

ARCHAEOLOGICAL INVESTIGATIONS OF THE HOLLAND  
POINT SITE (18DO220), DORCHESTER  
COUNTY, MARYLAND

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A Thesis  
Submitted to  
the Temple University Graduate Board

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in Partial Fulfillment  
of the Requirements for the Degree  
MASTER OF ARTS

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by  
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## TABLE OF CONTENTS

|                                                            |      |
|------------------------------------------------------------|------|
| ACKNOWLEDGEMENTS .....                                     | ii   |
| LIST OF TABLES .....                                       | x    |
| LIST OF FIGURES .....                                      | xiii |
| CHAPTER                                                    |      |
| 1. INTRODUCTION AND EXECUTIVE SUMMARY .....                | 1    |
| 2. RESEARCH DESIGN AND METHODOLOGY .....                   | 9    |
| A. Introduction .....                                      | 9    |
| B. Site Chronology and Typological Concerns .....          | 10   |
| C. Activity Areas .....                                    | 12   |
| D. Floral and Faunal Remains .....                         | 14   |
| E. Lithic Technology .....                                 | 16   |
| F. Ceramics .....                                          | 17   |
| G. Site Formation Processes .....                          | 18   |
| H. Settlement, Subsistence, and Interaction Patterns ..... | 19   |
| I. Background Research.....                                | 22   |
| J. Field Methodology.....                                  | 23   |
| L. Laboratory Methods Of Analysis.....                     | 38   |
| 1. Introduction .....                                      | 38   |
| 2. Lithics .....                                           | 39   |
| 3. Debitage .....                                          | 39   |
| 4. Flake Tools .....                                       | 44   |
| 5. Cores and Non-Chipped Stone Artifacts .....             | 48   |
| 6. Bifaces .....                                           | 50   |
| 7. Ceramics .....                                          | 54   |
| 8. Biological Remains .....                                | 57   |
| 9. Radiocarbon Dating.....                                 | 64   |
| 3. ENVIRONMENTAL BACKGROUND .....                          | 68   |
| A. Introduction .....                                      | 68   |
| B. Local Geomorphic Setting .....                          | 69   |
| C. Local Modern Ecology .....                              | 74   |
| D. Regional And Local Geological Setting.....              | 77   |
| E. Paleoenvironmental Data .....                           | 82   |

|    |                                                                         |     |
|----|-------------------------------------------------------------------------|-----|
| 4. | CULTURAL HISTORIC BACKGROUND .....                                      | 90  |
|    | A. Introduction .....                                                   | 90  |
|    | B. Late Archaic Period 5,000 B.P. to 3,000 B.P. ....                    | 93  |
|    | C. Early Woodland Period 3,000 to 2,000 B.P.....                        | 99  |
|    | D. Middle Woodland 2,000 to 1,000 B.P. ....                             | 104 |
|    | E. Late Woodland Period 1,050 to 350 B.P. ....                          | 109 |
|    | F. Contact Period 350 B.P. to Present .....                             | 115 |
| 5. | CULTURAL AND NATURAL STRATIGRAPHY .....                                 | 117 |
|    | A. Introduction .....                                                   | 117 |
|    | B. Soil Profiles and Formation Processes.....                           | 118 |
|    | 1. Soil Profile in Shell Midden Portion of the Site .....               | 119 |
|    | 2. Soil Profile in Shell-Free Area at The Tip of Holland Point ...      | 134 |
|    | 3. Soil Horizons And Features.....                                      | 135 |
|    | 4. Soil Profile in the Three Agricultural Fields .....                  | 139 |
|    | C. Cultural Stratigraphy.....                                           | 144 |
|    | 1. Shell Midden Area.....                                               | 144 |
|    | 2. Features 1 through 6 .....                                           | 157 |
|    | 3. Agricultural Fields .....                                            | 159 |
|    | D. Interpretation of Radiocarbon Assays .....                           | 163 |
|    | E. Analytical Contexts .....                                            | 168 |
| 6. | ANALYSIS OF THE LATE WOODLAND SHELL<br>MIDDEN CONTEXT (STRATUM II)..... | 190 |
|    | A. Lithics .....                                                        | 190 |
|    | 1. Bifaces .....                                                        | 190 |
|    | 2. Cores.....                                                           | 190 |
|    | 3. Debitage .....                                                       | 191 |
|    | 4. Flake Tools .....                                                    | 195 |
|    | 5. Cobble-Based Implements.....                                         | 197 |
|    | 6. Other Lithic Artifacts .....                                         | 198 |
|    | B. Ceramics .....                                                       | 198 |
|    | C. Biological Remains .....                                             | 202 |
|    | 1. Invertebrates .....                                                  | 202 |

|    |                                                                  |     |
|----|------------------------------------------------------------------|-----|
|    | 2. Vertebrates.....                                              | 219 |
|    | 3. Floral Remains .....                                          | 223 |
|    | D. Horizontal Patterning of Cultural Materials .....             | 229 |
| 7. | LATE WOODLAND-LATE ARCHAIC CONTEXT<br>(STRATA III AND IV) .....  | 234 |
|    | A. Lithics .....                                                 | 234 |
|    | 1. Cores.....                                                    | 234 |
|    | 2. Debitage .....                                                | 234 |
|    | 3. Flake Tools .....                                             | 237 |
|    | 4. Cobble-Based Implements.....                                  | 238 |
|    | 5. Other Lithic Artifacts .....                                  | 239 |
|    | B. Ceramics .....                                                | 240 |
|    | C. Biological Remains .....                                      | 243 |
|    | 1. Invertebrates .....                                           | 243 |
|    | 2. Vertebrates.....                                              | 245 |
|    | 3. Floral Remains .....                                          | 247 |
|    | D. Horizontal Patterning of Cultural Materials .....             | 250 |
| 8. | ANALYSIS OF THE FEATURES .....                                   | 258 |
|    | A. Introduction .....                                            | 258 |
|    | B. Feature 1 .....                                               | 258 |
|    | C. Feature 4 .....                                               | 268 |
|    | D. Feature 5 .....                                               | 271 |
| 9. | ANALYSIS OF THE CULTURAL MATERIAL FROM<br>THE THREE FIELDS ..... | 272 |
|    | A. Field 1 .....                                                 | 272 |
|    | B. Field 2 .....                                                 | 274 |
|    | C. Field 3 .....                                                 | 275 |

## VOLUME II

|     |                                                                          |     |
|-----|--------------------------------------------------------------------------|-----|
| 10. | ANALYSIS OF THE CULTURAL MATERIAL FROM THE<br>SHORELINE ASSEMBLAGE ..... | 279 |
|-----|--------------------------------------------------------------------------|-----|

|                                                                |     |
|----------------------------------------------------------------|-----|
| A. Introduction .....                                          | 279 |
| B. Ceramics .....                                              | 280 |
| C. Lithics .....                                               | 297 |
| 1. Projectile Points .....                                     | 297 |
| 2. Bifaces .....                                               | 307 |
| 3. Cores .....                                                 | 312 |
| 4. Flake Tools .....                                           | 317 |
| 5. Debitage .....                                              | 324 |
| 6. Cobbled-Based Implements .....                              | 331 |
| 7. Other Lithic Artifacts .....                                | 333 |
| D. Biological Remains .....                                    | 342 |
| 1. Introduction .....                                          | 342 |
| 2. Vertebrates .....                                           | 343 |
| E. Historic Artifacts .....                                    | 350 |
| F. Analysis Of Controlled Collection And Tile Experiment ..... | 351 |
| 1. FCR distributional analysis .....                           | 352 |
| 2. Cultural Material Distributional Analysis .....             | 357 |
| 3. Colored Tile Movement .....                                 | 365 |
| 4. Interpretation of Shoreline Processes .....                 | 375 |
| 11. SUMMARY AND CONCLUSIONS .....                              | 385 |
| A. Site Chronology .....                                       | 385 |
| B. Typological Concerns .....                                  | 398 |
| C. Activity Areas .....                                        | 402 |
| D. Insights from Floral and Faunal Remains .....               | 405 |
| E. Lithic Technology .....                                     | 412 |
| F. Ceramics Technologies .....                                 | 420 |
| G. Site Formation Processes .....                              | 435 |
| H. Settlement and Subsistence Patterns .....                   | 439 |
| I. Future Directions .....                                     | 455 |
| REFERENCES CITED .....                                         | 459 |
| APPENDENDICES                                                  |     |
| A. CERAMIC WARE DESCRIPTIONS .....                             | 498 |
| B. PROJECTILE POINT DESCRIPTIONS .....                         | 544 |



|    |                                                        |     |
|----|--------------------------------------------------------|-----|
| C. | RADIOCARBON DATING REPORT FROM BETA ANALYTIC INC. .... | 566 |
| D. | DESCRIPTIONS OF CHERT TYPES .....                      | 581 |

## LIST OF TABLES

| Table                                                                                                         | Page |
|---------------------------------------------------------------------------------------------------------------|------|
| 1. Methods of feature investigation.....                                                                      | 37   |
| 2. Debitage attributes .....                                                                                  | 40   |
| 3. Core attributes .....                                                                                      | 49   |
| 4. Biface attributes .....                                                                                    | 51   |
| 5. Native American pottery attributes used for all sherds .....                                               | 56   |
| 6. Rim sherd attributes.....                                                                                  | 56   |
| 7. Faunal attributes .....                                                                                    | 59   |
| 8. Oyster salinity regimes as defined by Kent (1992: Table 5).....                                            | 61   |
| 9. Idealized growth index values over the course of the year .....                                            | 63   |
| 10. Radiocarbon dates with context information.....                                                           | 65   |
| 11. Common smaller inedible species around Holland Point .....                                                | 77   |
| 12. Chesapeake Bay sea level rise .....                                                                       | 84   |
| 13. Amount of the B-horizon excavated in each test unit .....                                                 | 130  |
| 14. Total number of projectile points classified into morphological types<br>from the shoreline context ..... | 148  |
| 15. Summary of artifact refitting from excavated contexts .....                                               | 152  |
| 16. Impressed odostome by level in column samples .....                                                       | 155  |
| 17. Features with temporally diagnostic artifacts .....                                                       | 158  |
| 18. Summary ofdebitage from Stratum II.....                                                                   | 191  |
| 19. Flake morphological attributes from Strata II-IV.....                                                     | 193  |

|                                                                                                                                             |     |
|---------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 20. Summary of oyster analysis .....                                                                                                        | 203 |
| 21. Aquatic mollusc species .....                                                                                                           | 214 |
| 22. Land snail species .....                                                                                                                | 217 |
| 23. Stratum II faunal remains from the test units and column samples .....                                                                  | 220 |
| 24. Floral remains .....                                                                                                                    | 224 |
| 25. Summary of cultural material from Strata II in all the excavated units<br>and column samples .....                                      | 230 |
| 26. Summary of debitage from Strata III and IV .....                                                                                        | 235 |
| 27. Amount of ceramics collected during cleanup of Test Unit 2 that could<br>not be associated with Stratum II or Stratum III .....         | 243 |
| 28. Totals of Strata III and IV faunal remains from test units, column<br>samples, and bank cut (Lot# 3).....                               | 245 |
| 29. Summary of cultural material from Strata III and IV in all the excavated<br>units and column samples.....                               | 250 |
| 30. Summary of debitage from Feature 1 .....                                                                                                | 264 |
| 31. Summary of debitage from Field 1.....                                                                                                   | 273 |
| 32. Summary of the shoreline ceramics assemblage .....                                                                                      | 281 |
| 33. Classification of vessel lots from the shoreline assemblage by historic<br>types within the Townsend Series as defined by Griffith..... | 284 |
| 34. Temporal range of historic types in the Townsend series compared to<br>the number of vessel lots from the shoreline assemblage .....    | 287 |
| 35. Sherds from the shoreline assemblage that are sooted .....                                                                              | 295 |
| 36. Projectile points by material type from the shoreline assemblage .....                                                                  | 298 |
| 37. Breakage pattern of the shoreline projectile points .....                                                                               | 304 |
| 38. Shoreline assemblage of bifaces not classified into morphological types<br>by reduction stage .....                                     | 308 |

|                                                                                                       |     |
|-------------------------------------------------------------------------------------------------------|-----|
| 39. Core types from the shoreline assemblage by material .....                                        | 312 |
| 40. Summary of core size and number of flake scars .....                                              | 314 |
| 41. Summary of flake tools by material type from the shoreline assemblage .....                       | 318 |
| 42. Flake tools by flake type from the shoreline assemblage .....                                     | 319 |
| 43. Summary of debitage by flake type and material type from the shoreline<br>assemblage .....        | 325 |
| 44. Summary of debitage from the shoreline assemblage .....                                           | 325 |
| 45. Summary of the thermally altered debitage from the shoreline<br>assemblage .....                  | 330 |
| 46. Summary of cobble-based implements from the shoreline assemblage .....                            | 331 |
| 47. Summary of faunal remains from the shoreline assemblage .....                                     | 344 |
| 48. Numbers of different size tiles mapped in after 24 days from the 5 drop-<br>off locations .....   | 371 |
| 49. Grouping of morphological types for all the projectile points from the<br>site .....              | 388 |
| 50. Vessel lot determinations by ware/type for the total ceramic assemblage<br>at Holland Point ..... | 392 |
| 51. Ceramics where the final cordage twist could be identified .....                                  | 425 |

## LIST OF FIGURES

| Figure                                                                                                                                     | Page |
|--------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1. Map showing location of Holland Point in Maryland .....                                                                                 | 1    |
| 2. Map of Taylors Island .....                                                                                                             | 2    |
| 3. Modified Section of 1982 7.5 Minute Series Orthophotomap Taylors<br>Island Quadrangle showing areas investigated at Holland Point ..... | 4    |
| 4. Aerial photograph of site taken around 1990 .....                                                                                       | 4    |
| 5. Contour map of the Holland Point shoreline .....                                                                                        | 25   |
| 6. Beach sections .....                                                                                                                    | 26   |
| 7. Beach Section 2 with the 5-meter collection areas outlined .....                                                                        | 27   |
| 8. Drop-off locations used for the tile experiment .....                                                                                   | 28   |
| 9. Depth below surface to contact between O-horizon and shell midden.....                                                                  | 31   |
| 10. Location of the test units and features .....                                                                                          | 35   |
| 11. Shell midden area with overwash sand .....                                                                                             | 71   |
| 12. Photograph of the south wall profile of Test Unit 1 .....                                                                              | 120  |
| 13. South wall profile of Test Unit 1 .....                                                                                                | 121  |
| 14. Postmolds and concentration of shell in Test Unit 1 .....                                                                              | 129  |
| 15. Photograph of the west wall profile of Test Unit 4 .....                                                                               | 132  |
| 16. West wall profile of Test Unit 4 .....                                                                                                 | 133  |
| 17. Feature 1 .....                                                                                                                        | 136  |
| 18. West profile of low shelf landform and Feature 3.....                                                                                  | 137  |
| 19. Field 1 .....                                                                                                                          | 140  |

|                                                                                                                                     |     |
|-------------------------------------------------------------------------------------------------------------------------------------|-----|
| 20. Correlation between shell midden and plowed fields.....                                                                         | 143 |
| 21. Ceramic ware/type by stratum from excavated contexts.....                                                                       | 146 |
| 22. Ceramics recovered from the bank profile in 1998 .....                                                                          | 151 |
| 23. Amount of debitage less than 1 cm in diameter from Test Unit 6 and 7 .....                                                      | 153 |
| 24. Comparison of debitage by size with depth in Test Unit 5 .....                                                                  | 155 |
| 25. Weight of historic ceramics by excavation strata/level.....                                                                     | 156 |
| 26. Projectile points, A: Type 14 (Art# 2.393), B: Type 14 (Art# 2.133), C:<br>Type 33 (Art# 107.11), D: Type 14 (Art# 2.1065)..... | 160 |
| 27. Projectile points, A: Type 26 (Art# 106.6), B: Type 4 (Art# 2.504), C:<br>Type 1 (Art# 2.507) .....                             | 160 |
| 28. Stratigraphic correlation of radiocarbon dates from the column sample<br>in Test Unit 1 and 2 .....                             | 164 |
| 29. 2-sigma calibration for all nine radiocarbon dates .....                                                                        | 165 |
| 30. Correlation of stratum showing the valid radiocarbon dates and the two<br>analytical contexts .....                             | 171 |
| 31. Projectile points, A: Type 4 (Art# 19.228), B: Type 29 (Art# 2.475), C:<br>Type 2 (Art# 2.404), D: Type 7 (Art# 34.7).....      | 175 |
| 32. Projectile points, A: Type 21 (Art# 2.51), B: Type 15A (Art# 2.384), C:<br>Type 18 (Art# 2.505) .....                           | 175 |
| 33. Type 8A (A-D, F, G.), Type 8B (H-K), and Type 9 (E) projectile points .....                                                     | 177 |
| 34. Projectile points, A: Type 13 (Art# 2.389), B: Type 11 (Art# 2.462), C:<br>Type 12 (Art# 2.402), Type 30 (Art# 2.2682).....     | 177 |
| 35. Projectile points, A: Type 15B (Art# 2.477), B: Type 16 (Art# 2.523),<br>C: Type 17 (Art# 2.491), D: Type 19 (Art# 2.487) ..... | 178 |
| 36. Projectile points, A: Type 10 (Art# 2.450), B: Type 28 (Art# 2.449), C:<br>Type 20 (Art# 2.410), D: Type 31 (Art# 2.704).....   | 178 |

|                                                                                                                                                      |     |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| 37. Projectile points, A: Type 32 (Art# 2.395), B: Type 6 (Art# 2.411), C: Type 23 (Art# 36.5), D: Type 25 (Art# 2.443).....                         | 179 |
| 38. Ware groups by percentage of weight for the complete ceramic assemblage .....                                                                    | 182 |
| 39. Rhyolite projectile points, A: Type 24 (Art# 2.481) B: Type 22 (Art# 2.485), C: Type 24 (Art# 2.479), D: Type 26 (Art# 2.383).....               | 183 |
| 40. Graver (Art# 112.6) on left and scraper tool (Art# 112.1) on right.....                                                                          | 196 |
| 41. Polish on scraper (Art# 112.1) at 40X magnification.....                                                                                         | 196 |
| 42. Polish on graver (Art# 112.6) at 40X magnification.....                                                                                          | 197 |
| 43. Portion of Type I A vessel.....                                                                                                                  | 200 |
| 44. Portion of Type II A vessel .....                                                                                                                | 201 |
| 45. Growth index variation for valves measured from Test Unit 7 Stratum II Level 2 .....                                                             | 208 |
| 46. Growth index variation for valves measured from Test Unit 3 Stratum II .....                                                                     | 208 |
| 47. Growth index variation for valves measured from Test Unit 2 Stratum II northeastern quadrant .....                                               | 209 |
| 48. Growth index variation for valves measured from all three proveniences.....                                                                      | 209 |
| 49. Size distribution of larger skeletal elements recovered from the test units and column samples from the Late Woodland shell midden deposit ..... | 221 |
| 50. Percentage of modified bone and non-modified bone by total vertebrate bone weight from the Late Woodland shell midden deposit .....              | 222 |
| 51. Percentage of cultural material by test unit for the Late Woodland analytical context .....                                                      | 230 |
| 52. Size distribution of larger skeletal elements recovered from the test units, column samples, and bank cut from the Strata III and IV .....       | 246 |
| 53. Percentage of modified bone and non-modified bone by total vertebrate bone weight from the Late Woodland-Late Archaic deposits .....             | 247 |

|                                                                                                                                |     |
|--------------------------------------------------------------------------------------------------------------------------------|-----|
| 54. Percentage of cultural material by test unit for the Late Woodland-Late Archaic analytical context .....                   | 251 |
| 55. Field 2 .....                                                                                                              | 276 |
| 56. Field 3 .....                                                                                                              | 278 |
| 57. Average width/thickness ratio for measurable bifaces .....                                                                 | 309 |
| 58. Effigy face .....                                                                                                          | 338 |
| 59. Size distribution of larger skeletal elements recovered from the shoreline context.....                                    | 347 |
| 60. Modification types by percentage of the total weight for the vertebrate faunal remains from the shoreline assemblage ..... | 348 |
| 61. FCR weight for each beach section.....                                                                                     | 353 |
| 62. Distribution of FCR along shoreline .....                                                                                  | 354 |
| 63. Distribution of FCR in Beach Section 2 .....                                                                               | 355 |
| 64. Distribution of artifact/ecofact weight along the shoreline .....                                                          | 359 |
| 65. Distribution of artifact/ecofact weight in Beach Section 2 .....                                                           | 350 |
| 66. Distribution of artifact/ecofact by count along the shoreline .....                                                        | 362 |
| 67. Distribution of artifact/ecofact count in Beach Section 2 .....                                                            | 363 |
| 68. Comparison of artifact weight to count by beach section along the shoreline .....                                          | 364 |
| 69. Tile movement at all drop locations along the shoreline.....                                                               | 366 |
| 70. Tile movement at Beach Section 1 (15 m) .....                                                                              | 367 |
| 71. Tile movement at Beach Section 2 (35 m) .....                                                                              | 368 |
| 72. Tile movement at Beach Section 3 (40 m)/Section 4 (0 m) .....                                                              | 369 |
| 73. Tile movement at Beach Section 6 (40 m)/Section 7 (0 m) .....                                                              | 370 |



|                                                                                 |     |
|---------------------------------------------------------------------------------|-----|
| 74. Thickness of the lag deposit along the beach based on auger testing .....   | 373 |
| 75. Total number of projectile points by gross temporal groups and types .....  | 389 |
| 76. Vessel lot by ware/type for total ceramic assemblage at Holland Point ..... | 394 |
| 77. Graph comparing weights of lithic artifacts by material type .....          | 413 |
| 78. Graph comparing counts of lithic artifacts by material type .....           | 414 |
| 79. Vessel lots with measurable rim diameters .....                             | 431 |

which the coins were found make it difficult to definitely determine if they are related to Native American or Euroamerican activities at the site. Conservatively, the coins are believed to not be associated with Native American activities dating to the Contact period at Holland Point.

#### F. Analysis Of Controlled Collection And Tile Experiment

The controlled shoreline collection combined with the tile experiment provides a unique opportunity to analysis how cultural materials are distributed along the shoreline of the site. In addition, the natural and cultural processes affecting this distribution can be evaluated. Data sets analyzed in this discussion include (1) cultural material recovered from the one-time shoreline collection, (2) FCR, and (3) colored tiles released along the shoreline. Additional observations that were not systematically recorded will also be incorporated throughout this discussion. The major theoretical approach used in this analysis is to view the artifacts and ecofacts as types of sedimentary particles that are subjected to the same shoreline processes as the non-cultural sediments (Stein 1987). The artifacts/ecofacts are simply other particle types subjected to the same physical forces as natural sediments. Properties such as artifact size and weight affect how the cultural material and other sediments are distributed along the shoreline. These analyses will ultimately provide detailed insight into how coastal site formation processes affect the archaeological deposits at one particular locality. The data sets will be discussed in the following order: (1) the distribution of FCR by weight (2) cultural material (artifacts and ecofacts) distribution, and (3) colored tiles. The location of the

## CHAPTER 1 INTRODUCTION AND EXECUTIVE SUMMARY

The results of archaeological investigation at the Holland Point Site (18DO220) are presented in this report. The Holland Point Site is located in Dorchester County, Maryland in the middle portion of the Delmarva Peninsula on Maryland's Outer Coastal Plain (Figure 1).



Figure 1. Map showing location of Holland Point in Maryland

The site is within the Maryland Archaeological Research Unit 4, which is defined as the Choptank Drainage (Shaffer and Cole 1994: 77).

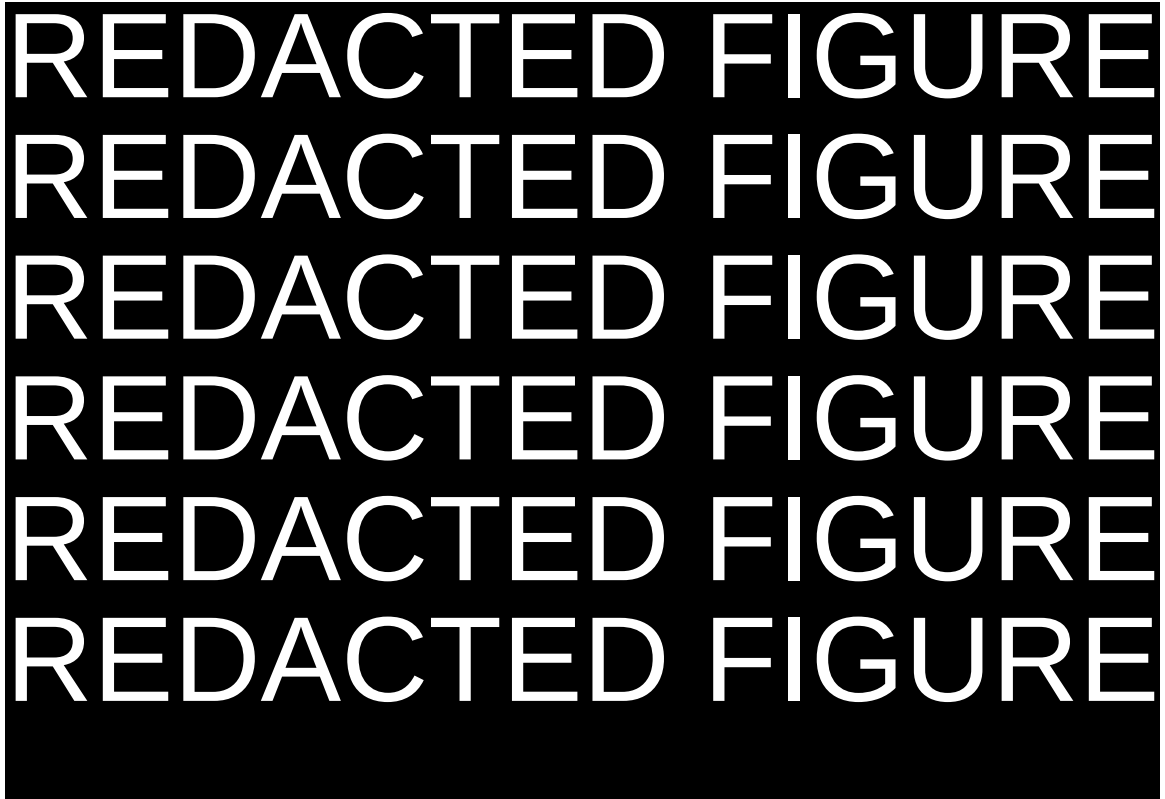


Figure 2. Map of Taylors Island

Holland Point is due to rising sea levels, which has embayed this portion of the drainage. The site was one of two sites investigated as part of the “Native American Site Excavations: Choptank River Basin,” a Non-Capital Grant. Darrin Lowery and R. Michael Stewart wrote the grant. R. Michael Stewart provided guidance throughout the all stages of the project. The Maryland Historic Trust funded this project. The administration of the project was handled by Temple University and the Department of Anthropology.

Darrin Lowery (1995a) initially recorded the site in 1995 as part of an archaeological survey of the Little Choptank Drainage Basin. The most visible aspects of the site are the oyster shell lag deposits along the shoreline and the *in situ* oyster shell

midden deposits buried below a salt marsh. The fieldwork was conducted from July to August 2000. It consisted of (1) a controlled shoreline collection, (2) a pedestrian survey of three near-by plowed fields, (3) the subsurface testing of the site in the saltmarsh, and (4) augering across the saltmarsh to determine the nature and extent of the buried midden. The Holland Point Site includes both the shell midden area and the near-by tilled fields. However, this large area is not one continuous concentration of cultural material. The site is divided into the following areas: (1) the shell midden portion of the site, which is located at the tip of Holland Point on the saltmarsh, (2) the island, which was connected to the mainland portion of Holland Point around 1990, (3) the three agricultural fields, which are situated inland from the saltmarsh (Figure 3).

[REDACTED]

[REDACTED]

[REDACTED]

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All of the fieldwork was conducted on the Holland Point farm with the permission of Barry Smith, the property manager.

The bulk of the subsurface testing was focused on the excavation of seven 1-by-1 meter test units. A controlled surface collection of the shoreline adjacent to and beyond the *in situ* archaeological deposits was conducted in a systematic manner. Three tilled fields west of the shell midden were surface collected and mapped. The material analyzed in this report includes artifacts and ecofacts collected over the last ten

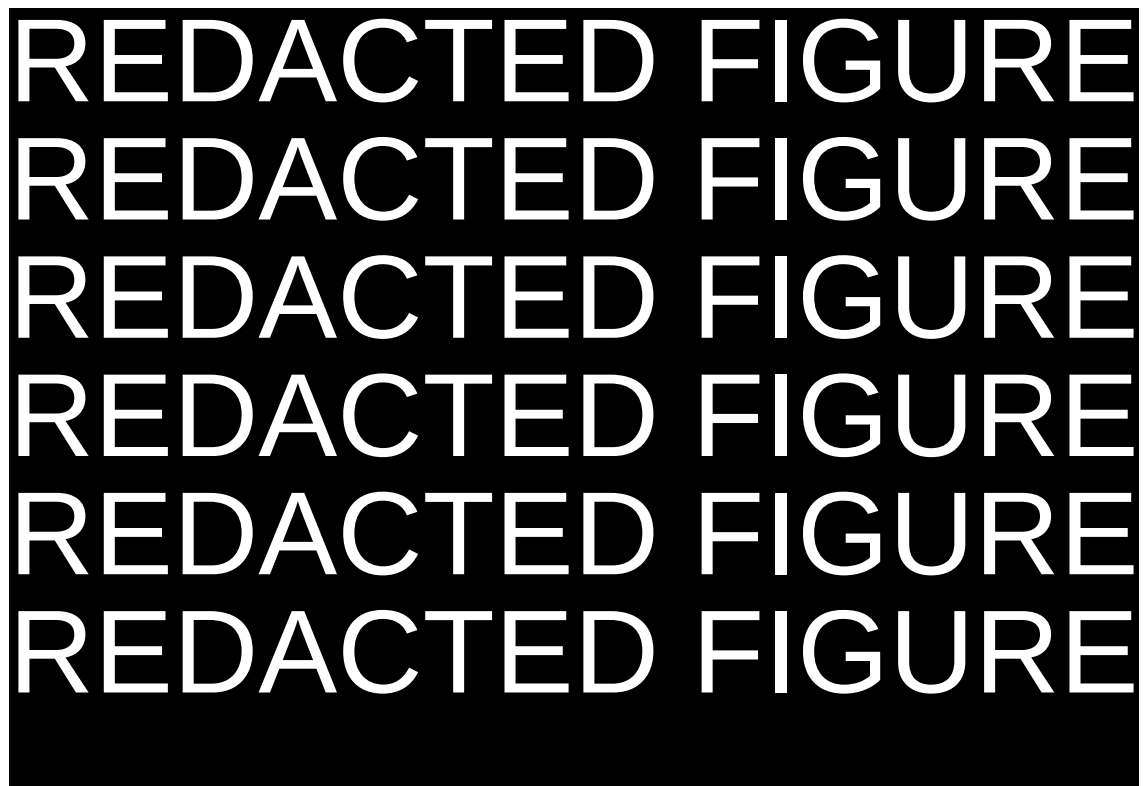


Figure 3. Modified Section of 1982 7.5 Minute Series Orthophotomap  
Taylors Island Quadrangle showing areas investigated at Holland Point

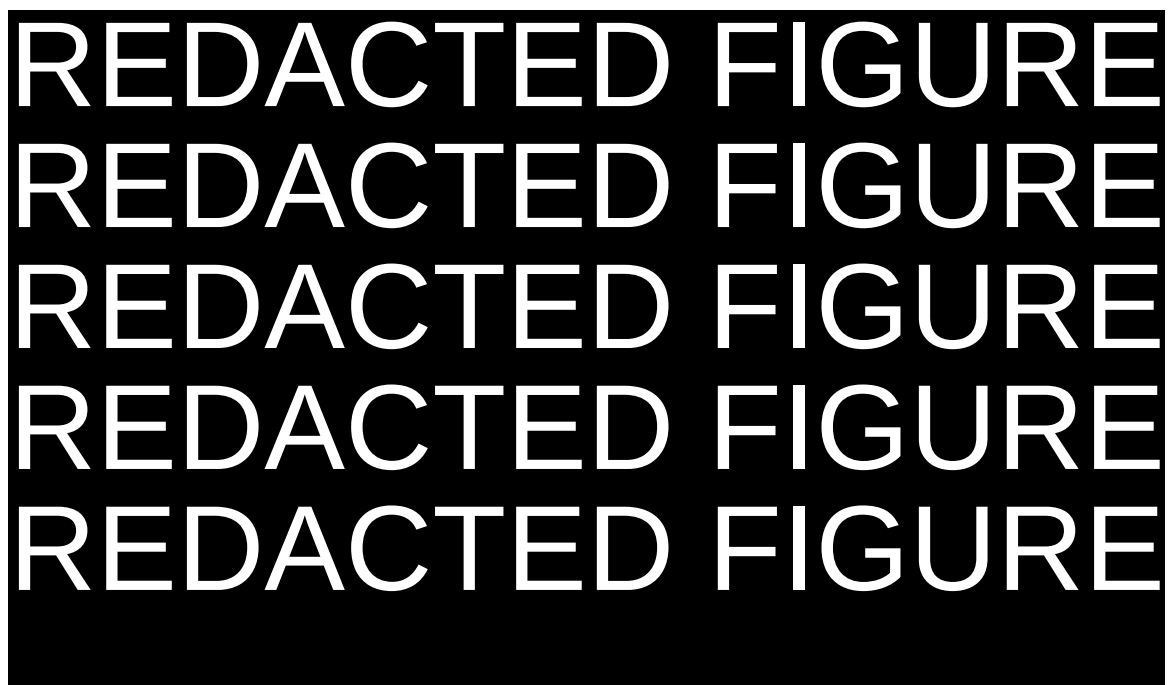


Figure 4. Aerial photograph of site taken around 1990;  
Note view is towards the southwest

years by Norman Brady and Darrin Lowery as well as material recovered from fieldwork in 2000.

Artifacts collected by the property manager, Barry Smith were briefly documented. A collection of artifacts from the initial recording of site by Darrin Lowery is archived in Jefferson Patterson Park and Museum's repository. These artifacts (Lot# 1) have not been analyzed in this report. Other individuals are also known to have collected cultural material from the site. However, their collections were not analyzed for this report.

The site has archaeological components dating from the Early Archaic (c. 11,000 calendar years ago) through the Late Woodland periods (c. 350 calendar year ago) (Lowery 1999: 48). An evaluation of the cultural and natural stratigraphy in the saltmarsh portion of the site reveals two distinct analytical contexts. One of the analytical contexts consists of the shell midden deposit, which dates to the Late Woodland cultural/temporal period. The second analytical context consists of archaeological deposits below the shell midden. This analytical context dates from the Late Woodland through Late Archaic periods. The deposits below the shell midden cannot be divided into more refined analytical contexts. Several features have been found and investigated to varying degrees at the site. One of the features consisted of a Middle Woodland Native American burial. Members of two local Native American groups were consulted when the human remains were identified. They performed a reburial ceremony in which the human remains and associated grave goods were re-interred.

The site was originally selected for evaluation for four primary reasons. First, the site is being eroded by the Chesapeake Bay at an alarming rate. Within a few years the majority of the shell midden portion of the site could be gone. Second, the site is located in a unique geomorphic setting below a saltmarsh that has facilitated the exceptional preservation of faunal and floral remains not typically preserved in regional prehistoric sites. Additionally, the site has not been subjected to plowing because of its location in a modern saltmarsh. Most shell middens excavated in the Middle Atlantic region have been disturbed by plowing to varying degrees. Third, the site has produced a rich array of temporally diagnostic artifacts that afforded the opportunity to analyze Native American utilization of the Holland Point Site, and make comparisons with the regional prehistoric cultural framework. Fourth, the stratified nature of the two analytical contexts (i.e. the Late Woodland shell midden deposit and the Late Woodland through Late Archaic deposits) allows for comparative analysis of site activities and utilization between the two contexts.

The analysis of the archaeological deposits and cultural material at Holland Point provides insight into the following research topics: subsistence practices, Late Woodland Period ceramic technology and variability, settlement patterns, site catchment's interpretations, lithic technology, Middle Woodland burial practices, and coastal site formation processes. The abundance of terrestrial faunal remains from the shell midden portion of the site indicates that aquatic and terrestrial resources contributed to a broad-spectrum economy during the Late Woodland at Holland Point. The absence of cultigens at the site indicates that Late Woodland subsistence practices at Holland Point were distinctive from surrounding Late Woodland cultures in the



Middle Atlantic region that utilized cultigens. The majority of the Holland Point ceramics consist of Late Woodland Townsend series ceramics. Analyses of vessel form, vessel size, surface treatment, design motifs, and function highlight the range of variability within Late Woodland ceramic technologies on the Delmarva Peninsula. The range of artifact types from the shell midden provides insight into site function and longevity of occupation. An assessment of site catchments can be estimated based on the lithic material utilization patterns and the biological remains recovered from the site. The heavy reliance on local cobble resources, the presence of freshwater mussel, deer and other ecofacts suggest that regular procurement activities by the site's inhabitants ranged in roughly a 15 km radius around the site. The Middle Woodland burial contains an array of artifacts and ecofacts. The presence of oyster shell, ribbed mussel, and micaceous schist in the burial is indicative of the symbolic role of these artifacts in mortuary contexts.

Site formation processes at Holland Point are dynamic. Sea level rise and shoreline erosion have had a dramatic impact on the preservation, modification, and destruction of the site's archaeological deposits. The analysis of the artifacts from the controlled shoreline collection reveals the effects of shoreline erosion on artifact distribution patterns along the beach. The high-energy wavy conditions along portions of the shoreline adjacent to the site create dynamic erosional and depositional environments. A pit feature found along the shoreline initially appeared to be a shell filled pit containing only Native American artifacts. However, historic lumber and corroded iron objects in the feature matrix indicate that both Native American and later historic period artifacts were fortuitously mixed together through natural shoreline

processes. This feature highlights the care that needs to be taken when evaluated the integrity of archaeological deposits along shorelines.

In sum, the analysis of Holland Point enhances our understanding of the cultural history of the native peoples who lived in the middle portion of the Delmarva Peninsula, and provides new insights into coastal site formation processes.

The organization of the report is designed to present a logical framework for the discussion of the materials and data obtained from the investigations at Holland Point. The research questions will be considered in greater detail in the next chapter. The field methods use as well as the methodology employed to analyze the cultural materials is also presented in Chapter 2. Chapter 3 and 4 provide the environmental and cultural context for the investigations at Holland Point. Chapter 5 establishes the analytical contexts used in later chapters to frame the discussion of the cultural material. Chapters 6 and 7 analyze the cultural material recover from the two analytical contexts encountered during the subsurface excavates in the shell midden area. The cultural material recovered from the plowed fields, the shoreline, and features is evaluated in Chapters 8 through 10. The conclusions are presented in the final chapter. Appendixes A and B provides comprehensive analysis and interpretation of the Native American pottery and projectile points.

## CHAPTER 2 RESEARCH DESIGN AND METHODOLOGY

### A. Introduction

The primary objective of this project was to gain a comprehensive understanding of the prehistoric occupations at the Holland Point Site before the archaeological deposits are completely eroded into [REDACTED]. The site's shoreline is subject to an extremely high erosion rate (Lowery 1999). The shell midden portion of the site is less than a meter above mean high tide (MHT). The Holland Point Site is located [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

The archaeological investigations were designed to address several site specific and regionally based research questions. The research potential was assessed on the basis on the following: (1) shoreline finds of cultural materials and features, (2) examinations of profiles of exposed banks along the shoreline, and (3) existing regional prehistoric frameworks. Methods of artifact analysis were chosen that would allow for comparisons between other regional sites of similar time periods. Other methods used were designed to look at the intrasite variability of different artifact classes. The term shell midden is used loosely in this report to mean a horizontal stratum in which over seventy-five percent of the matrix by volume consists of whole or fragmentary shell. Other researches concerned with classifying shell-bearing sites or deposits have

developed more elaborate scheme for characterizing shell middens or shell matrix sites (Claassen 1998: 10-12). The term shell matrix is also used to refer to the shell midden deposit at Holland Point.

## B. Site Chronology and Typology Concerns

The diagnostic artifacts recovered from the shoreline indicate components dating from the Early Archaic to the Late Woodland periods (Lowery 1999). The initial recovery of diagnostic artifacts from the profiles exposed along the shoreline prior to fieldwork in 2000 provides a tentative chronology for the deposits in the shell midden portion of the site. This chronology is presented below and will be critically evaluated in this report. Two British halfpennies dating to the seventeenth and/or eighteenth centuries have been found at the site. These artifacts could either reflect Native American occupations dating to the Contact period or Euroamerican activities at the site dating to the early Colonial period. Given the fact that the coins were found along the shoreline they are believed to be associated with Euroamerican activities. Middle Woodland and Late Woodland diagnostics were recovered from the shell midden stratum exposed along the shoreline. Early Woodland ceramics have been found in the stratum directly underlying the shell midden. Possible Late Archaic style projectile points have been recovered from the lowest stratum exposed along shoreline. The Early Archaic component might be associated with deeper submerged deposits (Lowery 1999). Inspections of the profile of banks exposed along the shoreline, which were conducted in preparing the grant proposal, indicated that cultural deposits ranged from

the Late Archaic to Late Woodland periods. These initial impressions of the bank profile along the shoreline suggested that both sediments and artifacts were discretely stratified. The collection of artifacts from the shoreline over the last ten years by Darrin Lowery and Norman Brady revealed that most of the ceramics are associated with the Late Woodland Period, although the Middle and Early Woodland periods are represented.

Subsurface investigation of the site was designed to provide a detailed understanding of the site's chronology by looking at the vertical distribution of the artifacts in site areas buried beneath the marsh and away from the actively eroding bank. The vertical distribution of diagnostic ceramics and projectile points can be used to determine the relative chronological sequences at the site. The recovery of carbonized material would provide radiocarbon dates for the different artifact bearing strata. In addition, the radiocarbon dates could assist in defining the chronology of the ceramics and projectile point types recovered. The abundance of ceramics and projectile points found along the shoreline provides a promising opportunity to recovery similar materials in buried contexts. In particular, several questions about regional ceramic and projectile point types can be evaluated. The excavations can offer a greater understanding of the various fabric and cored marked shell tempered ceramics, which have paste characteristics similar to Late Woodland pottery types. The recovery of small-stemmed points in a dated context would greatly enhance the chronology of this projectile point style. Recovering ceramics and projectile points from excavated contexts can confirm what is already known about some historic types and provide new understandings of uncontrolled types. In addition the recovery of suites of types

together would serve to highlight the types that may co-occur during certain temporal/cultural periods.

Chronological assessments are made for the deposits encountered in the subsurface investigations in the shell midden portion of the site, the deposits in the tilled fields, and the features. This analysis is presented in the evaluation of the cultural and natural stratigraphy.

### C. Activity Areas

The vertical and horizontal variations in cultural material across the site were used to determine the presence of distinct occupational episodes and general activity areas. Hypothesizes about activity areas in the shell midden portion of the site and the more inland settings are presented. Other explanations for variation in the shell matrix might also relate to how the shell midden is utilized or formed.

Two contrasting interpretations of land use practices related to the shell midden portion of the site are possible. Shell matrix deposits generally reflect uneven deposition over time (Waselkov 1982: 52-57). The heterogeneous nature of the depositional processes could be used to delineate dumping episodes or other activities within the shell deposit. In this scenario, the shell midden matrix is a reflection secondary refuse-dumping activities (Schiffer 1996: 58). Cultural materials in shell-free areas adjacent to and coeval to the shell matrix context could be associated with habitation activities. This habitation refuse found on shell-free living surfaces could broadly be defined as primary refuse because of its close spatial association with activity-related locations

(Schiffer 1996: 58). Evidence of cleaning up activities on the living surfaces would be reflected in a greater proportion of large artifacts and ecofacts found in the midden. Smaller pieces of debitage probably missed during the clean up would remain on the living surfaces. Elmer R. Reynolds (1889: 257) remarks in his overview of shell middens in the Potomac and Wicomico Valleys that “[u]sually the camp was situated directly in the rear of the shellheaps.” Reynolds’s late nineteenth century observations provide insight into activity areas prior to the destruction of many large shell middens in the Chesapeake Bay region.

In the second scenario, the shell matrix serves as the primary living surface. The porous matrix of the shell midden could function as drainage system providing high ground in an otherwise poorly drained landscape such as a floodplain or marsh-like area (Claassen 1998: 225). The artifacts associated within the shell deposit would be in a primary refuse context. One testable implication of this living-on-the-midden scenario is that shells would be fragmented because of trampling. In contrast, living off of midden and using midden as dumping ground would lead to a greater percentage of larger shell fragments. Paths of trampled shell might be evident even in the dumping model, but large areas of pulverized shell would be conspicuously absent.

A combination of the two shell midden utilization patterns cannot be ruled out. Using the high-and-dry midden as a living surface during soggy times would be expected. William Henry Holmes’s (1907) observations of depression-like features in the surfaces of the Pope Creek shell midden in Maryland suggest that shell deposits may have served as living surfaces. Reynolds’s (1889: 257) overview of shell middens in the Potomac and Wicomico Valleys indicates that the “camps” are not commonly

located on the middens. If a combination of the two scenarios are apparent at Holland Point during the same time periods, then comparisons between secondary refuse (i.e. material intentionally dumped) and primary refuse (i.e. material inadvertently “lost” on living surfaces) might not be possible. Alternatively, if the midden areas and shell-free zone reflect two distinctive behaviors then comparisons of artifact patterns between discard areas and habitations areas could provide insights into cultural behaviors such as the intensity of site use and degrees of sedentism (Murray 1980; Schiffer 1996: 59).

Vertical variations in the shell midden matrix could determine subtle stratigraphic differences in the deposit. Function differences between possible strata within the midden and deposits below the midden will be explored. Examinations of the tilled field west of the shell midden deposit could be used to look at the broader patterns in activity areas across the immediate landscape. Functional differences between the midden area and the more inland area would be expected. One hypothesis proposed is that the inland areas (i.e. the tilled fields) are the habitation areas while the shell midden area is a specialized processing locality.

#### D. Floral and Faunal Remains

Initial field investigations by Darrin Lowery and R. Michael Stewart (Lowery and Stewart 1999) indicated that the degree of organic preservation at the site was excellent. Possible wooden artifacts were recovered from an isolated portion of the site. During the site’s initial assessment for the Maryland Historic Trust Non-Capital Grant proposal, there was a high potential for additional wood artifacts to be recovered during



the fieldwork. The exceptional preservation of faunal remains in the archaeological deposits was one of the primary reasons for intensive investigations at Holland Point. The biological remains recovered provide information about Native American ecological practices in terrestrial and aquatic environments. The analysis of bone, shell, charcoal, nuts and seeds allows for dietary reconstructions and understandings of food processing activities. The ecofact data also allows for paleoenvironmental reconstructions around the site at the time of occupation. The relationship between the utilization of terrestrial and aquatic food resources can be explored. The distances traveled during foraging activities based on the distribution of modern plant and animal habitats can be used to understand local land use practices. The distances traveled for obtaining biological remains and lithic materials allows for an analysis of the site catchment's area.

Seasonality of the site can be assessed base on the times where particular plants and animals can be harvested or hunted. Oyster seasonality studies can provide information on the timing of shellfish harvesting activities (Custer and Doms 1990; Herbert and Steponaitis 1998; Kent 1992). The presence of cultigens would provide a significant contribution to Delmarva archaeology. Interpretations of Late Woodland subsistence practices on the Delmarva Peninsula argue that domesticated plants, when present, provide a limited amount of food in the overall diet (Custer 1989: 329). Ethnographic records of groups on the Virginia Portion of the Delmarva Peninsula document the trade of maize with the Powhatan chiefdom, suggesting that maize agriculture was practiced in the southern portion of the peninsula (Potter 1993: 40). Elsewhere in the Middle Atlantic region evidence for maize farming is widespread

during the Late Woodland (Barfield and Barber 1992; Stewart 1993; Stewart 1998a: 4-5; Trimble 1996). Research questions to consider are: What wild plant resources were incorporated in the Native American subsistence practices at the site? Are seasonal specific macro-remains present that will enhance our understanding of Late Woodland settlement patterns? What are the similarities and differences in the types of macro-remains recovered at Late Woodland shell middens verse other Late Woodland non-shell midden sites?

#### E. Lithic Technology

Lithic artifacts recovered from the site provide information on the production techniques and how stone tools were used. Identification of lithic materials types provides insight into lithic raw material acquisition behaviors. The comparison of local to non-local material recovered can be compared to intersite and intrasite variability. Meta-rhyolite found at the site, which weathers over time, can be used to make general observations concerning the number of occupations present (Stewart 1984a: 9-12). Methods used to reduce raw materials into stone tools can be assessed by analyzing the debris created from production activities. The effect of local cobble sources on the nature of lithic reduction strategies can be analyzed. It is hypothesized that bipolar techniques were frequently used to fracture local cobble resources. The occurrence of various stages in the sequence of tool production may reflect the duration of site occupation. The relationship between expedient and curated technologies provides

insight into site function. Analysis of micro-traces and macro-fracture patterns on stone tools can be used to determine tool functions.

## F. Ceramics

The rich assemblage of ceramics collected over the last ten years provides numerous avenues of research. Ceramics can provide insights about site function and relationships between cultural groups. Methods of vessel construction can be investigated. Differences in the degree of shell temper leaching from excavated sherds may reflect variations in production techniques. Questions about the presence and/or absence of on-site ceramic production can be investigated. Stylistic attributes can be analyzed to determine relationships between cultural groups and regional variations across time and space. Ceramic technologies can be analyzed. Vessel functions based on vessel size and the present/absence of sooting can be used to determine activities at the site. The vertical distribution of ceramics and associated radiocarbon dates can be used to look at changes in decorative motifs at the site. Relative intensity of site utilization can be estimated based on numbers of vessel lots per chronological time period. Ceramics recovered from the excavations can be used to evaluate existing typologies.

## G. Site Formation Processes

The investigations in 2000, combined with observations of the site over time seek to understand the natural and cultural formation processes affecting the deposits. The site's unique geomorphic setting allows for analysis of the effects of sea level rise, saltmarsh genesis, and shell midden formation. The excavation in the shell midden portion of the site allows for an analysis of past and present taphonomic processes altering the archaeological deposits. This evaluation helps to refine interpretations of past Native American activities at the site. The hypothesized rapid and uneven rate of shell matrix deposition provides a distinctive context to evaluate the midden deposit. Unique first-order changes (i.e. changes before archaeological recovery) to the archaeological deposits can contribute to the literature on coastal site formation research.

The shoreline processes of sea level rise and erosion affecting the archaeological deposits can be investigated through a controlled shoreline surface collection and field observations. A growing body of research has explored the effects wave erosion, longshore current, and storm surges and sea level rise on coastal sites (Gagliano 1984; Hughes and Sullivan 1974; Stewart 1999; Stright, et al. 1999; Wells 2001; Will and Clark 1996). The Holland Point controlled shoreline collection, describe in the field methods below, was oriented towards treating the cultural materials as a type of "sediment" (Stein 1987). This theoretical approach of looking at artifacts and ecofacts as sediments that are subjected to the same processes as "natural sediments" allows for a more robust analysis of site formation processes. The controlled surface collecting of

artifacts along the shoreline allowed the following research questions to be addressed: What are the patterns (if any) of artifact movement along the shoreline? How does the distribution of artifacts along the shoreline relate to the *in situ* archaeological deposits? What effect does the geometry of shoreline and below water topography have on the redistribution of artifacts along the shoreline? Are there variations in the amounts of artifacts collected at particular times that could reflect seasonal variations in the distribution of shoreline artifacts? Recent research by Lowery (2001) on the Virginia Eastern Shore provides a macroscopic perspective on coastal processes effecting site erosion and artifact movement in the Chesapeake Bay. In contrast, this controlled shoreline collection study at the Holland Point Site highlights a more “microscopic” perspective on coastal processes affecting a specific locality.

#### H. Settlement, Subsistence, and Interaction Patterns

Research questions concerning models of settlement patterns, subsistence practices, and social interactions seek to make intersite comparisons linking Holland Point with the regional archaeological record. Since multiple cultural/temporal periods are present at Holland Point, analytical contexts first need to be established. These analytical contexts will isolate what cultural/temporal periods are associated with particular portions of the deposits at the site (see Chapter 5). Then individual analytical contexts can be used to address the research questions. In addition, the nature of the cultural material collected from the shoreline and isolated features can be linked in varying degrees to particular cultural/temporal periods. The combination of the cultural

material associated with particular analytical contexts, features, and shoreline cultural material can be used to make general statements about settlement patterns, subsistence practices, and social interactions. The limited amount of excavations prohibits definitive conclusions about these larger research concerns. Nevertheless, attempts will be made to squeeze as much out of the data as possible.

Existing typologies of site function for the Delmarva Peninsula (Custer 1989: 129-130) are used to classify Holland Point. In general, site typologies in the Middle Atlantic Region are based on site setting, site structure, and both artifact and feature diversity and density (Stewart 1987a: 37-39, Table 4). This approach to classifying sites is grounded in an up-to-date cultural ecology theoretical framework (Custer 1984a: 21-22; Custer 1989: 23-25; Stewart 1987a: 37-39). Cultural ecology has been the driving theoretical force in much of the archaeological research in the Middle Atlantic Region over the last thirty years (Stewart 1995: 179). Custer's (1989:129-130) Delmarva site taxonomy consists of three basic site types: the macro-band base camp, micro-band base camp, and the procurement site. Custer's approach is used here with modifications and clarifications that are borrowed from approaches developed in the Middle Delaware Valley (Wall, et al. 1996b). The point of this approach is not to simply classify sites, but to use this taxonomic exercise to provide an understanding of broader cultural processes. What is currently known about settlement patterns, subsistence practices, and social interactions during the relevant cultural/temporal periods on the Delmarva Peninsula are incorporated into the cultural background section of this report (see Chapter 4).

The initial observations based on the Holland Point shoreline collections indicate that the site is not simply a specialized shellfish processing station or procurement site. The array of artifacts and ecofacts combined with the presences of features suggest that site activities consisted of more than just collecting and discarding of shellfish. One ultimate question concerns how shell middens are incorporated into the settlement/subsistence patterns for the Late Archaic through Late Woodland periods on the Delmarva Peninsula. Related questions to be addressed include the following: Are more inland areas abutting the shell middens used as the primary habitation area? Are activities all concentrated around the middens? How does settlement/subsistence patterns change over time?

Processes of social interactions are understood by looking at existing regional models of trade and exchange (Custer 1989; Stewart 1989a; Stewart 1994a). Two distinctive system of exchange (broad-based networks and focused networks) are apparent on the Delmarva Peninsula. These networks are examined by classifying artifacts into temporally diagnostic types and then comparing the relative percentages of lithic material used to manufacture these artifacts (Custer 1989; Lowery 1999; Stewart 1989a). The lithic sourcing studies of materials such as rhyolite serve to further clarify the nature of interactions systems (e.g. Bondar, et al. 2002). General trends in lithic utilization practices in the Choptank Drainage, which mirror regional trends, have been documented through the analysis of local artifact collections (Lowery 1999). Broad-based exchange of rhyolite in the Choptank drainage basin is apparent during the Early Archaic, Late Archaic/Transitional Archaic, and Middle Woodland (Lowery 1999: 96-97). The abundance of Middle Woodland rhyolite bifaces and caches of early stage

rhyolite bifaces reflects the hoarding of this material on the Delmarva Peninsula within broad-based networks during the Middle Woodland (Lowery 1999, Darrin Lowery, personal communication 10/12/2002). The extensive utilization of locally available lithic resources in the Choptank River basin during the Middle Archaic and Late Woodland periods marks a decline in broad-based exchange networks (Lowery 1999: 96-97). Comparing the relative abundance of local versus non-local lithic materials at Holland Point serves to highlight the interaction patterns at this site with the surrounding region.

## I. Background Research

In preparing for the fieldwork and during the analysis several types of information were obtained in order to write this report. Existing relevant monographs, articles, journals, cultural resource management reports, and other unpublished reports were reviewed in preparation for the fieldwork. The focus of this literature review was on Late Woodland sites and shell middens in the Chesapeake Bay region. Historic maps, topographic maps, soil maps, and wetland maps of the area were examined. Environmental and geological data was obtained through literature searches. Various reports were obtained from the Maryland Historic Trust, the Maryland State Highway Authority, the Maryland Geological Survey and the Maryland Department of Natural Resources. Discussion with Darrin Lowery, Dr. R. Michael Stewart, and Dr. Daniel Wagner provided insight into site formation processes and the nature of the sediments and soils at Holland Point. Visits to several other shell middens, cobble outcrops, and



other types of sites with Darrin Lowery on the Delmarva Peninsula afforded first-hand understandings of different geomorphic site locations and site formation processes. Shoreline processes distinctive to the Delmarva Peninsula were more clearly understood through these site visits. Extensive discussions with Darrin Lowery provided invaluable information about Native American archaeology on Delmarva Peninsula. Darrin Lowery provided the location of various local lithic sources and sites within the Slaughter Creek drainage. Discussions with R. Michael Stewart and various other individuals also enriched understandings of Delmarva archaeology.

## J. Field Methodology

The fieldwork conducted from July to September 2000 consisted of both surface collecting and subsurface testing. A transit and stadia rod was used to map the shell midden and surrounding shoreline (Figure 5). A controlled surface collection was conducted of both the shoreline adjacent to the site and the near-by tilled fields (Figure 3). The shoreline was partitioned into nine segments designated Beach Section 0 through Section 8. Seven segments (Beach Sections 1-7) were 40 meters long. Beach Section 0 along the north shoreline was 5 m long. Beach Section 8 is 35 meters long. A total of 320 meters of the shoreline was collected (Figure 6). Each 40-meter beach section was subdivided into 5-meter segments. Each 5-meter segment of shoreline was split into an upper portion and a lower portion. The division between the upper and lower portions was roughly the halfway point between Mean High Tide (MHT) and Mean Low Tide (MLT). Figure 7 show the upper and lower 5-meter segments for

Section 2 which is representative of the rest of the shoreline. All chipped stone artifacts, ceramics, bone, and ground stone tools were collected as distinct contexts from each individual upper and lower 5-meter section of shoreline associated with the eight sectors. The ground surface of the sections was generally covered with shell lag and loose sand. However, a few sections were covered with vegetation making collection conditions less than ideal. Fire-cracked rock (FCR) from both the upper and lower portions of each collection unit were gathered and weighed. FCR for the purposes of this tabulation in the field was considered as any large rock that does not appear to be a chipped stone tool or have been used as a cobble-based implement. Some of the material weighed from the shoreline might have been considered a manuport or could have been a stone tool that was recycled as FCR. After this “one time” collection, less systematic collections of artifacts by 40-sections were made during the course of the fieldwork. Informal collections of cultural material from north shoreline and the island were also made during the project. Darrin Lowery (personal communication 7/4/2000) had not collected from the shoreline in the year before the current fieldwork, which provided “pristine” collecting conditions. However, other people may have collected from the site’s shoreline because the site is located along a high traffic waterway leading to the Chesapeake Bay. Recreational boaters were observed collecting from the site during the course of the fieldwork.

An experiment was devised by Darrin Lowery to assess the movement of artifacts along the shoreline at the Holland Point Site. A series of different size ceramic tiles were placed at strategic points along the shoreline (Figure 8). Each “drop spot” was associated with different wind directions, waves energies, and had distinct shoreline

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Figure 5. Contour map of the Holland Point shoreline

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Figure 6. Beach sections

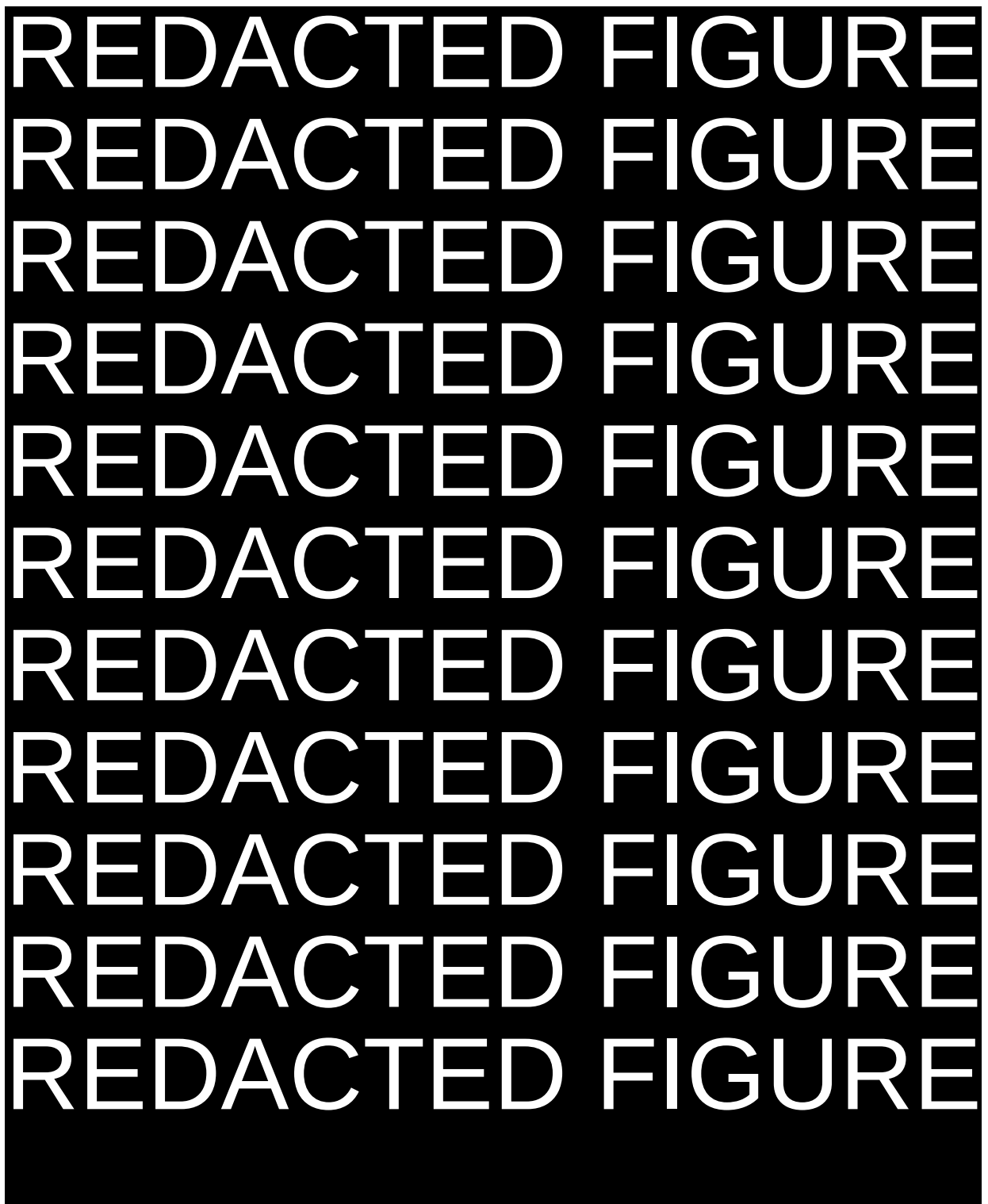


Figure 7. Beach Section 2 with the 5-meter collection areas outlined

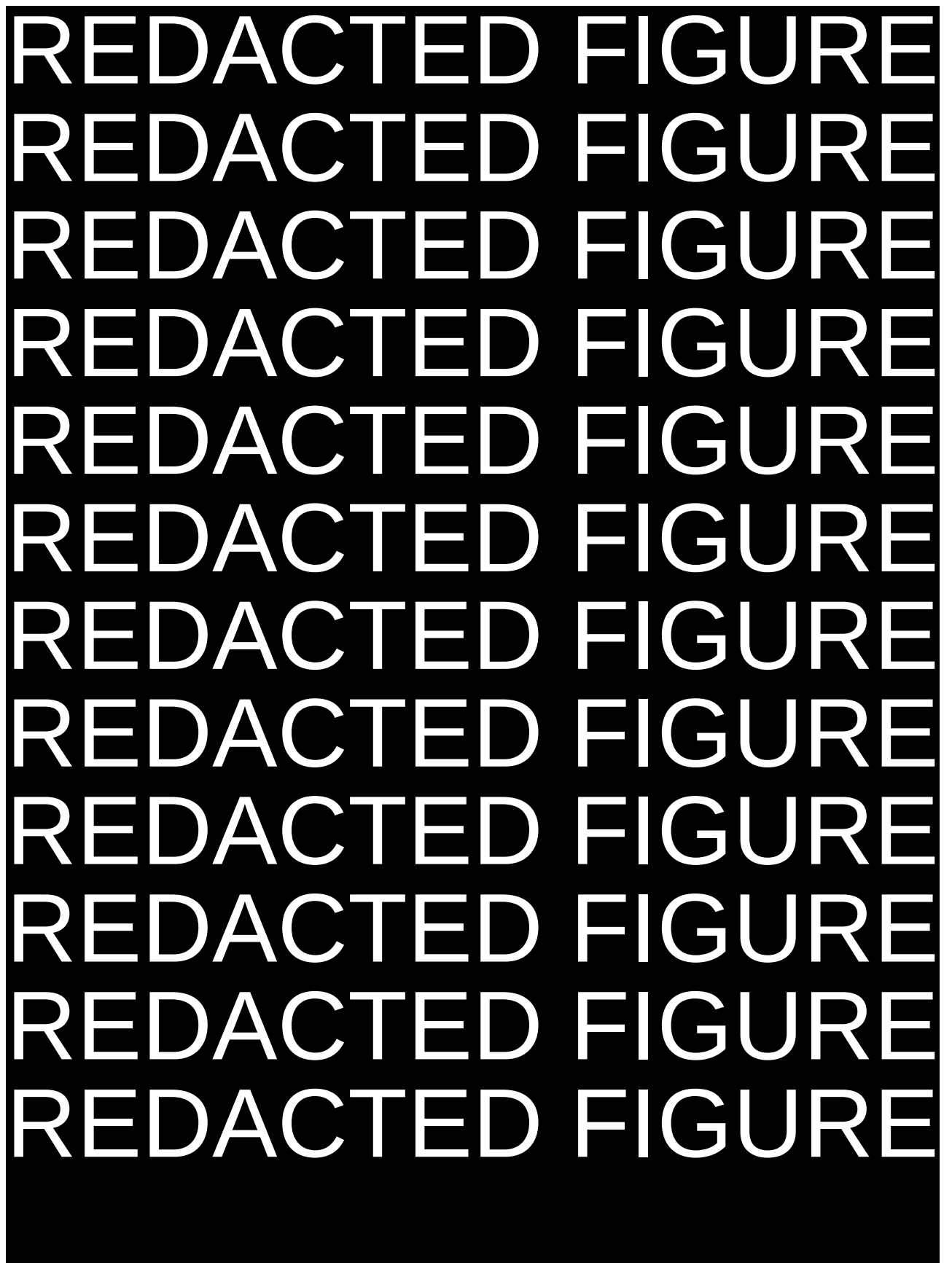


Figure 8. Drop-off locations used for the tile experiment

geometries to account for the different conditions found along the shoreline. The difference in the tile's size, shape, and weight roughly mirrored the variations in size, shape, and weight of the artifacts seen along the shoreline. At each "drop spot", twenty 2.5-by-2.5 cm tiles, three 2.5-by-5 cm tiles, five 5-by-5 cm tiles, one 5-by-7.6 cm tile, and one 7.6-by-7.6 cm tile were left. Each "drop spot" was marked with a wooden stake that was painted with a unique color. The tiles placed at each location were also painted the same color so that their movements could be tracked. After twenty-four days, the amount of tile movement was assessed.

The surface collection of the plowed fields allowed for an examination of interior portions the landscape west of the saltmarsh area. Three agricultural fields on the Holland Point Farm property were surface collected to examine the nature of prehistoric land use on the higher ridges set back from the shell midden. The three fields had been recently tilled and precipitation had occurred prior to the surface survey. All prehistoric artifacts observed were plotted on maps. Native American ceramics, chipped stone artifacts, and ground stone artifacts were collected. The locations of manuports and FCR were recorded on field maps, but not collected. The large size of Field 1 necessitated recorded the location of artifacts within ten-by-ten meter square areas. The quantity of FCR, flakes, and cobbles was noted for each ten-by-ten meter square collection unit. Projectile points recovered from Field 1 were plotted exactly where they were found. In Fields 2 and 3, prehistoric artifacts were plotted to the nearest meter from they where they were found. Soil profiles of the bank cuts along the northern edges of Fields 2 and 3 were drafted. Auger tests of Field 1 were used to examine the soil horizons.

The subsurface testing at the site consisted of (1) borings using a bucket auger and split spoon sampler, (2) the excavation of seven 1-by-1 meter test units, (3) the removal of three column samples from the test unit walls, and (4) the excavation of two features exposed along the shoreline. The borings were conducted across the point of land adjacent to where the shell midden was visible in the bank profile. The goal of the borings is to determine the extent and depth of shell midden/cultural deposit. An additional objective of the augering is to determine the paleotopography of the site prior to genesis of the salt marsh deposits. Augering across the point of land is most effective method for covering a large area quickly (Stein 1986; Stein 1991). In addition, the high water table would have complicated the excavation of shovel test pits. A standard 3-inch bucket auger and 1 inch split spoon auger were used for the auguring across the salt marsh. The locations of the soil borings were mapped with a transit and stadia rod and depths to the shell midden, thickness of the shell midden, and/or depth to the base of the O horizon were recorded (Figure 9). The edge of shell midden and the relative thickness of the shell deposits were determined through this soil-boring program. The depth below the ground surface to the top of the shell midden revealed the paleotopography at the site and surround landform. Borings were also placed along the shoreline beyond the edge of the site to determine the thickness of the beach lag deposits and the thickness of the saltmarsh peat (O horizon). Soil boring provided an understanding of the site's geomorphology and surrounding landscape. The data from the soil borings were used to determine test unit locations.

The combination of the test unit excavations with the other subsurface testing methodologies was intended to provide a wide range of information about the site's



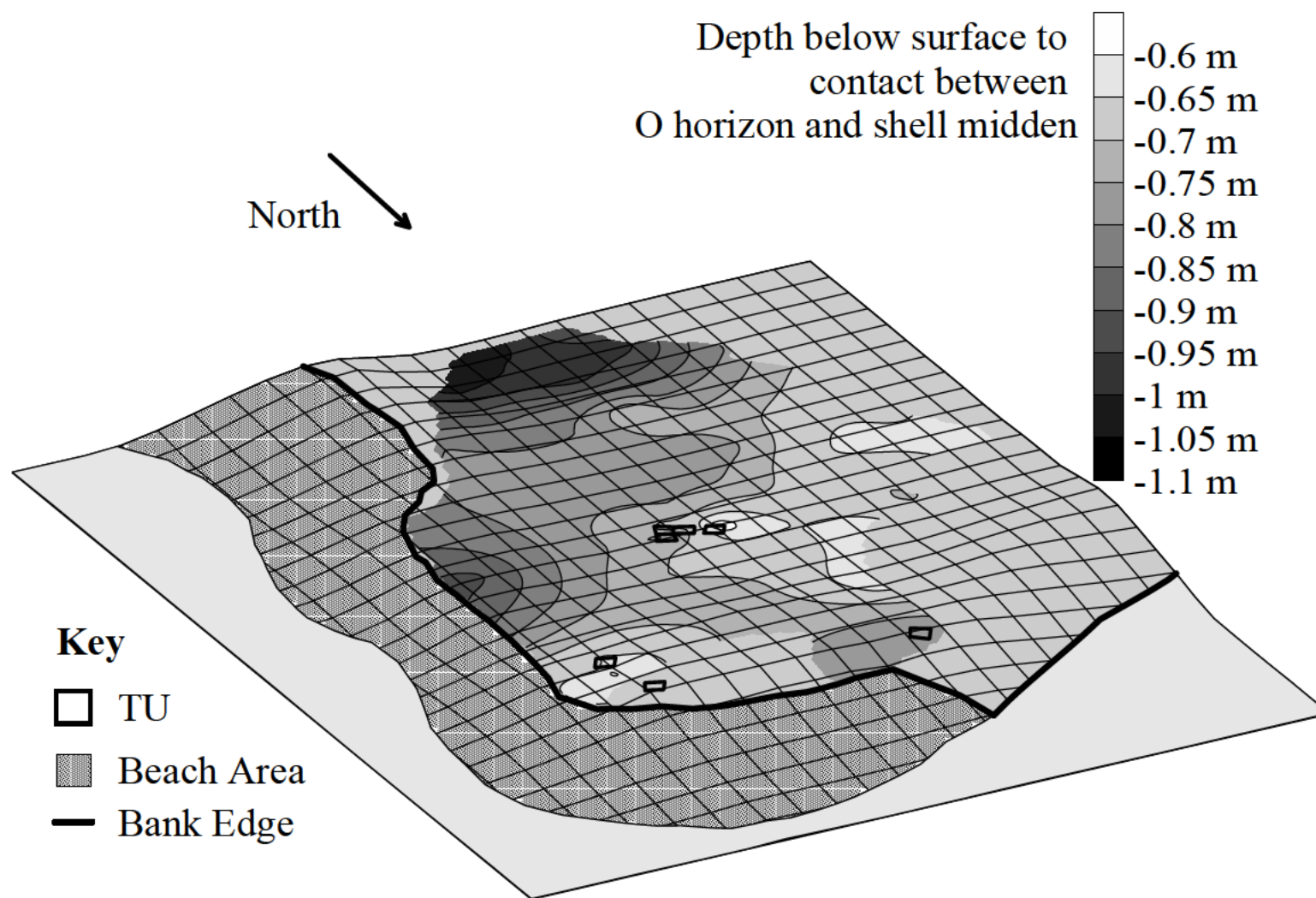


Figure 9. Depth below surface to contact between O-horizon and shell midden; note that the contour map defines the boundary of the shell midden

stratigraphy and geomorphology and Native American usage of the location. All excavated sediment was watered screen through ¼ inch wire mesh, except the upper most strata, which consisted of a thick, dense saltmarsh root mat (O-horizon). Marsh mat was removed with a shovel. A sample of sediment from the shell midden of one test unit was screen through 1/16-inch wire mesh. All the sediment from this sample was brought back to the lab for analysis. All cultural materials were bagged by provenience. Oyster shell samples were collected from the midden context for seasonality studies and habitat analysis.

Samples for flotation were taken from three column samples, one feature, and general excavation contexts. The light fraction from the flotation samples was retrieved using a 1/16-inch mesh fish net. The heavy fraction from the flotation was examined in the field for artifacts and then discarded. Discarding the heavy fraction in the field limited the recovery of nonbuoyant macrobotanicals. Ruth Dickau (personal communication 8/24/2001), a macrobotanical specialist, has encounter sites where the carbonized material is completely nonbuoyant and stresses that the heavy fraction disserves the same attention in analysis as the light fraction. The large amount of shell in the heavy fraction precluded bringing the material back to the laboratory for analysis. The column samples were intended to aid in refining the cultural and natural stratigraphy. Sorting the light fractions to identify macrobotanical remains and other cultural material was conducted in the laboratory.

Excavation levels in all test units were defined by changes in the natural stratigraphy. Natural stratigraphic deposits were distinguished in the field by differences in physical properties such as color, texture, or shell content (Stein 1987: 347). Ten-

centimeter arbitrary levels were excavated within overly thick natural stratigraphic units. The shell midden was excavated in two arbitrary levels where possible. The excavation conditions were not ideal because of the site's proximity to the open water and the high water table. Ground water was typically encountered at around 10 cm below the ground surface. The shell midden deposit served as an aquifer through which water and even small fish could flow through. Water was observed covering the saltmarsh during extreme high tides and after intense summer thunderstorms. Hurricane events could cover the site with a 50 cm or more of water. Water was removed during excavation by bailing out the test units with buckets by hand. An electric bilge pump was also used to remove the water. In Test Unit 1, 2, and 5, a quadrant of the unit was excavated first so that water would drain into the deeper (sump) area and be removed. This method of bailing out the unit worked to a limited degree. Water and small fish drained back into the unit through the shell midden deposit. The unit walls were undercut when these sump corners were first excavated to remove the water. Test Unit 1 was the first unit excavated. This unit was excavated with the water removed for most of the time to understand the site stratigraphy. After the general site stratigraphy was understood, units were excavated with the water in them. Split-spoon augering of the unit's floor helped to gauge changes in strata. Having the water in the units limited the quality of the stratigraphic control during excavation. The stratum changes in Test Unit 2, 3, 6, and 7 were sometimes felt with the hand in murky water, or observed from the shovel-fills of sediment brought above the water level in the test unit. The water was removed from the units during the excavation of the column samples. Tighter

stratigraphic control was obtained during the remove of the column samples. Wall profiles were drafted and test units photographed upon removal of the water.

Determining the location for the seven test units was based on several criteria (Figure 10). The first concern was to conduct excavations through the portions of the site that contained the highest potential for recovering the greatest amount of cultural materials in a stratified sequence. Second, test unit locations should seek to investigate the horizontal and vertical variability of the cultural deposits across the site. Third, different geomorphic settings on the ancient and modern landscape should be explored through the test unit locations. Fourth, test units should be placed along the point of land where the shell bearing deposits are not encountered in soil borings. Ultimately, the excavation sought to recover/salvage as much information about the site before it eroded into the Chesapeake Bay.

The soil boring data provided a three-dimensional understanding of the remaining portion of the shell bearing deposit below the saltmarsh. Four test units (Test Unit 2, 3, 6, 7) were placed where augering revealed the thickest part of the shell midden. A column sample was excavated out of the wall in the northeast corner of Test Unit 2. This column sample measured 40 by 25 cm. Test Unit 1 was located near the current shoreline. This part of the landform was subjected to the highest rate of shoreline erosion and would soon be eroded into the water. Test Unit 1 is located near where the thickest portion of the shell midden was exposed in the bank cut in 1998. A column sample was excavated out of the wall in the southeast corner of Test Unit 1. This column sample measured 25 by 25 cm. Features observed by Darrin Lowery, Norman Brady, and R. Michael Stewart were also located on tidal flat adjacent to Test

REDACTED FIGURE  
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Figure 10. Location of the test units and features

Unit 1. Test Unit 5 was placed along the north shoreline along a ridge that ran roughly paralleled the adjacent shoreline. This unit was indented to examine the character of the natural and cultural deposits on the ridge landform. Test Unit 4 was located in a patch of *phragmites* where the shell midden was not encountered in the auger testing. This unit was intended to examine a portion of the site that lacked the shell bearing deposit, but was clearly within the site boundaries. The excavation of Test Unit 4 allows for a comparison between the shell midden and non-shell midden portions of the site to look for activity area differences or variations in post-depositional alterations of natural and cultural deposits. A column sample was excavated out of the wall in the northeast corner of Test Unit 4. This column sample measured 25 by 25 cm.

Features were encountered during the 2000 fieldwork. All feature locations were mapped in plan view within the unit or measured in with a transit and stadia rod. Where possible features were photographed in plan and profile view. All features were bisected to reveal the profile and confirm that the feature was cultural in origin. Profile drawings were drafted before the remaining portion of the feature was excavated. A hand pump was used to siphon water during excavation, photographing, and drawing of the profile view of the feature. The features excavated during the current fieldwork consisted of four postmolds in Test Unit 1 and two isolated pit features. The two pit features observed during low tide along the shoreline. The tidal flat exposed during low tide was inspected on numerous occasions for potential features. One dark stain (mapped as Feature 2) observed early in July 2000 during low tide was initially mapped, but could not be relocated to confirm its origin. Feature 2 was never excavated. No additional eroding features were observed during the present fieldwork beside the

two excavated features and the one possible stain. Darrin Lowery, Norman Brady and R. Michael Stewart have observed eroding features exposed along the shoreline during low tides prior to the current investigations. Darrin Lowery excavated one feature in the 1990s that contained large portions of several Native American ceramic vessels. Table 1 summarizes the how the features were investigated.

| <b>Feature #</b> | <b>Level of Investigation</b>                            | <b>Dimensions and General Description</b>                                                                                                                                                                                                                                | <b>Flotation</b> |
|------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 1                | Photographed, Mapped and Excavated in July 2000          | Circular (90-85 cm in diameter), 19 cm in profile                                                                                                                                                                                                                        | Yes              |
| 2                | Mapped in 2000, Could not be relocated for excavation    | 160 cm NW-SW and 100 cm NE-SE                                                                                                                                                                                                                                            | No               |
| 3                | Mapped and Excavated in July 2000                        | 70-75 cm diameter, 38 cm deep                                                                                                                                                                                                                                            | No               |
| 4                | Photograph and Excavated 1996                            | No data available                                                                                                                                                                                                                                                        | No               |
| 5 & 6            | Observed prior to 1999, Sketched, No Artifacts Collected | 5 m by 1.7 m oval shape shell filled feature in plan view, small oval pockets (15 to 20 cm in diameter) appear occasionally along edge of feature and contain reddened (burned-subsoil, shell, dark colored organic sediment which could be postmolds around the feature | No               |

Table 1. Methods of feature investigation

## L. Laboratory Methods Of Analysis

### 1. Introduction

All artifacts have been washed and labeled following the MHT guidelines. A Microsoft Access® database was created to facilitate artifact analysis. Artifacts from the same provenience, such as Test Unit 1 Stratum 2, were assigned Lot numbers starting with Lot # 2. Lot # 1 was assigned to the original shoreline collection donated by Darrin Lowery when the site was first recorded with the state in 1995. Each artifact and ecofact within a lot was assigned an Artifact number (Art #). For material recovered from flotation (and window screening) the artifact numbers begin with a zero to distinguish them from the material recovered from the same provenience but through different methods. For example, the first artifact from flotation is number 13.01 while the first artifact from the same general excavation level would be labeled 13.1. The artifact numbers start at one for each lot. The artifacts are labeled first with the site number (if it fits) then the Lot # and then the Art #. The Art # is separated from the Lot # with a period. Very small fragments of ceramic sherds and bone, which were physically too small to be labeled, were grouped together and assigned one artifact number. A variety of attributes were recorded for lithic materials, Native American pottery, and ecofacts. This section provides an overview of the methods used for analyzing the artifacts and ecofacts as well as procedures used for selecting radiocarbon samples.



## 2. Lithics

The lithic artifacts were first organized into material types. A wide variety of chert types were apparent in the collection, but are all grouped together in this report. Other lithic material types classified include jasper, rhyolite, argillite, quartz, quartzite, ironstone, unidentified sedimentary, unidentified igneous, unidentified metamorphic, basalt, schist, steatite, and sandstone. Lithic artifacts were separated into debitage, cores, flake tools, bifaces, and non-chipped stone tools for different types of attribute analysis. In the chipped stone artifact analysis, two broad terms are used throughout the discussion. Objective piece refers to lithic artifacts “that have been hit, cracked, flaked, or modified in some way, and may include nodules, cores, flakes, and flake tools (Andrefsky 1998: 9-11).” Detached pieces are those stone artifacts “that have been removed from objective pieces (Andrefsky 1998: 11)” which are typically classified as debitage.

## 3. Debitage

Table 2 presents the attributes analyzed for debitage. This attribute analysis developed by University of Delaware-Center for Archaeological Research (UDCAR) for numerous sites on the Delmarva Peninsula was chosen for comparative purposes with the Holland Point data. The significance of these attributes is presented by Lowery (1990: 97-98) based on approaches developed by other researchers (Gunn and Mahula 1977; Magne 1981; Verrey 1986). The primary objective of UDCAR analysis is to

| <b>Attribute</b>                       | <b>Values</b>                                                                                                                                       |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Weight                                 | Grams                                                                                                                                               |
| Size                                   | # 1 cm, 1–2 cm, 2-5 cm, 5> cm                                                                                                                       |
| Cortex                                 | Presence/Absence                                                                                                                                    |
| Lithic Material Type                   | Chert, jasper, quartz, quartzite, etc.                                                                                                              |
| Flake Portion                          | Complete, Proximal, Medial, Distal, Shatter, Pot Lid)                                                                                               |
| Flake Type                             | Undiagnostic Flake, Bifacial Thinning, Bipolar Flake, Blade-like Flake, Pressure Flake, Not Applicable, Overshot Flake<br>Blade-like, Flake Bipolar |
| Dorsal Flake Scar Count                | Number                                                                                                                                              |
| Dorsal Flake Scar Number of Directions | Number                                                                                                                                              |
| Platform Shape                         | Triangular, Flat, Round, No Observation                                                                                                             |
| Platform Preparation                   | Presence/Absence                                                                                                                                    |
| Heat Treatment                         | Presence/Absence                                                                                                                                    |
| Biface Edge Remnant                    | Presence/Absence                                                                                                                                    |
| Comment                                |                                                                                                                                                     |

Table 2. Debitage attributes

differentiate between flake/core and biface reduction technologies (Petraglia, et al. 1998: 342). Several additional attributes were recorded to aid in thedebitage analysis. These additional attributes are intended to help determine the stage of reduction (Magne 2001). This attribute analysis combined with biface analysis provides a more rigorous interpretation of the stages of reduction which are present at the site. Debitage size class was recorded by placing flakes over squares measuring 1-by-1 cm, 2-by-2 cm, 5-by-5 cm. Debitage size is related to general stage of stage artifact production, objective piece size, and type of load application applied to the objective piece (Andrefsky 1998: 126-127). Weight for individual pieces ofdebitage was recorded to provide general information about lithic material distribution. This attribute was recorded also for individual cores, bifaces, flake tools, FCR collected, and cobble-based implements.

Flake Portion (complete, proximal, medial, distal, shatter, pot lid) is believed to be an indicator of biface verse core reduction (Lowery and Custer 1990: 98). Greater numbers of smaller medial-distal fragments are associated with biface reduction (Prentiss 2001: 171). In contrast, core reduction frequently produces greater quantities of larger complete flakes and proximal portions of flakes (Prentiss 2001: 171). Shatter, also referred to as non-orientable fragments (Kuijt, et al. 1995), chips (Petraglia, et al. 1998: 345) or non-flake debitage (Andrefsky 1998: 82-83), does not have definable dorsal or ventral surfaces.

Potlids are defined as non-flake fragments which spall from heating (Petraglia, et al. 1998: 345). Potlids are less the 1 cm in diameter.

Platform shape (triangular, flat, round) is an indicator of the type of objective piece from which the detached piece was removed (Andrefsky 1998: Figure 5.6, 92-96; Gunn and Mahula 1977; Lowery and Custer 1990: 98). Triangular platforms are common on flakes struck during biface thinning. The triangular platform is similar to Andrefsky's complex and abraded platform (1998: Figure 5.6c, 95). Andrefsky (1998: 95-96) remarks that complex and abraded platforms are common in later stages of reduction. Flat platforms are characteristic of core reduction flakes or non-bifacial tools (Andrefsky 1998: 94). Round platforms (i.e. cortex bearing platforms) are characteristic of early stage reduction (Andrefsky 1998: 993-94).

Platform preparation, recorded as present or absent, is more indicative of biface reduction then core reduction (Lowery and Custer 1990: 98). Platform preparation can include grinding and faceting.

Dorsal flake scar counts were recorded because higher numbers are believed to reflect later stages of biface reduction, while lower numbers reflect early stage biface reduction (Gunn and Mahula 1977; Lowery and Custer 1990: 97). Andrefsky (1998: 106) remarks that recording dorsal flake scars are problematic because the “clutter” of platform preparation can create numerous small flake scars. Increase in dorsal flakes scar counts may be correlated with flake size and not reduction stage (Andrefsky 1998: 103). The reporting of dorsal flake scar counts should be used in conjunction with other attributes and with caution. Number of directions from which flakes were removed from the dorsal surface should also reflect the stage of reduction. Flakes from later stage biface reduction will have greater numbers of directions of flake removal because of previous episodes of reduction.

Remnant biface edges (presence/absence) are another indicator of biface reduction. Distinguishing between a remnant biface edge and a prepared platform can be difficult. The presence of this attribute is limited to the most obvious examples of biface margins.

Debitage was classified into technological types based on characteristics of stone tool technology (Andrefsky 1998: 118). Techniques such as biface thinning, bipolar reduction, and pressure flaking are identified in this typology. Bipolar flakes are classified as having impact damage from opposing ends. Bipolar flakes with damage on opposing ends are only one of several different types of flakes produced during bipolar reduction (Geier 1990; Jeske and Lurie 1993; Kuijt, et al. 1995). Yet, they are the most easily recognized type of bipolar debitage. Blind test analysis of freehand versus bipolar debitage indicate that if both methods of reduction are used, segregating all the debris

by method of reduction is not possible (Jeske and Lurie 1993). Other types of debitage produced through bipolar reduce, such as shatter, can also be produced by other reduction methods. Pressure flakes are relatively small and have triangular platforms, which have been prepared. Several dorsal flake scars are usually present on pressure flakes. This definition of pressure flakes attempts to avoid existing vague definitions of pressure flakes as simple “small flakes” (Andrefsky 2001: 7-8).

Other flake types consist of blade-like, undiagnostic flakes, and overshoot flakes. Overshoot flakes have a plunging termination (Andrefsky 1998: see Figure 2.8d). The “blade-like” flake type refers to flakes that are twice as long and they are wide. The general size proportion of this flake type is similar to blades. However, these flakes are not produced from prepared cores in the way that blades, bladelets, or microliths are produced. The term “blade-like” flake is used to remain consistent with terminology used by Stewart (1987b; 1989b). Thus the “blade-like” flake type classification refers only to flakes of a particular shape and not a formalized approach to core reduction. Using this classification in conjunction with the UDCAR attribute analysis permits greater interpretation of lithic reduction strategies. Technological classification is not as objective as recording flake attributes. Various definitions of biface thinning flakes highlights the challenges with classifying flakes based technological aspects that can be variable (Andrefsky 1998: 118).

Heat treatment (presence or absence) consisting of color alteration, pot lids or crazing was recorded. The specific character (i.e. color alteration, pot lids) was not recorded. The attribute could be used to determine if heat treatment was used to

improve the ability to work lithic material or if debris was deposited in fires. The same approach to recording heat treatment was used for flake tools and bifaces.

#### 4. Flake Tools

Special analytical procedures for identifying flake tools in the debitage recovered during the subsurface investigation are used. All debitage recovered from excavation was scanned at 10x to identify flakes with retouch, edge damage, or micro-traces. A sample of lithics found along the shoreline was initially examined. The material from the shoreline context contained a high degree of abrasion, which obscured observations of micro-traces. An Olympus stereomicroscope was used for the analysis of the lithic artifacts. These artifacts were cleaned in several chemical baths to removed residue, dirt, possible iron-oxide build-up, and hand grease following methods used by Kimball (1996). All bath-soaked artifacts were handled with latex gloves to prevent hand grease from being mistaken as a polish. A range of magnification between 10-375x was used to examine the archaeological specimen for various types of modifications.

Micro-traces were interpreted as a consequence of manufacture, use, and post-discard alteration. Different types of reference material were consulted to make interpretations of micro-traces. Published descriptive terminology was used to classify micro-traces. Edge damage consists of the removal of very small flakes or fragments of the tool's edge during use (Katz 2000: 54). Keeley's (1980: 24-25) classification of edge damage as scalar, step, and half-moon breakages is used for this analysis. The

sub-categories for Keeley's scalar, step, and half-moon breakages, reflecting differences in size and/or depth, were also used in the current study. Measurements to the tenth of a millimeter using a microscopic ruler were taken to classify the type and extent of edge damage. Edge rounding caused by intensive abrasion of the tool's edge was recorded when apparent.

Micro-traces classified as polishes and striations are the focus of attention in high-powered analysis. Polish consists of an area of greater brightness that results from contact with the tool's surface and the material being worked (Keeley 1980). In the current study, characterization of polish and striations followed the descriptive terminology for micro-traces used by Kimball (1996: 214-215). This framework characterizes a micro-trace by its extent, texture, contour, brightness, and the polish morphology. Employing Kimball's terminology facilitates classification of micro-traces based on material worked. In addition, Kimball has based his micro-trace descriptions on cryptocrystalline material from the Eastern United States.

Several sources of visual reference material were used for comparisons of stone tool utilization. A set of experimental drills, curated in the Temple Anthropology Laboratory, exhibiting different types of polish were used to compare to the Holland Point stone tools. The experimental drills were used to work various materials, which provided examples of well-developed bone, antler, shell, wood, and stone polish (Cushman 1999). Microphotographs by Kimball (1996) and Keeley (1980) provided additional images of various micro-traces. These resources proved to be invaluable since experimental tools were not created during the current study. In addition, Dr. Anthony Ranere, a lithic specialist, confirmed the micro-trace identifications.

General observations concerning the hardness of the material worked can be made based on observed wear patterns (Katz 2000: 63). Polish, edge rounding, and shallow scalar damage is associated with working soft materials. In contrast, deep scalar damage, half-moon breakage, and step damage is attributed to working hard materials.

Retouch can vary from being extensive to limited. Purposeful retouch is defined as the consistent removal of at least 3 small flakes creating a pattern of scalar damage along the tool's edge. Retouching can function to dull an edge, which provides a comfortable location for grasping the tool. Edge strengthening, or increasing the edge angle, can be accomplished through retouch. Extensive retouch can modify the original shape of the detached piece turning them into formalized tools such as endscrapers. Edge damage produced during manufacturing (i.e. spontaneous retouch) is distinguished from purposeful retouch. Spontaneous retouch occurs when the flake's edge, usually the distal edge, pivots back into the core driving off small flakes (Brink 1978; Keeley 1980: 25). Flakes with feather terminations typically do not exhibit this "manufactured" retouch. Hinged and plunging terminated flakes may commonly have spontaneous retouch. Spontaneous retouch was produced during experimental knapping for comparative purposes. Flakes with distal retouch, plunging terminations and step termination were present in excavated contexts, but did not contain other forms of micro-traces.

In addition to the micro-trace analysis, other attributes were recorded for all flake tools. All the attributes recorded for debitage except dorsal flake scar count and direction were recorded for flake tools. The identification of flake tools from the



surface collected material in the plowed fields and shoreline was not subjected to the same level of scrutiny as the debris from the subsurface investigations. The edge angle measurement was taken along the working edge, or edge with retouch. If the edge angle varied along the margin, several measurements were taken and the average measurement was used.

Morphological attributes of flake tool types are briefly discussed. Lowery and Custer's (1990) typology of flake tools from the Crane Point Site is used as a general model for the Holland Point flake tool classification. Utilized flakes are defined as tools that show micro-traces or edge damage characteristic of use. From the shoreline assemblage, the classification of utilized flakes was conservatively estimated. Damage that could have occurred because of abrasion along the shoreline can easily be mistaken for utilization damage. Only the damage that was most obviously the result of utilization was used to classify shoreline lithic debris as utilized flakes. Retouched flakes are defined as tools that have one or more edges that exhibit purposeful retouch. Scrapers are tools with purposefully retouched edges that have a more formalized shape than utilized flakes and retouched flakes. Retouch on scrapers is more patterned than flake removal patterns on retouched flakes. Scrapers generally have steeper edge angles. Scrapers are subdivided into types based on profiles of working edges, edges that have been retouched, and number of surfaces with retouch. Straight scrapers are defined as tools with retouch along the lateral edges. Endscrapers have retouch along the proximal and/or distal edge. Some endscrapers have retouch along lateral edges, also giving them a formalized shape. Convex scrapers have retouch along incurvate lateral edges. Bifacial side scrapers have retouch along both the dorsal and ventral surfaces. Gravers

are defined as unifacial tools with thick projections. The projection is created through retouching the flake margin. Denticulates are flake tools with multiple projections in a series creating serrated edge(s). Awls are defined as tools with a single projection that was suitable for piercing soft material.

Flake tools collected along the shoreline that have flake scar patterns oriented in opposing directions are classified as “possible wedges.” The flake scars patterns are oriented along one or more axis of the artifact. Microscopic use-wear interpretation could not be effectively made for these tools from the shoreline context because the abrasive nature of this environment would alter or destroy polish, striations, or other micro-traces. These wedge-like tools have damage that is similar to bipolar damage. Flake scars produced from compression-like damage are apparent on both the dorsal and ventral surfaces of the artifact.

## 5. Cores and Non-Chipped Stone Artifacts

Table 3 presents the attributes recorded for cores. All of the cores represent variations of multidirectional forms (Andrefsky 1998: 137). Bipolar cores are defined as lithic artifacts that have impact damage from opposing directions. Single axis bipolar cores have opposing damage along one axis of the objective piece, while multiple axis bipolar cores have opposing damage oriented along several different axes of the core. Bifacial cores have flakes removed in several directions from two opposing surfaces creating an edge (Andrefsky 1998: 144). Distinguishing between bifacial cores and certain early stage bifaces was difficult. The Irregular/multi-faceted Core Type is an

| Attribute                | Values                                                                                                                   |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Weight                   | Grams                                                                                                                    |
| Maximum linear dimension | Centimeters                                                                                                              |
| Cortex                   | Presence/Absence                                                                                                         |
| Lithic Material Type     | Chert, jasper, quartz, quartzite, etc.                                                                                   |
| Core Type                | Irregular/multi-faceted Core, Single Bipolar Axis Core, Multiple Bipolar Axis Core, Bifacial Core, Other or unknown Core |
| Flake Scars              | Number                                                                                                                   |
| Comment                  |                                                                                                                          |

Table 3. Core attributes

objective piece where flakes were driven off in several different directions with no apparent pattern. The Other or Unknown Core Type was use to classify the cores that could not grouped into another type. The maximum linear dimension (MLD) of the core was determined by measuring the largest dimension of the core. The MLD was multiplied by the core weight to determine the core size value (Andrefsky 1998: 138-150). The core size value was calculated to compare cores in an arbitrary manner (Andrefsky 1998: 138-150). The number of flake scars was recorded to get a general idea of how many flakes had been removed from the objective piece. In general, only flake scars greater then 5 mm were recorded for this attribute. This count simply gives a relative impression of the number of flake scars. This count can be used to discriminate tested cobbles where only one flake was removed, from cores that were used to the point of exhaustion.

The attributes recorded for non-chipped stone artifact analysis consisted of weight and material type. Non-chipped stone artifacts include hammerstones, anvils, pitted cobbles, etc. FCR was defined as lithic material with angular breaks and or

evidence of heat alteration such as red coloration. Manuports are unconsolidated sediments larger than pebbles, which do not show evidence of modification from lithic reduction or heat alteration. Manuports include lithic material that is not a natural component of the sediment at the site. The parent material at the site is well-sorted. Gravel and cobble size particles are not present in the soils around the sites. Any gravel or larger size particles had to be brought on site by the occupants and are classified as manuports.

## 6. Bifaces

Table 4 presents the attributes recorded for bifaces. Biface length, width, and thickness were measured. Measurements were taken along the length and width axis when these margins or tips were not broken. Andrefsky's (1998) approach to cataloging biface reduction sequences was used to classify the Holland Point bifaces. Finished bifaces (i.e. projectile points) were classified into morphological types using the approach developed for the Trenton Complex in New Jersey (Wall, et al. 1996a). Broken tips of finished bifaces and other smaller pieces of broken bifaces could not be classified into the morphological types. This taxonomic approach was chosen to deal with the variability in finished biface form. The different morphological types were assigned Arabic numerals and letters. Some of these types can be directly correlated with historically defined types. Other types defined in this analysis crosscut historically defined projectile point types. The approach by Custer (2001) to group projectile points

| <b>Attribute</b>                    | <b>Values</b>                                                                                                                                                                  |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Weight                              | Grams                                                                                                                                                                          |
| Length                              | Centimeters                                                                                                                                                                    |
| Width                               | Centimeters                                                                                                                                                                    |
| Thickness                           | Centimeters                                                                                                                                                                    |
| Cortex                              | Presence/Absence                                                                                                                                                               |
| Lithic Material Type                | Chert, jasper, quartz, quartzite, etc.                                                                                                                                         |
| Biface Fragment                     | Complete, Blade without Base, Blade without Tip, Only Haft Element, Medial Fragment, Unknown Fragment                                                                          |
| Reduction Stage                     | Stage 1 (Blank), Stage 2 (Edged Biface), Stage 3 (Thinned Biface), Stage 4 (Preform), Stage 5 (Finished Biface); Stage 5 (Finished Drill), Stage 5 (Finished Projectile Point) |
| Projectile Point Morphological Type | 1, 2, 3, etc.                                                                                                                                                                  |
| Breakage Type                       | None, Distal/transverse fracture, Longitudinal macro-fracture, Haft snap                                                                                                       |
| Heat Treatment                      | Presence/Absence                                                                                                                                                               |
| Comment                             |                                                                                                                                                                                |

Table 4. Biface attributes

into “Major” and “Minor” types provides a new constructive way to deal with the numerous historic names given to the same morphological type. Analysis of finished bifaces from dated contexts where the cultural/temporal period is known has shown that certain types, traditionally thought to date to particular cultural/temporal periods, have a much broader time range of use. Varieties of stemmed and notched points such as Poplar Island, Bare Island, and other stemmed and notched varieties can no longer be considered “diagnostic” to particular cultural temporal periods (cf. Custer 2001). A slightly modified version of Custer’s new “Major” and “Minor” classification system is used in this analysis. Where applicable names for historically recognized types are used in the Holland Point classification. Appendix B provides detailed morphological

information for the finished bifaces. Comparison to historical types and their possible temporal ranges is presented in Appendix B.

The term “projectile point” is used loosely throughout this report. Usewear analysis of several historically defined “projectile point types” has revealed that bifaces traditionally referred to as “projectile points” were in fact more commonly utilized as knives. BROADSPEAR points are an example of a historical defined “projectile point” type that appears to have been used as knives more often than as projectiles (Custer 1991).

Breakage patterns on finished bifaces are used to make tentative interpretations about the cause of the fracture type. Four distinctive types of fracture patterns were defined. One breakage pattern is classified as a haft snap. The haft snap is the fracture of the biface on the lower portion of the biface around the hafting element (Ebright 1992: 118). This type of fracture pattern can be difficult to interpret on triangular and lanceolate biface forms where the boundary between the hafting element and the blade is not obvious. The haft snap was not recorded for triangular shaped bifaces. Another fracture pattern was classified as a material flaw. This was recorded when fracture planes, inclusions or other features caused a failure in the material. This break type is mostly associated with reduction failures, but a finished bifaces could also break along a fracture plane within the material while in use. Two fracture types discussed by John Dockall (1997) were used in this analysis. The longitudinal macro-fracture is characterized as “failure in the distal region of the projectile through either cone- or bending-initiation with propagation along one surface” (Dockall 1997: 325). This macro-fracture type was recorded when the tip of a point appears to have a flake or several flakes driven off of the distal end. This type of macro-fracture is a breakage

pattern that is typical of impact damage. The other common fracture pattern observed was classified as a distal/transverse fracture. Distal/transverse fractures are characterized as having fracture plans that are flat and relatively featureless, or bending in nature. This breakage type is comparable to snap or bending fracture. Distal/transverse fractures can be a product of impact. Also, distal/transverse fracture can be produced during manufacture (Dockall 1997: 325). Interpretations of the cause of distal/transverse fractures are not as clear-cut as the cause of longitudinal macro-fracture. Distal/transverse fractures are considered both use related and manufacturing related fracture patterns, while longitudinal macro-fractures are considered evidence of damage associated with the use of the biface as a projectile. Another biface attribute that was recorded is thinning failure. This was recorded for bifaces that exhibited a high width/thickness ratio. Bifaces with humps, stacks of step fractures, and other large lumps that could not be reduced because of constraints on the size of the objective piece were classified as thinning failure. Bifaces that were not successfully thinned were presumed to be discards. However, use-wear analysis was not conducted on these thinning failures to confirm that they were discarded prior to being used.

Most of the finished bifaces recovered were found along the shoreline. Microscopic analysis of the projectile points was not performed because the abrasive nature of the shoreline environment was felt to have obscured micro-traces.

## 7. Ceramics

Ceramics were classified into wares and types following a similar methodology used by Stewart (1998b) at the Trenton Complex in New Jersey. Ware groups are distinguished on the basis of similarities in the following paste characteristics: temper type, temper size, temper amount, hardness, texture, color, and how well integrated the aplastics are with the clay. Ware groups are designated with Roman numerals. The designations were not made in any particular order. Subdivision of Ware groups into Types is based on differences in interior and exterior surface treatment and decoration. Types are designated with letters. Detailed descriptions of surface treatment and decoration are presented in Appendix A for each type within the Ware. Small or heavily eroded sherds that were grouped into a Ware, but could not be further grouped into a specific Type were designated as Type “ND” (non-diagnostic). Small sherds, where limited observations about the paste could be made, were classified as Ware/Type N ND. Throughout the report ware/types will be referred to as both Type IA meaning Ware I and Type A. If just referring to a ware the designation will read Ware I. Some of these ware/types can be directly correlated with historically defined types. Several ware/types are similar to more than one historically defined type. The regional literature on ceramic typologies was consulted to make the correlation between ware/types and historically defined types. Detailed comments on the relationship of ware/types to historically defined types are presented in Appendix A.

Vessel lots were made on the following basis: (1) refits of rim sherds (2) rim sherds with similar decoration and/or lip form (3) refit body sherds, and (4) groupings



of similar body and rim sherds which could not be refit (rarely done). Final twist direction of cordage was also used to define a vessel lot. Rim sherds with similar decorative motifs and the same direction of final cordage twist were grouped as a vessel lot. Different directions of cordage twist were used to distinguish vessel lots. The final cordage twist direction was recorded from the positive cast of the cord impression. Several vessel lots are defined on the basis of one unique body or rim sherd. In general, most body sherds could not be easily linked with vessel lots. Vessel lots were given a Ware group Roman numeral and Type letter followed by an Arabic number. For example, two rim sherds that refit of Ware I and Type A would be designated Vessel Lot IA-1. The next vessel lot for this ware/type would be Vessel Lot IA-2. Some vessel lots for wares do not have a sub-designation for the type within the ware because all of the sherds for the ware could have come from one vessel. This type of designation is used for ware groups represented by a small number of sherds.

Table 5 presents the attributes that were recorded for all sherds. Table 6 presents the additional attributes that were recorded for rim sherds and body sherds that refit to rim sherds. Some of the attributes will be discussed to clarify how they are recorded. Sooting is defined as dark deposits on the surface of the sherd (Hally 1983: 7-8). The soot accumulation is a “combustion product [deposited] at the edge of the flames (Rice 1987: 235).” Sooting was not analyzed under the microscope in detail. Sooting is used loosely in this analysis and not critically distinguished from smudging (Hally 1983). When soot is present around the exterior of the vessel on its upper portion, it is strong indication that the vessel was used over an open fire (Hally 1983: 9-10).

| Attribute                                | Values                                                                                                                                                           |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sherd Size                               | <1 cm, 1-2 cm, 2-3 cm, 3-6 cm, 6-10 cm                                                                                                                           |
| Weight                                   | Grams                                                                                                                                                            |
| Degree of leaching                       | None, Partly, Completely, Not Applicable                                                                                                                         |
| Sherd Condition                          | Non-eroded (crisp edges), Partial Eroded (slight breaks round), Eroded (edges and surface rounded)                                                               |
| Portion of vessel                        | Body, Rim, Base, Shoulder, Pipe                                                                                                                                  |
| Ceramic Ware                             | I-X                                                                                                                                                              |
| Type                                     | A-I                                                                                                                                                              |
| Sherd Refit                              | No, Yes, Excavated Break, List of sherds break                                                                                                                   |
| Soot Location                            | None, Exterior, Interior, Both Int./Ext., Lip                                                                                                                    |
| Orientation Of Fabric Impressions To Rim | Not Applicable, Exterior Horizontal/ Interior None, Exterior Oblique/ Interior None, Exterior Horizontal/ Interior Vertical, Exterior Oblique/ Interior Vertical |
| Basis For Vessel Lot                     | NA, Rim/Body Sherds mend, Unique Rim Sherd, Body sherds mend, Basal Sherd                                                                                        |
| Vessel Lot Number                        | IA-1, IA-2, IA-3 etc.                                                                                                                                            |

Table 5. Native American pottery attributes used for all sherds

| Attribute                        | Values                                                                                                                                                                                                              |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lip Presence                     | Yes, no                                                                                                                                                                                                             |
| Lip Form                         | Not Applicable, Round, Flat, Pie-Crust like, Eroded                                                                                                                                                                 |
| Design Motif                     | Not Applicable, Cannot determine, Horizontal band, Oblique element, Horizontal & Oblique element, Vertical element, Multiple directions, Herringbone design, Rectangular-like designs, Criss-cross, Zig-zag element |
| Design Technique                 | Not Applicable, Cannot determine, Incising, Direct cord impression, Pseudo-cord impression, Cord wrapped stick impression, Multiple techniques                                                                      |
| Surface of Decoration            | Not Applicable, Exterior, Interior, Lip, Lip and Exterior                                                                                                                                                           |
| Rim Diameter of vessel           | Centimeters                                                                                                                                                                                                         |
| Comparable Historic Ceramic Type | None, Rappahannock Fabric Impressed, Rappahannock Incised, Townsend Corded, Dames Quarter, Hell Island, etc.                                                                                                        |
| Comments                         |                                                                                                                                                                                                                     |

Table 6. Rim sherd attributes

The degree of sherd erosion (non-eroded, partial, completely) was recorded as an ordinal attribute (Andrefsky 1998: 63). The degree of erosion is a relative way to measure the hardness or friability of the paste from the assemblage of excavated sherds. The degree of sherd weathering for ceramics from the shoreline context also provides a relative indication of how long the sherds have been subjected to abrasion along the shoreline. The degree of shell leaching (none, partial, complete) was recorded for shell-tempered sherds. Questions concerning different production methods or site formation processes, based on the differences in the severity of shell temper leaching for excavated sherds, could be addressed by analyzing this attribute.

## 8. Biological Remains

The initial analysis of floral and faunal remains involved identification to the most specific taxonomic level. The Artifact Research Center in Hackettstown, New Jersey was subcontracted to identify the carbonized floral material recovered from general excavation contexts and flotation samples. Carbonized pieces were picked out of the flotation for identification. Only pieces that appeared to be seeds, nutshell fragments, or other intriguing fragments were sent out for identification. Thus, the macrobotanical specialist analyzed only a limited amount of the carbonized material.

The faunal remains were separated between vertebrates and invertebrates for analysis. The reference faunal collection in the Temple University Anthropology Laboratory was used for some of the bone identification. Faunal remains that could not be identified using the Temple collection were compared to the reference collection at

the Department of Zoology at Philadelphia Academy of Natural Science. Ned Gilmore, from the Zoology Department, assisted with the species identification. Table 7 presents the attributes that were recorded for vertebrate faunal remains. Vertebrate faunal remains were identified to element when possible. The same size grades used for the ceramics were used for animal bone. Bone modification (i.e. burning and butchering marks) was defined as follows: carbonized bone consisted of bone that was blackened, calcined bone showed white coloration, and butchering marks are indentations or scrapes in the bone (Lyman 1994). Calcined bone indicated that the bone was subjected to higher temperatures than carbonized bone (Lyman 1994: 384-392). Number of identified specimens (NISP) is defined in this analysis as one bone that could not be refitted to another bone. If two fragments from a femur could be refit they were counted as one for the NISP count. All bones that could be labeled were assigned artifact numbers. Bone fragments that refit were given a special code in the refit field. This code enabled the refitted bone to be counted as one identified specimen. The NISP counts for particular elements such as the number of right deer femurs is used to calculate the minimum number of individuals (MNI). The faunal tables presented in the report list the element, side, and portion for each taxon, which allows for MNI calculations. Age and sex characteristics as well as measurement of elements were not used to determine the MNI (Reitz and Wing 2000: 195) because the analyst was not familiar with some of these characteristics or appropriate measurements.

| <b>Attribute</b>    | <b>Values</b>                                                                     |
|---------------------|-----------------------------------------------------------------------------------|
| Faunal Size         | Same as for ceramics                                                              |
| Weight              | Grams                                                                             |
| Bone Condition      | Same as for ceramics                                                              |
| Faunal Element      | Unidentified, Longbone, Humerus, Radius, Carapace etc.                            |
| Faunal Side Portion | Right, Left, Shaft, Left/Proximal End, Fragment, etc.                             |
| Modification        | None, Burned, Calcined, Butcher Marks, Bone Tool                                  |
| Faunal Species      | Unidentified, Mammal, Mammal larger the raccoon, White-tailed deer, Raccoon, etc. |
| Faunal Count        | The default is 1; counts are used for grouping small fragments                    |
| Faunal Refit        | No, Yes, Excavated Break, List of sherds break                                    |
| Comments            |                                                                                   |

Table 7. Faunal attributes

Smaller pieces of bone from excavated contexts that could not be individually labeled and could not be identified to a particular taxon were lumped as group and given one artifact number for the provenience. The counts for the grouping of small pieces of bone were used in the NISP calculation. Small-unidentified bone was grouped by modification type within particular proveniences. The material from excavated contexts has a large NISP because of the small pieces of bone. Most of the small bone fragments are classified as unidentified vertebrate.

Mollusc remains that could not be identified by the author were brought to Garry Rosenberg at Philadelphia Academy of Natural Science for identification.

The oyster shell analysis was conducted with the assistance from Keith Doms at the University of Delaware. The oyster shell analysis focused on characterizing the habitat from which oysters were harvested and estimating the season of harvest. The

analysis was conducted on the lower valves (also referred to as the left valve). Lower valves were randomly collected from the test units and column samples during the excavations. The sampling approach outlined by Brett Kent (1992: 21-24) could not be followed because of the high water table at the site. Shells were primarily selected to show the range in variation in valve size and to obtain adequate samples for conducting oyster seasonality analysis. A sample of around 50 left valves is needed order to accurately estimate the season of harvest. It is recommended that similar size sample of valves is also examined for oyster habitat analysis. A more controlled approach to collecting valves would have ensured that range in different shell size classes were adequately represented. Oysters from three different proveniences (Test Unit 2 Strat II Northeastern Quadrant, Test Unit 3 Strat II, Test Unit 7 Strat II Level 2) were analyzed. These three samples were chosen for analysis because largest samples of left valves were collected from these proveniences.

Kent's (1992: 25-38) methodology for evaluating oyster habitat was followed in this analysis. Characteristics of oyster habitat that are evaluated include the salinity regime, substrate upon which the oyster was attached, water depth, and tidal position. The salinity regime is determined by analyzing presence and/or absence of certain species of boring sponge (*Cliona* spp.) on the lower valve. The four different salinity regimes defined by Kent (1992: 29-33), based on the presence/absence of sponge boreholes and combinations of borehole, are used to determine paleo-salinity condition from where the oysters were harvested (Table 8).

| Salinity Regime | Description                                                                                            |
|-----------------|--------------------------------------------------------------------------------------------------------|
| I               | Salinity below 10 ppt for about ½ of the year and rarely above 20 ppt.                                 |
| II              | Salinity below 10 ppt for about ¼ of the year, below 15 ppt ½ the year, and occasionally above 20 ppt. |
| III             | Salinity occasionally below 15 ppt and above 20 ppt for ¼ to ½ the year.                               |
| IV              | Salinity rarely below 15 ppt and above 20 ppt for most of year.                                        |

Table 8. Oyster salinity regimes as defined by Kent (1992: Table 5)

Oysters were classified into four basic types (sand oyster, bed oyster, channel oyster, and reef oyster) based on the height-length ratio as well as general thickness of the oysters. Certain types of oysters live in particular environments. Sand oysters live in sandy substrates in intertidal and shallow waters. Bed oysters live on mixed muddy sand, either singly or in loose clusters. Channel oysters live in deeper subtidal waters. Channel oysters are more common on historic sites when tongs were used to reach deeper oysters. Reef oysters live in dense clusters frequently in intertidal environments. The presence/absence of attachment scars on the exterior of left valve was recorded to evaluate degree of oyster clustering. The presence/absence of *Polydora* (mud) worm, boring clam, barnacle, and briazoa were used to characterize habitat and salinity (Kent 1992: 33, Figure 13). The presence of mud worms is an indicator that the oyster lived on a muddy bottom. Habitat characteristics that are conducive to the presence of boring clam, barnacle, and briazoa have not been extensively analyzed. Radial ribbing, which is indicative of sun and heat exposure, was also recorded. The valve height, which is defined as the longest dimension, was recorded in centimeters.

Currently, there are three different methods for determining the season-of-harvest for oysters. The method used in the Chesapeake Bay Region is the visual

analysis of the umbo region on the left valve (Custer and Doms 1990; Doms 1996; Herbert and Steponaitis 1998; Kent 1992; Lawrence 1988). Two other methods for determining season of harvest have not been attempted on oysters from the Chesapeake Bay (e.g. Andrus and Crowe 2000; Russo 1991). Controlled collection of modern oysters from the Chesapeake Bay has shown that during the colder winter months when water temperatures dip below 8° C oyster growth is minimized (Custer and Doms 1990: Figures 4 and 5; Doms 1996; Galtsoff 1964: 407; Herbert and Steponaitis 1998: 66; Kent 1992: 51-53). During this period of dormancy a winter growth check is deposited. The annual formation of this winter growth check provides a means to determine the amount of growth over the course of a year.

The anterior nympha on the hinge of the left oyster valve was analyzed using methods developed by Keith Doms (1996). Oysters with a minimum of three complete years of growth and one partial year of growth past the last annuli were used to calculate a growth index following methods developed by Custer and Doms (1990). Taking the average for the last three years of growth and dividing this value by the amount of the growth past the last annuli determined the growth index. The growth index is a percentage of the amount of growth during the year of harvest based on the average for the last three years.

The growth index value is compared to length of the growing cycle. Growing cycles based on modern samples collected on a monthly basis indicate that oysters typically begin to grow sometime in March and April (Custer and Doms 1990: 154-158; Herbert and Steponaitis 1998: 60). However, the start of the growth cycle can range from February to June (Herbert and Steponaitis 1998: 60). The start of the growth cycle



based on averaging the growth cycles for modern sample populations begins around the middle of March. For this analysis, the beginning of March is used as the start of the growth cycle. The drop in water temperature to below 8° C around the end of December, typically defines the end of the growing cycle (Custer and Doms 1990: 154-158; Herbert and Steponaitis 1998: 60). Thus oysters in the Chesapeake Bay have a growing cycle of around ten months and a dormancy period of two months.

Keith Doms (personal communication 6/26/2002) advocates that the growth index should be compared to the length of the growing cycle and not to a full calendar year since oysters have a two-month period of little to no growth. Roughly a ten percent increase in the growth index for each month in the growth cycle is estimated. Table 9

|              | <b>J. 1</b> | <b>Fb. 1</b> | <b>Mr.1</b> | <b>Ap. 1</b> | <b>M. 1</b> | <b>Jn. 1</b> | <b>Jl. 1</b> | <b>Ag. 1</b> | <b>Sp. 1</b> | <b>Ot. 1</b> | <b>No. 1</b> | <b>Dc. 1</b> |
|--------------|-------------|--------------|-------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Growth Index | 1           | -            | .0          | .1           | .2          | .3           | .4           | .5           | .6           | .7           | .8           | .9           |

Table 9. Idealized growth index values over the course of the year

presents the idealize growth index values that are used to determine the season of harvest. One assumption built into this approach is that the growth during the ten-month growth-cycle is relatively consistent. Future research using large modern control samples should seek to test this assumption.

The ten-month growth-cycle is a generalized figure based on Custer and Doms (1990) and Herbert Steponaitis (1998) growth pattern for modern oysters collected in the lower portion of Patuxent River. Records of changes in Chesapeake Bay water temperatures also suggest that a ten-month growth cycle is likely (Stroup and Lynn

1963). Modern collections indicate that the start of growth and the length of the growth-cycle can vary based on water temperature, salinity, and other factors. The large sample size of Custer and Doms's (1990: 156) modern collection revealed that towards the end of the growth-cycle (around the fall) the amount of growth is more variable than in other portions of the growth cycle. The standard of deviation in the growth index for late summer-fall season oysters is greater than during the summer. Thus the amount of growth during the late summer through the fall is more variable than during the summer.

The annual variability in the growth of oysters prevents the determination of the exact month of harvest. Researchers advocate using the growth index value to determine the "season" of harvest and not the "month" of harvest (Custer and Doms 1990; Herbert and Steponaitis 1998). Determining the "season" of harvest provides a means to compensate for this variability in annual growth. The seasons of harvest are defined as: late winter-early spring (March to early April); spring (early April through May); summer (June through August); fall (September and November); late fall/early winter (late November till March) (Doms n.d.). This provides a rough outline of the seasonal terms that are commonly used when talking about the season of harvest. Other seasonal terms such as late summer/early fall are also used.

## 9. Radiocarbon Dating

A total of eleven samples were sent for radiocarbon dating (Table 10). The Accelerator Mass Spectrometry (AMS) technique was used for all of the chronometric

| Context                                   | 2 Sigma Calibration/<br>Uncalibrated date                            | Archaeological Importance/material dated                                                                                       | Sample Number |
|-------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------|
| TU 2 Column<br>Sample Level 3; 76-79 cm   | 780-670 Cal B.P.<br>830 $\pm$ 40 Uncal B.P.                          | Stratum II, Upper part of shell midden, dated carbonized <i>Juglans</i> sp. (walnut) fragment 20 mg; 1 large sherd of Townsend | Beta-159984   |
| TU 2 Column<br>Sample Level 4; 79-87 cm   | 750-660 Cal B.P.<br>740 $\pm$ 40 Uncal B.P.                          | Stratum II, Middle part of shell midden; <i>Carya</i> ssp. (hickory) 20 mg                                                     | Beta-159985   |
| TU 2 Column<br>Sample Level 5; 87-90 cm   | 2050-1880 Cal B.P.<br>2030 $\pm$ 40 Uncal B.P.                       | Stratum II Lower shell midden; 3 cord marked ceramic sherds, 1 same dated bulk collection of carbon                            | Beta-159986   |
| TU 2 Column<br>Sample Level 6; 90-93      | 2300-2260 Cal B.P.<br>2160-1990 Cal B.P.<br>2130 $\pm$ 40 Uncal B.P. | Stratum III A horizon bellow the midden; dated unidentified Nut                                                                | Beta-159987   |
| TU 2 Column<br>Sample Level 7; 93-99      | 740-660 Cal B.P.<br>770 $\pm$ 40 Uncal B.P.                          | Stratum III and IV Lower part of the "A" and top of the "B"; dated <i>Carya</i> sp. (hickory) 100 mg                           | Beta-159988   |
| TU 2 Column<br>Sample Level 8; 99-109     | 2310-2240 Cal B.P.<br>2180-2000 Cal B.P.<br>2140 $\pm$ 40 Uncal B.P. | Stratum IV B-horizon; 1 medium unidentified nut; 1 small unidentified nut                                                      | Beta-159989   |
| TU 1 Column<br>Sample Level 4; 73.6-79.6  | 1250-1050 Cal B.P.<br>1230 $\pm$ 40 Uncal B.P.                       | Stratum II Lower part of the shell midden with sediment around shells, Single piece of carbon                                  | Beta-159990   |
| TU 1 Column<br>Sample Level 5; 79.6-89.6  | 980-910 Cal B.P.<br>1020 $\pm$ 40 Uncal B.P.                         | Stratum III A horizon bellow the shell midden, dated bulk carbon; Large Townsend sherd in context                              | Beta-159991   |
| TU 1 Column<br>Sample Level 6; 89.6-101.6 | 950-780 Cal B.P.<br>990 $\pm$ 40 Uncal B.P.                          | Stratum IV B horizon, dated bulk carbon sample                                                                                 | Beta-159992   |
| Feature 4                                 | 1240-1040 Cal B.P.<br>1030-1000 Cal B.P.<br>1190 $\pm$ 40 Uncal B.P. | Dated reconstructed Townsend Ceramic vessel; Vessel Lot III A-1 Art 110.19                                                     | Beta-159993   |
| Feature 1<br>Surface @ 93 cm              | 1730-1550 Cal B.P.<br>1760 $\pm$ 40 Uncal B.P.                       | Native American burial; Single piece of carbonized wood identified at Oak Species                                              | Beta-160461   |

Table 10. Radiocarbon dates with context information; note elevations are relative to the site datum

dating because of the limited amount of carbonized wood, nutshells, and other plant parts in the archaeological deposits. All of the dates are presented as 2-sigma calibrated dates using the INTCAL98 calibration curve (Stuiver, et al. 1998). The calibrated dates reflect actual calendar years. The abbreviation of Cal is used throughout this report to refer to calibrated/calendar years. Uncalibrated dates reflect radiocarbon years, which are not the same as calendar years. Radiocarbon dates that have not been calibrated will be referred to as uncalibrated throughout this report. Dates throughout the report are presented as “Before Present” (B.P.) with present being defined at 1950.

Nine of the samples dated were taken from column sample contexts where the excavation conditions insure reliable stratigraphic control. Carbonized wood, nutshells, and other plant parts were picked from the light fractions of the column samples. The carbonized nut fragments found in the column sample were set to Dr. Roger Moeller for species identification prior to radiocarbon dating the samples. The floral remains that could be identified to a particular species are listed in Table 10. These identified floral remains were sent for dating. The dating of carbonized floral remains ensures that the samples are not modern carbon. The single pieces of carbon that met the minimum weight requirements were sent for dating. Using single pieces of carbon ensures a smaller sigma. Bulk collections of carbon consisting of carbonized wood, nutshells, and other plant parts were sent for analysis when individual pieces of carbonized matter did not meet the minimum weight requirements. Carbonized material for radiometric dating also was collected in the field during the excavation of a Native American burial. Ruth Dickau, an ethnobotanist, used standard wood classification manuals to identify a fragment of carbonized material from the Native American burial sample as oak

(*Quercus* spp.). This oak fragment was the material dated. The identification of the charcoal ensured that uncontaminated charcoal was dated (McWeeney 1997). The carbon from the burial was placed in an aluminum foil pouch and allowed to air dry back in the laboratory. Care was taken while analyzing the charcoal to avoid contamination in the laboratory.

The final radiometric date was obtained from a partially reconstructed ceramic vessel that was excavated by Darrin Lowery. The pot was found in a pit feature associated with two other partially reconstructed vessels. The ceramic vessel was sent to Beta-Analytic where a small portion of the vessel was sacrificed for dating. Originally, the carbonized residue from the rim was going to be dated. However, there were not enough residues for AMS dating.

All carbon samples were subjected to pretreatment methods performed by Beta Analytic to remove contaminated carbon prior to dating the samples.

## CHAPTER 3 ENVIRONMENTAL BACKGROUND

### A. Introduction

The shell midden at Holland Point is located in a modern salt marsh. This unique setting distinguishes this analysis from previous research on regional shell middens. Post-Pleistocene sea level rise is the primary environmental variable influencing natural formation processes at Holland Point. A review of research on sea level rise in the Chesapeake Bay is necessary in order to interpret its influence on the archaeological deposits and prehistoric lifeways at Holland Point. The regional and local geological information as well as paleoenvironmental data relevant to the site's analysis are presented in this chapter to provide an ecological context for analyzing Holland Point.

The Holland Point archaeological site [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]. This

estuarine setting provides a rich ecological backdrop for Native American occupation at the site. The highest concentration of wetlands in Maryland is found in Dorchester County (cf. Tiner and Burke 1995: Figure 3-8). Surrounding estuarine conditions influenced aquatic and terrestrial resources vital to Native American occupations. The availability and richness of estuarine resources were critical in site selection and use through time. Yet, modern ecological conditions do not exactly mirror the paleo-

environmental/ecological conditions. A discussion of the evolving environment over time at the site and its surroundings provide a context for understanding Native American subsistence practices at the site.

## B. Local Geomorphic Setting

[REDACTED]

[REDACTED] [REDACTED]

[REDACTED] . [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] The shell midden area of the Holland Point archaeological site is located on relatively flat intertidal salt marsh wetland. The soil mapped for the midden area is Honga peat,

which is associated with submerged upland tidal marshes (Brewer, et al. 1998: Sheet Number 14, 45). The term upland is used throughout the report to refer landscape positions where Holocene-age fluvial and marine sediments have not been deposited. Submerged upland tidal marshes reflect the accretion of an organic soil horizon (i.e. a histic epipedon) on top of a well-developed upland soil (Darmody and Foss 1978: 13-21, Figure 13). Prior to sea level rise the Holland Point landform was on a higher part of the soil catena. This upland position in the [REDACTED] catena facilitated pedogenic modification of the parent material. A change in marsh sub-environments occurred at Holland Point because of landward transgression of the shoreline. The submerged upland marsh that was initially protected from tidal and wave energies at Holland Point over time became subjected to high-energy environments as surrounding shorelines were submerged and eroded.

The elevation of the salt marsh on Holland Point ranges from 50 to 75 cm above mean tide. Around the perimeter of this landform, there is a berm consisting of loose sand separating the flat salt marsh from the erosive bank cut and beaches (Figure 11). The berm is most prominent along the north shoreline. The formation of the berm reflects the deposition of overwash sediments by wave action in the backshore zone of the shoreline (Ward, et al. 1998: 124). The shoreline has a jagged and complex geometry. Small erosion-resistant points of land separate coves that have beaches covered with sand and oyster shell. The points resist erosion because the surface sediments consist of dense marsh root mats (i.e. the histic epipedons) that absorb wave energy greater than other areas along the shoreline. Nevertheless, the geometry of the points changes over time because of wave energy forces.





Figure 11. Shell midden area with overwash sand

Pannes (pans) are scattered across the ground surface of the salt marsh. Pannes are places on the marsh surface where the vascular vegetation such as salt marsh grasses is not growing. These bare, exposed, or water filled depressions on the marsh surface can form through several natural and cultural processes (Mitsch and Gooselink 2000: 275-267). On the high-marsh subjected to infrequent flooding concentrations of evaporated salt in the O-horizon choke the root system of the vegetation creating pannes. Pans, which retain water even at low tide, have elevated salinities when evaporation rates are high. The high salt content of these water filled depressions limits plant growth to species such as wigeon grass (*Ruppia* sp.), which can tolerate these salty conditions. Pans regularly subjected to tidal inundation are not as permanent a feature on the salt marsh as pans in higher elevations. Shifting sediment and deposition of sediment in pannes on the low marsh is common. Anthropogenic processes such as digging holes in the salt marsh can create pans. Also pans can expand in size with repeated foot or vehicular traffic. However, pans are not formed by blocks of salt marsh root mat being dislodged from interior portions of the salt marsh through natural processes such as storm events.

A small tidal channel was mapped in the southern end of the controlled shoreline collection area. It is not clear if this channel is a natural feature or dug during historic times.

Inland from this low salt marsh is higher marsh vegetation which surrounds portions of the plowed fields that were surface collected. Fringing woodlands are present along the western edge of Field 1. The plowed fields set back from the midden area are located on a low ridge. The ridge is oriented north/south. The soils mapped for

this topographic feature are Mattapex and Keyport silt loam (Brewer, et al. 1998: Sheet Number 14). The other mapped soil associated with the trough area in the fields is Sunken mucky silt loam (Brewer, et al. 1998: Sheet Number 14). The ridge in the fields is roughly one meter above mean tide. A low order tidal creek parallels this ridge to the west. This creek drains to the north into Hooper Cove. This drainage may have been a source of fresh water prior to its embayment. The poorly drained agricultural fields, which were surface collected, are currently used as marginal farming land. A United States Costal Survey (USCS) map of 1847 indicates that Field 1 was cleared for cultivation by 1847. The other two fields may not have been cleared in the nineteenth century. The recently built house, driveway, and garage are located on this higher ground next to the fields. Two man-made ponds are located at the northern end of Field 1. Based on the presence of prehistoric artifacts found around the pond, indicates sediment was dug out to from the depressions and placed around the pond's perimeter creating a man-made ridge. Crushed hard shell clam (*Mercenaria mercenaria*) was spread as paving on a two-track road around the pond. This shell-paved road extends westerly into Field 1 and may have led to a former historic structure in the field. The 1847 USCS map show two structures in Field 1 near the location of the shell-paved road. The historic utilization of the area has impacted the site's integrity in the plowed fields.

### C. Local Modern Ecology

The low relief in the [REDACTED] watershed results in an abundance of wetland habitats (Tiner and Burke 1995). The salinity at Holland Point ranges from Mesohaline to Polyhaline (Tiner and Burke 1995: 79; White 1989: 12). Salinity generally increases in the fall because of a summer drop in freshwater runoff. Variations from the average salinity range can be caused by draught and storm pulses. These aquatic conditions support a diversity of plants and animals near by Holland Point. The salt marsh vegetation at Holland Point consists of the following species: common reed (*phragmites*), cordgrass (*Spartina alterniflora*), black needlerush (*Juncus roemerianus*), Olney threesquare (*Scirpus olneyi*), and wax myrtle (*Myrica cerifera*). Different plant types living on the each of the landscape features at Holland Point demark these distinctive landforms on this wetland, and also reflect some of the subsurface geological features and characteristics. Loblolly pine (*Pinus taeda*) is the dominant tree species in the forest around Holland Point. Wetland forests in Dorchester County are also dominated with red oak (*Q. rubra*), southern red oak (*Q. falcate*), black gum (*Nyssa sylvatica*), and red maple (*Acer rubrum*) (Tiner and Burke 1995: Table 6-20). Well-drained forests are made up of loblolly pine, Virginia pine (*P. virginiana*), pitch pine , sweetgum (*Liquidambar styracifla*), willow oak (*Q. phellos*), pin oak (*Q. palustris*), post oak (*Q. stellata*), and Spanish oak (*Q. falcata*) (Brown and Brown 1972: xi). The middle portion of the Delmarva Peninsula is characterized by a diversity of micro-forest environments (Lowery 1999: 15-16). This diversity provides rich

resources for Native Americans to exploit. However, much of the woodlands have been deforested and converted into farmland.

Numerous animals live in the coastal marsh setting and the adjacent forests. Modern animals common around salt marshes are white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), muskrat (*Ondatra zibethicus*), common snapping turtle (*Chrysemys rubriventris*), and northern diamondback terrapin (*Malaclemys terrapin*) (Lowery 1999: 13). Opossums (*Didelphis virginiana*) are also common in marshlands (VanDruff 1971). Grey fox (*Urocyon cinereoargenteus*) prefer woodlands over open field environments (Samuel and Nelson 1982: 479). Tiner (1995: Table 7-5, 7-6) provides a comprehensive list of mammals, amphibians and reptiles species found in Maryland's tidal wetlands. Waterfowl and other birds are abundant around the coastal marsh setting. Various species of ducks, great blue herons (*Ardea herodias*), and egrets (*Casmerodius* ssp. and *Egretta* ssp.) are some of the species observed around Holland Point.

Numerous aquatic vertebrates and invertebrates live in the tidal and subtidal zone. Marsh periwinkles (*Littorina irrorata*) are small gastropods that are present around Holland Point. They live off the algae on salt marsh grass stalks. Native Americans have exploited these small gastropods for food and possible utilitarian purposes. Marsh periwinkles avoid the saltwater by moving up and down the marsh grass stalks. Dense concentrations of marsh periwinkles were found in a Middle Woodland pit feature at the Addington Site, near Virginia Beach (Geier, et al. 1986a: 344). The Addington feature suggests that marsh periwinkles were boiled or roasted to cook the creatures and facilitate meat extraction (Whyte 1986: 48). Marsh periwinkles

could have been steamed, cooked into a stew or soup, or used as bait (Claassen 1998: 176-178; Lawrence 1991: 159). Eastern Melampus (*Melampus bidentatus*) is another small gastropod that lives on the edge of marshes near the high tide level (Rehder 1981: 646). Melampus are not believed to have been exploited by Native Americans. Eastern Oysters (*Crassostrea virginica*), soft-shell clam (*Mya arenaria*), stout razor clam (*Tagelus plebius*), ribbed mussel (*Geukensia demissa*), and common jackknife clam (*Ensis directus*) are species that could have been exploited by Native Americans. They all live in the mud flats and shallow bars. These mollusks create habitats attracting Impressed Odostome (*Boonea impressa*), barnacles (*Balanus* ssp. and *Chthamalus fragilis*), blue crabs (*Callinectes sapidus*), fiddler crabs (*Uca pugnax*), and hermit crabs (*Pagurus* ssp.). Only soft-shell clams were observed living at Holland Point. Table 11 lists common smaller inedible species and their habitats. These species have not been observed around Holland Point, but are expected to live in the near-by aquatic environments.

Oysters can form thick reefs locally in the subtidal zone. Diseases such as MSX (Kennedy, et al. 1996: 583, 716) and commercial harvesting have drastically reduced the quantity of oyster in the Chesapeake Bay. Lippson and Lippson (1997) provide a detailed study of the animal communities associated with intertidal flats, salt marshes, and oyster bars in the Chesapeake Bay. A total of forty-four different fish species were observed in irregularly flooded salt marshes or nearby waters of Dorchester County (Metzgar 1972: Table V-3). Murdy et al. (1997) provides a detailed study of fish species in Chesapeake Bay.

| <b>Common name</b>    | <b>Scientific name</b>           | <b>Habitat</b>                                              |
|-----------------------|----------------------------------|-------------------------------------------------------------|
| Atlantic oyster drill | <i>Urosalpinx cinerea</i>        | oyster bars, sea grass meadow, and shallow intertidal zone* |
| Lunar dove shell      | <i>Mitrella (astyris) lunata</i> | sea grass meadow, mud and subtidal*                         |
| Slipper shell         | <i>Crepidula</i>                 | intertidal to deep water**                                  |
| Gem clam              | <i>Gemma gemma</i>               | buried in sand intertidal to subtidal*                      |
|                       | <i>Triphora (marsallora)</i>     | eelgrass meadows under stone and shells, subtidal*          |

Table 11. Common smaller inedible species around Holland Point; references  
 \*(Lippson and Lippson 1997: 42-45), \*\* (Rehder 1981: 464-467)

Nearby interior freshwater wetland are available for Native American exploitation at Holland Point. These fresh water swamps contain an array of plant and animal communities that would be appealing to Native Americans. Decreasing salinities up the Slaughter Creek drainage fosters habitats for a different variety of aquatic and terrestrial plant and animal species. Lowery (1999: 15) provides an overview of the biological species in the lower salinity regimes.

#### D. Regional And Local Geological Setting

The site is located in Outer Coastal Plain physiographic subprovince (Figure 1) on the central Delmarva Peninsula. The Delmarva Peninsula consists of poorly consolidated to unconsolidated sedimentary deposits. The layers of sand, gravel, silts, and clays range from Cretaceous to Holocene in age. These sedimentary deposits

provide sources of raw lithic material for the production of stone tools and clay for the production of Native American pottery. The underlying basement rock is 900 m below the ground surface. Three Quaternary age Susquehanna River paleochannel systems have been mapped within the sedimentary deposits under the Delmarva Peninsula and Chesapeake Bay (Colman, et al. 1990; Genau, et al. 1994; Kerhin, et al. 1996). These paleochannel systems have a general north/south orientation. Additional paleochannels associated the ancestral Potomac River oriented east/west have been documented in the Delmarva sedimentary deposits (Harrison 1972; Oertel and Foyle 1995). Basal units in the paleochannels on the Delmarva Peninsula typically contain cobbles exploited by Native Americans for stone tool production such as chert, jasper, quartzite, quartz, basalt, schist, and argillite. Cobble deposits have been documented up stream from Holland Point and in the Choptank and Little Choptank Drainage Basin (Lowery 1999).

Land-based seismic-reflection analysis along a 1,500 m section of Taylors Island's northern end has refined the location of two distinctive paleochannels (Genau, et al. 1994). The eastern end of this seismic study was located roughly 1000 m to the west of the shell midden area at Holland Point. This remote sensing project indicates that potentially useful sources of cobbles are located at least 30 m below the ground surface at this location. The specific cobble bed identified in this seismic study would not have been exposed at any time during the last 15,000 years. Genau et al (1994) stress that there is a complex network of paleochannels and associated tributaries below Taylors Island and the surrounding area. Both paleochannels extend to the south roughly following the course of the Honga River.



If there were exposed cobbles outcrops located [REDACTED] [REDACTED] in the early Holocene, rising Holocene sea levels have since inundated these lithic resources. Cobble outcrops have been recorded [REDACTED] (Darrin Lowery, personal communication 10/19/2002). Large cobble outcrops are [REDACTED] [REDACTED]. These cobble sources are located in the Little Choptank Drainage Basin. Extensive cobble deposits are also located along the Choptank River. Numerous cobble outcrops of chert, jasper, quartz, and quartzite have been documented by Lowery (1999: Figure 4.3) in the Choptank and Little Choptank watersheds. The rich array of cobble deposits in the Choptank Drainage Basin provides secondary cobble sources that could be exploited by Native Americans. Lowery (1999) also reports finding argillite cobbles in the Delmarva cobble beds, indicating that argillite also was locally available.

Lowery (2002a: 132-139) has documented differences between cobble outcrops associated with the Susquehanna paleochannels and ancestral Potomac paleochannels. The Susquehanna paleochannel cobble deposits are generally confined to the portion of the Chesapeake Bay north of the northern Tangier Sound area. These Susquehanna derived cobble deposits “have a relatively uniform composition of non-cryptocrystalline and cryptocrystalline materials (Lowery 2002a: 135)”. The cobble outcrops around the mouth of the Choptank and Little Choptank area are associated with the Susquehanna paleochannel networks. In contrast, cobble outcrops associated with the ancestral Potomac River are located to the south in Pocomoke River and Beasley Bay area. The Pocomoke-Beasley Bay outcrops have high quality quartzite and jasper cobbles. High quality quartzite and jasper is relatively rare in the cobbles resources associated with the

Susquehanna paleochannels. Potomac paleochannels are older than Susquehanna paleochannels. Alluvial processes associated with the ancestral Susquehanna River may have reworked the older Potomac paleochannel deposits located on the western edge of the Delmarva Peninsula. In the regional archaeological record, a higher percentage of artifacts made out of high quality quartzite and jasper cobbles could be suggestive of the use of the lower bay cobble outcrops.

Primary sources of lithic material are located in the Choptank River Basin while other primary sources are located in the surrounding Middle Atlantic Region beyond the Delmarva Peninsula. A primary outcrop of Miocene Silicified Fossiliferous Sandstone is currently inundated at the mouth of the Choptank River (Lowery 1998). This material is utilized in both large slab forms and in small caste-like forms to make chipped stone tools. Ironstone is a lithic material with primary outcrops in the Choptank Drainage Basin (Lowery 1999: 86). However, the largest outcrops of iron-cemented sandstone are located in the northern portion of the Delmarva Peninsula (Ward and Doms 1984). Ironstone is available in the flatten plates and blocky slabs. Argillite and rhyolite are two non-local types of lithic material utilized by Native Americans. The closest sources of argillite outcrops are found in the Lower to Middle Delaware Valley and the Susquehanna Valley in Pennsylvania (Custer 1989: 245). Lowery (1999) has found a limited amount of argillite in the local cobble outcrops on the Delmarva Peninsula suggesting that some argillite might be locally available. Rhyolite outcrops in the northernmost portion of the Blue Ridge Mountains in Maryland and Pennsylvania (Stewart 1984a; Stewart 1984b). Soapstone is another non-local material. The closest outcrops of soapstone are located in northeastern Maryland and southeastern

Pennsylvania (Ward and Custer 1988). The combination of secondary cobble resources and primary lithic outcrops provide a rich array of raw materials for Native American to utilize. Lowery (1999: 17) has characterized the Choptank River basin as a “lithic rich region”.

Topographically,

This topography is a reflection of the depositional processes in upper most portions of the subsurface geological strata. Jacobs (1980) has developed a (lithostratigraphic) genetic model for the shallow subsurface stratigraphy and lithology in the Slaughter Creek Basin. The Mattapex and Keyport silt loam ridge in agricultural field is one of several ridges on Taylors Island that have northwest-southeastern preferred orientation. Jacobs believes this ridge, and the other near-by ridges, formed as longshore bars. Longshore bars and troughs are nearshore depositional features, which are typically oriented parallel or oblique to the coastline (Jacobs 1980: 40). This sandy ridge system is formed in a nearshore environment around 60,000-125,000 B.P. when the sea levels were slightly higher than present levels.

The ridge system is asymmetrically mantled with Pleistocene age loess. The deposition of Holocene age peat and tidal flat sediments in the trough features and topographic low points have buried portions of the loess deposits (Jacobs 1980:44-45). The Pleistocene age loess is the parent material for the soil around Holland Point. Loess deposits of Holocene age on the Eastern shore have been associated with Clovis-age archaeological material (Lowery 2002a; Wagner, et al. 2001). Lowery (personal

communication 7/10/2000) remarks that loess deposits at Holland Point contain a higher percentage of sand size particles than loess deposits associated with the Clovis-age paleosol. The loess deposit at Holland Point does not contain the Clovis-age paleosol.

### E. Paleoenvironmental Data

This discussion will focus on the regional paleoenvironmental data from the time period from 6,000 to 350 B.P., which brackets the use of the Holland Point archaeological site by Native Americans. The primary interest for understanding how Native Americans interact with their environment to obtain food must consider looking at both the nature of the plant and animal communities and Chesapeake Bay sea-level rise. Detailed paleoenvironmental studies have not been conducted at the Holland Point site. Yet, the regional fossil pollen record in the Middle Atlantic has been used to develop an environmental episodic model. Problems with focusing on single isolated pollen samples can be overcome to a degree by taking a macroscopic approach (Custer 1989: 42). However, Lowery (2001) stress that looking at the broader picture obscures the subtle micro-environmental characteristics that might make a location significant.

Environmental episodes dating from 14000 B.P. to the present are discussed. From the Late Glacial through Boreal episode (14,000 B.P. to 8,500 B.P.), prior to occupation at the Holland Point site, the climate is generalized as cooler and wetter than current conditions (Brush 1986:149; Custer 1989: 38-39). Forest communities change from spruce, pine, and fir complex to more deciduous composition during this time. The Atlantic Episode (8,500 B.P. to 5,000 B.P.) marks the establishment of an oak-

hemlock forest indicative of a warming and drying trend in the climate. After 5,000 B.P., occupation at the Holland Point Site occurred on a more consistent basis. An oak-hickory forest exists during the Sub-Boreal (5,000 B.P. to 2,800 B.P.), while the climate oscillated continually between wet and dry conditions (Custer 1989: 51). A warming trend is hypothesized from the preceding Atlantic to the Sub-Boreal. The Sub-Boreal mast-producing forest would have been favorable habitats for animal communities of deer and small mammals. The increase in nut-bearing trees provided a new abundant resource that humans were also exploiting. Oak-hickory forest persists after 2,800 B.P. and remains until the present. The post-2,300 B.P. climate is considered wetter than during the early Holocene (10,000 B.P.-6,000 B.P.) (Cronin 2000). At this time, the climatic change is characterized as short-term alterations from a “normal” pattern (Custer 1989: 52). Two alterations toward wetter and cooler conditions occurred around 1,400 B.P. and 500 B.P. (Cronin 2000). Brush (1986: 151) hypothesizes that pollen, charcoal and metal evidence from coring in the Nanticoke River indicate a dry period with intermittent fires from 950 to 750 B.P. Could this be evidence of controlled fires or other land use practices by Native Americans?

The rise in sea level correlating with the melting of the late Pleistocene glaciers is another major parameter affecting the paleoenvironment at the Holland Point Site and surrounding Delmarva region. Coastal inundation at the Holland Point Site alters the terrestrial vegetation, landscape geomorphology, aquatic resources, hydrology, and soil development processes. Table 12 provides information about sea level rise over the last 10,000 years. Increase amounts of ocean water from glacial melting combined with local subsidence of the Earth’s crust caused this marine transgression of the Chesapeake

Bay (Colman, et al. 1992: 107). Various reconstructions of the rates of sea level rise have been applied to Chesapeake Bay (Belknap and Kraft 1977; Colman, et al. 1992; Custer 1989: 53; Kraft and Brush 1981). The radiometric dating of basal peats and shells are used to determine the time scale. However, Cronin (1999: 391) questions the accuracy of using dated marine shell because mollusks such as the oysters can live at varying depths below the water, and thus the dating of shell only provides a minimum depth of paleo-sea level.

| <b>Date:</b> | <b>Sea Level:</b> |
|--------------|-------------------|
| Present      | 0                 |
| 1,000 B.P.   | -0.5 m            |
| 2,000 B.P.   | -2.25 m           |
| 3,000 B.P.   | -4 m              |
| 4,000 B.P.   | -6 m              |
| 5,000 B.P.   | -8.5 m            |
| 6,000 B.P.   | -10 m             |
| 7,000 B.P.   | -15 m             |
| 8,000 B.P.   | -22 m             |
| 9,000 B.P.   | -38 m             |
| 10,000 B.P.  | -60 m             |

Table 12. Chesapeake Bay sea level rise (after Colman, et al. 1992; Kearney 1996)

Colman et al.'s (1992: Figure 7) composite curve is the most up-to-date analysis for the Chesapeake Bay from 1,000-10,000 B.P.. The 7,000-10,000 B.P. period of sea level rise is characterized as a time of rapid sea level rise in the Middle Atlantic and New England regions (Dent 1995: 83). Oyster shell from a core taken in the Chesapeake Bay offshore from the Calvert Cliffs dating to 7400 B.P. (calibrated) suggests an early development of marine resources (Cronin 2000). However, a (marine)

reservoir correction for this shell assay has not been calculated (Little 1995). Reservoir corrections indicated that marine dates are older than terrestrial dates (Little 1999). The date falls within the period of rapid sea level rise suggesting the even during the Middle Holocene estuarine environments may have provided limited shellfish resources for Native Americans. However, marine resources began to flourish after 5000 B.P. (Custer 1989: 54). The rate of sea level rise slowed down to a more gradual pace from 6000 B.P. to the 1000 B.P. The more gradual rate of sea level rise would have provided for greater development of coastal resources. Lateral erosion of shoreline would have allowed for the formation of oyster habitats in tidal flat environments.

The early to middle Holocene rapid rise presented by Colman et al. (1992: 107) is based on worldwide curves developed by Fairbanks (1989), who uses data from outside the Chesapeake Bay region. Recent analysis of sea levels based on data from the lower Eastern Shore suggest that by 1000 B.P. sea levels are within 0.5 m of their modern levels (Kearney 1996: 981). This almost flat sea level tendency would have especially favored the development of marine resource habitats at Holland Point. During the Little Ice Age (ca. 550-250 B.P.), Kearney (1996: 982) hypothesizes a regression of sea levels based on the presence of large pine stumps in 5-10 m of surf. Radiometric dating of one stump, combined with trunk size analysis, indicates that the tree was growing during the early Little Ice Age. The Little Ice Age regression is followed by a dramatic increase in rates after 100 B.P. Additional research is needed to confirm the impact of the Little Ice Age on sea levels. In contrast, Lowery's (2001: 109-114) analysis comparing a 1849 USCS map with a 1989 USGS topographic map in Somerset County suggests little sea-level rise over the last 150 years. Additional

radiocarbon dating of rotting pine stumps in the shallow water of the Chesapeake Bay may help to clarify the rate of sea level rise over the last couple hundred years.

Archaeological investigations have the potential to provide detailed information about sea level rise, especially during the Late Holocene. Finding archaeological components below both modern salt marshes and mean tide levels could reveal how much sea levels have rose since the site was last occupied. This approach of documenting inundated Native American sites along the coastline in the Chesapeake Bay could help refine the Late Holocene sea level curve. Salt marsh surfaces need to be maintained at mean sea level in order to sustain the their vegetation. Salt marsh can grow vertically to keep up with rising water levels through sediment deposition and *in situ* biota production of peat (Darmody and Foss 1978; Mitsch and Gooselink 2000: 2769-2770). Pieces of historic timber were observed eroding out of salt marsh peat along the Holland Point shoreline. An historic brick was found in a soil boring at 50 cm below the salt marsh surface. Cut timbers probably wash up onto the surface of the marsh. As the salt marsh grows vertically it incorporated the timbers into the marsh's peat. The timbers do not appear to have been forced into the peat by wave action. The thickness of the peat from the position of the historic timbers to the current surface can provide an idea of the amount of sea level rise during the post-100 B.P. transgression.

The modern shape of the Chesapeake Bay is established around 3000 B.P. (Dent 1995: 84). The embayment of Slaughter Creek probably occurred around 3000 B.P. based on the current depth of the creek's channel and the estimated age of initial shellfish exploitation. As sea level continued to rise, a salt marsh formed over the archaeological deposits at the Holland Point. Coastal inundation at the Holland Point



Site affected the terrestrial vegetation, landscape geomorphology, aquatic resources, hydrology, and soil development processes. The existing forests probably extended closer to the water's edge prior to rising sea levels, which increased the salinity and brought up the water table. Dead and dying trees affected by salt stress define the boundary between the fringing salt marsh and the forest along Slaughter Creek. The forests have been retreating and salt marsh expanding as the sea level rises. A rotting stump observed along the Holland Point shoreline below the peat is evidence that a mature forest once covered the Holland Point landform. This forest might have formed during the Little Ice Age regression. Examination of the root systems of dead trees along the shorelines can provide evidence of paleo-hydrology, paleo-salinity, and past water table levels (Lowery 2001: 116-121).

Additional information about paleo-vegetation at Holland Point is suggested by the presence of land snails recovered from the archaeological deposits. The land snail analysis will be presented in the analysis of the biological remains from different archaeological contexts.

In sum, the geological and ecological backdrop makes Holland Point and its surroundings an ideal location for Native American habitation. The geographic location of Holland Point is advantageous to Native Americans for several reasons. First, the landform is protected from harsh storm events. Nineteenth century historic maps show that Hooper Point and James Island, prior to their erosion, would have been natural barriers blocking wind-generated waves coming across the Chesapeake Bay from the northwest. Hooper Point and James Island have since eroded to such a degree that open water extends from Holland Point northwest across the bay. Second, Hooper Cove and

other coves near Holland Point, which took their modern form during the Woodland Period, were ideal habitats for oysters and other associated aquatic resources. The importance of aquatic resources to Native Americans of Holland Point cannot be underestimated. Regional settlement and subsistence data indicates, that by at least Middle Woodland times, shellfish and other aquatic resources are critically important to Native Americans in the Chesapeake Bay region (Custer 1988). Third, Holland Point is situated at the mouth of a major waterway towards more interior ecological settings. The numerous tributaries of Slaughter Creek provide ways to access interior plant and animal resources that are distinctive from the estuarine biota near the site.

Forests with an abundance of mast producing trees are present by 6000 B.P. (Kellogg and Custer 1994) on the Delmarva Peninsula, especially in high elevations (Rountree and Davidson 1997: 10). These nut-bearing trees provide a seasonally predictable food resource. The recovery of hickory nuts and hickory phytoliths from Paleoindian and Early Archaic contexts in the Chesapeake Bay region suggests the presence of mast producing trees prior 5000 B.P. (Ebright 1992; Lowery and Custer 1990). More ubiquitous exploitation of mast resources dates to Late Archaic in the Chesapeake Bay region. Prior to sea level rise, nut-bearing trees would have been more abundant in the forests around Holland Point. The changing hydrology link to rising sea levels would have affected the forest communities. However, the exact timing of the changing forest communities is unknown. Currently, pines dominate the low forests around Holland Point. Nut bearing trees are currently more common on well-drained landforms in settings not immediately around Holland Point.

The raw materials for the production of stone tools and clay pots are abundantly available near Holland Point. Cobble resources 2 km up stream from Holland Point on Slaughter Creek and farther away in the Little Choptank River drainage basin are readily obtainable, especially using watercraft. The extensive cobble deposits in the Little Choptank drainage basin are roughly 10 km from Holland Point. Analysis of regional lithic utilization patterns indicates that cobbles are utilized from Paleoindian Period through Contact Period (Lowery 1999). Outcrops of Silicified Sandstone at the mouth of the Choptank River are within 13 km of Holland Point. Diagnostic stone tools made from this material suggest that this lithic resource was used from the Early Archaic to Early Woodland times (Lowery 1998). The Choptank source of this material was inundated by Middle Woodland times. Primary outcrops of ironstone near Trapp, Maryland are roughly 25 km from Holland Point. This resource is most intensively used during the Late Archaic Period (Ward and Doms 1984).

Deposits of clay suitable for making ceramic vessels have not been systematically documented on the Delmarva Peninsula. However, soil surveys and geological reports indicate that soils with a high clay fraction are relatively common in surrounding areas (Brewer, et al. 1998; Ries 1902).

The environment overview presented in this chapter serves as framework for interpreting resources used by Native Americans at Holland Point.

## CHAPTER 4 CULTURAL HISTORICAL BACKGROUND

### A. Introduction

This chapter reviews the cultural historical periods typically used in organizing the Indian past in the Chesapeake Bay and Delmarva Peninsula. In the archaeological literature, period names have taken on connotive meanings that reflect the historical foundations of the region's archaeological research. Ritchie's (1932) codification of the "Archaic Period", as a pre-pottery and pre-agriculturalist time period, is a classic example. The Paleo-Indian, Archaic, and Woodland periods have been refined and enriched by ongoing research. Yet, other researchers have questioned the validity of using this "traditional" division of past lifeways into the Paleo-Indian, Early Archaic, Middle Archaic, Late Archaic, Early Woodland, Middle Woodland, and Late Woodland. The creation of the Transitional Archaic by Witfoff in the 1950 highlights the evolving nature of the cultural historic sequences in the Middle Atlantic. Most notably Gardner (1982) and Custer (1986; 1996) have revised the traditional taxonomic approach to organizing Native American past history.

The use of term "prehistory" and "history" in this report is modified from its standard usage to respect regional Native American concerns. A comment about the use of the term "prehistory" is warranted. In conversations with Charlie Clarke, formerly assistant chief of the Nanticoke Indian Tribe, he expressed apprehension in using the term "prehistory" to describe his people's past. In this era of socially conscience archaeology, an attempt has been made to respect and address Native American

concerns with regards to documenting their past. The connotative meaning of “prehistory” is that Native Americans have a “pre-historic past” which is an implicitly evolutionary precursor to Euroamericans’ “historic past”. Throughout this report an attempt will be made to refrain from using the term “prehistory” to refer to Native Americans’ culture prior to the time of Euroamerican-Native American interaction.

The reworking of traditional chronological time periods by Gardner and Custer reflects a greater understand of past Native American cultures and culture changes through time. Custer (1996: 18-23) makes a distinction between chronological periods, which represent the traditional taxonomic approach, and cultural periods. “Diagnostic artifacts” which reflect “segments of time” are used to define chronological periods (Custer 1996: 19). In contrast, cultural periods indicate times of share lifeways and cultural adaptations. This distinction seeks to focus greater archaeological attention on understanding cultural process and culture change. As archaeologists working within the discipline of anthropology, we seek to understand past cultural practices. Our research should strive to emphasize cultural lifeways based on archaeological data and not define past people in terms of diagnostic artifacts.

In this review of the regional archaeological database, emphasis is placed on the chronological periods and cultural periods that are represented at the Holland Point site. The geographic area discussed in this overview is the Delmarva Peninsula. The Delmarva Peninsula is not an isolated cultural area. Relevant data from the surrounding Middle Atlantic region will be incorporated when appropriate. Custer’s chronological time periods for the Delmarva Peninsula (Archaic, Woodland I and Woodland II) are not used because this scheme combines time ranges where differences in cultural

practices are apparent. In addition, Custer (1989; 1990) over emphasizes the differences in settlement patterns and subsistence practice on the Delmarva Peninsula between Woodland I and Woodland II periods. The traditional chronological periods of Early Archaic, Middle Archaic, Late Archaic, Early Woodland, Middle Woodland and Late Woodland are used in this summary. The dates used in this report to define the Late Archaic through Late Woodland are based on the time ranges for cultural complexes defined by Custer (1989) for the Delmarva Peninsula. The cultural complexes, which are temporally defined based on diagnostic artifacts, are used to frame the discussion of the region's cultural history.

The earliest temporally diagnostic artifact found at the site is an Amos style projectile point (Darrin Lowery personal communication 7/25/2001). The recovery of Amos and Amos-like points from dated contexts in the Eastern Woodlands indicates that they have an uncalibrated date range of 9,900 to 9,000 B.P. (Broyles 1971; Funk and Steadman 1994: 53-55, and Plate 13-14; Gardner 1986: Figure 5; McAvoy and McAvoy 1997: 63-65, Figure 5.32, and Table 6.7). The stratigraphic and pedological data from an Amos component recently excavated from the Paw Paw Cove Site Complex corroborates the antiquity of this biface style on the Delmarva Peninsula. Amos points in the Middle Atlantic region are one of the classic diagnostic artifacts of the Early Archaic chronological period and the Archaic Cultural Period (Lowery 2002a: 85-103). The Amos point was found along the shoreline and is hypothesized to have come from a sub-aqueous component of the site that is presently well below MLT. The Amos point indicates an ephemeral use of this site, because it's an isolated artifact; thus the cultural characteristics of the Early Archaic Period will not be reviewed. Projectile

points styles and Native American ceramic styles spanning from the Late Archaic to the Late Woodland chronological period are the predominant diagnostics found at the Holland Point Site. This overview will synthesize the current state of knowledge spanning from the Late Archaic through the Late Woodland.

#### B. Late Archaic Period 5,000 B.P. to 3,000 B.P.

The Late Archaic Period is characterized as a time of significant population increase and the emergence of ranked societies in places. This is based on the dramatic increase in number of sites and “diagnostic” projectile points from Middle Archaic Period to the Late Archaic Period. In addition, macro-band base camps are larger than preceding Middle Archaic macro-band base camps (Custer 1989: 189). Custer (1989: 129) characterizes macro-band base camps as habitation localities of multiple families containing a wide range of tool classes and a large amount of debris. Micro-band base camps also contain a wide range of tool classes, but contain noticeably lesser amounts of debris than macro-band base camps (Custer 1989: 130). The characterization of the Middle Archaic as the “Lost Years” reflects how little physical evidence exists for this time period and just how little is understood about the past lifeways during the Middle Archaic Period (Custer 1996:133-134). Late Archaic macro-band base camps are used for a wider array of activities while procurement sites contain evidence for less variability in activities. The ratio of the number of macro-band base camps to micro-band base camps increase from the preceding Middle Archaic times. However, large sites might not reflect large social group size. Excavations of large Late Archaic base

camps in central Delaware suggest that they are the result of repeated occupation focused around certain productive environments (Custer 1996: 188). Settlement patterns become more focused around specific riverine, estuarine, and swamp areas (Custer 1989: 189). The largest sites (i.e. macro-band base camps) contain structural remains and pit features. Medium size sites (i.e. micro-band base camps) with limited amount of features are located near these water sources. In general, the macro-band base camps are not common in low coastal settings. There are in more larger sites in interior riverine and swamp settings during the Late Archaic Period. Numerous procurement sites are associated with spring heads and low-order ephemeral streams (Custer 1989: 200). Groups are believed to have coalesced during the fall and winter at macro-band base camps and dispersed during the summer and spring (Custer, et al. 1996: 132). These general patterns in the settlement system continue from the Late Archaic through to Middle Woodland times providing a basic theme (see Custer 1989: Figure 38). Certain variations in the theme, such as mortuary ceremonialism, are noteworthy at particular times and will be highlighted below. Trends toward sedentism at macro-band base camps and increase in population densities is partially responsible for the shift from egalitarian to ranked societies during this time period (Custer 1989: 190-191).

A dramatic environmental change that influences cultural development is hypothesized during the Late Archaic. The Sub-Boreal climatic episode brought on dryer and warmer conditions. Oak-hemlock dominant forest is replaced by oak-hickory forest (Custer 1996: 182). A subsistence focused on marine shellfish and other estuarine resources emerges and is incorporated into the preexisting broad-spectrum hunting and gathering subsistence practices during the Late Archaic Period. Prior to 5,000 B.P., the



rapid rate of sea level rise may have inhibited the development of stable marine shellfish habitats. The more gradual rate of sea level rise during Late Archaic times allowed for the establishment of marine shellfish habitats and their exploitation by Native Americans (Custer 1988). Excavations at the Martingham Site in Talbot County, Maryland have encountered Late Archaic artifacts (rhyolite broadspears and steatite vessel fragments) associate with a thin shell midden (Lowery 1999: 33). Martingham Site represents the initial exploitation of shellfish resources on Maryland's Eastern Shore. This site is the earliest evidence for shellfish exploitation on the Delmarva Peninsula. On the other side of Chesapeake Bay in the Potomac Drainage basin evidence of intensive shellfish exploitation during the Late Archaic was found at the White Oak Point Site (Waselkov 1982). Radiocarbon dated Late Archaic shell midden deposits at the White Oak Point Site contained a steatite vessel fragment and stemmed projectile points. Subsistence remains recovered from this Late Archaic component included oyster, marsh periwinkle, soft-shell clam, ribbed mussel, stout tagellus, black racer, garter snake, and white-tailed deer (Waselkov 1982: Table 11). Based on estimated meat weights from the Late Archaic component at White Oak Point Site terrestrial faunal remains contribute more to the overall diet then shellfish remains. The diversity of subsistence resources agues against typing the Late Archaic component at the White Oak Point Site as specialized shellfish processing station.

Inundation and erosion of shorelines by rapidly rising sea levels prior to 5000 B.P. obscure the picture of exactly when marine shellfish resource are incorporated into Native American subsistence practices. Marine resources could have been available

during the early Holocene in the Chesapeake Bay region based on the radiocarbon dating of oyster shell that was mentioned above (Cronin 2000).

Custer (1989) has defined two coeval complexes (Clyde Farm and Barker's Landing) dating to the Late Archaic. Similarities in the technologies associated with the Clyde Farm and Barker's Landing complexes include the production of large broad blade knives, and stemmed projectile points, steatite bowls and early experimental ceramic wares. Soapstone bowls traded into the region were quarried and manufactured north and west of the Delmarva region (Ward and Custer 1988). The appearance of the earliest types of ceramics occurs during the latter part of the Late Archaic. The first appearance of ceramics and soapstone vessels during this time period has been interpreted in contrasting ways in the Middle Atlantic Region. Stewart (1998c) has argued that the introduction of ceramics did not have a revolutionary impact on existing cultures. New approaches to processing food and other products developed with direct heating methods. However, this new container technology along with the use of soapstone bowls would have been grafted onto existing bark, wood and basket technologies. Stewart (1998c) also remarks that uneven distribution in the amounts of experimental wares indicates that ceramics are not fully incorporated into the container technology during the Late Archaic. In contrast, Gardner and McNett (1971) view the adaptation of ceramics as dramatically impacting demography, social organization, and settlement patterns.

Differences in the utilization of exotic raw materials also distinguish the Clyde Farm from Barker's Landing Complex. The types of projectile points and knives produced are similar for both complexes. The stone tool assemblages of the Clyde

Farm Complex reflected a heavy reliance on local cobble chert, jasper, quartz and quartzite and a minor amount of locally available ironstone (Custer 1989: 205). Lowery (1998) notes that Miocene Silicified Fossiliferous Sandstone is also used during the Late Archaic.

In contrast to the Clyde Farm Complex, the Barker's Landing Complex has a higher reliance on using non-local lithic materials (argillite and rhyolite) for stone tool production (Custer 1989: 230). Argillite is commonly used to make broadspear-shaped bifaces on the Delaware Bay side of the Delmarva Peninsula. The closest sources of argillite outcrops are found in the Lower to Middle Delaware Valley and the Susquehanna Valley in Pennsylvania (Custer 1989: 245). Lowery (1999) has also found a limited amount of argillite in the local cobble outcrops on the Delmarva Peninsula, suggesting that some of the argillite could be locally obtained. The large quantities of argillite bifaces found at Coverdale and Kiunk Ditch caches reflect regional exchange in argillite derived from primary sources (Custer 1989: 230). On the Chesapeake Bay side of the peninsula, Late Archaic bifaces are more commonly made from rhyolite. In general, sites in the Choptank Drainage Basin that have large quantities of rhyolite also contain significant amounts of argillite (Lowery 1999: Table 7). Fourteen rhyolite broadspears recovered from a cache along the shoreline in Talbot County attest to rhyolite preference on the Chesapeake Bay side of the peninsula (Lowery 1995b). Rhyolite outcrops in the northernmost portion of the Blue Ridge Mountains in Maryland and south-central Pennsylvania (Stewart 1984a; Stewart 1984b). A difference in the stage of biface reduction is apparent between the Delaware Bay side and Chesapeake Bay side of the Delmarva (Custer 1989: 245; Lowery 1999:

32). Argillite caches in Delaware typically consist of early stage bifaces while the rhyolite caches in Maryland contain late stage bifaces. Custer (1989: 239) believes that argillite was traded by direct exchange of early stage bifaces while rhyolite was traded as late stage bifaces. Caches of early stage bifaces of rhyolite found in the middle portion of the Delmarva Peninsula also suggest direct exchange of this material with groups near rhyolite outcrops (Darrin Lowery, personal communication 10/19/2002). The distance from the primary source of rhyolite and argillite to the Delmarva Peninsula could account for the stage of biface reduction. Rhyolite outcrops are farther from the Delmarva than argillite outcrops. Trade distance and stage of reduction might be correlated. Analysis of regional trade and exchange networks during the Late Archaic suggest that broad-based networks served to bring argillite and metarhyolite bifaces into the Delmarva Peninsula (Stewart 1989a).

Custer (1989: 230) believes the organization of lithic exchange networks allowed particular individuals to have control over the production of finished broadspear knives. The presences of biface caches are believed to reflect a functional transformation from bifaces as technomic artifacts to sociotechnic artifacts. Powdered hematite and red ochre associated with biface caches on the Chesapeake Bay (Lowery 1999: 32) may support the functional transformation hypothesized by Custer. This control over lithic production combined with intensified food production, population growth, and sedentary lifestyles is believed to represent the development of incipient ranked societies. Yet, the lack of burials with differences in mortuary expenditure suggests that social status differences were at best minimally developed during the Late Archaic.

### C. Early Woodland Period 3,000-2,000 B.P.

The Early Woodland Period encompasses several important environmental changes. Sea level rise occurred at a much slower rate allowing for the establishment of more stable water temperatures and salinity. Estuarine resource increased in abundance. Shellfish beds become more extensive and habitats favorable for spawning anadromous fish emerge (Custer 1988: 125). Aquatic resources that had emerged during the Late Archaic began to blossom in the Early Woodland. Waselkov's (1982: 206) analysis of diet breadth from the White Oak Point Site in the lower Potomac Valley suggest that a decrease in the diversity of shellfish species with a more intensive used of oysters during the Early Woodland. A specialized used of the White Oak Point Site for seasonal oyster harvesting began during the Early Woodland Period and continued up until early Late Woodland times.

Fiedel (2001) has recently proposed a population decline in the Middle Atlantic and Northeast during the Early Woodland Period based on a cooling event around 2,700 (Cal.) B.P. Pollen profiles from Chesapeake Bay cores indicate a peak in Pine pollen at 2,800 (Cal.) B.P. reflecting an interval of wetter and cool conditions (Cronin 2000). Yet, intensive exploitation of aquatic resources and increased social complexity on the Delmarva Peninsula (i.e. the Delmarva Adena) argue against population decline during this time period. The earliest dates for the Delmarva Adena, which were calibrated in 1990 (Custer, et al. 1990: Figure 36) coincide with Field's 2,700 (Cal.) B.P. cooling event. A recent count of the number of sites in the Choptank Drainage basin indicate

there are roughly three times as many Late Archaic sites than Early Woodland sites, which could suggest a demographic decline (Lowery 1999: 109, 111). Yet, Lowery's figures only provide a generalized impression of the demographics in the middle portion of the Delmarva Peninsula. Moreover, making a direct correlation between site numbers and population density is a dangerously simplistic interpretation of the archaeological database that does not take into account site size or intensity of occupation or the variety of factors related to site visibility or discovery. The 2,700 B.P. cooling event might have had varying effects in different parts of the Middle Atlantic Region.

Early Woodland settlement patterns are relatively similar to preceding Late Archaic Period. One noticeable difference is the increase in the number of Early Woodland shell midden sites classified as micro-band base camps (Custer 1989: 254-55). The greater abundance of shell middens reflects a more intensive use of shellfish during the Early Woodland and a new focus on sites located on the low coastal regions.

The Wolfe Neck and the Delmarva Adena complexes are two distinctive cultural complexes that have been identified on the Delmarva Peninsula during the Early Woodland Period (Custer 1989: 249). Both complexes have overlapping temporal ranges. Yet, the Delmarva Complex spans a greater amount of time, which extends into the Middle Woodland Period. Radiometric dates for the Delmarva Adena Complex range from 2,750 B.P. to 1,300 B.P. indicating that this complex is associated with both the Early and Middle Woodland Periods (Custer, et al. 1990).

Adaptations developed during the Late Archaic continue through the Early Woodland. The diversity of experimental ceramic wares dating to the end of Late Archaic and beginning of Early Woodland gives way to more uniformity in ceramic

production methods across the Delmarva Peninsula by 2650 B.P. (Custer 1989: 171). Coil construction becomes the dominant method for making clay pots.

Wolfe Neck and Accokeek ceramics are the diagnostic artifacts associated with Wolfe Neck Complex (Custer 1989: 34). Rossville and other stemmed projectile point are associated with the Wolfe Neck Complex. Investigations at 18KE128 provide insight into Wolfe Neck Complex subsistence practices on the Chesapeake Bay (Custer, et al. 1997). 18KE128 is located in Kent County, Maryland. The extensive oyster midden deposits associated with Wolfe Neck ceramics accumulated through repeated short term occupations of the site during the late summer and early fall. The overall low density of artifacts, lack of house features and storage features reflect short-term site utilization. In addition to harvesting oysters, other aquatic resources such as crabs, clams and, unidentified fish were procured from near by waters. Oyster seasonality studies at 18KE128 indicate a late summer/early fall harvesting period. Floral remain recovered during flotation include *Amaranth/Chenopodium* and sumac as well as a small amount of hickory and acorn shell fragments. The sumac may have been used to make a medicinal drink (Tantaquidgeon 1972: 75, 111) or as dye for textile coloration (Jakes and Ericksen 2001).

The occurrence of starchy-seeds (*Amaranth/Chenopodium*) in an Early Woodland context might be evidence of early experimentation with seed-bearing plants that were domesticated in the Mississippi River Basin c. 2000 B.P. (Smith 1992a). The recent identification of possibly domesticated sumpweed (*Iva annua*) at the Two Guys Site in Sussex County, Delaware from a feature with an uncalibrated date of  $2460 \pm 130$  B.P. (LeeDecker, et al. 1996) is suggestive of early seed-crop horticulture in the Middle

Atlantic region. Other domesticated oily-seeds and starchy-seeds found in later contexts in the Middle Atlantic region hint at the possibility of pre-maize horticulture in the Middle Atlantic region (Hart 1999: 2-3). Future ethnobotanical research in the region needs to be geared towards confirming the presences/absence of pre-maize horticulture. Microscopic analysis of *Amaranth/Chenopodium* from 18KE128 and other early Middle Atlantic contexts should be conducted to identify domesticated or wild starchy-seeds (King 1999: 20).

The fragmentary nature of the faunal remains from Wolfe Neck Complex sites prevents species identification. The dietary information gained from the Wolfe Neck Complex sites indicates that even at temporary shellfish harvesting stations, plant and terrestrial animal resources are a critical part of Wolfe Neck Complex subsistence practices. Additional marine species such as marsh periwinkle and mussels recovered from the Wolfe Neck Site (75-D-10) in Delaware (Griffith and Artusy 1977) indicate that a variety of shellfish species were incorporated into subsistence practices during the Early Woodland Period. Wolfe Neck settlement patterns are similar to proceeding Clyde Farm Complex with a greater intensity placed on marine resource exploitation.

The Delmarva Adena Complex reflects continuation of social complexity that had emerged during the Barker's Landing Complex. The discoveries of Adena related burial sites containing large quantities of exotic trade goods and local items suggest that a "big-man" social organization existed in the Choptank Drainage basin (Custer 1989: 268). Settlement pattern interpretations reflect distinctive changes from earlier times. Delmarva Adena site taxonomies incorporate three new site types (major cemeteries, minor cemeteries, and caches) (Custer 1989: Figure 71). In Custer's (1989: 266-267)



Delmarva Adena settlement system, major cemeteries are not associated with habitation sites. Micro-band base camps are associated with minor cemeteries. Caches are found at both macro- and micro-band base camps.

Stewart (1989a:58) provides an overview of the materials traded from the west and nature of the exchange patterns. The Sandy Hill Site (Ford 1976) along the Choptank River near Cambridge, Maryland is a major Delmarva Adena mortuary exchange center. In addition to the exotic materials at the Sandy Hill Site, a cache of Miocene Silicified Fossiliferous sandstone bifaces and a cache of locally made bifaces were discovered at the site (Lowery 2001: 80). A primary outcrop of Miocene sandstone is currently inundated at the mouth of the Choptank River (Lowery 1998). The Sandy Hill bifaces highlight that both local primary and local secondary lithic sources were used in conjunction with exotic material in Delmarva Adena culture. Delmarva Adena Complex mortuary sites are not associated with habitation sites.

Delmarva Adena habitation sites found on the Delaware and Maryland side of the Delmarva commonly have only a limited amount of exotic Ohio Valley lithic materials.

Local lithics dominate assemblages at habitation sites. Nassawango, Coulbourn, and Wilgus ceramics tempered with clay and stemmed projectile points are associated with the Delmarva Adena Complex (Custer 1989: 251-252). Extensive excavations at the Wilgus Site located on Delaware's Atlantic Coast provide a detailed picture of a Delmarva Adena living site and general Middle Woodland subsistence practices (Custer, et al. 1983). Based on the faunal remains recovered from shell middens a late summer through spring occupation is hypothesized. Coulbourn, Wilgus, and Mockley

ceramics were found in an undisturbed shell midden deposit in association Fox Creek-like Lanceolate, small side-notch, and triangular projectile points. Refitting of flakes and cores across the midden deposit indicate the deposit reflects a single occupation. The Middle Woodland artifacts (Fox Creek points and Mockley ceramics) are contemporaneous with the small side-notched points and the Coulbourn and Wilgus ceramics. This association of the Middle Woodland diagnostics (Fox Creek and Mockley ceramics) with Delmarva Adena artifacts corroborated the Middle Woodland radiocarbon dates for the Delmarva Adena Complex. Fauna remains included deer, turtles (box, snapping, and painted), oysters, catfish, unidentified fish and clams. *Amaranth/Chenopodium* recovered from the midden might reflect the storage of seeds for consumption during times of winter scarcity. The hard shell clam (*Mercenaria mercenaria*) found at the Wilgus Site would not be available in the lower salinity waters of the middle Chesapeake Bay (Lippson and Lippson 1997).

#### D. Middle Woodland 2,000 to 1,000 B.P.

The Middle Woodland on the Delmarva Peninsula is defined by Carey/Late Carey Complex and the Webb Complex. The environment can be characterized as warm and dry. The slow rate of sea level rise allows for the continued development of extensive estuarine resources. The exploitation of estuarine resources with a focus on oysters in the Chesapeake Bay continues during this time period (Custer 1988: 130). The discovery of large basin type features (measuring greater than 1 m in diameter and deeper than 0.5 m) dating to the Middle Woodland at the Great Neck Site complex near

Virginia Beach, Virginia suggests that the storage of food resources became important during this time period (Hodges 1998: 87-95, Figure 33). Other large Middle Woodland storage pits have been found at the fall line of the Potomac River (Barse 2001). These large features are indicative of increasingly more permanent settlements in environmentally rich locations during the Middle Woodland (Stewart 1992). Settlement systems focused around macro-band base camps with group movement to coastal micro-band base camps reflect a new emphasis on marine and estuarine resources (Custer 1989: 277-278, Figure 74). Terrestrial animal resources consisting of elk and deer have been found at Carey Farm shell midden sites (Lowery 1999: 38-39). The demise of Delmarva Adena mortuary ceremonialism combined with break down of focused exchange networks around 1,500 B.P. associated with Delmarva Adena (Custer 1988: 128; Custer, et al. 1990: 200) marks the end of the Early Woodland Period.

The Carey/Late Carey Complex (1,800-1,000 B.P.) is well represented across the Delmarva Peninsula. Diagnostic artifacts include Rossville projectile points, Fox Creek bifaces, Selby Bay bifaces, and Mockley ceramics. The abundance of Mockley ceramics on individual sites and throughout the Middle Atlantic region indicates that pottery is fully incorporated into the container technologies during this time (Stewart 1998c: 7). In the Early Woodland, experimental wares reflected a spotty distribution across the Middle Atlantic region with only a few isolated sites containing an abundance of ceramics. Prior to the production of Mockley ceramics, material used for containers consisted of an array of perishable materials with a minor amount of stone bowls and ceramics utilized. The increasing uniformity in production aspects, such as the used of shell tempering, suggests greater regional integration of cultures. The large

size of vessels implies the production of containers for storage (Stewart 1998c: 7). The wide spread distribution of Fox Creek bifaces across the Middle Atlantic region also highlights the degree of regional integration of cultures.

The nature of regional exchange patterns during Carey/Late Carey Complex is highlighted by the abundance of non-local lithics used to produce stone tools. Large quantities of non-local rhyolite have been recovered from several sites in the Choptank River Basin. 18TA192 containing over 11,000 pieces of rhyolite is suggestive of direct procurement of rhyolite (Lowery 1999: Table 7). The recovery of early stage bifaces from caches on the Delmarva Peninsula indicates that early stage and mostly later stage bifaces were probably obtained directly from sources outside of the Delmarva Peninsula. Some of the non-diagnostic early stage bifaces and rhyolite debitage could be associated with the early Barker's Landing Complex. However, the abundance of Fox Creek/Selby Bay rhyolite bifaces across the Delmarva Peninsula suggests that most of rhyolite at 18TA192 and other sites is more like associated with Middle Woodland exchange. Sites in the Choptank River Basin with the high-density accumulations of rhyolite are more commonly found closer to the Chesapeake Bay. This pattern suggests that sites such as 18TA192 served as a focused exchange point, which may have functioned as rhyolite redistribution centers for the Delmarva Peninsula. Rhyolite debitage, early, middle, and late stage bifaces, finished projectile points, and flake tools indicated that regional trade of rhyolite is not limited to the exchange of finished bifaces. The Potomac and Susquehanna River Valleys may have served as trade routes to bring rhyolite from western sources in the Delmarva Peninsula (Custer 1989: 283). Limited sourcing studies of rhyolite from the Virginia portion of the Delmarva

Peninsula indicates that this material originated from rhyolite outcrops in south-central Pennsylvania (Bondar, et al. 2002). Lowery (1999: 81) notes that high-density rhyolite sites are conspicuously absent along the main channel of the Choptank River. The Choptank River would be an ideal route of travel into the Delmarva Peninsula. The movement of rhyolite up the Choptank River would result in concentrations of rhyolite at sites on lower order tributaries of the Choptank River.

Carey/Late Carey Complex subsistence practices show continuity from previous complexes. Marine resources continue to play a significant role as productive estuarine environment expanded in size. Large shell middens dating to the Carey/Late Carey Complex are commonly found along the Chesapeake Bay and its tributaries. Subsistence remains from the Carey Farm Site include shellfish, deer, beaver, box turtle, dog, muskrat, turkey, woodchuck, and hickory nuts (Custer 1989: 277). Other faunal remains found at Carey/Late Carey Complex sites include soft-shell clams, periwinkle, razor clams and elk (Lowery 1999: 39). On the Western Shore, floral remains recovered from the oyster shell bearing deposits at the Luce Creek Site (18AN143) include blackberry, acorn, and an abundance of hickory (Ballweber 1994). Combinations of terrestrial and aquatic resources round out subsistence practices during this time period.

Carey/Late Carey Complex settlement patterns are relatively similar to preceding Early Woodland settlement patterns (Custer 1989: 277). The major difference is the absence of Delmarva Adena major cemeteries and minor cemeteries during the Carey/Late Carey Complex. In general, there is an abundance of Cary/Late Carey Complex sites that are focused around estuarine and riverine resources.

Typically, the largest shell middens located in estuarine settings dating to the Cary/Late Carey Complex.

The Webb Complex is the second Middle Woodland complex with an uncalibrated date range from 1,350 B.P. to 950 B.P. Webb Complex sites are not as numerous as Carey/Late Carey Complex sites and are more common north of the Choptank River (Custer 1989: 291). Fewer large Webb Complex sites are known than large Carey/late Carey Complex sites. Only one Webb Complex macro-band base camp (the Hell Island Site) dates to this complex (Custer 1989: 292). The Hell Island Site is situated in the mid-drainage zone in northern Delaware. Diagnostic artifacts associated with the Webb Complex are Jack's Reef projectile points, Hell Island ceramics, bone artifacts, large bifaces, and steatite platform pipes. Subsistence data from the Oxford Site suggest shellfish and other resources complemented a hunting and gathering lifestyle (Lowery 1999: 39). Mortuary ceremonialism reemerges during the Webb Complex. Oxford (18TA3), Riverton Site (18WI5), and Island Field are the three Webb Complex mortuary sites. The types of grave goods, burial treatments, and burial caches show a cultural link to the north and west suggesting a migration of Algonquian speaking Native American people from the Eastern Great Lakes region into the Delmarva Peninsula between 1,500 and 1,300 B.P. (Custer 1990; Custer, et al. 1990). Historical linguistic data has also been used to support archaeological evidence for this migration hypothesis (Fiedel 1987; Fiedel 1991; Luckenback, et al. 1987). The cooling event occurring at 1414 (Cal.) B.P. (A.D. 536) and its aftermath might provide an environmental kick for the migration of Algonquian speakers into the Delmarva Peninsula (Gunn 2000). Analysis of burial ceremonialism at the Island Field Site

indicates the inclusion of utilitarian items as grave goods suggesting egalitarian social groups instead of hierarchical social organization (Custer, et al. 1990).

#### E. Late Woodland Period 1,050 to 350 B.P.

The Late Woodland Period includes two cultural complexes: the Minguannan Complex and the Slaughter Creek Complex. The environment during this time is basically modern in character (Custer 1989: 311). Gradual rise in sea level rise had a minimal effect on existing aquatic resources. In the Middle Atlantic region, domesticated plants are incorporated, albeit at varying degrees, into existing subsistence practices during this time. Earliest consistent evidence for maize in the Middle Atlantic region dates from 1050 to 950 B.P. (Stewart 1995: 192). The emergence of intensive maize farming is hypothesized to date to c. 750/650 B.P. (Stewart 1993). Shifts in sedentary settlements to broad floodplains also correlate with the establishment of Late Woodland maize farming (Stewart 1993). Preliminary isotopic analysis from the middle Delaware Valley confirms macrobotanical evidence for intensive maize farming (Stewart 1998a, personal communication 10/21/2001). However, the importance of domesticates on the Delmarva Peninsula is ambiguous. There is not a shift in settlement locations to settings on floodplains. Maize has only been recovered from the Cole Site (Doms, et al. 1985), Bay Vista Site (Kellogg 1996), the Ritter Site (Omwake 1951; Omwake 1954a; Omwake 1954b), and Moore Shell Midden (Weslager 1944: 77-78) in Delaware. The general absence of maize, beans, and squash domesticates from the Delmarva Peninsula may indicate that existing wild resources, in particular estuarine

resources, fulfill subsistence requirements (Custer and Griffith 1986). The intensive collection of *Amaranthus* and *Chenopodium* along with shellfish harvesting met subsistence requirements during seasons of food scarcity (Custer 1989: 329). The continued reliance on mast resources, such as hickory and acorn, served to round out the diet (Custer 1989: 327-328).

Oysters are the primary shellfish recovered from Slaughter Creek Complex middens with other shellfish such as hard shell clam, soft shell clam, ribbed mussel, whelk, and periwinkle found in fewer numbers (Custer 1989: 328-329). Hard shell clam and whelk would not be present near Holland Point because of the lower salinity in the middle portions of Chesapeake Bay (Lippson and Lippson 1997). The association of *Amaranthus* and *Chenopodium* with shellfish from a Late Woodland pit feature at the Island Field Site (7K-F-17) highlights the combined use of these seed resources with aquatic food resources (Doms and Custer 1983). Excavations at Locust Neck on the Choptank River encountered several pit features containing oyster shell (McNamara 1985). Oyster seasonality analysis at the Locust Neck Site of eight features which contained Townsend ceramics indicate both spring and fall oyster harvesting. Other faunal remains recovered from these eight features include white-tailed deer, gray squirrel, wild turkey, catfish, and sucker. The lack of storage features and postmolds at Locust Neck suggest an ephemeral use of the location by micro-social units as a hunting/procurement camp during the Late Woodland. On the Western Shore at the Thomas Point Site, Rappahannock Incised ceramics and Townsend ceramics were recovered from a shell matrix deposit (Herbert 1995). The subsistence remains included nuts, deer, oyster and maize. The lack of large storage features and postmolds suggests



that this site was a temporary camp. Yet, the recovery of domesticates implies a greater degree of sedentism than is indicated by the feature data.

Investigations at sites with shell middens tend to focus excavations on the shell midden areas, which may affect interpretations of these sites. Storage features and structural related features may be spatially separated from the shell midden. Therefore, the longevity of occupation could be misconstrued by only investigating the shell midden portions of the site. The spatial separation of midden areas at the Great Neck Site complex from Late Woodland houses indicates that refuse areas are separated from the habitation areas (Geier, et al. 1986a; Hodges 1998). The Great Neck middens contain shell pockets, but refuse areas does not represent dense continuous shell middens. In reviewing the Delmarva archaeological literature, evidence for pithouse or other structural remains at Late Woodland shell midden sites has not been reported. Pithouse structures have been found at several Late Woodland sites in Delaware suggesting a degree of sedentism (Custer 1989:319-324). Custer (1989: 323) mentions that a Late Woodland pithouse from the Island Field Site that was associated with a shell midden, but it is unknown if this midden is a shell midden. Oyster shell is commonly found in pit features and pithouses at Late Woodland sites in coastal settings in Delaware. The lack of structural remains (postmold patterns and pithouses) in shell midden areas could suggest they are spatially separated from midden areas. Alternatively, houses may not be typically found at shell midden sites.

A decline in long distance trade of lithic material occurs during the Late Woodland on the Delmarva Peninsula (Custer 1989: 299) and surrounding the Middle Atlantic Region (Stewart 1989a). A renewed focus on local lithic resources is apparent.

Trade in argillite and rhyolite used to produce bifaces during the Carey/Late Carey Complex declines. Local lithic resources are almost exclusively used for the production of Late Woodland Period bifaces. The decline in trade of rhyolite is attributed shifts in settlement patterns away from primary outcrops that are associated with the development of agriculture in western Maryland (Stewart 1984b). A reduction in the size of group territories based on ceramic style analysis (Stewart 1993: 172; Stewart 1998b: 257-266) and increase sedentism could be responsible for the disruption of broad-based exchanged networks (Stewart 1989a: 63). The hypothesized migration of people into the Delmarva Peninsula during the time of the Webb Complex may be responsible for the demise of lithic exchange networks (Custer 1989: 310). Sporadic distributions of soapstone pipes, ornaments, and carvings suggests some “focused” type of exchange (Stewart 1989a: 63). In the Delaware Valley, Late Woodland lithic technologies show an increase usage of expedient flake tools (Stewart 1992: 6-7). The production of bipolar blade-like flakes used in expedient technologies might also be related reduction to group territoriality. The existence of expedient lithic technologies has not been critically examined on the Delmarva Peninsula.

The first models for Late Woodland (i.e. Slaughter Creek) settlement patterns on the Delmarva were developed in the middle of the 1970s (Thomas, et al. 1975). Thomas et al. (1975) originally proposed five models for the Slaughter Creek Complex. Custer’s (Custer 1989: 317) interpretation of Thomas et al.’s model incorporated three site types: macro-band base camps (Thomas et al.’s base camp), micro-band base camp (Thomas et al.’s seasonal camp), and procurement sites (no correlation to Thomas et al.’s model). UDCAR’s work in northern and central Delaware suggest that in the

Upper Delmarva Peninsula individual family occupations (i.e. micro-band base camps) are more common during the Late Woodland and earlier times than multi-family occupations (macro-band base camps) (Custer, et al. 1996: 132). These data suggest that the traditional view of groups coalescing at larger base camps in the winter and fissioning during the spring and summer might not be the only settlement model operating at this time (Custer, et al. 1996: 132). The other settlement model in use at the same time proposes that individual families were regularly moving between tidal marsh settings, well-drained woodlands and poorly drained woodlands. The riverine locations are believed to be the location of cold-weather occupations. Group fusion for mates and rituals would have been more infrequent in this second model. The large scale stripping of the Snapp Site and the Leipsic Site allow for more robust interpretations of house patterns and other features and suggests that large sites might be a reflection of the intensity of site use, not simply that large multi-family groups used the location (Custer, et al. 1996: 131). Custer et al. (1996: 131) have labeled sites like Leipsic, as “repeatedly reused base camps” while the more traditional micro-base camps are more aptly designated “individual base camps”. It remains to be seen whether these new names will be incorporated in the site typology literature.

Diagnostic artifacts associated with the Late Woodland include triangular projectile points, Townsend series ceramics, Minguannan ceramics, and Killens ceramics. Triangular projectile points, once thought to be the hallmark of the Late Woodland, have been found in deposits dating from the Middle and Late Archaic periods (8,500-3,000 B.P.) in the Middle Atlantic region (Custer 2001: 84-88; Katz 2000; Stewart 1998d). Morphological and functional comparison of Archaic and

Woodland triangles reveals that there are no definitive attributes which can distinguish individual Late Woodland triangles from Archaic triangles (Katz 2000). The bow and arrow technology was introduced around 1000 B.P. which could have come from either the Midwest (Nassaney and Pyle 1999) or the Arctic region (Dent 1995: 247).

Changes in ceramic paste, designs, and surface treatments provide a more refined way to control time in the Late Woodland then through the analysis of projectile points. Townsend ceramics are discussed because they are the predominate ceramics from Holland Point. Townsend series ceramics are one of the more widely recognized historic types for the Late Woodland, which is reflection how earlier the series was defined in the history of Middle Atlantic Archaeology. Margaret C. Blaker (1963) originally defined several broad types within the Townsend series. All of the types within the Townsend series have the following similar paste characteristics: the temper consists of finely crushed shell and the consistency of the paste is relatively hard, dense and compact. Yeocomico ware from the lower Potomac River Valley is also shell tempered and has paste characteristics comparable to Townsend ware (Potter 1993: 87; Waselkov 1982: 294-295). The original Townsend series includes the following historic types: Rappahannock Fabric-Imprinted, Rappahannock Incised, Townsend Cord Horizontal, and Townsend Herringbone (Blaker 1963). Griffith's (1977; 1980; 1982) later refinements defined several types of Rappahannock Incised and Townsend Cord based on a seriation analysis of several sites in Delaware and one site on the Eastern Shore of Maryland.

Minguannan ceramics have a fine sand temper (Custer 1989: 305). Minguannan is more common in the northern portion of the Delmarva and adjacent area to the north

and west (Custer 1989: 308). Killens ceramics defined on the basis their sand and shell temper is believed to be a geographic transitional type between Minguannan and Townsend (Custer 1989: 308). This hypothesis is made because Killens co-occurs with Minguannan and Townsend and the shell and grit temper of Killens are temper materials used in both Minguannan and Townsend ceramics.

#### F. Contact Period 350 B.P. to Present

The earliest European written accounts of the Delmarva Peninsula occur in 1524 (Kraft 1991: 99). Evidence for sixteenth century Contact Period sites is limited to six possible sites (see Lowery 1999: 42). European made artifacts such as kaolin pipes, brass arrow points, scraps of brass, gun flints and glass trade beads were traded with Eastern Shore Native Americans for furs and possibly maize (Custer 1989: 340; Potter 1993: 40; Rountree and Davidson 1997). Maize farming may have been a post-Contact development brought about by the European land grab and its forced (refugee) confinement of Native Americans to reservations and “Indian Towns”. The profitability of trading maize with Europeans may have made maize farming a more appealing subsistence practice. Historic accounts document the trade of maize between Virginia Eastern Shore groups and the Powhatan Confederacy on the other side of the Chesapeake Bay (Potter 1993: 40). Yet, maize is conspicuously absent on Late Woodland and Contact Period sites on Maryland’s Eastern Shore.

The Choptank Indians had a reservation established in 1669 along the Choptank River up stream from Slaughter Creek (Rountree and Davidson 1997: 93-103, Figure

3.1). This region along the Choptank served as the core area for Native Americans in the Choptank River Basin. The headwater areas of the Choptank River and the Eastern Shore in general would have been the first regions depleted of furs for trading. Native American settlement and fur trading would have quickly moved to more interior portions of the Delmarva Peninsula. The location of major Native American settlements and reservations suggest that middle reaches of major drainages were more suitable locations for settlements.

## CHAPTER 5 CULTURAL AND NATURAL STRATIGRAPHY

### A. Introduction

This chapter develops the different analytical contexts that will be used to organize discussions of the cultural material from the excavations. The artifacts and ecofacts from different units and column samples, but the same analytical contexts, will be analyzed as a group in subsequent chapters. The stratigraphy observed in the three plowed fields will be described and related to stratigraphy under the saltmarsh portion of the site near the tip of Holland Point. The cultural/temporal periods of the six features encountered along the shoreline are also evaluated.

The chapter is divided into four major parts. First, the descriptions of the soil profiles encountered at the site and the processes of sediment deposition are discussed. The natural stratigraphy is presented for shell midden portion of the site, the shell-free area near the shell midden, the features, and plowed fields. Second, cultural stratigraphy is presented for the deposits in the shell midden portion of the site, features, and plowed fields. In the shell midden portion of the site, the cultural stratigraphy is defined by analyzing the vertical distribution of temporal diagnostic artifacts in the test units and column sample. The age of the features is first evaluated based on associated diagnostic artifacts. The diagnostic artifacts from the plowed fields are used to provide a general impression of the Native American occupations in the field. In the third section, the validity of the radiocarbon assays is addressed. A total of nine radiocarbon dates were obtained from various deposits encountered in the column samples. Radiocarbon dates

were obtained on material from two different features. In the final portion of the chapter, a determination is made of the cultural/temporal periods related to each analytical context encountered during the excavations. Cultural/temporal period designations also are made for the features. The temporal relation of cultural material from the plowed fields is correlated with the analytical contexts encountered during the excavations. An analysis of the depositional processes for these analytical contexts also is presented.

## B. Soil Profiles and Formation Processes

Soils and sediments reflect a variety of natural and cultural processes affecting the portion of the site around the shell midden and the plowed field portion of the site. The site is located on a relatively stable landform. Several soil profiles were encountered across the shell midden portion of the site and the plowed field portion of the site. Two distinctive soil profiles are present in the shell midden area near the tip of Holland Point. The ubiquitous profile that contains the shell midden deposit will be described first. Second, the anomalous profile encountered in one test unit will be analyzed. This anomalous profile reflects a possibly disturbed area that is confined to a limited portion of the site. Features found that are not associated with test units will be related to soil horizons encountered in the shell midden area of the site. Finally, the soil profiles observed in the interior agricultural fields are correlated with soil profiles under the saltmarsh.



## 1. Soil Profile in Shell Midden Portion of the Site

In the six test units (Test Unit 1, 2, 3, 5, 6, and 7) where the shell midden was encountered, five strata can be correlated between the test units. Figure 12 and Figure 13 provide typical views of the soil profile encountered in five of the units in the shell midden area. Test Unit 5 contained the same five strata as Test Unit 1, 2, 3, 6, and 7. However, in Test Unit 5 another stratum was present, which was overlying the typical five-strata profile found in the other five test units. This unique stratum will be discussed first. Then the five strata found in all six test units (Test Unit 1, 2, 3, 5, 6, and 7) will be discussed.

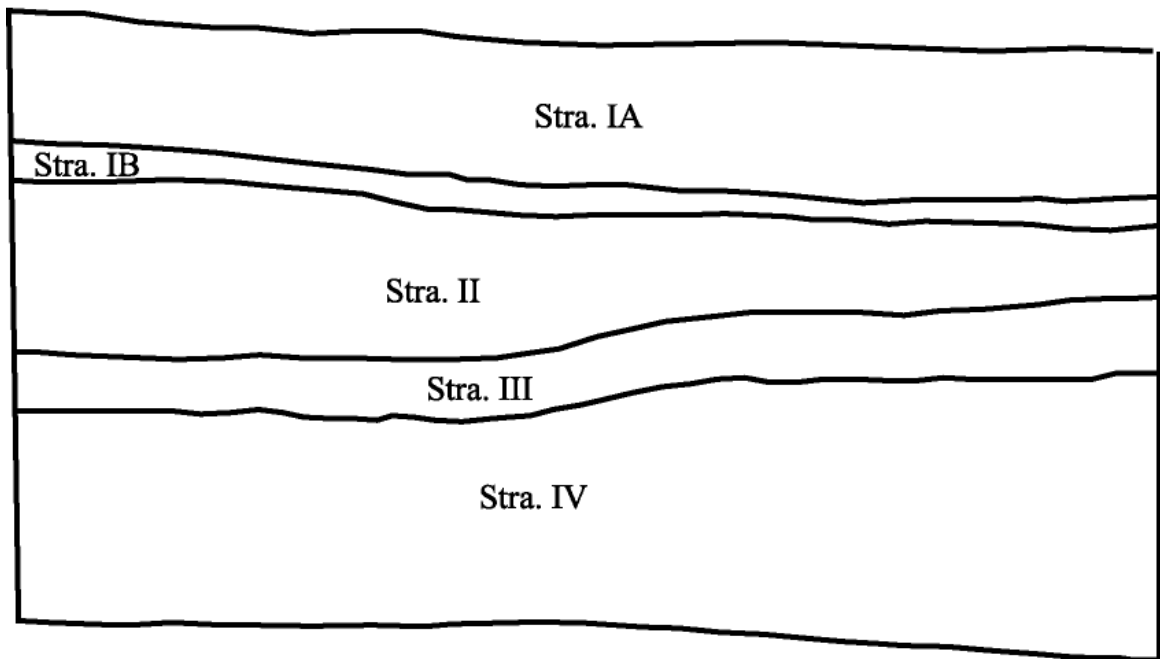
The unique stratum found in Test Unit 5 consists of sand. The sand is not compact and is well sorted. Bedding within the sand was not visible. The boundary with the underlying stratum is abrupt and smooth. The sandy sediments appear to be an overwash deposit, thrown on the top of the pre-existing surface of the saltmarsh. This sandy sediment is built up creating a low berm on the saltmarsh near the shoreline. The berm follows the shape of the shoreline. This sandy deposit was encountered in Test Unit 5 and Test Unit 4. Overwash deposition is typical for sedimentary sequences of saltmarshes adjacent to open embayments (Ward, et al. 1998: 124). The overwash deposit is limited to the portion of the site near the shoreline (Figure 11). This berm will continue to migrate landward with ongoing shoreline erosion. A young A-horizon is visible in the upper portion of the sand facies. The overwash deposit contains twentieth century artifacts.



Figure 12. Photograph of the south wall profile of Test Unit 1; scale is approximately 20 cm long

The first of the five strata typically encountered is Stratum IA that consists of a dense marsh root mat and sediments. The sediments are a silt loam. A dark sediment color and high percentage of non-decomposed plant matter characterize this stratum. The dark color is derived from the decay of organic matter. The burning of saltmarsh vegetation by the property manager on an annual basis over the last eight years would facilitate the decomposition of organics and contribute to the dark sediment color. The characteristics of the stratum warrant its classification as an Oi-horizon. This stratum is culturally sterile. Only isolated pieces of oyster shell were found. The oyster shell

### Test Unit 1 South Wall Profile



#### Soil Descriptions

Stratum IA (Oi-horizon): 10YR 3/3 Dk Br Silt Loam

Stratum IB (Oe-horizon): 10YR 3/2 Vy Dk Gr Br Silt Loam

Stratum II (Shell Midden): 10YR 3/1 Vy Dk Gr Sandy Loam

Stratum III (Ab-horizon): 10YR 3/3 Dk Br Sandy Loam

Stratum IV (B-horizon): 2.5 Y Lt Olive Br Sandy Loam

#### Scale

20 cm

Figure 13. South wall profile of Test Unit 1

fragments originate from along the beach and are cast into the saltmarsh during periods of high-energy waves. Auger borings across the saltmarsh reveal changes in the thickness of this organic horizon. The Oi- horizon is thinnest near the tip of Holland Point (Figure 9). The Oi-horizon increases in thickness to the west and south of the archaeological deposits. The Oi-horizon can be classified as a histic epipedon where the thickness ranges between 20-40 cm (US Department of Agriculture 1996). Where the thickness of the Oi-horizon exceeds 40 cm, the soil is defined as a histosol (US Department of Agriculture 1996). The underlying archaeological deposits are confined to a relatively high area on the landform's ancient topography, prior to sea level rise and salt marsh genesis.

The Oi- horizon is not as dense where it is capped by the overwash deposit (see below) because the saltmarsh grass roots have partially decayed. A greater percentage of sand was found in the Oi-horizon in Test Unit 1 because of the unit's proximity to the shoreline. A general pattern of particle size fining landward is evident in the Oi-horizon.

Studies of saltmarsh accretion rates for submerged upland marshes in Monie Bay, located about 50 km southeast of Holland Point on the Eastern Shore of Maryland, indicate that these marshes are relatively young (Ward, et al. 1998: 124). In the Monie Bay study, the accretion rates for submerged upland marshes range from 0.15 to 0.63 cm/yr (Ward, et al. 1998: 125). The average accretion rates for submerge upland marshes from the Monie Bay study are comparable to the rate of sea level rise (Ward, et al. 1998: 125). Investigations of a Late Woodland site on the New Jersey side of Delaware Bay, which is also capped by a submerged upland marsh, have revealed that

the overlying saltmarsh is approximately 500 years old (Hartwick 2000). The presence of historic timbers and a brick in the saltmarsh horizon at Holland Point indicates a relatively young age for the sediments. If Kearney's (1996) hypothesis of a sharp spike in sea-level rise after 1850 is correct (see Chapter 3), then the saltmarsh deposit at Holland Point might only be 150 years old. Accretion rates for submerged upland saltmarshes are on average less than 0.40 cm/yr (Darmody and Foss 1978: 45; Ward, et al. 1998: 126). Ward et al.'s (1998: 126-128) detailed study of the saltmarsh in Monie Bay reveals a complex spatial pattern of marsh accretion rates. Factors effecting marsh accretion are proximity to tidal channels, subtle changes in marsh topography, and storm activities (Ward, et al. 1998: 128).

Below the dense marsh root mat is another organic rich soil horizon (Stratum IB). The horizon has the same color as the overlying Oi-horizon. The horizon ranges in thickness from 3 to 5 cm. The sediment from this stratum reflects the decay and translocation of organic rich sediment from the overlying organic horizon. The base of the root mat (Stratum IA) decays as new organics and sediment accumulate on the ground surface and the saltmarsh grows vertically to maintain equilibrium with sea level rise. These processes provide the sediment for Stratum IB. The soil horizon is not an A-horizon because the organics are derived from Stratum IA. Stratum IB reflects the transition from the histic epipedon to the shell midden. The sediment in Stratum IB is a silt loam. Stratum IB can be classified as an Oe-horizon. Cultural materials were not found in this stratum. The small number of oyster shell fragments found in Stratum IB is believed to be intrusive. Smaller fragments of shell may have been deposited on top of the saltmarsh during high-energy events and translocated downward. Or compaction

of sediments and mixing of sediments by root activities in Stratum IB could have incorporated shell fragments from the underlying stratum.

The next stratum (Stratum II) encountered is the shell midden. The sediment of this stratum consists almost exclusively of whole and broken oyster shell. The depth to the top of the shell midden varies across the site (Figure 9). In general, the midden is closest to the ground surface near Test Unit 2, 3, 6, and 7. The depth to the midden increases moving to the west and south of Test Unit 2, 3, 6, and 7.

Carbonized material consisting of wood, nutshells, and other plant parts are abundant in the shell matrix. A minor amount of highly organic black sediment, which is distinctive from the above-mentioned carbonized matter, is present in the shell matrix of Test Unit 2, 3, 6, and 7. The decay and translocation of organics from the overlying root mat could be responsible for the dark color of the sediment in the shell matrix. Organics could also be accumulating in the shell midden as part of the natural soil forming processes that occur in soil horizons at or near land surfaces. The black sediment around the shells in Test Unit 2, 3, 6, and 7 could be a post-inundation overprinting. The darker sediment was found in the upper portion of the midden where the shell matrix contained a greater amount of voids. Similar post-depositional darkening of shell midden deposits caused by process associated with inundation has been observed along Northwest Coast shell middens (Stein 1992; Stein 1996). Portions of the site are not subjected to the same degree of inundation. The shell midden in Test Unit 5 was not inundated during excavation because the unit is located on a topographic highpoint (Figure 10 and Figure 11). The shell midden deposit in Test Unit 5 does not contain the same black sediment as in Test Unit 2, 3, 6, and 7. The midden in this

portion of the site is saturated only during abnormally high tides, which raises the ground water level and floods the landform.

Fragmentation of the oyster shell in the midden reflects natural and cultural processes. The combination of saturation, water percolation, freeze-thaw, and saltmarsh bioturbation are natural factors affecting oyster shell fragmentation. Cultural causes of fragmentation are trampling, shell roasting, shucking of shells, and processing shell for temper. Detailed quantification studies of shell fragmentation ratios in the midden were not conducted. An absence of highly fragmented lenses in the midden suggests there are no buried living surfaces within the excavated portion of the shell deposit (Claassen 1998: 58). Discrete lenses within the midden were not visible in the wall profiles or during excavation. The existing area of the site at the time of the fieldwork is a remnant of a once much larger shell midden. Augering across the remainder of the midden reveals that the shell midden is typically less than 20 cm thick. Ground water was typically encountered at the level of shell midden obscuring patterns in shell size and orientation during excavation. However, initial observations of the bank profile along the shoreline in 1998, two years prior to the current investigations, revealed two distinct shell midden strata. The matrix of the upper shell midden stratum consisted of “relatively small pieces of shell and dark-color organic sediment (Lowery and Stewart 1999: 14)”. The lower stratum of the midden consisted of “large pieces of shell and organic sediment (Lowery and Stewart 1999: 14)”. The two strata in the shell midden were not contiguously present along the bank profile during initial field observations (Stewart n.d.: 102). The variability in the stratigraphy of the shell midden visible in 1998 could indicate areas of trampled shell or places where the shell eroded along the

shoreline is deposited on top of the midden by wave energy. Remnants of the stratified portion of the shell midden eroded into the bay prior to the current field investigations. Over the three-month span of the present fieldwork, a noticeable amount of bank erosion occurred at the tip of Holland Point.

Dramatic variations in shell midden thickness are apparent across relatively short horizontal distances. Figure 12 and Figure 13 show the variation of the midden over a span of 1 m. During the excavation of the column sample, when the water was removed from the units, a change in the composition of shell midden matrix was apparent. The lower level (Level 4) of the column sample in the shell midden associated with Test Unit 1 contains a greater amount of sandy loam sediment in the matrix than the matrix from the upper shell midden level (Level 3) in the same column sample. In the column sample associated with Test Unit 2, lowest level in the shell midden (Level 5) contained a greater amount of sandy loam sediment in the shell matrix than two overlying levels (Level 4 and Level 3). This sandy loam sediment is a coarser textural class than the darker sediment caused by post-depositional inundation found in the upper portion of the shell midden. This change was not visible when excavating the test units because the test units were constantly filling with water. Mixing of sediment is apparent between the shell midden and the underlying soil horizon. An interface between the shell midden and the underlying soil consisting of whole and fragmentary oyster shell mixed with sandy loam ranged from 3 to 6 cm thick. The mixing of sediment from the underlying stratum could be caused by trampling and/or sediment compaction. The interface zone does not have any textural size differences or uniform sedimentary characteristics to suggest that the zone is a flood deposit. Shell trampling



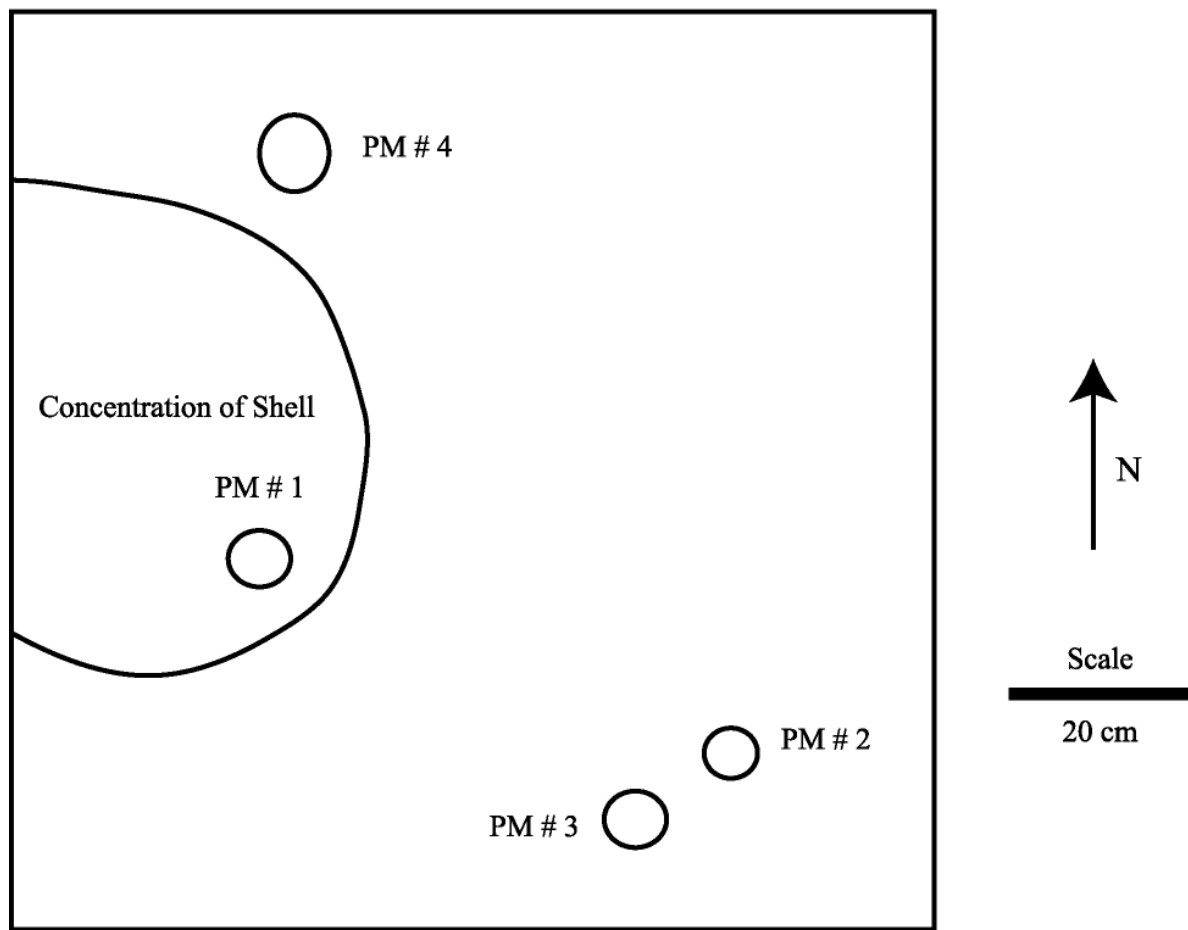
experiments consisting of a 1,000 walkovers of shell on a loam substrate indicate that 96% of the shell is found between 0 to 2 cm below the ground surface (Muckle 1985: 70-75, Table 5). The experiment suggests a limited degree of downward movement of shell do to trampling. If the sediments are wet, the degree of mixing is expected to extend to a greater depth.

Below the shell midden is a dark colored mineral horizon (Stratum III). The sediment in Stratum III ranges from sandy loam to loam. The horizon ranges from 5 to 12 cm thick across the site. Stratum III is continuous across most of the site and is visible in the bank profile. The dark organic coloring of Stratum III suggests rapid burial. The characteristics of the stratum indicate that it is a buried A-horizon. The parent material on which the Ab-horizon developed is probably aeolian in origin (Foss, et al. 1978: 331; Jacobs 1980: 44). The sediment of Stratum III contains a higher faction of courser sand size particles then the darker sediment within the upper portion of shell midden. A dramatic decrease in the amount of oyster shell was apparent in Stratum III. In portions of the site, little to no oyster shell was recovered from the buried A-horizon. The color of the A-horizon and other soil horizon characteristics could have been partially preserved by the capping of shell midden deposit. Comparison between soils underneath oyster shell midden and “natural soils” (i.e. not altered by human activities) in Florida indicate that the sheltering effects of midden deposits “arrested” pedogenesis of soils below the shell matrix (Scudder 1996). Horizon characteristics of the other strata bellow the Stratum III may have been preserved to varying degrees because of the midden’s sheltering effect. A smooth and gradual boundary exists between the A-horizon (Stratum III) and the underlying horizons (Stratum IV).

Stratum IV is primarily distinguished from the overlying stratum on the basis of color differences. Stratum IV is distinctively lighter in color than the A-horizon suggesting that this stratum is the zone of illuviation. However, detailed particle size analysis and geochemical analysis was not conducted at Holland Point to confirm the translocation of solid particles and/or soluble constituents through the soil profile. Stratum IV is a sandy loam. Stratum IV increases in brightness with depth in the portion of the site that is located on the topographic high point. The development of weak subangular blocky structure also occurs with greater depth. The soil structure could have been modified after inundation. The saline conditions of the soils may result in clay dispersion that causes soil structures (peds) to break up (Stolt and Rabenhorst 1991). The degree of structural development in the Stratum IV horizon may have been more pronounced prior to inundation of the landform. Subdivisions within Stratum IV based on color and structural development are documented in the wall profiles of Test Unit 2, 3, and 5. All of the above-mentioned soil characteristics indicate that Stratum IV should be designated a B-horizon. The subdivisions of the B-horizon apparent in Test Unit 2, 3, and 5 for simplicity in this report are grouped together and referred to as Stratum IV because detailed pedological analyses have not been conducted.

The parent material for the B-horizon might be aeolian in origin (Foss, et al. 1978: 331; Jacobs 1980: 44). Oyster shell was not commonly found in Stratum IV. Oyster shell in the B-horizon was limited to a small concentration of weathered/chalky whole valves in Test Unit 1 (Figure 14). Three postmolds found in Test Unit 1 at the top of Stratum IV may have originated in Stratum III.

Plan view of TU 1 at top of Stratum IV



Profile view of post molds from TU 1

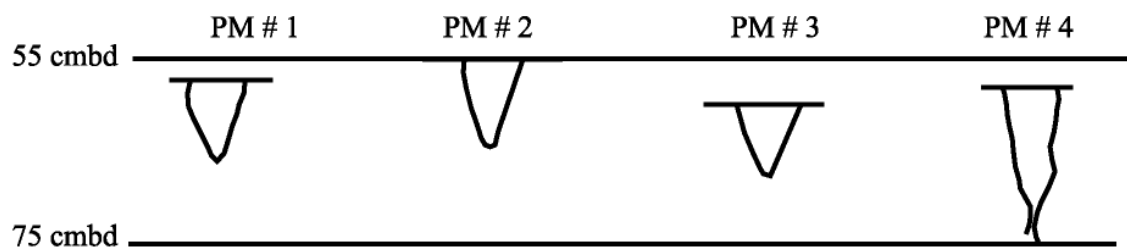


Figure 14. Postmolds and concentration of shell in Test Unit 1

Varying amounts of Stratum IV were excavated across the site because ground water conditions hampered fieldwork. Table 13 indicates how much of Stratum IV was excavated in each test unit. In Test Unit 2, an arbitrary 10 cm level was excavated from the stratum. Several soil borings were placed in the base of the Test Unit 2. The sediment from the soil borings was screened and did not produce any cultural materials. In Test Unit 3, a level associated only with Stratum IV was not excavated. A limited portion of the Stratum IV was incorporated with the Ab-horizon excavation level in Test Unit 3. The location of Test Unit 5 on a topographic high point allowed for more of Stratum IV to be excavated before ground water was encountered.

| <b>Test Unit</b> | <b>Amount of Stratum IV excavated</b> |
|------------------|---------------------------------------|
| 1                | 14-27 cm                              |
| 2                | 10 cm                                 |
| 3                | None                                  |
| 4                | 15-20 cm                              |
| 5                | 30-40 cm                              |
| 6                | 5-13 cm                               |
| 7                | 5-13 cm                               |

Table 13. Amount of the B-horizon excavated in each test unit

An increase in the amount of mottling occurs with greater depth in Stratum IV. The presences of light brown mottles in the B-horizon reflect redoximorphic conditions. The soils at Holland Point have high tendency to develop redoximorphic features based on laboratory analysis of similar (Mattapex) soils on Maryland's Outer Coastal Plain (Rabenhorst and Parikh 2000). The mottling probably developed both before and after the inundation of the landform (Daniel Wagner, personal communication 1/20/2002). A

greater amount of mottles deeper in the B-horizon may suggest partially saturated soil condition existed prior to sea level rise. Augering through the saltmarsh south of the shell midden where the histic epipedon thickens the B-horizon is gleyed indicating that this portion of the landform was probably poorly drained before tidal inundation. The B-horizon is more gleyed on the fringes of the shell deposit where the marsh mat is thicker and the B-horizon is farther below the modern ground surface. The drainage class of the soil on the topographic high point prior to sea level rise, where the archaeological deposits are concentrated, is estimated to range from moderately well to somewhat poorly drained. On the topographic high point, mottling probably developed higher in the B-horizon with the onset of tidal inundation and the establishment of saltmarsh. Now the soils at Holland Point are continuously saturated.

Another redoximorphic feature besides mottling is the presences of sediment nodules in the B-horizon. The nodules do not react to HCL. The non-reactive nature of the nodules indicates they are not formed by secondary carbonate leaching from the shell midden (Daniel Wagner, personal communication 1/20/2002). The nodules are not organic in composition because heating them with a propane torch did not reduce their mass. The nodules occur in various shapes, sizes and ranges of stability. The nodules are probably iron and manganese concretions (Daniel Wagner, personal communication 1/20/2002). The concretions increase in frequency with greater depth in the B-horizon. The concretions probably formed both before and after inundation of the landform.

Where possible soil horizons have been correlated with strata encountered in the shell midden portion of the site. This correlation allows comparisons across the landform.

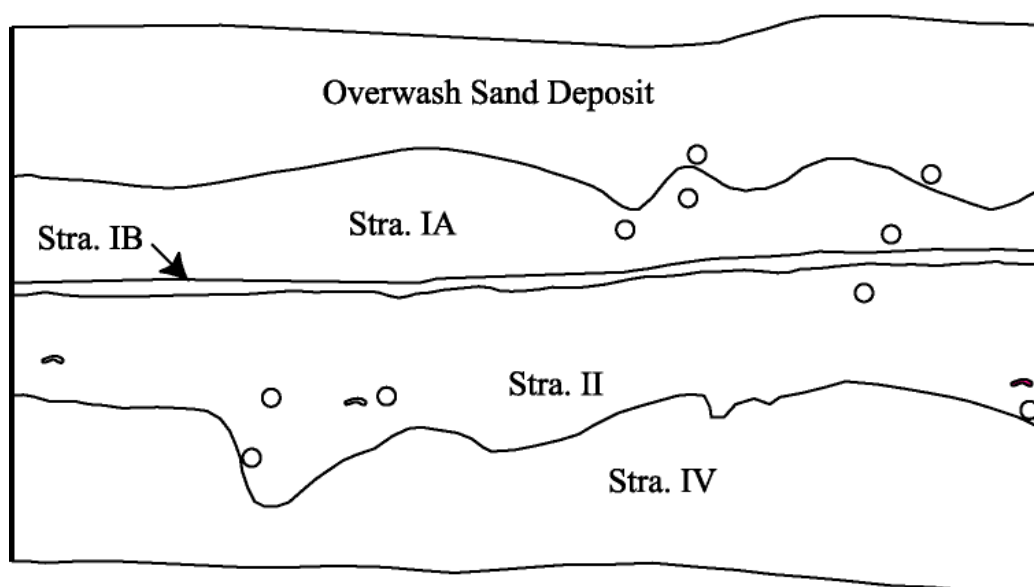
## 2. Soil Profile in Shell-Free Area at The Tip of Holland Point

In the area of the site near the tip of Holland Point, extensive augering indicated that the shell midden (Stratum II) was not present (Figure 11). This portion of the site was overgrown with *Phragmites australis*, a weedy invasive tall reed grass (Silberhorn 1999: 209). Test Unit 4 was excavated through this non-shell midden portion of the site (Figure 15 and Figure 16). Certain deposits encountered correlated with the overall site stratigraphy while others cannot be easily matched. The overwash sand facies, Stratum IA (Oi-Horizon), and Stratum IB (thin Oe-horizon) encountered in Test Unit 4 reflects



Figure 15. Photograph of the west wall profile of Test Unit 4

### Test Unit 4 West Wall Profile



#### Soil Descriptions

Stratum IA (Oi-horizon): 10YR 3/3 Dk Br Silt Loam

Stratum IB (Oe-horizon): 10YR 3/1 Vy Dk Gr Br Silty Clay

Stratum II (Ab-horizon): 10YR 4/1 Dk Gr Silty Lo/Silty Cl Lo.

Stratum IV (B-horizon): 10YR 5/4 Yel Br Loam

#### Key

- Root
- ⤿ Shell

#### Scale



20 cm

Figure 16. West wall profile of Test Unit 4

the typical depositional sequence found at the site. Stratum IA is the buried marsh root mat. The organics in Stratum IA have decomposed to a greater degree because of burial. The shell midden was not present below Stratum IB (Figure 15 and Figure 16). In Test Unit 4, underlying Stratum II is an Ab-horizon that does not correlate with the Ab-horizon (Stratum III) encountered in the other test units; therefore it is not identified as Stratum III. The texture of Ab-horizon in Test Unit 4 ranges from a silt loam to silty clay loam. Across the rest of the site the Ab-horizon (Stratum III) varies from sandy loam to loam. The finer textural class of the Ab-horizon in Test Unit 4 indicates that the horizon is not comparable to the Ab-horizon across the rest of the site. The Ab-horizon in Test Unit 4 contains only a few isolated fragments of oyster shell. This horizon only contained a limited quantity of cultural material in comparison to the Ab-horizon (Stratum III) across the rest of the site.

An abundance of *phragmites* rhizomes (roots) were encountered throughout the Ab-horizon and overlying deposits. Dark organic stains are associated with the rhizomes. The bioturbation of the Ab-horizon has homogenized the soil texture and altered the color. The wavy boundary between Ab-horizon and B-horizon is partially caused by the bioturbation of the rhizomes. The wavy boundary between the two horizons may also reflect a disturbance in the deposits in this portion of the site. *Phragmites* typically grows in disturbed soils (Tiner 1998: 131) indicating that an unknown disturbance may have altered the archaeological deposit in this portion of the site.

The B-horizon in Test Unit 4 can be correlated with Stratum IV encountered across the rest of the landform. It is labeled as Stratum IV in the soil profile to be



consistent across the site. The soil characteristics are similar to B-horizon properties found across the rest of the site. Phragmites rhizomes did not penetrate this horizon.

### 3. Soil Horizons And Features

Shoreline erosion is stripping off Strata I through IV most severely at the tip of Holland Point near Test Unit 1 and 2. In general, only the upper portion of Stratum IV is being truncated by shoreline erosion. This eroded surface of Stratum IV is exposed during low tide around the tip of Holland Point. A total of five features have been observed on the erosional surface. All of the features have been concentrated near the tip of Holland Point (Figure 10). Detailed soil characteristics are not available for all of the features because of the differences in ways the features were found and/or investigated (Table 1). Feature 1 is a shallow circular pit with a rounded bottom (Figure 17). The sediment in Feature 1 consisted of sandy loam with charcoal, oyster shell and other molluscs. From the flotation of the sediment, a significant amount of carbonized plant matter was obtained. The carbon is generally small in size. The larger pieces were collected from carbon dating. Stratum IV had the same textural consistence as Feature 1. However the darker color matrix distinguished the feature from the Stratum IV. Feature 2 has an oblong shape in plan view with one portion that could not be clearly defined because surface characteristic of the sediment were not clearly distinguishable. The feature matrix has similar texture to the surrounding Stratum IV sediment.

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Figure 17. Feature 1

Feature 2 was not excavated, because it could not be relocated after it was initially mapped. It is not known if Feature 2 is cultural in origin. Feature 3 a pit feature that was discovered in the bank profile near Test Unit 5. The fieldwork in this area was limited to excavating the matrix from the feature (Figure 18). The pit feature appears to be located on a low shelf that could be the remnant of a larger cove. This cove might have originally extended along the northern shoreline toward the island. In the aerial photograph, a large cove that extends from the island along the north shoreline (Figure 4). This cove in the photograph is believed to be the same one where Feature 3 is located. Figure 18 show a profile of the low shelf landform and Feature 3. This low shelf is inundated at high tide.

The profile of through this low shelf consists of three strata. The upper most strata, which ranges in thickness from 8 to 14 cm, consists of dark organic rich sandy loam sediment. The organic matter is highly decomposed. The stratum is not as dense or as hard to dig through as the saltmarsh root mat (Stratum IA). The low shelf position in the intertidal zone permits a sparse amount of saltmarsh grasses to grow on the

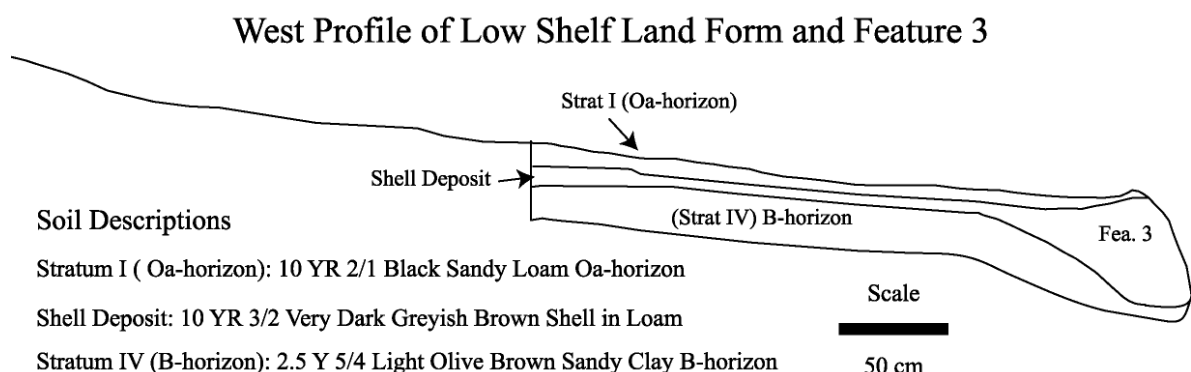


Figure 18. West profile of low shelf landform and Feature 3

landform. Being in the intertidal position could allow for tidal flat deposition to occur on the shelf landform. This stratum is classified as an Oa-horizon because of the above mentioned soil horizon characteristics. The next stratum is a thin shell midden deposit. The midden ranges in thickness from 5 to 10 cm. Feature 3 appears to originate in the shell deposit and extend into the underlying stratum. The matrix of Feature 3 consists of fragmentary oyster shell and loam sediment. Stratified deposits within Feature 3 were not visible in the feature's profile or during the excavation of the pit.

The shell matrix in both the Feature 3 and the sheet midden has a similar consistency. The shell in this portion of the midden near Feature 3 is highly fragmentary. The shell appears to be more broken up than in the other portions of the midden encountered in the test units and bank profile. The shell midden in this portion of the site contains less carbonized wood and nut fragments than in the shell midden deposit encountered in the test units. The sediment within the shell matrix is a loam. This shell matrix is not believed to correlate with the shell midden encounter in Test Unit 1, 2, 3, 5, 6, and 7 (Stratum II). The stratum below the shell matrix is a sandy clay. The soil is lighter in color than the overlying horizon suggesting this stratum is the zone of illuviation. This stratum is classified as a B-horizon. This soil horizon appears to correlate with Stratum III encountered across the rest of the site.

Feature 4 was recognized as a concentration of oyster shell, artifacts and dark sediment exposed at low tide that appears to be surrounded by Stratum IV. More descriptions of the soil and sediment characteristic for Feature 4 are not available.

Features 5 and 6 have similar characteristics. Both Feature 5 and 6 are large oblong pits filled with oyster shell and dark organic sediment (Stewart n.d.: 108).

Stratum IV sediment appears around the features. One of the features had “small oval pockets” range from 15 to 20 cm in diameter, which appear occasionally along edge of the large oblong feature (Stewart n.d.: 108). The sediment in the small features is reddened suggesting it is possibly burned (Stewart n.d.: 108). Shell and dark colored organic sediment was also observed in these small oval features (Stewart n.d.: 108). These smaller associated features may have been postmolds around the large feature. The Holland Point property manager remarked that he had given permission to someone to dig up another large shell filled pit near the island several years ago.

Features 1, 2, 4, 5, and 6 all have been clearly truncated by shoreline erosion. The stratum from which these features originated at cannot be determined; thus these features and their associated cultural material as well as radiocarbon dates cannot be correlated with a specific stratum.

#### 4. Soil Profile in the Three Agricultural Fields

The soil profiles in the three tilled fields to the west of the shell midden portion of the site can be correlated with strata in the shell midden area of the site. Two split spoon auger tests were placed in Field 1 (Figure 19). The upper stratum in Auger Test 1 consists of a silty clay loam (10YR 3/3 dark brown). This stratum is 12 cm thick. The homogenized nature of the sediment texture and color combined with its abrupt and smooth boundary with the subsoil indicates that the upper stratum is a plowzone (Ap-horizon). The underlying silty clay soil horizon is lighter in color (10YR 5/8 yellow brown). The soil structure of this underlying stratum is weakly developed subangular

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blocky. These characteristics indicate that it is a B-horizon. Auger Test 2 has a profile similar to Auger Test 1. An Ap-horizon (10YR 3/3 dark brown) overlies a B-horizon (10YR 5/8 yellow brown with 5% 10YR 5/2 grayish brown mottles) in Auger Test 2. The Ap-horizon is 22 cm thick. The B-horizon in Auger Test 2 is different in three ways from the B-horizon in Auger Test 1. First, the B-horizon in Auger Test 2 has moderately well developed, subangular blocky soil structure compared to weak ped development in the B-horizon from Auger Test 1. Based on in-field comparisons, the B-horizon in Auger Test 2 is slightly less sandy than the Auger Test 1's B-horizon. The Auger Test 2's B-horizon has a limited amount of mottles which are absent in the other auger test. The development of mottling suggests the drainage conditions are different in front and behind of the ponds in Field 1. Auger Test 1 is located on one of the Matapeake and Mattapex silt loam ridges that are oriented across Holland Point. Auger Test 2 is located lower trough-like area in the field. After a rain the sediment in the portion of the field behind the ponds was more saturated with water than the soil in front of the ponds. In general, the soils in all of the fields after a rain are pretty muddy.

A soil profile was recorded from the bank cut along the northern edge of Field 2 and 3. The upper most stratum in the Field 2 consists of a silty loam (2.5Y 4/4 olive brown). The horizon is 20 cm thick. The horizon has a homogenized color as well as an abrupt and smooth boundary with the underlying stratum indicating that it is a plowzone (Ap-horizon). The next stratum is a loam that is lighter in color (10YR 4/6 dark yellowish brown) than the overlying plowzone. This stratum is roughly 5 cm thick. The lighter color indicates that the stratum is a B-horizon. The third stratum from the top has a similar color as the B-horizon, but can be distinguished on the basis of a textural

difference. The third stratum has a slightly higher sand content than the overlying stratum. This stratum is also a B-horizon (10YR 4/6 dark yellowish brown).

Field 3 has a similar profile as Field 2. The upper most stratum in Field 3 is a fine sandy loam (2.5Y 4/2 dark grayish brown) with an abrupt and smooth boundary indicating that the stratum is a plowzone (Ap-horizon). The plowzone is 20 cm thick. Second horizon is lighter in color than the plowzone indicating that the stratum is a B-horizon. A subdivision in the B-horizon into a B1-horizon (2.5Y 5/4 yellowish brown) and B2-horizon (2.5Y 5/6 yellowish brown) based on a slight textural change was apparent. The B1-horizon is 25 cm thick. The B2-horizon stratum has a slightly higher sand content than B1-horizon.

The stability of the land surface at the Holland Point Farm allows for soils encountered in the three plowed fields to be correlated with soils under the saltmarsh in the shell midden portion of the site. The landform at Holland Point is interpreted as being in an upland position in topographic sequence because it has not been subjected to Holocene-age alluvial deposition. Limited amount of slope wash from slightly higher positions on the landscape might be responsible for colluvial deposition in lower areas. There could also be limited aeolian deposition at Holland Point. Figure 20 shows the correlation of the soils between the shell midden region of the site and the three plowed fields. The plowzone in all three fields reflects the mixing of sediment from the underlying B-horizon with the sediment on the surface. The surface sediments prior to plowing could have been correlated with the Stratum III in the shell midden portion of the site. The plowzone in the agricultural fields can be correlated with Strata III and IV



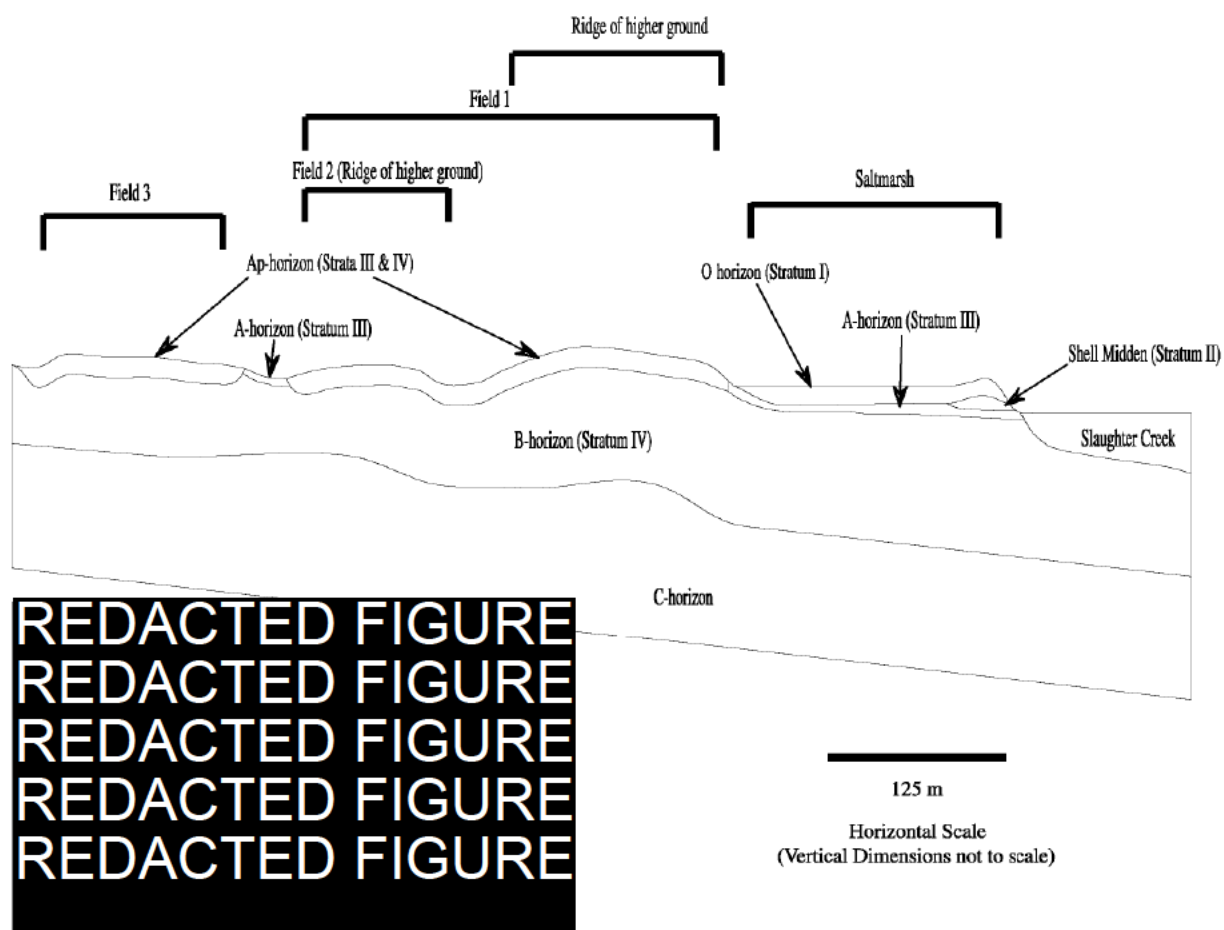


Figure 20. Correlation between shell midden and plowed fields

in the shell midden portion of the site. The B-horizons in the fields can be correlated with Stratum IV in the shell midden portion of the site.

### C. Cultural Stratigraphy

In this section, the relationship of the natural stratigraphy is compared to the vertical distribution of artifacts in: (1) the shell midden portion of the site near the tip of Holland Point; (2) Features 1 through 6 not associated with the test unit excavations; and (3) the plowed fields. The majority of the analysis focuses on the deposits encountered in the test units. The chronological age of the cultural deposits is evaluated. Vertical distributions of artifacts and ecofacts as well as the point of origin of features are used to determine the integrity of the cultural deposits. The degree of vertical displacement of artifacts in the deposits is also evaluated. Using diagnostic artifacts to define analytical contexts assumes that artifact chronologies developed in the region are valid for this study.

#### 1. Shell Midden Portion Area

Artifacts were primarily recovered from Stratum II (shell midden), Stratum III (A-horizon), and the upper portion of Stratum IV (B-horizon). Projectile points were not recovered from any excavated context. Projectile points have been found in specific strata of the bank profile along the shoreline and on the surface along the beach. Early Archaic through Late Woodland projectile points have been found along the shoreline.

Projectile points will be discussed in more detailed below. Appendix B contains morphological descriptions of the projectile point types, their relationships to historic types, and their relative date ranges.

Diagnostic artifacts recovered during the excavation are limited to Native American ceramics. Figure 21 depicts the ceramic ware/types by excavation level from the seven test units and three column samples. A total of 86 g of ceramics were recovered during the cleaning up of Test Unit 2, which could not be clearly associated with Stratum II or Stratum III. This lot of sherds is not included in Figure 21. Also one sherd weighing less than a gram was not included in Figure 21 because it was recovered from the A-horizon of Test Unit 4, which could not be correlated with A-horizon across the rest of the site. Appendix A contains a morphological description of the ceramic ware/types, their relationships to historic ceramic types, and their relative date ranges.

The ceramics recovered from Stratum II are predominately Late Woodland. Ceramic Type I A, I C, and II A can be classified as Townsend series ceramics, which date to the Late Woodland. The traditional date range for Townsend ceramics is 1050 to 350 B.P. Four sherds of Type I C with incised decoration are comparable to Rappahannock Incised. The traditional date range for Rappahannock Incised is 1050-665 B.P. Griffith (1977) originally proposed that Rappahannock Incised dates to the early part of the Townsend sequence before 665 B.P.. Yet several calibrated dates for Rappahannock Incised from sites in Virginia do not fall within the traditional date range for this historic type (see Appendix A). Additional calibrated dates for Rappahannock Incised from a site on Kent Island, Maryland post-date 665 B.P. The two assays from

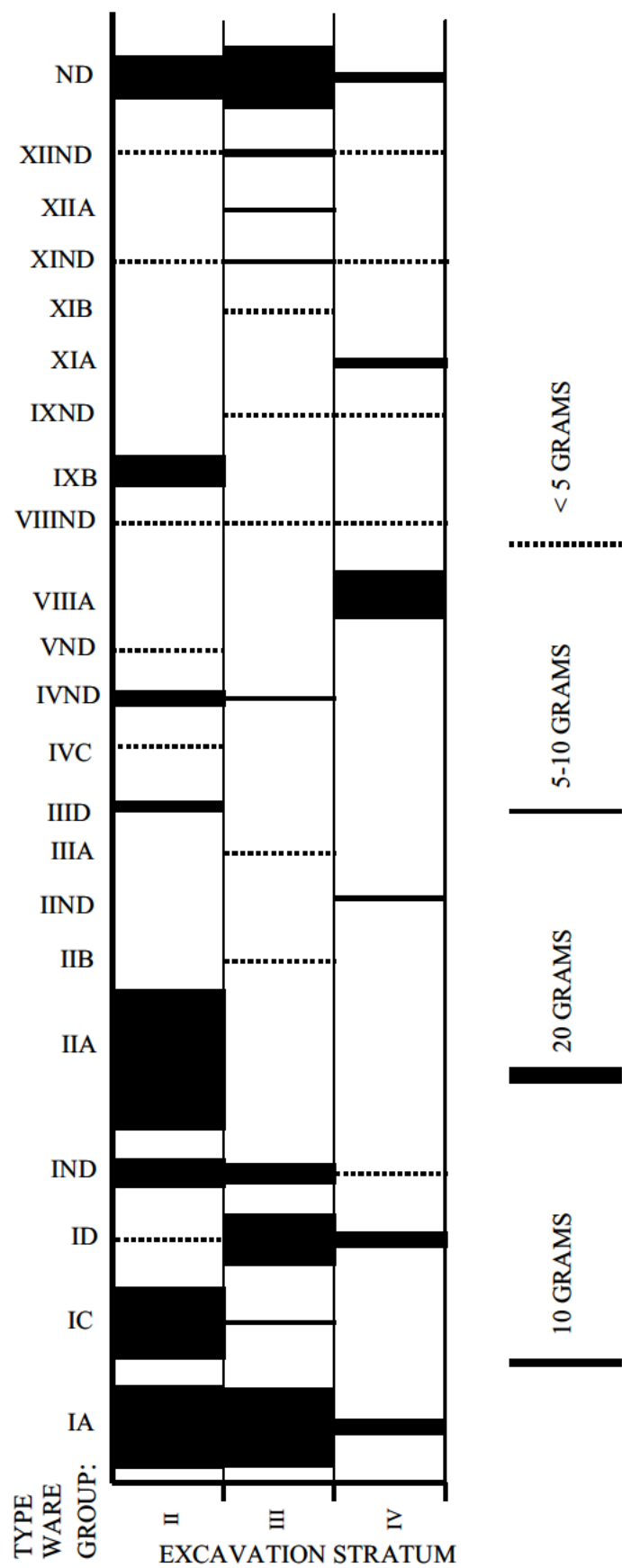


Figure 21. Ceramic ware/type by stratum from excavated contexts

Kent Island have two-sigma date ranges of 660-510 B.P. and 670-540 B.P. (Davis, et al. 2002: 276). The two dates from the same feature at 18QU326 provide convincing evidence that Rappahannock incised ceramics date to late Late Woodland contrary to Griffith's chronology for Townsend ceramics.

Early Woodland ceramics from the shell midden consist of Type IX B (Wolfe Neck) and Type VIII ND (Dames Quarter). Only one sherd of Type IX B pottery was found in the lower level of the shell midden in Stratum II. Type VIII ND ceramics are limited to one sherd weighing less than a gram found in the Test Unit 5. The shell midden in this portion of Test Unit 5 was not divided into an upper and lower level. The Type VIII ND sherd could have come from anywhere in the shell midden. The minor quantity of these earlier ceramics in the shell midden reflects mixing from the underlying stratum.

A triangular shaped projectile point (Type I) was found in the shell midden deposit in the bank profile along the shoreline. Type I projectile points are diagnostic to the Late Woodland (Custer 2001: 84-88; Ritchie 1971; Wall, et al. 1996a: 60). Type I projectile points are the most abundant arrowhead/spearpoint type from the shoreline surface collected material (Table 14). The recovery of triangular shaped projectile points from contexts dating to the Late Archaic and Middle Archaic in the Middle Atlantic region has shown that this projectile point style is not strictly a Late Woodland phenomenon (Custer 2001: 84-88; Katz 2000; Stewart 1998d; Stewart and Cavallo 1991). The projectile point and the Late Woodland ceramics associated with the shell midden suggest a date range from 1050 B.P. to 350 B.P. for this stratum. Early colonial artifacts consists of two British halfpennies were recovered from the shoreline. The

| <b>Projectile Point Morphology Type</b>           | <b>#</b> | <b>Projectile Point Morphology Type</b>     | <b>#</b> |
|---------------------------------------------------|----------|---------------------------------------------|----------|
| Type 1: Triangular projectiles                    | 100      | Type 16: Bare Island-variant                | 3        |
| Type 2: Susquehanna Broadspear                    | 1        | Type 17: Bare Island-variant                | 1        |
| Type 3: Jack's Reef Corner Notched                | 3        | Type 18: Savannah River-like                | 1        |
| Type 4: Basal-Notched                             | 1        | Type 19: Bare Island variant                | 1        |
| Type 5: Perkiomen-like                            | 1        | Type 20: Piney Island/Poplar Island variant | 2        |
| Type 6: Unnamed stem/notched type                 | 1        | Type 21: Unnamed Broadspear                 | 1        |
| Type 7: Fishtail                                  | 1        | Type 22: Side Notched/Selby Bay-like        | 7        |
| Type 8A: Poplar Island/Rossville/Piscataway       | 10       | Type 23: Unnamed side-notched               | 4        |
| Type 8B: Small Poplar Island/Rossville/Piscataway | 4        | Type 24: Selby Bay-like                     | 3        |
| Type 9: Small unnamed side notched                | 1        | Type 25: Side-Notched variant               | 2        |
| Type 10: Teardrop                                 | 5        | Type 26: Unnamed SN/expanding stemmed       | 4        |
| Type 11: Poplar Island/Rossville-like             | 6        | Type 27: Hellgramite-like                   | 1        |
| Type 12: Poplar Island/Piscataway-like            | 6        | Type 28: Unnamed stemmed type               | 3        |
| Type 13: Vosburg-like                             | 5        | Type 29: Jack's Reef Pentagonal             | 2        |
| Type 14: Fox Creek-like                           | 3        | Type 30: Poplar Island-like                 | 1        |
| Type 15A: Bare Island                             | 6        | Type 31: Unnamed expanding stem             | 1        |
| Type 15B: Bare Island/Piney Island variant        | 4        | Type 32: Unnamed ear-notched type           | 1        |
| Total:                                            | 158      | Total:                                      | 38       |

Table 14. Total number of projectile points classified into morphological types from the shoreline context

coins suggest that the shell midden was exposed during early historic times prior to the formation of the saltmarsh over the shell midden. Since the coins were not found in the shell midden they cannot be directly associated with Native American occupations at the site. The coins are not felt to be representative of Contact Period occupations by Native Americans at Holland Point.

The ceramics recovered from Stratum III during the test unit excavations predominately date to the Late Woodland (Figure 21). Ceramic Types I A, I C, II B, and III A can be classified as Townsend series ceramics. Type I D is similar to Yeocomico Cord Marked and Sullivan Cord-Marked ceramics. Type I D probably dates to the Late Woodland Period. The limited amount of Middle Woodland ceramics (Type XI B and Type XI ND) and Early Woodland ceramics (Type VIII ND) recovered from the excavations of the test units indicate that the A-horizon does not strictly date to the Late Woodland. Type XI B and Type XI ND can be classified as a variant of Hell Island ceramics. The traditional date range for Hell Island is 1350-950 B.P. (Custer 1989: 176). Recent calibrated radiocarbon dates at the Leipsic Site for Hell Island ceramics suggests that this type could date to as early as 1850 B.P. (see Appendix A). The paste characteristics of Type VIII ND are similar to Dames Quarter ware. The traditional date range for Dames Quarter is 2950-2650 B.P. (Artusy 1976: 2).

A total of five Late Woodland (Type I A) and Early Woodland (Types VIII A and IX A) sherds were collected from Stratum III in the bank profile along the shoreline during 1998 (Figure 21). Type VII A is identical to cord marked Dames Quarter ware. Type IX A is identical to cord marked Wolfe Neck ceramics, which have a date range from 2650-2350 B.P. The Late Woodland through Early Woodland ceramics from the

Stratum III in the bank profile and the test units suggest that the stratum dates from 2950- 300 B.P.

Projectile point styles diagnostic to the Late Woodland through Early Woodland periods were found along the shoreline. Triangle points (Type I), Jack's Reef Corner-Notched points (Type 3), Jack's Reef Pentagonal points (Type 29), Rhyolite Selby Bay-like points (Type 22), Selby Bay-like points (Type 24), and the Hellgramite-like (Type 27) point could all date to the Woodland Period (see discussion later in the chapter concerning the relative age of the projectile points and Appendix B).

Ceramics dating from the Late Woodland through Early Woodland periods are associated with Stratum IV. A drop off in the quantity of ceramic Type I A (Townsend) is apparent in Stratum IV. The ceramics associated with the Middle Woodland consist of Type XI B, cord marked Hell Island ceramics. Type VIII A (Dames Quarter) is the predominant ceramic type by weight associated with Stratum IV.

A total of five Late Woodland and Early Woodland sherds were collected in 1998 from Stratum IV in the bank profile along the shoreline (Figure 22). Type I A (Townsend) and IV A ceramics dated to the Late Woodland Period. Type IV A ceramics are similar to fabric impressed Killens and fabric impressed Currioman ceramics, which have a calibrated date range of 910-560 B.P. (see Appendix A). Type VIII A (Dames Quarter) and IX A (Wolfe Neck) ceramics date to the Early Woodland. The Type IX A sherds found in the bank profile from both Strata III and IV have similar paste and color characteristic as well as thickness that suggest the body sherds could have come from the same vessel. The sherds could not be refitted, but if they were indeed from the same vessel this would suggest that the two strata are



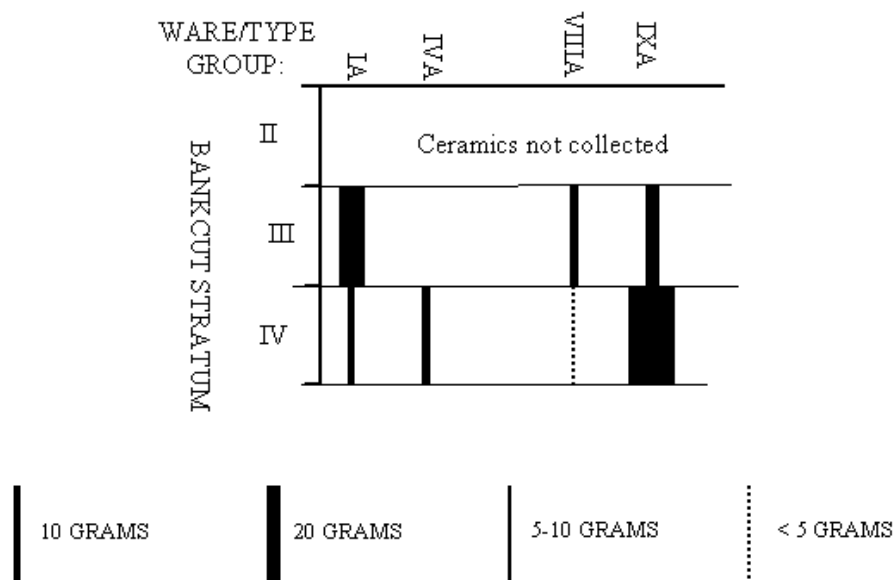


Figure 22. Ceramics recovered from the bank profile in 1998; Note that the Strata are same as the Strata in Figure 21

laid down very close in time. The ceramics from the bank profile in Stratum IV corroborate the proposed Late Woodland to Early Woodland date range for Stratum IV that was suggested by the ceramics recovered from the unit excavations.

Several approaches to the analysis of the cultural material from the unit excavations provide insight into the degree of vertical movement of cultural materials between the natural strata. Attempts to refit artifacts from the excavated contexts provide a means to assess the degree of disturbance between analytical contexts (Villa 1982). Refitting of artifacts indicates that cultural material has not been mixed between strata (Table 15). Artifacts have moved vertically within the shell midden. Mending of

| TYPE OF ARTIFACT                | NUMBER OF INDIVIDUAL CASES OF REFITTING | STRATUM/LEVELS                                                                              |
|---------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------------|
| Bones (excluding recent breaks) | 9                                       | Stratum II (3 cases); Stratum II Level 2 (3 cases); Stratum III (3 cases)                   |
| Ceramics                        | 9                                       | Stratum II (5 cases); Stratum II Level 1- Stratum II Level 2 (3 cases); Stratum IV (1 case) |

Table 15. Summary of artifact refitting from excavated contexts

sherds between upper and lower portions of the shell deposit suggests that the midden might not be stratified.

The recovery of smaller size artifacts in the archaeological deposits can be used to assess vertical displacement of artifacts (Dunnell and Stein 1989: 37). A debate in Northeastern shell midden archaeology between Brennan (1977) and Sanger (1981) has centered on the degree of downward artifact movement and the association of artifacts with charcoal in shell middens. The porous nature of shell midden matrix facilitates the downward movement of artifacts in the deposit. The following classes of smaller artifacts, and ecofacts are used to evaluate the movement of cultural material through the profile: debitage less than 1cm in diameter, impressed odostome (*Boonea impressa*), and historic artifacts. Debitage is a better indicator of vertical movement because it is not as prone to post-deposition breakage as ceramics or bones. *B. impressa* are a small gastropod ranging in size from 1 mm to 7 mm that attaches to oysters (Russo 1991). *B. impressa* is a species prone to vertical displacement because of their size and the porosity of the shell midden matrix (Claassen 1998: 149; Claassen and Whyte 1995:

70). The position of historic artifacts is also an indicator of vertical displacement. The assumption is made that historic artifacts are introduced to the top of the shell midden.

Only one piece of small debitage ( $\geq 1$  cm in diameter) was recovered from the column samples. This piece was found in the lowest level of the shell midden in the column sample associated with Test Unit 1. This may suggest vertical movement in the shell midden. Figure 23 presents the vertical distribute of small debitage throughout the

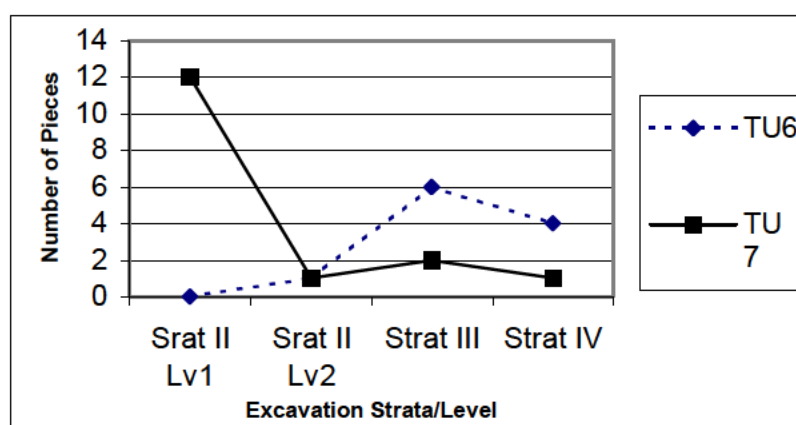


Figure 23. Amount of debitage less then 1 cm in diameter from Test Unit 6 and 7

archaeological deposit in Test Unit 6 and 7. The shell midden was roughly separated into an upper and lower level during the excavations of Test Unit 6 and 7. The recovery of twelve pieces of small debitage in the upper portion of the midden in Test Unit 7 and 1 piece in the lower portion of the midden in Test Unit 7 suggest little movement of debitage downward in the shell deposit. Collection methods were not consistent for the excavation of both the midden deposits in Test Unit 6 and Test Unit 7. All sediment was screen through at least  $\frac{1}{4}$  inch mesh. Roughly equal amounts of sediment were floated from both the lower levels of the midden in Test Unit 6 and Test Unit 7. In addition, a

sample of sediment from the second level of the shell midden in Test Unit 6 was screened through window screen mesh and all the sediment was brought back to the lab for analysis. The presence of only one smaller piece of debitage in Test Unit 6 Strat 2 Level 2 suggests that smaller pieces of debitage have not moved downward in the shell deposit. The increase in the amount of small debitage in Stratum III suggests that the artifacts have been vertically displaced through the shell midden and accumulated in the underlying soil.

The vertical distribution of small debitage in Test Unit 5 suggests that artifacts are moving through Stratum IV. Figure 24 shows the vertical distribution of small debitage in comparison to larger size debitage. The data suggests that in this portion of the site there was greater movement of smaller artifacts through the profile. Test Unit 5 is located on a high portion of site where the percolation of water through profile would have been greater than on lower areas of the site near Test Unit 1, 2, 3, 4, 6, and 7. This may account for the movement through the profile. Trampling and more foot traffic could also account for the downward movement of artifacts.

Uniform recovery methods were used to collect *B. impressa* from the light fraction samples in the column samples associated with Test Unit 1 and 2. The vertical distributions of *B. impressa* in both column samples indicated concentrations in the upper and middle levels of the shell midden (Stratum II) (Table 16). The data argues against post-depositional downward movement of artifacts and ecofacts in the shell midden deposit.

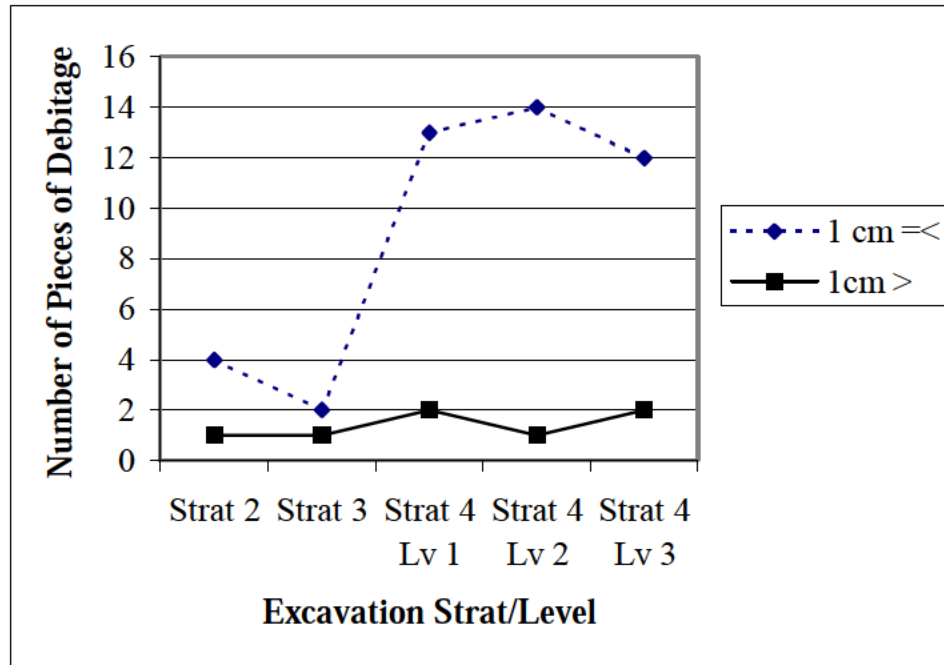


Figure 24. Comparison of debitage by size with depth in Test Unit 5

| Lot# | Unit | Stratum | Level | Impressed odostome (Boonea impressa) | Lot# | Unit | Stratum | Level | Impressed odostome (Boonea impressa) |
|------|------|---------|-------|--------------------------------------|------|------|---------|-------|--------------------------------------|
| 115  | 1    | 1       | 1     | 0                                    | 127  | 2    | 1       | 1     | 0                                    |
| 116  | 1    | 1       | 2     | 0                                    | 128  | 2    | 2       | 2     | 1                                    |
| 117  | 1    | 2       | 3     | 8                                    | 129  | 2    | 2       | 3     | 12                                   |
| 118  | 1    | 2       | 4     | 3                                    | 130  | 2    | 2       | 4     | 1                                    |
| 119  | 1    | 3       | 5     | 2                                    | 131  | 2    | 2       | 5     | 1                                    |
| 120  | 1    | 4       | 6     | 0                                    | 132  | 2    | 3       | 6     | 0                                    |
|      |      |         |       |                                      | 133  | 2    | 4       | 7     | 0                                    |
|      |      |         |       |                                      | 134  | 2    | 4       | 8     | 0                                    |

Table 16. Impressed odostome by level in column samples

Historic artifacts consisting of redware, stoneware, and brick have only been recovered from Stratum II. A total of ten historic artifacts weighting 48.49 g have been recovered from the shell midden. Figure 25 shows the vertical distribution of historic artifacts from Test Unit 6, Test Unit 7 and Test Unit 5 (SE Quadrant) where the shell

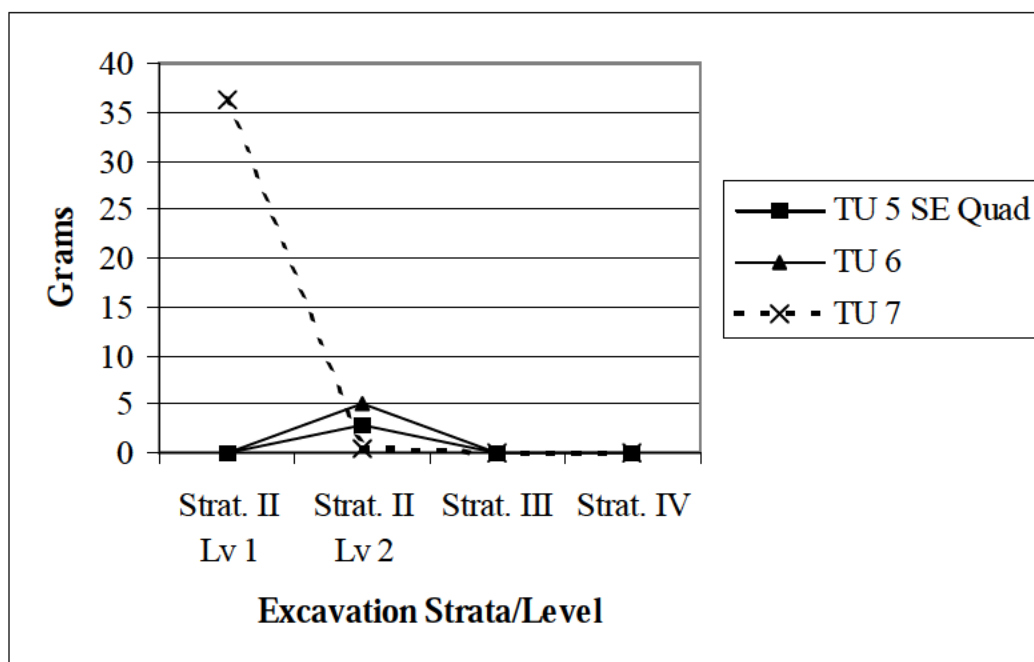


Figure 25. Weight of historic ceramics by excavation strata/level

midden was divided into two levels. One brick fragment was found in the upper portion of the shell midden in Test Unit 7. Brick was used in the past as a footer for duck hunting blinds on the saltmarsh (Darrin Lowery, personal communication 7/20/2000). The brick found in Test Unit 7 could be from an old duck blind footer. Several smaller pieces of historic ceramic and brick were recovered from the lower levels of the midden in Test Unit 5 and 6. The small amount of historic ceramics in the lower level of the shell midden and their absence in Strata III and IV reflect a limited downward vertical displacement of artifacts.

The evidence from analyzing the vertical distribution of smaller artifacts and ecofacts suggest limited movement of material through the profile, especially in the shell matrix. Several factors may account for the relative lack of mixing between strata. The overall low topographic relief of the Holland Point landform would inhibit

downward drainage of water through the profile. The moderately well to somewhat poorly drained conditions hypothesized at the site prior to inundation would also inhibit the downward movement of water. The rise in the ground water table at Holland Point caused by sea level rise induces more horizontal movement of ground water. The porous shell midden matrix can act similar to an aquifer allowing water to move lateral during tidal fluctuation.

The depth at which features originate should reflect the actual ground surfaces. Four postmolds found in the upper portion of B-horizon in Test Unit 1 probably originated in the A-horizon (Figure 14). This indicates that Stratum III is a former ground surface.

## 2. Features 1 through 6

Table 17 lists the temporally diagnostic artifacts associated with each feature. Internal stratigraphy was not visible within any of the features at the site. The vertical position of artifacts in the features was only documented for Feature 3. The other features were either too small or controlled field methods were not used to document the context of the features.

Feature 1 contains a small sherd of Type VIII B (Dames Quarter), which suggests an Early Woodland date for the burial. Cultural material was found from Feature 2. Feature 3 contained an assortment of Native American and historic artifacts. The Native American ceramics range from the Late Woodland (Type I ND) to Early Woodland (Type VIII A) periods. Two historic timbers were oriented horizontally in

| <b>Features</b> | <b>Diagnostic Artifacts</b>                                                                                                                                                         | <b>Chronological Time</b> | <b>Description of Feature</b> |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------------------------|
| 1               | Type VIII B (Dames Quarter) (2.61 g); Beta-160461; 1730-1550 Cal B.P.                                                                                                               | Middle Woodland           | Burial                        |
| 2               | Not Excavated                                                                                                                                                                       | NA                        | Charcoal Stain                |
| 3 (Lot 111)     | Type I ND (1.97 g); VIII A (2.53 g); XIII ND (1.55 g, small rim sherd); ND (3.07 g), Lumbered Historic Timbers, Brick, Iron                                                         | Historic                  | Shell Filled Pit feature      |
| 4 (Lot 110)     | Type I B (Vessel Lot IB-4: Art# 110.21 and IB-5; Art# 110.20; 298.97g), Type III A (Vessel Lot III A-1; Art# 110.19; 32.33 g.; Beta-159993; 1240-1040 Cal B.P., 1030-1000 Cal B.P.) | Late Woodland             | Shell Filled Pit feature      |
| 5               | Mockley Pottery*; This one is observed by Lowery                                                                                                                                    | Possible Middle Woodland  | Shell Filled feature          |
| 6               | One from RMS notes                                                                                                                                                                  | Possible Middle Woodland  | Shell Filled feature          |

Table 17. Features with temporally diagnostic artifacts, \*note that Mockley ceramics were only observed in the field associated with Feature 5 by Darrin Lowery prior to 1998

the feature above the brick and Native American ceramics. The brick was found near the base of the feature. The corroded iron object (possibly a nail) was found while screening the feature matrix. The stratigraphic position of the brick and timber indicates that the Feature 3 is historic in origin. After discovering the brick in the feature, the excavation of the feature was terminated.

Feature 4 contains a large amount of Late Woodland ceramics. Type I B and III A are comparable to Rappahannock Fabric-Imprinted ceramics, which range in age from 1050 B.P. to Contact (c. 350 B.P.) (Griffith 1977; Griffith 1980; Griffith 1982). The ceramics from Feature 4 indicate that feature dates to the Late Woodland Period. Darrin Lowery (personal communication 7/20/2002) indicates that Mockley ceramics



were observed in association with Feature 5. Mockley ceramics would imply a Middle Woodland age for Feature 5. Diagnostic artifacts were not found in association with Feature 6. R. Michael Stewart, Darrin Lowery, and Norman Brady observed this feature in 1998. The feature is similar in size and shape to Feature 5.

### 3. Agricultural Fields

A limited amount of diagnostic artifacts were found in Field 1. Field 2 and 3 did not contain any temporally diagnostic cultural material. Native American diagnostics found in Field 1 consist of a contracting stem projectile point (Type 33, Figure 26C), a weakly side-notched/expanding stem (Type 26, Figure 27A) and a small sherd of Type I (Townsend ware). The exact location of the Townsend sherd was not recorded. The sherd was found in the portion of Field 1 south of the ponds. The Type 33 projectile point could be classified as either a Chesapeake Diamond or a variant of Poplar Island (see Appendix B). Chesapeake Diamonds are believed to date to the Archaic (Hranicky 1994: 35; Hranicky and Painter 1989: 48). However, the chronological information for the Chesapeake Diamond type is based on surface finds in Virginia (Custer 2001: 52) and should be considered tentative. Poplar Island has a broad time range dating from Middle Archaic to the end of the Middle Woodland (Custer 2001: 43, 90-112). Custer (2001: 43) uses Poplar Island as the “Major Type” name for other morphologically similar varieties of contracting stem points, which have been given different “type” names in the projectile point typology literature.

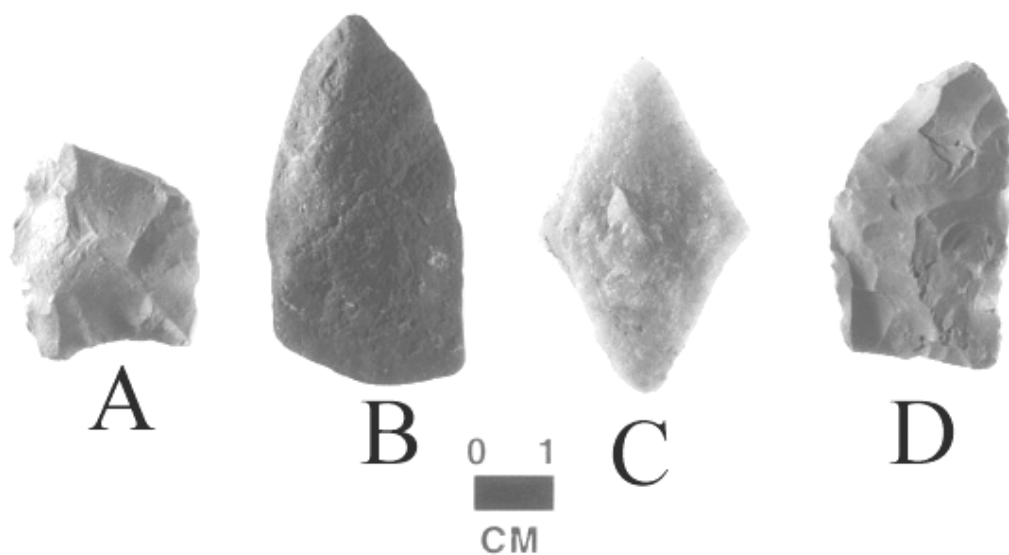


Figure 26. Projectile points, A: Type 14 (Art# 2.393), B: Type 14 (Art# 2.133), C: Type 33 (Art# 107.11), D: Type 14 (Art# 2.1065)

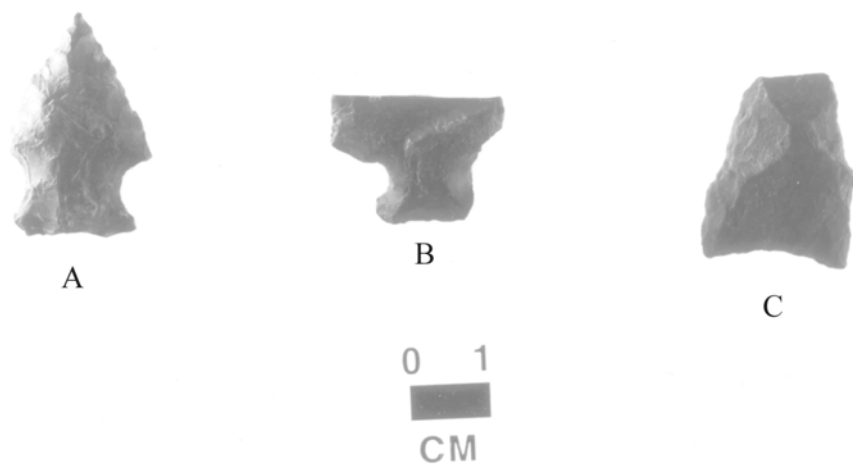


Figure 27. Projectile points, A: Type 26 (Art# 106.6), B: Type 4 (Art# 2.504), C: Type 1 (Art# 2.507)

Type 26 has a morphology that is similar to the following historic projectile point types: Halifax, small variant of Brewerton Side-Notched, Pequea, and Vernon. Custer (2001: 40) has recently grouped this morphological style into the Pequea “Major Type”. One of the defining morphological attributes of the Pequea type is the expanding stem, which in some examples can appear similar to shallow side notching. Custer (2001: 62, 60) refers to Vernon and Halifax types as “Minor Types” that were historically defined based on excavation in the Potomac River Valley (Stephenson and Ferguson 1963) and North Carolina (Coe 1964). Both Halifax and Vernon types are narrow-bladed forms that became engrained in the regional literature as traditional Late Archaic types (Dent 1995: 178-179). The analysis of the vertical distribution of the Pequea “Major Type” from the Piney Island Site in southeastern Pennsylvania has confirmed that the Pequea type and its related “Minor Types” have a broad time range from the late Middle Archaic to end of the Middle Woodland (7450-1050 B.P.) (Custer 2001: 90-112).

The Type 26 point is also grossly comparable to the Brewerton Side-Notched historic type. The Brewerton Side-Notched type is one of several side and corner notched varieties that have been published in the region’s archaeological literature (Custer 2001: 66). Generalized side-notch points in the Middle Atlantic Region have a broad time range from the Middle Archaic (c. 6000 B.P.) to the end of the Middle Woodland (c. 950 B.P.) (Custer 1996: 143-44; Custer 2001: 66, 90, Figure 30, Figure 33). Custer (2001: 66, 91-107) clearly demonstrates that generalized side-notched points that were once considered to be “diagnostic” of a particular temporal/cultural period can no longer be thought of this way. The recovery of stemmed and notched points from

Late Archaic and Early Woodland stratified contexts at 36SN220 on the main stem of the Susquehanna River in Pennsylvania corroborates the longevity of stemmed and notched points in the Middle Atlantic region (Miller 1998).

The two finished bifaces (Type 26 and Type 33) are morphologically similar to projectile point styles that date from the Middle Archaic to the end of the Middle Woodland Period. The Townsend pottery from the field suggests a Late Woodland date range of 1050 to 300 B.P. Historic artifacts dating from the late nineteenth century to the present are scattered throughout the field. The historic artifacts are generally concentrated in front of the pond where an older structure might have been located. The assemblage of diagnostic artifacts from Field 1 suggests a date range of possibly Middle/Late Archaic through Late Woodland periods (c. 350 B.P.) for Native American occupations. The historic artifacts suggest a date range from the post-Civil War era to present.

The early end of the date range for Poplar Island points (i.e. the Middle Archaic) is not considered to be an accurate reflection of the age these bifaces at Holland Point. There is an overall absence of Middle Archaic diagnostics in the Holland Point projectile point assemblage. Other more widely recognized Middle Archaic bifaces, such as bifurcated points that are more “diagnostic” of the Middle Archaic (Custer 1996:133-145), have not been found at Holland Point. The overall lack of more “traditional” Middle Archaic diagnostics suggests that Type 8A might not date to the Middle Archaic. Based on the co-occurrence of other diagnostic projectile points and ceramic types at Holland Point, Type 8A more likely dates from the Late Archaic to the end of Middle Woodland Period.

#### D. Interpretation of Radiocarbon Assays

The validity of the radiocarbon dates obtained from the archaeological deposits is analyzed in this section. In all, nine radiocarbon dates were obtained from material from the column samples associated with the Test Unit 1 and 2. Three assays are believed to be invalid because of their relative stratigraphic position to other assays and their location within the site's stratigraphy. The other radiocarbon dates corroborate the estimated date ranges for the strata based on the stratigraphy of diagnostic artifacts. Two radiocarbon assays are associated with two features.

A total of four radiocarbon dates obtained from the shell midden deposit provide corroborating evidence for the age of the shell midden (Figure 28 and Figure 29). Two (Beta-159984 and Beta-159985) out of three of the dates from the shell midden in the column sample associated with Test Unit 2 are valid dates for the deposit. The two dates from the upper portion and middle portion of the midden have a combined date range 780-660 Cal B.P., which falls within the Late Woodland. This combined date range encompasses the traditional date range for Townsend Ware. The 2-sigma calibrations for both Beta-159984 and Beta-15985 have an overlapping range between 670 B.P. and 750 B.P. Beta-159986 sample from the lower portion of the shell midden in Test Unit 2 is problematic because it predates the traditional date range for the Late Woodland Period by roughly a thousand years.

The only radiocarbon date (Beta-159990) from the column sample associated with Test Unit 1 in the shell midden is problematic. Beta-15990 sample from the lower

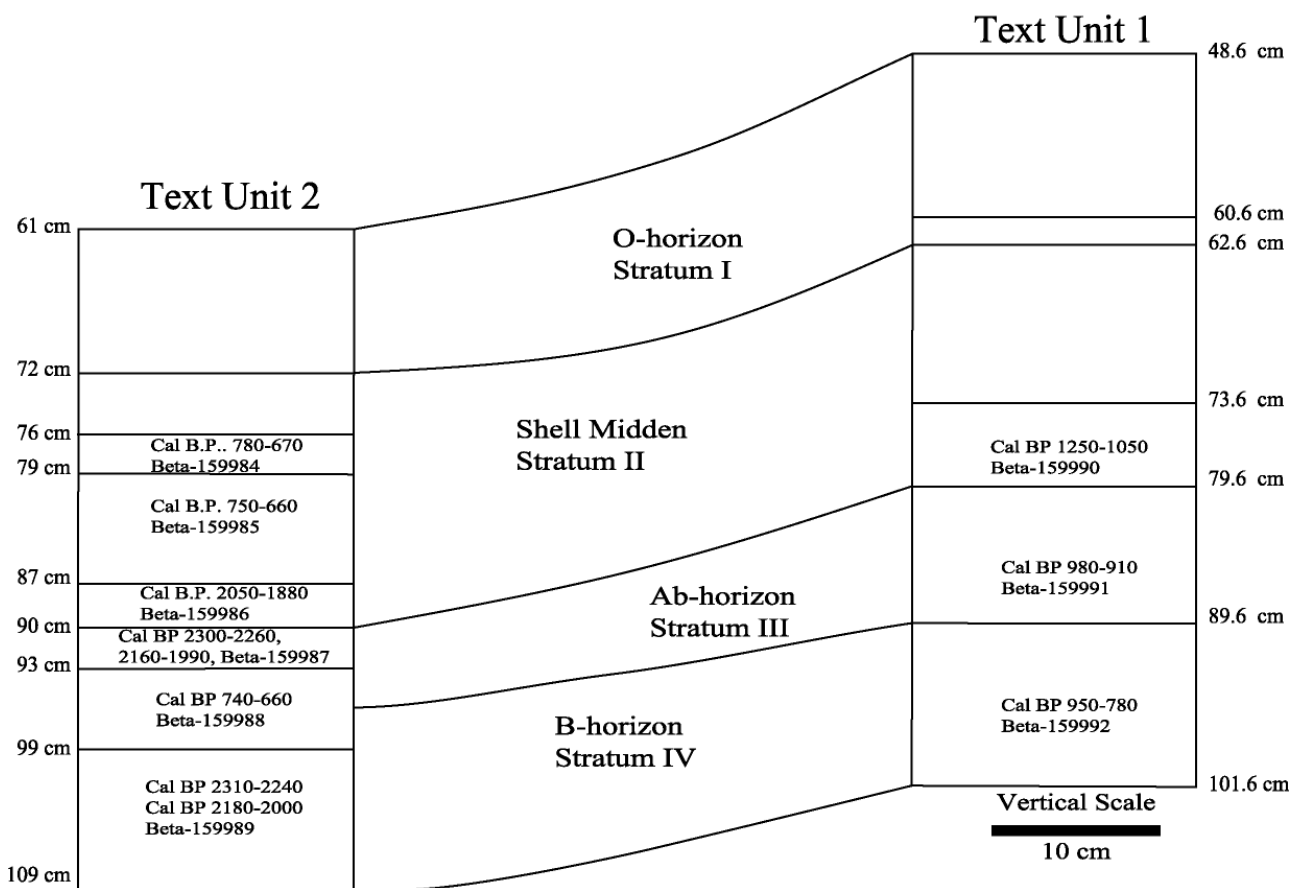


Figure 28. Stratigraphic correlation of radiocarbon dates from the column sample in Test Unit 1 and 2

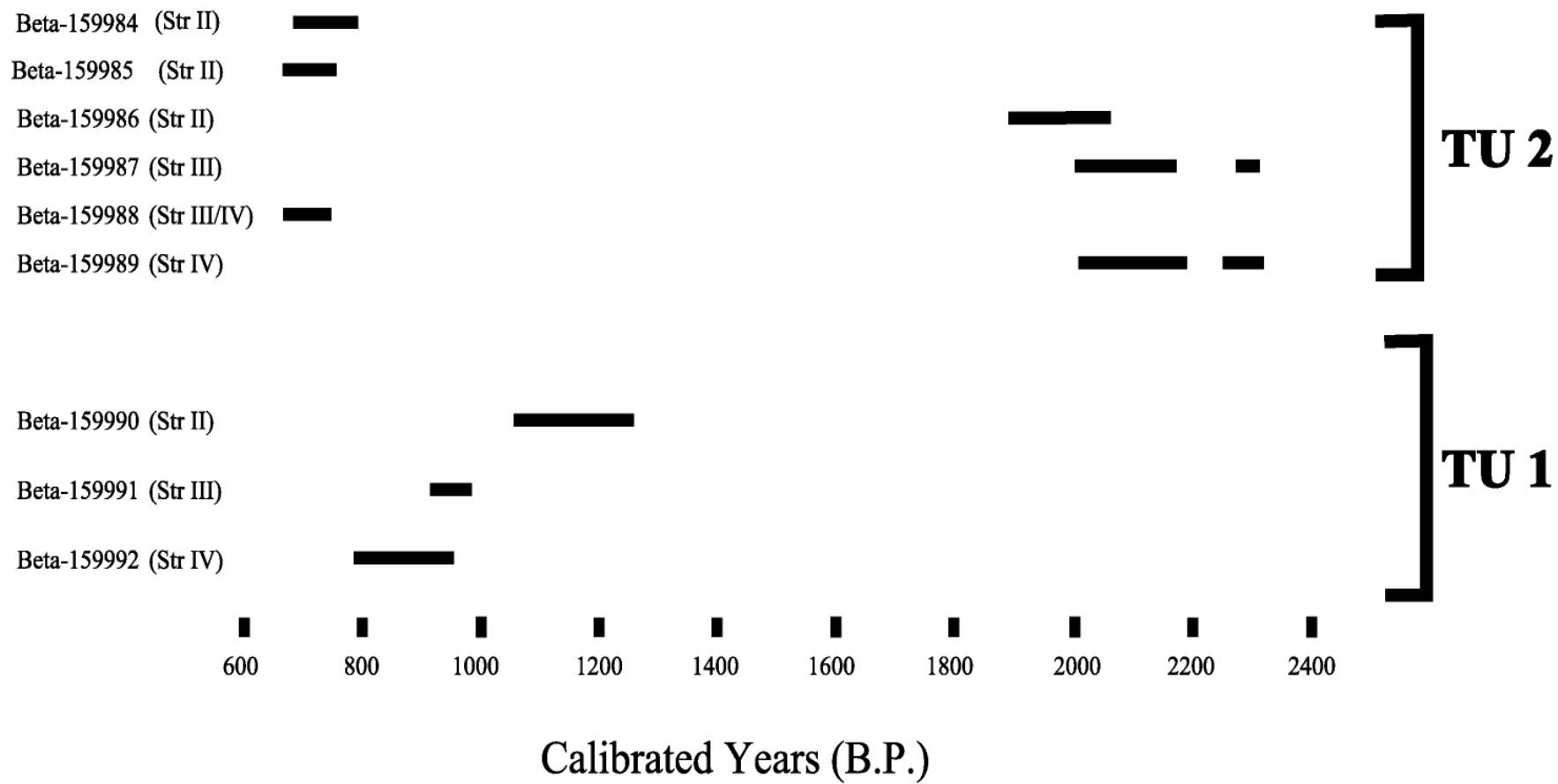


Figure 29. 2-sigma calibration for all nine radiocarbon dates

portion of the shell midden dates to the very beginning of the Late Woodland and the end of the Middle Woodland. The Beta-15990 assay is not a valid date because it is older than the two underlying assays (Beta-15991 and Beta-15992) from the same column sample. Bioturbation or trampling could have mix charcoal from the underlying stratum into the base of the shell midden. This could account for the old date range of Beta-15990.

An uneven dumping or discarding of oyster shells across Holland Point can also account for the horizontal variation in accumulation rates and radiocarbon dates between the two column samples. The shell midden in the south wall profile of Test Unit 3 and 6 contained a region where variations in shell orientation suggested a possible dumping episode. The deposition of shell reflects unique formation processes where rapid accumulation and irregular horizontal dispersal are common (Claassen 1991; Waselkov 1987: 143-145).

In the Ab-horizon (Stratum III), one radiocarbon date was obtained from the column samples associated with Test Unit 1 and 2. The two calibrated radiocarbon dates (Beta-159987 and Beta-159991) for the Ab-horizon do not have overlapping date ranges. The Holland Point landform is believed to be relatively stable ground surface implying that Stratum III might have accumulated over a large amount of time. The combined range of time represented by both Beta-159987 and Beta-159991 reflects the stability of the land surface.

A gradual and smooth boundary exists between the A-horizon (Stratum III) and B-horizon (Stratum IV). One date (Beta-159988) is associated with the interface between Strata III and IV; therefore Figure 28 depicts Beta-159988 being linked with



both strata. Beta-159988 is not internally consistent with the rest of assays from the column sample associated with Test Unit 2. The two overlying samples (Beta-159987 and Beta-159986) are younger than Beta-159988. The hickory nut fragment analyzed for Beta-159988 sample could have been from an overlying stratum or the radiometric date is inaccurate.

Two radiocarbon dates (Beta-159992 and Beta-159989) associated with Stratum IV do not overlap in their 2-Sigma date ranges. The combined date range for both assays is 2310-780 Cal B.P. This combined range spans the Middle Woodland to the early Late Woodland periods. Both assays help to bracket the date range for Stratum IV. The two radiocarbon dates are believed to be valid dates for the stratum.

Radiocarbon dates were obtained for two of the features. One radiocarbon date (Beta-160461) was obtained from Feature 1. The date range of 1730-1550 Cal B.P. for the assay falls within the Middle Woodland Period. This date is believed to be a valid age association for the burial. Residue from a reconstructed portion of a Rappahannock Fabric-Imprinted pot (Vessel Lot III A-1; Artifact Number 110.19) from Feature 4 was radiocarbon dated (Beta-159993). The date for the assay, which intercepts the calibration curve twice at 1240-1040 Cal B.P. and 1030-1000 Cal B.P., correlates with the range for Rappahannock Fabric-Imprinted pottery. The traditional date range for Rappahannock Fabric-Imprinted ceramics is from 1050-350 B.P. (Griffith 1977; Griffith 1980; Griffith 1982). The assay indicates that the vessel dates to the Late Woodland Period.

## E. Analytical Contexts

Analytical contexts will be defined in the following order (1) deposits encountered in the shell midden portion of the site, (2) features, and (3) plowed fields.

Figure 20 graphically presents four chronostratigraphic units defined for the landform at Holland Point based on the natural and cultural stratigraphy. The earliest unit in the chronostratigraphy is the deposition of the longshore bar sediments dating to the Pleistocene when the Holland Point landform was in a shallow off shore environment. This depositional event was responsible for forming the ridge-and-trough topography that is visible in the agricultural fields and surrounding landscape. The second chronostratigraphic unit is the mantle of loess deposited over the basal unit. This loess deposit probably ranges in age from the last glacial maximum to the early Holocene. After and during the deposition of the loess in-place soil develop occurs. The loess is the parent material on which Strata III (A-horizon) and IV (B-horizon) eventually develop. Most of the pedogenic development is hypothesized to occur after the loess is deposited because buried soil sequences were not observed below the parent material. Based on the diagnostic artifacts from the shoreline and the radiocarbon dates, the development of the A-horizon (Stratum III) and B-horizon (Stratum IV) occurred over the last 10,000 years. The Early Archaic Amos point helps define the beginning of the pedogenic development of Strata III and IV. These two strata are believed to begin forming c. 10,000 B.P. The Late Woodland artifacts and radiocarbon dates associated with Strata III and IV indicate that this chronostratigraphic unit date to at least c. 350

B.P. In the area of the plowed fields, these soil horizons continue to develop into historic times.

The next chronostratigraphic unit is the Native American deposition of the shell midden (Stratum II). This unit represents roughly 650-year period of time from c. 1000 B.P. to 350 B.P. With sea level rise the fringing salt marsh begins to move landward. The next chronostratigraphic unit is the saltmarsh genesis on top of the shell midden. The formation of the saltmarsh might have occurred during the last 150 years. During and possibly before the salt marsh development, agricultural tilling of the fields at Holland Point occurred. The plowing combined the upper portion of Stratum IV with Stratum III. Cultural material that might have been stratigraphically separated in the upper portions of the tilled fields was mixed after plowing. The chronostratigraphy at Holland Point provides a generalized sequence of natural and cultural events that have affected the archaeological deposits to varying degrees.

The critical interval in the chronostratigraphic sequence at Holland Point is after the major aeolian deposition, and before the deposition of the shell midden and creation of the saltmarsh. Based on the analysis of diagnostic artifacts and radiocarbon assays this interval dates from c. 10,000 B.P. to 350 B.P. During this interval, relatively little sediment deposition occurs. The entire Holland Point landscape is relatively stable. The stability of the Holland Point landform has affected formation processes at the site. The artifact deposits in the shell midden portion of the site are located on a high point in the paleo-topography based on the relative thickness of the modern saltmarsh soil horizon (Figure 9). This portion of the landform was not subjected to alluvial deposition. Buried artifact deposits are confined to the shell midden and the upper portions of the

soil profile below the shell midden (Strata III and IV) supporting the impression that the landform is relatively stable. The temporally diagnostic artifacts are not vertically separated in Strata III and IV. The recovery of an Early Archaic Amos point along the shoreline also suggests that the land surface at Holland Point is relatively stable. At the interface between Stratum II and Stratum III, limited artifact mixing would not be unexpected. The excavation of pits and other features into Stratum III could account for artifact mixing between the two strata. Figure 30 presents the radiocarbon dates that are believed to be valid and the two analytical contexts.

The shell midden deposit at Holland Point reflects a period of uneven sediment accumulation. Refits of ceramics from the upper and lower portions of the shell midden indicate that deposit is not stratified. Uniform beds of non-shell bearing sediment (i.e. alluvial deposition or organic lenses) are not present within the midden deposit. If uniform beds of non-shell bearing sediment were present, this could suggest a major hiatus between shell dumping episodes or changes in the natural depositional processes. Generally, shell middens are believed to reflect rapid accumulations of sediment (Waselkov 1987: 52-54). The two valid radiocarbon dates (Beta-159984 and Beta-159985) for the shell midden suggest a rapid accumulation. The combined 2-Sigma range for the two dates spans 120 calendar years from 780-660 Cal B.P. The other two assays are believed to be invalid for Stratum II. The calibrated date range from the Beta-159986 sample does not correlate with the traditional date range for Late Woodland Townsend ware that is found throughout the shell midden; therefore Beta-159986 is not believed to be valid. Beta-159990 is not believed to be valid for two reasons previously

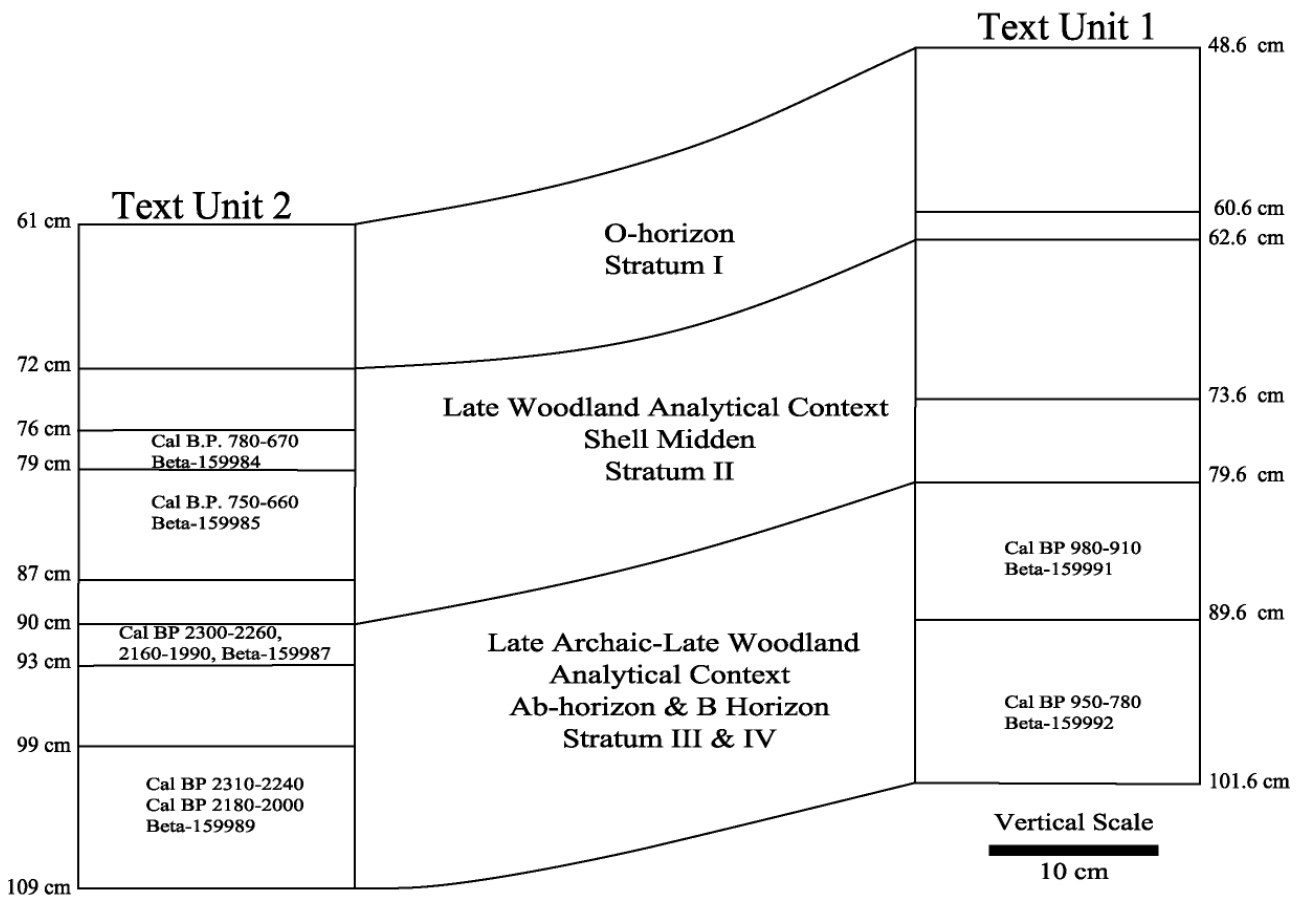


Figure 30. Correlation of stratum showing the valid radiocarbon dates and the two analytical contexts; note elevations are relative to the site datum

discussed in detail with the analysis of the radiocarbon dates. First, the date range for Beta-15990 does not encompass the traditional date range for the Late Woodland Period. Second, Beta-15990 is older than the two underlying assays (Beta-15991 and Beta-15992) from the same column sample.

In general, the Late Woodland ceramics found in the shell midden correlate with the radiocarbon dates. Rappahannock Incised ceramics (Type I C) found in the shell midden suggest that the deposit may span more than the 120 calendar years as indicated by radiocarbon dates. Rappahannock Incised ceramics have a traditional date range of 1050-665 B.P. The presence of Rappahannock Incised suggests that the deposit might span a longer amount of time than suggested by the radiocarbon dates. However, recent calibrated dates for Rappahannock Incised from Kent Island, Maryland suggest that this ceramic type might correlate with the two valid dates (Beta-159984 and Beta-159985) obtained from the shell midden. The analysis of the cultural stratigraphy indicates a limited amount of Early Woodland and Late Woodland ceramics are fortuitously mixed within Stratum II. Cultural processes such as pit excavations and other digging activities by Native Americans along with trampling could account for artifact mixing between the shell midden and the upper portion of Stratum II. The vertical distribution analysis of smaller artifacts suggests there has been limited vertical displacement of cultural material in the midden. The combination of the two radiocarbon dates with the abundance of Late Woodland ceramics indicates that the shell midden strictly dates to the Late Woodland Period between 950-300 B.P.; thus Stratum II represents a Late Woodland analytical context. All cultural materials from the shell midden are believed to date to this single cultural/temporal period: the Late Woodland.

The radiocarbon assays and temporally diagnostic ceramics from Strata III and IV indicate that the two strata reflect a greater amount of time than the shell midden deposit. The two radiocarbon dates (Beta-159987 and Beta-159991) from Stratum III have a combined range of 2300-910 Cal B.P. These dates span the Middle and Late Woodland periods. As previously indicated in the analysis of the radiocarbon dates, Beta-159988 is not believed to be valid. The date range for Beta-159988 is not consistent with the vertical sequence of assays (Beta-1599884 through Beta-159989) obtained throughout the column sample associated with Test Unit 2 (Figure 29). Both assays (Beta-159989 and Beta-159992) for Stratum IV are valid dates for the upper portion of the B-horizon. The combined date range for the two assays from the B-horizon (Stratum IV) is 2310-780 Cal B.P. The four radiocarbon dates for both the A-horizon and B-horizon overlap for 1390 calendar years. This overlap suggests that the two strata do not represent chronologically stratified deposits.

Similar diagnostic ceramics recovered from both Strata III and IV also indicates that the two strata span more than one cultural/temporal period. In the A-horizon, Late Woodland (Type I A, I C, I D, IIB, III A, IV ND), Middle Woodland (Type XI B and XI ND) and Early Woodland (Type VIII A, VIII ND, IX A, and IX ND) ceramics were found in the excavations of the test units and in the bank profile (Figure 21 and Figure 22). In the B-horizon, a similar variety of Late Woodland through Early Woodland ceramics were found in the excavations of the test units and in the bank profile (Figure 21 and Figure 22). The ceramics associated with both Strata III and IV suggests that the strata range from Late Woodland to Early Woodland cultural/temporal periods. The ceramics suggest that the radiocarbon assays do not fully

reflect the age of Strata III and IV. The similarity in ceramic types from both the Strata III and IV combined with the overlapping radiocarbon date ranges for the two strata indicate that they cannot be separated into different analytical contexts.

The temporally diagnostic projectile points collected along the surface of the shoreline suggest that archaeological deposits in near the tip of Holland Point predate the Early Woodland Period. The Amos point found along the shoreline dating to the Early Archaic is the earliest diagnostic artifact known from the site. Yet this Early Archaic diagnostic is not believed to be a valid indicator of the age of the deposits encountered in the subsurface investigations. The Amos point is an isolated find from the site. The point could have eroded from deposits on lower portions of the landscape currently under Slaughter Creek.

Several of the morphological types in Table 10 correlate with historically defined projectile point types that predate the Early Woodland. Susquehanna Broadspire points (Type 2, Figure 31C), Fishtail points (Type 7, Figure 31D), Perkiomen-like points (Type 5, Figure 27B), and Unnamed Broadspire points (Type 21, Figure 32A) are finished biface styles that have been found in contexts in the Middle Atlantic which date the Late Archaic/Transitional Archaic periods. Types 2, 7, 5, and 21 have a combined uncalibrated date range of 4450 B.P. to 3450 B.P. (Custer 2001: 37, 41, 44; Dent 1995: Table 5.4). These styles of projectile points (Types 2, 7, 5, and 21) have a restricted temporal range that predates the traditionally defined Early Woodland Period. These four types (Types 2, 7, 5, and 21) are “diagnostics” that can be assigned with confidence to the Late Archaic and Transitional Archaic periods.



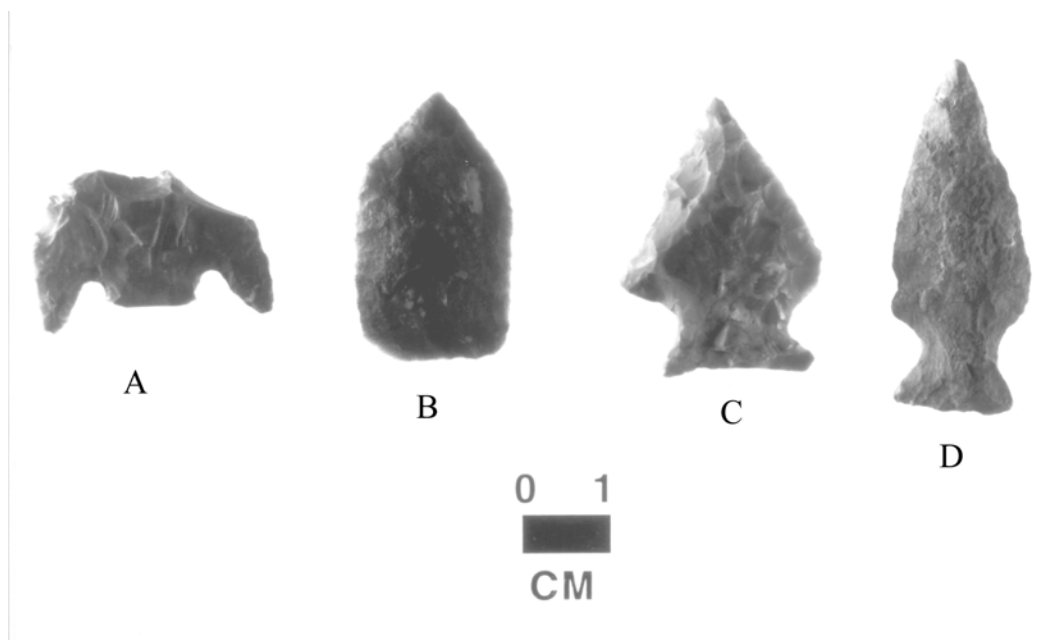


Figure 31. Projectile points, A: Type 4 (Art# 19.228), B: Type 29 (Art# 2.475), C: Type 2 (Art# 2.404), D: Type 7 (Art# 34.7)

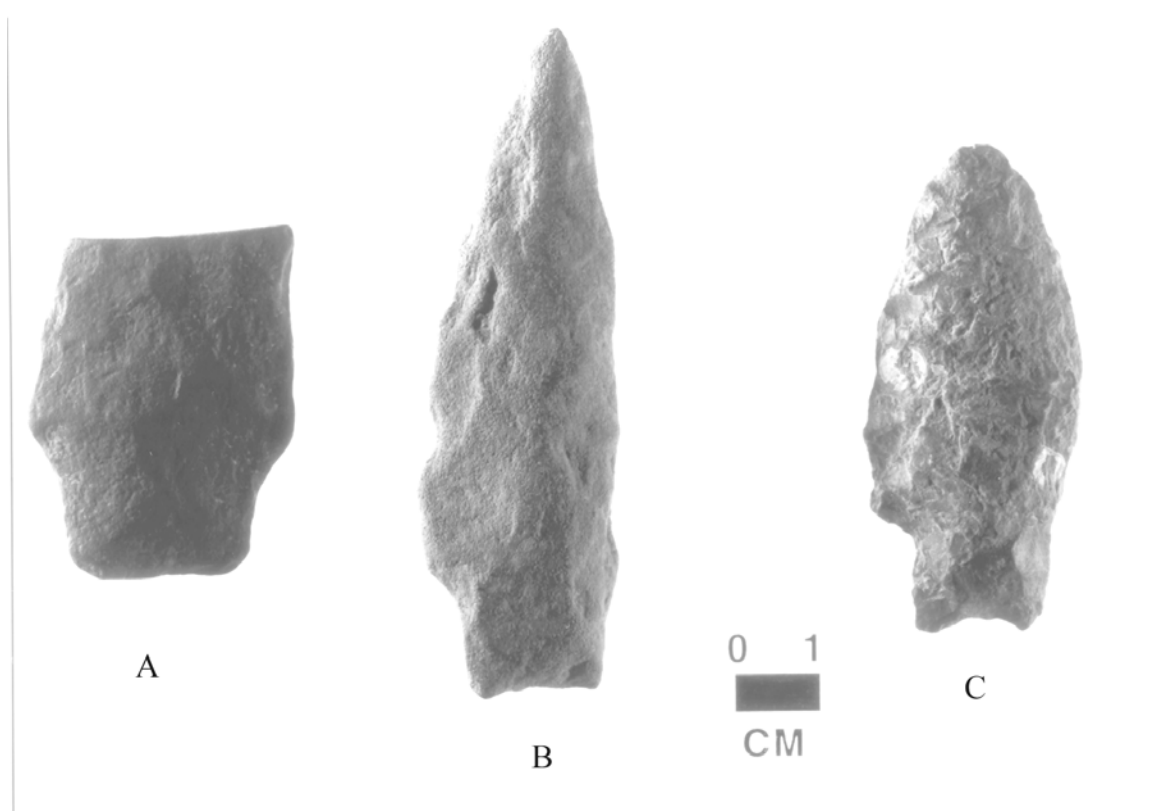


Figure 32. Projectile points, A: Type 21 (Art# 2.51), B: Type 15A (Art# 2.384), C: Type 18 (Art# 2.505)

Several other projectile point types from Holland Point could also date to Late Archaic Period. Types 8A (Figure 33), 8B (Figure 33), 11 (Figure 34B), 12 (Figure 34C), 15A (Figure 32B), 15B (Figure 35A), 16 (Figure 35B), 17(Figure 35C), 19 (Figure 35D), 20 (Figure 36C), and 30 (Figure 34D) are morphological similar to Bare Island, Poplar Island, Piney Island, Rossville, Piscataway, and Lackawaxen historic types. These types could also date to the Late Archaic. Type 23 (Brewerton Side-Notched/Pequea/Halifax/Vernon, Figure 37C), Type 25 (Side-Notched/Brewerton Eared-like, Figure 37D), Type 26 (Brewerton Side-Notched/Pequea/Halifax/Vernon, Figure 27A), and Type 28 (Pequea-like, Figure 36B) could also date to the Late Archaic. Custer's (1996: 139-145; 2001: 92-108) analysis of projectile points from stratified contexts at the Piney Island Site in Pennsylvania combined with analyzes of projectile points from other dated contexts in the Middle Atlantic suggest that the Bare Island, Poplar Island, Piney Island, and Pequea "Major Types" and related "Minor Types" (Rossville, Piscataway, Vernon, and Halifax) have a broader time range then traditionally assigned to these historic types. Custer (2001: 107) concludes that Bare Island, Poplar Island, Piney Island, and Pequea "Major Types" and their cognates date from late Middle Archaic (c. 7500 B.P.) to the end of the Middle Woodland Period (c. 1000 B.P). The early end of the date range for these stemmed and notched points, which extends back into the late Middle Archaic, is not considered to be an accurate reflection of the age for the deposits encountered at the tip of Holland Point. Other more widely recognized Middle Archaic bifaces, such as bifurcated points, that are more "diagnostic" of the Middle Archaic (Custer 1996:133-145) have not been found at Holland Point. The overall lack of more "traditional" Middle Archaic diagnostics

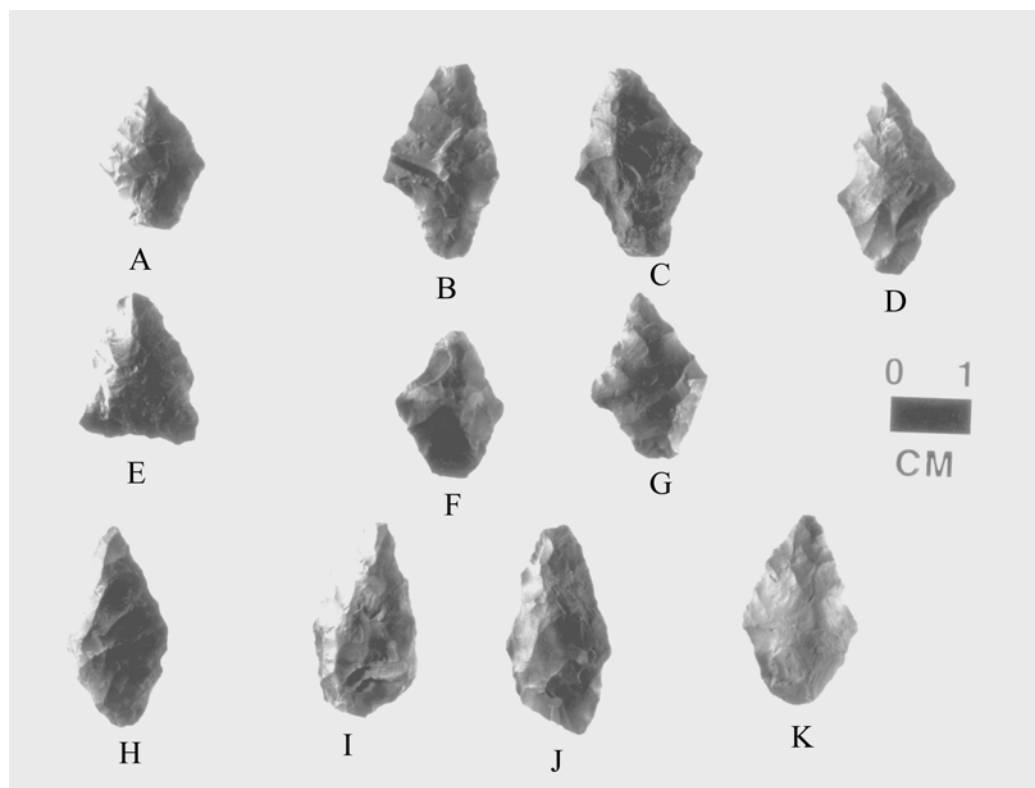


Figure 33. Type 8A (A-D, F, G.), Type 8B (H-K), and Type 9 (E) projectile points

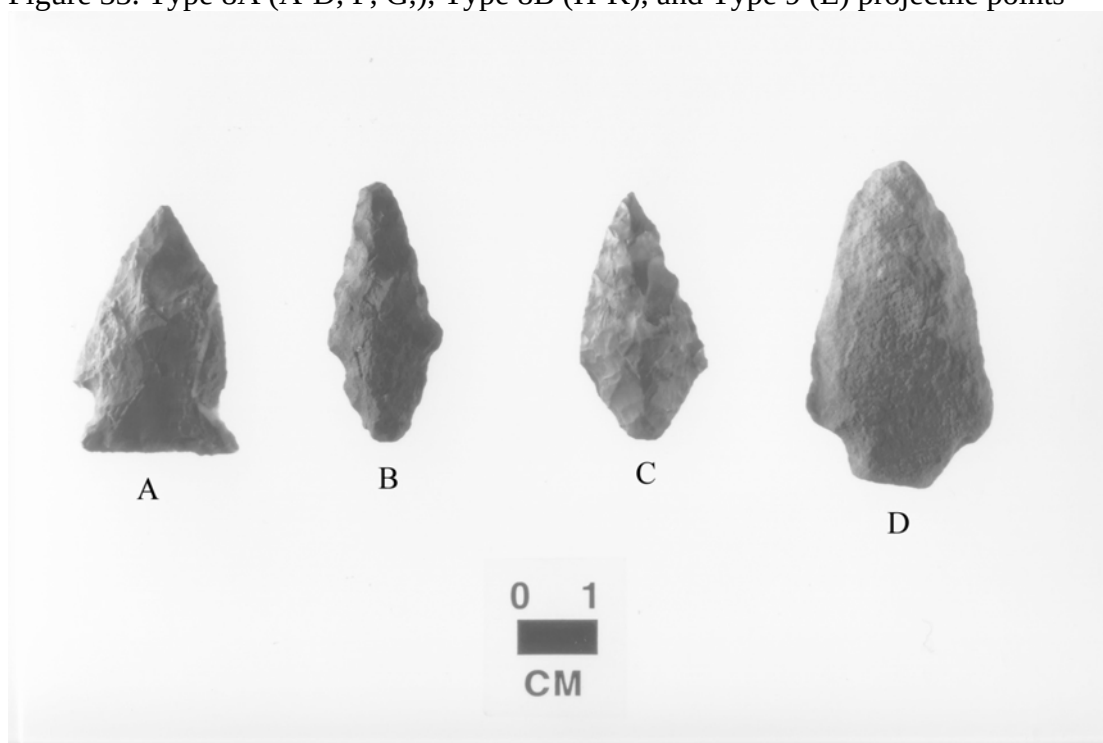


Figure 34. Projectile points, A: Type 13 (Art# 2.389), B: Type 11 (Art# 2.462), C: Type 12 (Art# 2.402), Type 30 (Art# 2.2682)

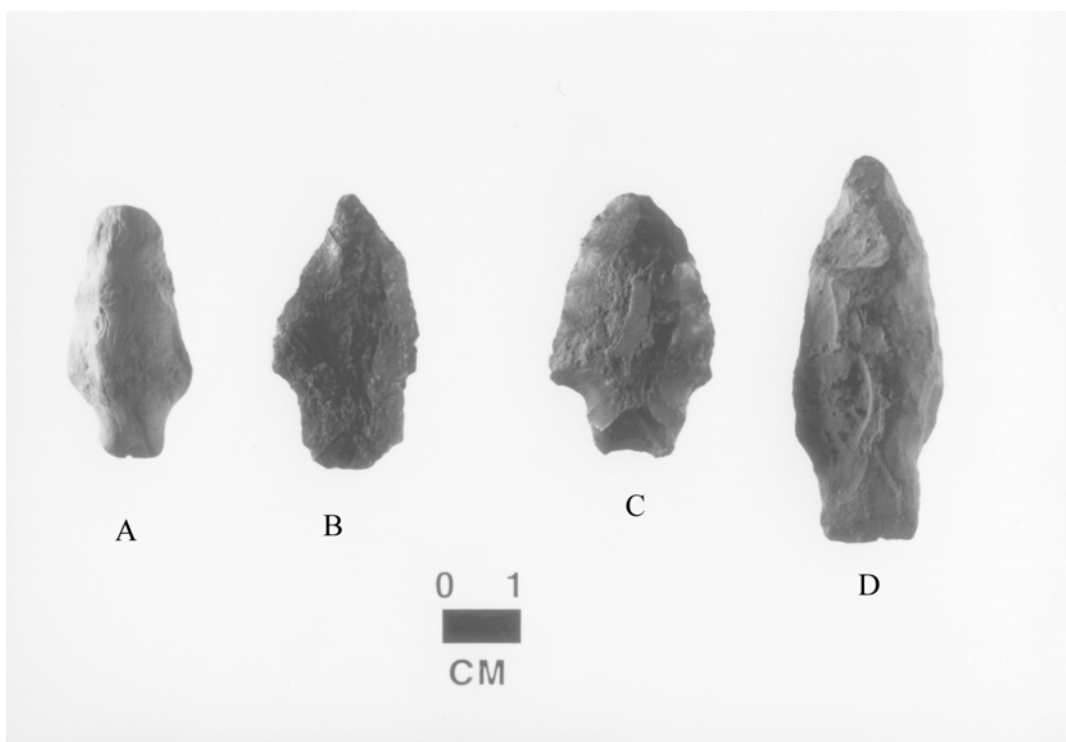


Figure 35. Projectile points, A: Type 15B (Art# 2.477), B: Type 16 (Art# 2.523), C: Type 17 (Art# 2.491), D: Type 19 (Art# 2.487)

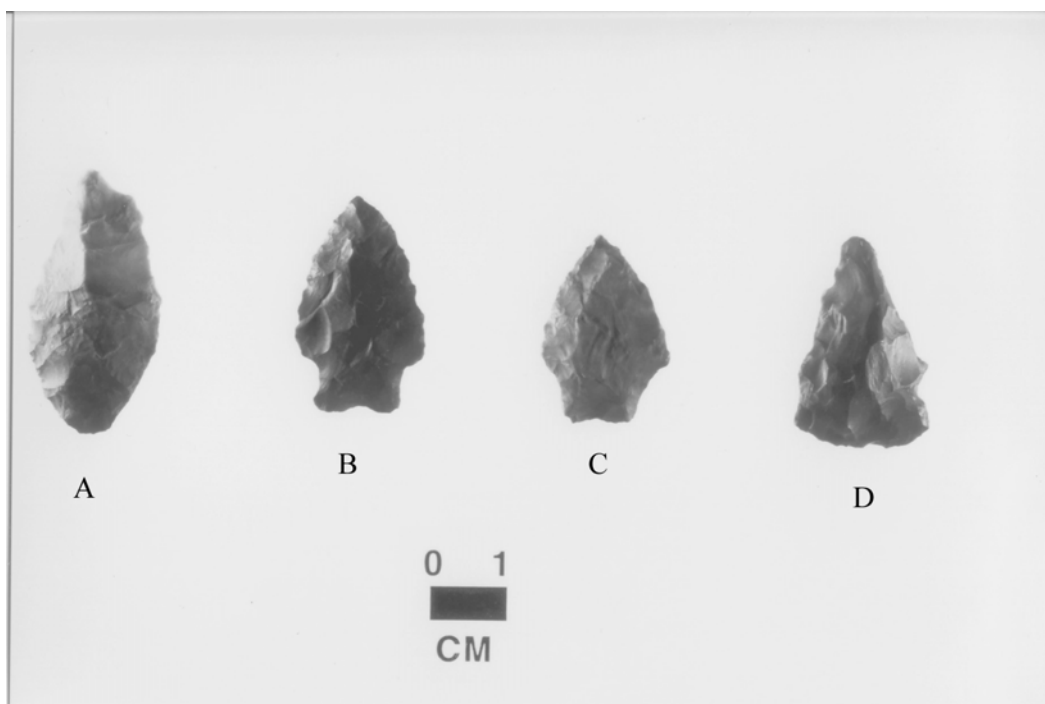


Figure 36. Projectile points, A: Type 10 (Art# 2.450), B: Type 28 (Art# 2.449), C: Type 20 (Art# 2.410), D: Type 31 (Art# 2.704)

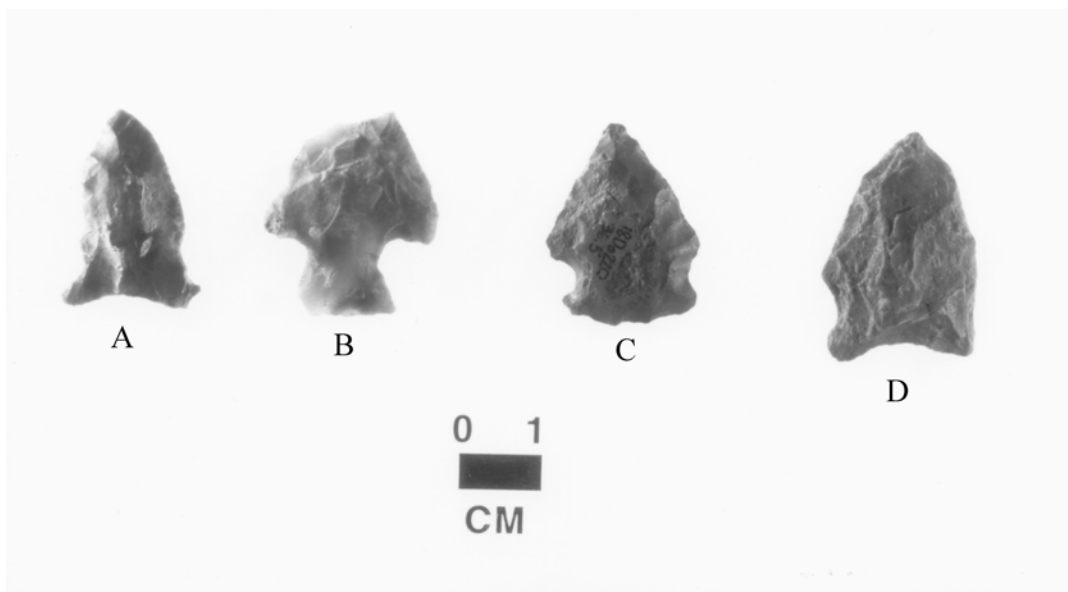


Figure 37. Projectile points, A: Type 32 (Art# 2.395), B: Type 6 (Art# 2.411), C: Type 23 (Art# 36.5), D: Type 25 (Art# 2.443)

suggests that Bare Island, Poplar Island, Piney Island, and Pequea “Major Types” and their cognates found at Holland Point date might not date to the Middle Archaic. The broad time span represented by these projectile points could simply overlap with cultural/temporal periods for the diagnostic ceramics found at the site.

The classification of Type 13 (Figure 34A) as Vosburg-like should be considered cautiously since this point type was originally defined in New York (Ritchie 1971: 55) and is not commonly found or recognized on the Delmarva Peninsula. The Vosburg type has an uncalibrated date range from 5620 B.P. to 4600 B.P. based on data from New York and the Upper Delaware Valley (see Appendix B). This late Middle Archaic age for Type 13 is not considered valid date for the age of the deposits at Holland Point. The classification of Type 18 (Figure 32A) as Savannah River-like should be considered cautiously since this specimen is not identical in morphology to

the classic “Savannah River Broadspear” type (Coe 1964: 42-45). The blade is not as wide as “typical” Savannah River Broadspear points. Savannah River Broadspear points traditionally date to the Late Archaic 4450-3650 B.P. (Coe 1964: 44-46; Custer 2001: 44). Lowery (1999: 53) remarks that projectile points similar to Savannah River Broadspear have been found Woodland Period contexts on the Delmarva Peninsula suggesting that this type might date to as late as c. 2,000 B.P.

Types 2, 7, 5, and 21 that are securely dated to Late Archaic/Transitional Archaic along with the “possible” Late Archaic types indicate that the Holland Point archaeological deposits are older than the Early Woodland. The deposits associated with these pre-Early Woodland projectile point types may have been lost to shoreline erosion. The Amos projectile point found along the shoreline suggests possible Early Archaic occupations at the site. This Early Archaic diagnostic could be from some underwater component farther east of the current shoreline under Slaughter Creek. Since this is the only Early Archaic diagnostic, the projectile point is not considered a valid indicator for the age of Strata III and IV. The overall stability of the Holland Point landform suggests that pre-Early Woodland deposits might not have been deeply buried. The recovery of several Late Archaic points indicates that time represented by Strata III and IV could range from the Late Woodland to the Late Archaic.

In sum, a total of two different analytic contexts can be defined for the deposits encountered during both the test unit and column sample excavations. The analytical contexts are (1) Late Woodland context represented by Stratum II (shell midden deposit) and (2) Late Woodland through Late Archaic context represented by Strata III (Ab-horizon) and IV (B-horizon). The isolated Early Archaic Amos point suggests that

occupations predating the Late Archaic are present. The early artifact could be associated with deposits currently under water on lower elevations of the landscape that would have been inundated by Late Archaic times. The rarity of Early Archaic artifacts along the shoreline suggests artifact deposits encountered in the subsurface investigations do not pre-date the Late Archaic Period.

The features are believed to represent relatively short periods of time because internal stratigraphy was not visible in these deposits. Sequences of feature abandonment and reuse are not apparent in the feature matrix. In general, only lower portions of the features were found along the shoreline. The analytical context for Feature 2 and 6 cannot be evaluated because limited data is available for these contexts.

The diagnostic ceramic sherd, radiocarbon assay, and land snails as well as the overall amounts of diagnostics from the Holland Point provide insight into the cultural/temporal period of Feature 1. The radiocarbon assay (Beta-160461) and the single diagnostic ceramic sherd from Feature 1 do not correlate to the same cultural/temporal period. The relative small size of the Early Woodland sherd suggests that the artifact could be from sediment associated with an earlier utilization of the site, which predates the radiocarbon date. The Middle Woodland date (1730-1550 Cal B.P.) was obtained from a single piece of carbonized wood. Two species of land snails (*Anguispira alternata* and *Helicodiscus* ssp.) are present in the feature matrix. *A. alternata* was not found in the Late Woodland-Late Archaic analytical context while *Helicodiscus* ssp. was recovered from both the Late Woodland shell midden analytical context and the Late Woodland-Late Archaic analytical context. The absence *A. alternata* from the Late Woodland-Late Archaic analytical context may suggest that

Feature 1 could possibly be associated with the shell midden deposit. This association is only suggested by the land snail data since the stratum in which the Feature 1 originated cannot be determined.

Limited amounts of Middle Woodland diagnostics (Mockley, clay tempered ceramics, Selby Bay, and Fox Creek projectile points) have been recovered from the Holland Point Site (see Table 14 and Figure 38). The traditional date range for Mockley (Ware VI), Fox Creek Points (Type 14, Figure 26), and Selby Bay points (Types 22 and 24, Figure 39) is 1950-950 B.P. (Custer 1990: Figure 1; Custer 2001). Ceramic Ware VII, which is possibly clay tempered, is hypothesized to have a date range of 2750-1750

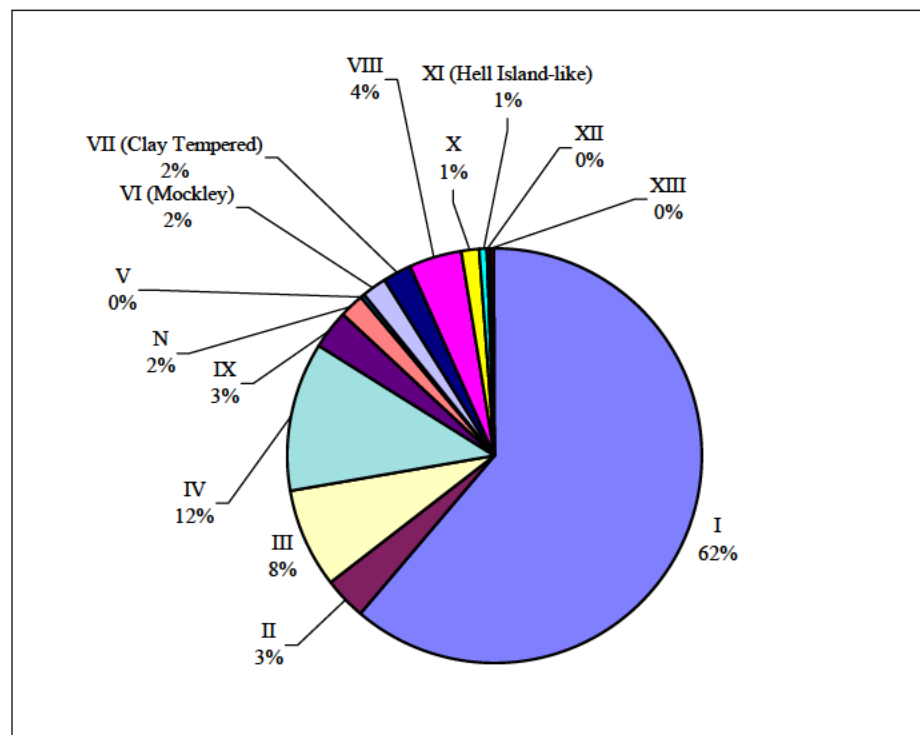


Figure 38. Ware groups by percentage of weight for the complete ceramic assemblage



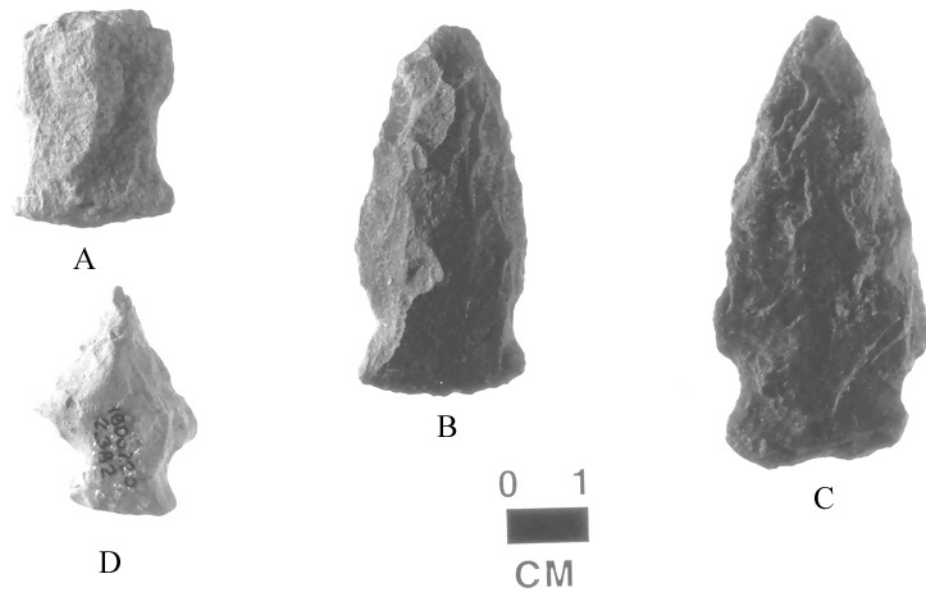


Figure 39. Rhyolite projectile points, A: Type 24 (Art# 2.481) B: Type 22 (Art# 2.485), C: Type 24 (Art# 2.479), D: Type 26 (Art# 2.383)

B.P. (Custer 1990: Figure 1). The date ranges for the above mentioned Middle Woodland diagnostics overlaps with the radiocarbon date from Feature 1. Calibrated dates of 1836-1172 B.P. and 1374-1276 B.P for Hell Island ceramics at Leipsic Site (Custer, et al. 1996: 69) overlap with the Feature 1 assay. The overwhelming majority of the diagnostics from Holland Point are Late Woodland Townsend series ceramics. The general dearth of Middle Woodland diagnostics is perplexing given the Middle Woodland assay for the burial and the Mockley associated with a shell filled pit (Feature 5). Nonetheless, the assay is believed to reflect the age of the deposit; therefore the feature dates to the Middle Woodland Period.

Feature 3 contains a mixture of Native American and historic artifacts. The location of Feature 3 on a low shelf along the north shoreline below mean high tide exposes this feature to intense wave energy. The shoreline along the northern boarder of Holland Point faces a large expanse of open water in the embayed portion of Slaughter Creek. The erosion of Hooper Point to the north of Holland Point has left Holland Point vulnerable to wavy energy originated from the Chesapeake Bay. During storms coming from the northeast, 40 km of open water and wavy energy bear down on this portion of the shoreline. This high-energy environment is believed to be responsible for the association of Native American and recent historic debris in Feature 3. The East/West profile across the low shelf suggests that wave energy has eroded some of the strata in the area of Feature 3. In the low shelf profile, Stratum III (A-horizon) is not clearly visible (Figure 18). Stratum III was visible in bank profile near Test Unit 5.

An erosional discontinued is hypothesized at the boundary between Strata IV and the shell deposit in low shelf profile. The erosion discontinuity explains why Native American artifacts and recent historic debris are associated together with the matrix of Feature 3. Detailed geoarchaeological analysis of this landform would be necessary to confirm this hypothesis. Researchers debating shell deposits along shorelines in other regions have faced similar challenges concerning whether deposits are cultural or natural in origin (Watters, et al. 1991). A tentative chronosequence of geological events is presented for the formation of the deposits on the low shelf and the origin of the Feature 3. First, wavy energy in the past removed an upper portion of the soil profile possibly including Stratum III and left Stratum IV exposed at the surface. The depression (Feature 3) was created either naturally by erosion or through some cultural

process. Then the depression (Feature 3) and top of Stratum IV was covered with shell bearing sediment eroded from somewhere around the site. After the deposition of the shell deposit, an organic horizon began to accumulate on the shell matrix. This sequence of events must have happened during historic times. The erosional discontinuity is confined to this low shelf landform based on comparison of the shelf profile in front of Test Unit 5. A few days after the excavation of Feature 1 located on the tidal flats, the depression created by the removal of the Feature 1 matrix was filled in with dark colored sediment and some shell. This process of depressions being filled in is believed to be similar to how Feature 3 was created. Therefore, Feature 3 is believed to be natural in origin.

The artifacts from Feature 4 and the radiocarbon date of the pottery vessel correlate to the same cultural/temporal period. Late Woodland Rappahannock Fabric-Imprinted ceramics have a date range of 1050-350 B.P. (Griffith 1977; Griffith 1980; Griffith 1982). The assay (Beta-159993) has a date range of 1240-1040 Cal B.P. and 1030-1000 Cal B.P., which falls within the Late Woodland Period. The combination of the radiocarbon assay and the diagnostic ceramics indicate that Feature 4 dates to the Late Woodland Period. The presence of oyster shell in the matrix and Townsend series ceramics suggest that Feature 4 could correlate with Stratum II (the shell midden deposit). However, the stratum from which Feature 4 originated cannot be determined making the correlation between the feature and Stratum II problematic. Feature 4 and Stratum II date to the same time period, but Stratum III and IV also date to the Late Woodland; therefore Feature 4 is not assigned to either the Late Woodland context (Stratum II) or the Late Woodland through Late Archaic context (Strata III and IV).

Feature 5 is believed to date to the Middle Woodland based on Darrin Lowery's observation of Mockley ceramics associated with the feature matrix. This Middle Woodland (Carey Farm Complex) cultural/temporal period designation is cautiously made because of the limited amount of information about this feature. Furthermore, limited amounts of Carey Farm Complex diagnostics are found at Holland Point (see Figure 38 and Table 14). Fox Creek projectile points and Selby Bay style projectile points are the traditional diagnostic point types associated with Mockley ceramics and the Cary Farm Complex. The Selby Bay type is used to refer to side notched projectile points made out of rhyolite. A total of three Fox Creek-like projectile points (Type 14) and six Selby Bay points (Type 22 and Type 24) were found along the shoreline at Holland Point. Only three of the Type 22 points are made out of rhyolite. These rhyolite Type 22 points are considered more typical of Middle Woodland Selby Bay points (See comments for Type 22 in Appendix B). The nine bifaces, which could clearly be associated with the Carey Farm Complex component at Holland Point, is less than five percent of the site's total projectile point assemblage. Ware VI (Type VI A, VI B, VI C) ceramics are comparable to Mockley. Ware VI is two percent of the overall amount ceramics by weight from the site (Figure 25). A minimum of one vessel is estimated based on a single Type VI A rim sherd. On the basis of body sherd data for Ware VI another vessel is suggested for Type VI B. In contrast, a total of 54 of Late Woodland vessels are suggested on the basis of grouping of similar rim sherds and rim sherd refits for Types I A, I B, I C, III A, III C, V B. In general, the site's ceramic assemblage is dominated by Late Woodland shell tempered pottery (Ware I, II, III, V). The overall

low quantity of Middle Woodland (i.e. Mockley) ceramics does not support the discovery of large shell fill Mockley features at the site.

Feature 6 is comparable to Feature 5 in terms of size and shape. Diagnostic artifacts were not found in association with the Feature 6 making a cultural/temporal period designation problematic. The similarities between Features 6 and 5 suggest that Feature 6 could also date to the Middle Woodland Period. However, this age assessment is made cautiously because of the previously mentioned dearth of Middle Woodland ceramic and projectile points from the site.

Table 17 summarizes the analytical context based on the above analysis of the information relevant to the features. The features found at the site cannot be easily correlated with the Late Woodland and Late Woodland-Late Archaic deposits without knowing the stratum from which the features originated.

Diagnostic artifacts provide a general impression of the age of the cultural material from Field 1. The two projectile points (Types 26 and 33) both have a similar time range from the late Middle Archaic to the end of the Middle Woodland Periods. The assemblage of diagnostic ceramic and projectile points from the shoreline provide insight into the general timing of Native American occupation at Holland Point. As discussed above in the analysis of the deposits in the shell midden portion of the site, there is a lack of Middle Archaic diagnostics (i.e. bifurcate point) at Holland Point. The two projectile points (Types 26 and 33) could potentially date to the late Middle Archaic Period. However, given the overall variety of diagnostics points and ceramics at Holland Point the two points in Field 1 more than likely date from the Late Archaic to the end of the Middle Woodland Periods.

The Type I (Townsend ware) sherd dates to the Late Woodland Period. The historic artifacts reflect a continued use of Field 1 into more recent times (i.e. twentieth century). The assemblage of diagnostic (Native American and Historic) artifacts from Field 1 suggests a date range of Late Archaic through present for the sediments on the surface on Field 1. The Native American stone artifacts in Field 2 and 3 reflect a use of those areas prior to Euroamerican cultivation of the land. The age of the sediments and artifacts on the surface cannot be estimated because diagnostic artifacts have not been found in the two fields. Based on the diagnostics from the rest of the Holland Point Farm the cultural material from Field 2 and 3 probably post-date the Late Archaic.

The broad time range (Late Archaic through Late Woodland) as indicated by the diagnostic artifacts found on the surface of Field 1 suggest that the ground surface was relatively stable. Sediment was at best only being deposited in very limited amount on this portion of the landscape. The reworking of sediment through aeolian processes could be depositing sediment into the low spots on the landscape. As indicated in the analysis of the soil horizons encountered in the agricultural fields, the Ap-horizon can be correlated with Stratum III and upper portion of Stratum IV while the B-horizons in the fields can be correlated with B-horizon (Stratum IV) (Figure 17). This correlation would suggest that the Ap-horizon ranges from at least the Late Woodland to the Late Archaic Periods. The B-horizon in the plowed fields could have a similar date range, but could also be slightly older than the plowzone sediments. The age as reflect by diagnostic artifacts from the Field 1 suggest a similar date range as indicated by the correlation of the soils between saltmarsh area and the interior fields. In sum, artifacts on the surface of agriculture field reflect a broad time range that overlaps with

cultural/temporal periods for the archaeological deposits in saltmarsh portion of the site. The artifacts found in the three plowed fields are grouped into one analytical context, which has a temporal range from the Late Archaic to Late Woodland.

The analytical contexts developed in this chapter will be used to frame discussions of the artifacts, ecofacts, and features in subsequent chapters. The analytical contexts will be discussed in the following order: (1) Late Woodland shell midden deposit, (2) Late Woodland-Late Archaic context (Strata III and IV), (3) Features not associated with test units, and (4) the cultural material from the surface of three agricultural fields. The largest quantity of artifacts and ecofacts from Holland Point collected from the surface along the shoreline will be discussed last. This cultural material cannot be associated with a particular analytical context.

## CHAPTER 6

### ANALYSIS OF THE LATE WOODLAND SHELL MIDDEN CONTEXT (STRATUM II)

#### A. Lithics

##### 1. Bifaces

One broken tip of a finished biface made out of quartz was recovered from the column sample in Test Unit 2 (Art# 117.9). This is the only biface found during the excavations. The 4 pieces of quartz debitage found in the vicinity of the projectile point fragment are not characteristic of biface thinning or resharpening activities. The biface fragment is not believed to be the by-product of a manufacturing accident. A triangular shaped biface was found in the shell midden in the bank profile. The triangle is made from jasper. The point is not broken. This triangle is probably Late Woodland in age.

##### 2. Cores

Two cores were recovered from Stratum II. Both cores retain cortex. One core made out of chert is a single ended bipolar core. The other objective piece is an irregular/multifaceted quartz core. The cores were found in Test Unit 1 and the Column Sample associated with Test Unit 1. Only one flake scar is present on both cores indicating that the cobbles were probably being tested for material quality.



### 3. Debitage

A total of 68 pieces ofdebitage were recovered from the shell midden deposit. Table 18 provides a summary ofdebitage by material type and flake size, weight, and cortex amount. The amount ofdebitage recovered allows for some general statements to be made about lithic reduction activities in the shell midden deposit. Forty percent of thedebitage consists of shatter, which is not indicative of a particular lithic reduction activity. Experiments in reducing various size cobbles to the point of exhaustion using bipolar technique indicates that shatter ranges from 56.5 to 31 percent of the totaldebitage (Kuijt, et al. 1995: Table 2). Shatter is a major category of debris created during bipolar reduction and may suggest that this technique was utilized. The bipolar core recovered from the shell midden indicates the use of this reduction technique.

| <b>Material Type</b> | <b>Total Number of Debitage (Weight g)</b> | <b>No. of Debitage # 1 cm (Number w/ cortex)</b> | <b>No. of Debitage1 -2 cm (Number w/ cortex)</b> | <b>No. of Debitage 2-5 cm (Number w/ cortex)</b> | <b>No. of Debitage 5&gt; cm (Number w/ cortex)</b> | <b>Decortication Debitage (% of total)</b> |
|----------------------|--------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|----------------------------------------------------|--------------------------------------------|
| Chert                | 32 (29.13)                                 | 11 (3)                                           | 19 (10)                                          | 2 (2)                                            | 0                                                  | 46.8                                       |
| Jasper               | 24 (13.79)                                 | 8 (3)                                            | 13 (8)                                           | 3 (2)                                            | 0                                                  | 54.1                                       |
| Quartz               | 4 (11.5)                                   | 0                                                | 3 (2)                                            | 1 (1)                                            | 0                                                  | 75                                         |
| Quartzite            | 6 (51.83)                                  | 1(1)                                             | 3 (0)                                            | 1 (1)                                            | 1 (1)                                              | 50                                         |
| Other                | 2 (2.82)                                   | 1 (0)                                            | 0                                                | 1(1)                                             | 0                                                  | 50                                         |
| Totals:              | 68 (109.07)                                | 21 (7)                                           | 38 (20)                                          | 8 (7)                                            | 1 (1)                                              | 51.5                                       |

Table 18. Summary ofdebitage from Stratum II

Forty-eight percent of all debitage has cortex. The high percentage of cortex-bearing flakes is indicative of cobble utilization. Several possible explanations for the quantity of cortex-bearing flakes are possible. The selection of relatively small cobbles for reduction would lead to a greater amount of cortex-bearing debitage. Smaller cobbles per mass would have a greater amount of surface area than larger cobbles. Bipolar reduction techniques may have been used that can produce a large amount of cortex-bearing debris. Experimental studies of single episodes of primary through late stage cobble reduction found that decortication flakes make up 15 to 50 percent of the total debitage (Ranere and Ressler 1981). Later stage reduction of objective pieces such as cores, flakes, and bifaces that have cortex would result in additional decortication debitage. A combination of all these lithic reduction behaviors would produce a high percentage of cortex bearing flakes. A correlation could be expected between the selection of small cobbles and bipolar reduction strategies (Kuijt, et al. 1995: 122-124). Bipolar reduction is ideal for initially creating platform surfaces on cobbles or producing flakes that can be reduced further (Cresson 1977; Flenniken 1981).

The attributes presented in Table 19 indicate several activities are occurring at the site. The overall small size of the debitage is indicative of reducing smaller cobbles or later stage reduction activities. The presence of triangular platforms for 70% of the whole flakes and proximal flake fragments indicates that the predominate activity is bifacial reduction. The occurrence of platform preparation, albeit low in frequency, also indicates biface reduction activities. The higher percentage of broken flakes (56%) versus whole flakes (44%) suggests a greater focus on biface thinning versus

| <b>Attribute</b>      | <b>Stratum II (Late Woodland)</b> | <b>Stratum III</b> | <b>Stratum IV</b> | <b>Late Woodland-Late Archaic (Strata III &amp; IV)</b> |
|-----------------------|-----------------------------------|--------------------|-------------------|---------------------------------------------------------|
| Flake Portions        |                                   |                    |                   |                                                         |
| Complete              | 18                                | 15                 | 14                | 47                                                      |
| Proximal              | 12                                | 4                  | 1                 | 17                                                      |
| Media                 | 1                                 | 3                  | 0                 | 3                                                       |
| Distal                | 10                                | 8                  | 2                 | 10                                                      |
| Shatter               | 27                                | 27                 | 51                | 78                                                      |
| Pot Lid               |                                   | 3                  | 1                 | 4                                                       |
| Cortex                |                                   |                    |                   |                                                         |
| Presence              | 33                                | 26                 | 4                 | 30                                                      |
| Absence               | 35                                | 34                 | 65                | 99                                                      |
| Platform Shape        |                                   |                    |                   |                                                         |
| Triangular            | 21 (70%)                          | 15 (75%)           | 10 (67%)          | 25 (71%)                                                |
| Flat                  | 5 (17%)                           | 4 (20%)            | 5 (33%)           | 9 (26%)                                                 |
| Round                 | 4 (13%)                           | 1 (5%)             | 0 (0%)            | 1 (3%)                                                  |
| Platform Preparation  |                                   |                    |                   |                                                         |
| Presence              | 12 (40%)                          | 10 (50%)           | 5 (33%)           | 15 (43%)                                                |
| Absence               | 18 (60%)                          | 10 (50%)           | 10 (67%)          | 20 (57%)                                                |
| No Platform           | 38                                | 40                 | 54                | 94                                                      |
| Biface Edge Remnant   |                                   |                    |                   |                                                         |
| Presence              | 1                                 | 0                  | 0                 | 0                                                       |
| Absence               | 67                                | 60                 | 69                | 129                                                     |
| Size                  |                                   |                    |                   |                                                         |
| (# 1 cm               | 21                                | 20                 | 53                | 73                                                      |
| 1-2 cm                | 38                                | 35                 | 16                | 51                                                      |
| 2-5 cm                | 8                                 | 5                  | 0                 | 5                                                       |
| 5> cm                 | 1                                 | 0                  | 0                 | 0                                                       |
| Heat Treatment        |                                   |                    |                   |                                                         |
| Presence              | 5                                 | 7                  | 3                 | 10                                                      |
| Absence               | 63                                | 53                 | 66                | 119                                                     |
| Dorsal Scar Count     |                                   |                    |                   |                                                         |
| Mean                  | 2.2                               | 2.2                | 2.0               | 2.2                                                     |
| Standard Div.         | 1.4                               | 1.9                | .9                | 1                                                       |
| Flake Type            |                                   |                    |                   |                                                         |
| Undiagnostic          | 26                                | 19                 | 4                 | 23                                                      |
| Not Applicable        | 27                                | 29                 | 52                | 81                                                      |
| Bifacial Thinning     | 3                                 | 5                  | 0                 | 5                                                       |
| Pressure              | 12                                | 4                  | 13                | 17                                                      |
| Bipolar               | 0                                 | 1                  | 0                 | 1                                                       |
| Blade-like            | 0                                 | 1                  | 0                 | 1                                                       |
| Blade                 | 0                                 | 1                  | 0                 | 1                                                       |
| Overshot              | 0                                 | 0                  | 0                 | 0                                                       |
| Blade-like Bipolar    | 0                                 | 0                  | 0                 | 0                                                       |
|                       |                                   |                    |                   |                                                         |
| Dorsal Scar Direction |                                   |                    |                   |                                                         |
| Mean                  | 1.3                               | 1.3                | 1.2               | 1.2                                                     |
| Std. Dev.             | .8                                | .5                 | .4                | .5                                                      |

Table 19. Flake morphological attributes for Strata II through IV

core reduction. The lower frequency of flat and rounded platforms reflects limited amount of core reduction and early stage reduction. The limited quantity of debitage larger than 2 cm supports a limited amount of core reduction and/or early stage reduction. The presence of heat-treated jasper, chert, and quartzite suggests that exposing lithics to heat may have been used to improve the quality of the material or debris could have been discarded in fires.

The small sample size precludes any definitive statements about lithic reduction activities in the shell midden deposit. In general, the debitage suggests a slightly greater focus on biface reduction activities than core reduction or early stage reduction. Based on morphological attributes of size, platform shape, dorsal flake morphology twelve flakes are classified as pressure flakes and three as biface thinning flakes. The rest of the assemblage consists of non-diagnostic flakes and shatter. Given the interpretation of the shell midden as an accretional dump, the lithic material in this analytical context may reflect dumping of debris from activities that took place in other areas of the site. The recovery of relatively small debitage less than 1 cm may suggest the dumping of lithic debris in the area. Ethnographic observations of flaking into baskets, pots or bowls (Gallagher 1977) or onto a cloth, a hide or some material that can be picked up may explain the occurrence of smaller size lithic debris in shell midden. Smaller debitage is not easily picked-up by hand or during sweeping around lithic reduction areas (Behun 1983: 13). The overall low quantity of lithic debris reflects a limited amount of lithic reduction activities.

#### 4. Flake Tools

A total of four flake tools were found in the shell midden deposit. Art# 112.1 was probably used as a scraper for woodworking or fresh hide working (Figure 40). The polish micro-trace on Art# 112.1 (Figure 41) is localized on the right lateral edge and distal edge corner of the ventral aspect. The polish is also present on the edge and dorsal aspect to a lesser degree. This micro-trace is directly opposite small shallow scalar damage (SS) on the dorsal aspect. The polish is visible at both low (10x) and high magnification (378x). Kimball (1996: 215) remarks that certain aspects of polish micro-traces are visible at different magnification. His microphotographs of one micro-trace at various magnifications provide a visual representation of these differences (Kimball 1996: Figure 12.20). Art# 112.6 (Figure 40) is interpreted as a graver used for working wood. The polish on Art# 112.6 (Figure 42) is confined to the graver spur. Extensive dorsal retouch is present along the right lateral edge. Art# 135.36 exhibits edge rounding and dorsal retouch. The occurrence of edge rounding on Art# 135.36 suggests working softer material such as meat. Micro-traces of ½ moon breaks and SS on Art# 122.35 suggest the working of both hard and soft material.

The assemblage from the shell midden deposit indicates that flake tools were utilized for a range of functions. The flake tools reflect an expedient technology. Debitage with opportunistic edges were selected as tools. The flakes are larger than most of the debitage. The use of both jasper and chert suggests that there is a preference for cryptocrystalline material.



Figure 40. Graver (Art# 112.6) on left and scraper tool (Art# 112.1) on right

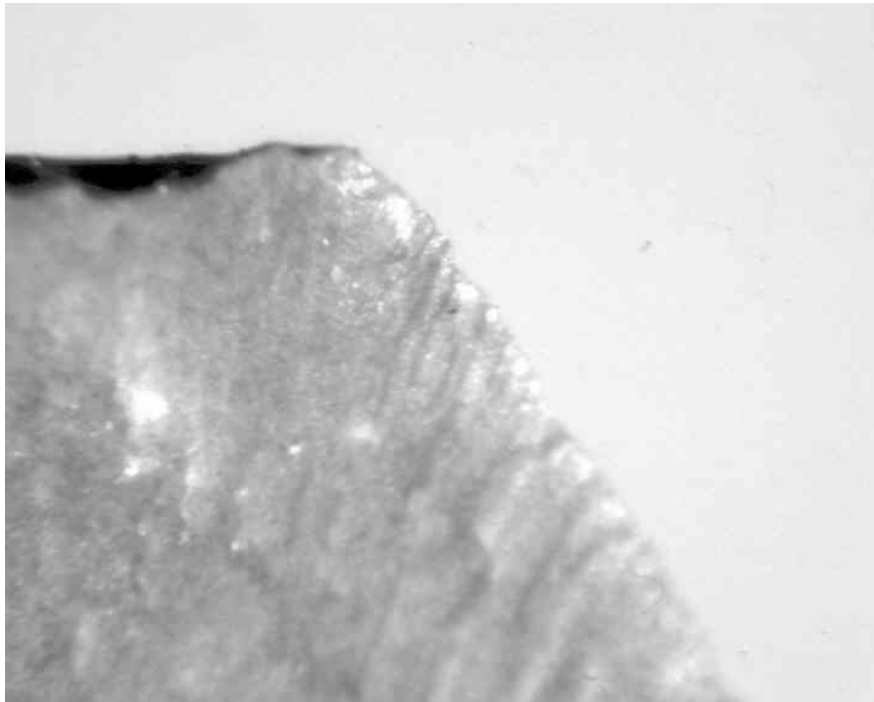


Figure 41. Polish on scraper (Art# 112.1) at 40X magnification

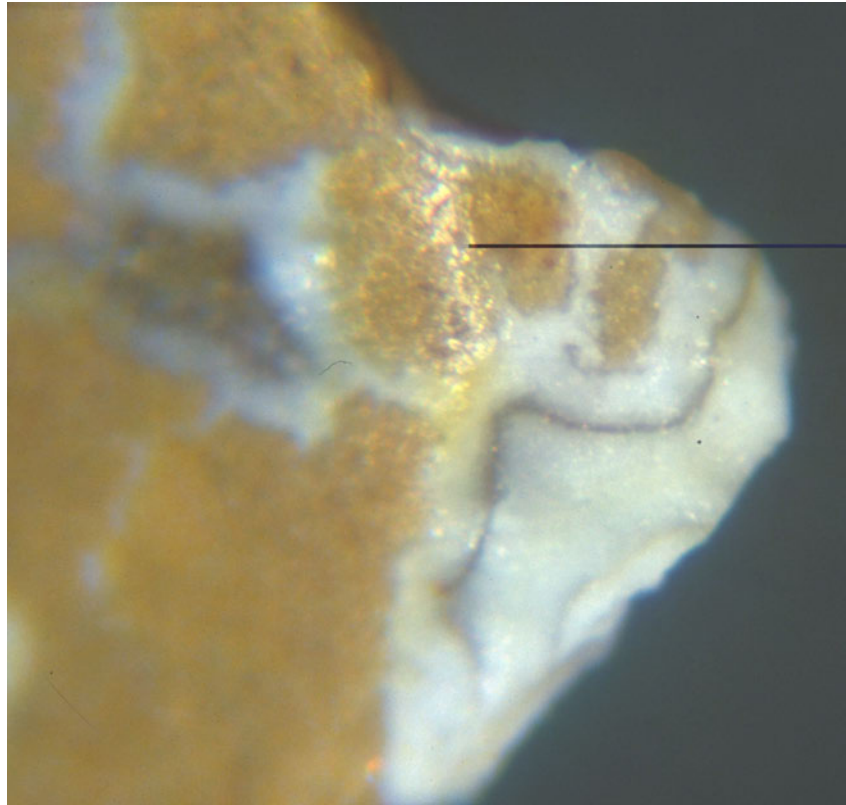


Figure 42. Polish on graver (Art# 112.6) at 40X magnification

### 5. Cobble-Based Implements

Cobble-based implements from the Late Woodland shell midden consist of two quartzite hammerstones. One hammerstone was found in Test Unit 1 and the other in Test Unit 3. Hammerstones exhibit battering on one end from being used during lithic reduction. The hammerstones are associated with debitage. However, the limited amount of excavations inhibits the ability to infer an association between hammerstones and concentrations of debitage. The hammerstones may have been used on the midden and just left there, or dumped on the midden together with other refuse.

## 6. Other Lithic Artifacts

A total of 1088.48 (N=61) grams of FCR was recovered from the shell midden deposit. The FCR consists of basalt, quartz, quartzite, sandstone, and unidentified rock material. Twenty-one manuports weighting 505.01 g consist of ironstone, sandstone, unidentified sedimentary, quartzite, quartz, and basalt were recovered. Manuports are larger than pebbles and do not show evidence of modification or heat alteration.

### B. Ceramics

The majority of the ceramic types date from 1050-350 B.P. Several ceramic types dating to earlier time periods are not felt to be a valid association with Stratum II. Types I A, I C, I ND, II A and V ND are comparable to Townsend series ceramics. Type I A is comparable to Rappahannock Fabric Impressed ceramics. Dates associated with Rappahannock Fabric Impressed span the entire Late Woodland Period from 1050-350 B.P. Some Type I C body sherds may represent heavily smoothed over portions of fabric-impressed vessels that probably could be combined with Type I A. Type I C is also comparable to Yeocomico Plain found in the lower Potomac River Valley dating to terminal Late Woodland and Protohistoric periods (Waselkov 1982: 294-295). One small rim sherd with no decoration and smooth surface may be comparable to Yeocomico Plain. Four sherds of Type I C with incised decoration are comparable to Rappahannock Incised that has a date range of 1050-665 B.P. The limited quantity of Type IV C and IV ND can be roughly compared to Killens or Currioman ware that is



contemporaneous with Townsend ceramics. Type III D is roughly comparable to Sullivan Cord Marked ceramics.

Other ceramic types in the midden not felt to be in valid association include Type VIII ND and IX B. Type VIII ND has paste characteristics similar to Dames Quarter ware. A small piece of stone material (possible hornblende) similar to the crushed rock used as temper Dames Quarter was found in Test Unit 2 in the shell midden. The presence of temper may suggest the presence of on-site ceramic production. Yet, the occurrence of this Early Woodland tempering agent in a Late Woodland deposit is problematic. Type IX B is comparable to net marked varieties of Wolfe Neck.

Two partially reconstructed vessels provide information on vessel shape, size and variations in surface treatment. Type I A is represented by a reconstructed rim section (Figure 43). The rim diameter for this Type I A vessel is 9-12 cm. Vessel shape cannot be determined for this vessel. The fragile nature of the relatively thin walls of this Type I A vessel suggest the pot might not have function as a cooking or storage vessel. The absence of sooting around the vessel's rim also suggests a non-cooking function. The relatively small size of the vessel would not be ideal for storage. The decoration on this vessel is confined to the lip. The cord wrap stick or edge of cord wrap paddle impression on the lip gives a pie-crust like appearance to the lip. The temporal range of this decorative attribute has never been assessed in regional ceramic studies.

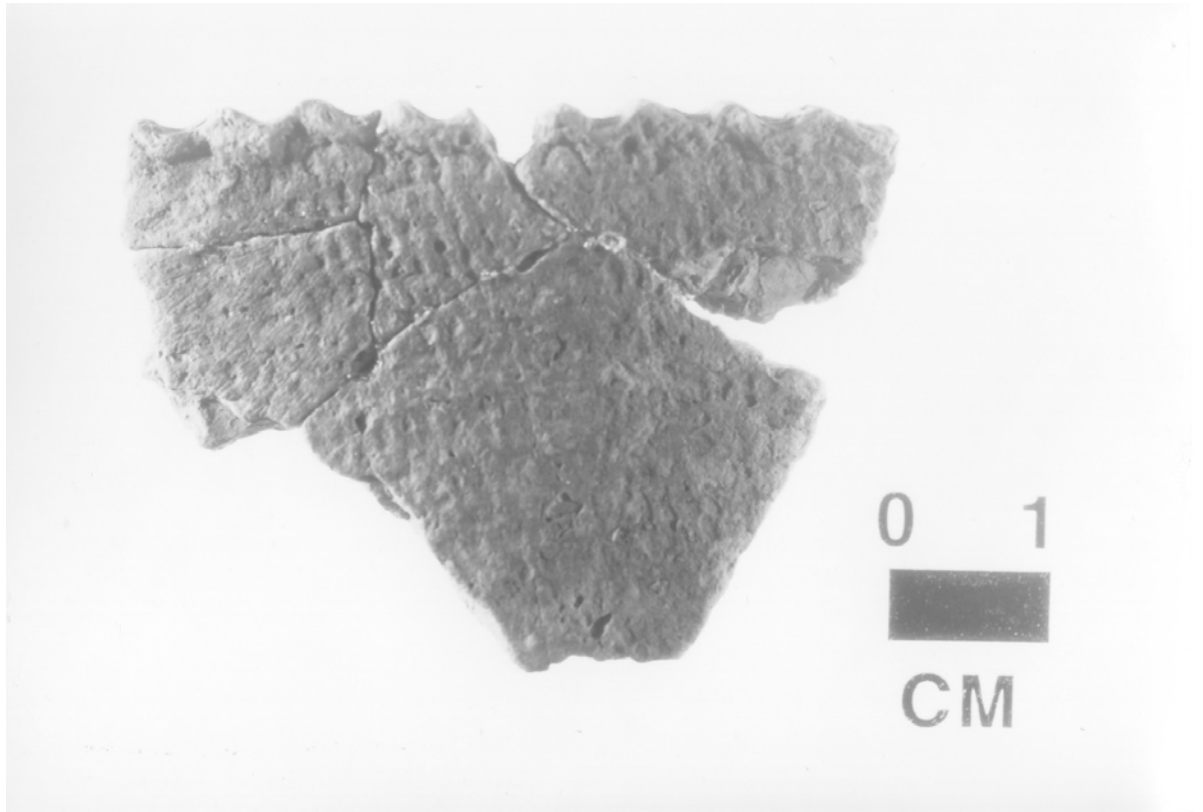


Figure 43. Portion of Type I A vessel

A partially reconstructed vessel of Type II A provides information concerning variation in surface treatment across a pot and general vessel shape information (Figure 44). The Type II A vessel contains a section that shows a transition from a fabric-impressed surface to a smoothed surface. The reconstruction of this vessel suggests that the distinction between analytical wares with smoothed exterior surfaces (i.e. Type I C) and fabric-impressed surfaces (i.e. Type I A) may not be significant. Inevitably, some of sherd classified as Type I C could be combined with Type I A based on vessel reconstructions from Holland Point and descriptions of whole vessels from other sites in the Middle Atlantic region. The partially reconstructed Type II A vessel has a globular shape.



Figure 44. Portion of Type II A vessel

A minimum of five vessels is represented based on groupings of rim sherds that could belong to the same vessel and refitted rim sherds. The rim sherd assemblage suggests one vessel of Type I A and three vessels of Type I C. Ceramic types with total amounts of body sherds weighing over 5 g suggest another vessel Type IX B and Type IIID.

## C. Biological Remains

### 1. Invertebrates

Attempts at determining Minimum Number of Individuals (MNI) were not conducted. In general, Native Americans harvested a variety of shellfish species with a focus on oyster. Barnacles, Impressed Odostome, Atlantic Oyster Drill, Lunar Dove Shell, Slipper, Gem Clam and *Triphora* are relatively smaller aquatic animals that are probably incidentally collected while harvesting oyster and other large molluscs. The limited nutritional value of these species suggests they are not a food item. Atlantic Oyster, Drill Lunar Dove Shell, and *Triphora* live in habitats that include sea grass meadows. The presences of these species could indirectly suggest that Native Americans may have been harvesting aquatic grasses. Eelgrass was found at the Wilgus site suggesting Native Americans were harvesting aquatic grasses (Custer, et al. 1983: Table 3). The shells are not broken in a manner indicative of meat extraction. The salinity range for these species overlaps with oyster.

Eastern oyster (*Crassostrea virginica*) is the predominate species found in the shell midden deposit. Table 20 summarizes the oysters habitat and season of harvest data from three proveniences. The percentage calculation for the amount of attachment scars and ribbing exclude the valves listed as “cannot determine”. The habitat analysis will be discussed first followed by the season of harvest analysis. Both habitat and

| <b>Sample Size for various analyses</b>            | <b>TU 2 Strat II NE Quad (Lot 121)</b> | <b>TU 3 Strat II (Lot 135)</b> | <b>TU 7 Strat II Lv 2 (Lot 162)</b> | <b>Total</b> |
|----------------------------------------------------|----------------------------------------|--------------------------------|-------------------------------------|--------------|
| Number of valves analyzed for habitat analysis (1) | 46                                     | 90                             | 76                                  | 211          |
| Salinity Regime I                                  | 15 (35%)                               | 24 (27%)                       | 33 (46%)                            | 72 (35%)     |
| Salinity Regime II                                 | 13 (30%)                               | 52 (58%)                       | 27 (38%)                            | 92 (45%)     |
| Salinity Regime III                                | 15 (35%)                               | 14 (16%)                       | 12 (17%)                            | 41 (20%)     |
| Cannot Determine Salinity Regime                   | 3                                      | 0                              | 4                                   | 7            |
| Attachment Scars Presence                          | 26 (58%)                               | 44 (53%)                       | 48 (72%)                            | 118 (61%)    |
| Without Attachment Scars                           | 19                                     | 39                             | 19                                  | 77           |
| Cannot Determine Attachment Scars                  | 1                                      | 7                              | 9                                   | 17           |
| Ribbing presence                                   | 32 (76%)                               | 57 (70%)                       | 53 (78%)                            | 142 (74%)    |
| Without ribbing                                    | 10                                     | 25                             | 15                                  | 50           |
| Cannot Determine Ribbing                           | 4                                      | 8                              | 8                                   | 20           |
| Mud Worms Presence                                 | 44                                     | 87                             | 71                                  | 208 (97%)    |
| Without Mud Worms                                  | 1                                      | 2                              | 3                                   | 6            |
| Cannot Determine Mud Worms                         | 1                                      | 1                              | 2                                   | 4            |
| Bed Oyster                                         | 26 (63%)                               | 73 (83%)                       | 59 (84%)                            | 158 (86%)    |
| Sand Oyster                                        | 12 (29%)                               | 8 (9%)                         | 3 (11%)                             | 28 (7%)      |
| Channel Oyster                                     | 3 (7%)                                 | 7 (8%)                         | 8 (4%)                              | 13 (7%)      |
| Cannot Determine Oyster Type                       | 5                                      | 2                              | 6                                   | 13           |
| Number of valves analyzed for seasonality          | 31                                     | 29                             | 41                                  | 101          |
| Ave. Growth Index                                  | .62                                    | .60                            | .64                                 | .62          |
| StDv Growth Index                                  | .36                                    | .39                            | .33                                 | .35          |

Table 20. Summary of oyster analysis, note that certain characteristics could not be recorded for all of the oysters because some valves were not complete, for fragmentary valves where a characteristic could not be observed it was recorded as “Cannot Determine”

season of harvest analysis will be compared by each provenience when significant differences are apparent. Ideally more oysters should have been analyzed to provide more robust data.

The salinity regime data from the three proveniences shows intra-assemblage variability. The variability could suggest that the salinity levels fluctuated in the waters around Holland Point. Variability could also relate to micro-differences in paleo-salinity in certain areas. The waters in Hooper Cove to the north of Holland Point might have a higher salinity than the water to the east along Holland Point adjacent to the main channel of Slaughter Creek. Rainwater runoff would reduce the salinity in the waters around the channel of Slaughter Creek. Hooper Cove would have been more isolated from the water in the channel of Slaughter Creek, prior to the erosion of Hooper Point and Holland Point. Oysters collected from Hooper Cove might have bore sponges species indicative of higher salinities than oysters collected from along the main channel of Slaughter Creek. The data for all three assemblages combined also suggest that salinity conditions were not the same for all the locations where the oysters were harvested. The variability in salinity as indicated by the sponge bore data is intimately linked to the hydrology around Holland Point.

The salinity in the Chesapeake Bay near Holland Point and the lower embayed portion of the Little Choptank River is comparable to Salinity Regime II (Lippson and Lippson 1997: 6; Stroup and Lynn 1963; Tiner and Burke 1995: Figure 6-1). The presence of oysters from three different salinity regimes is expected because of the hydrology around Holland Point and in the near-by waters. Micro-aquatic environments could have been located around Holland Point that lead to differences in salinity.

Most of attachment scars on the oysters are relatively small suggesting that the shells were loosely clusters and not obtained from dense reefs. The scars are generally confined to the area near the hinge. Loosely clumped oysters have been found at other shell midden sites in the Chesapeake Bay (Custer, et al. 1997). The percentage of attachment scars is relatively consistent between the three proveniences.

The prevalence of radial ribbing among all three proveniences is relatively consistent and indicates that most oysters were collected from intertidal and/or shallow waters. The “oyster type” data also supports the interpretation that the oysters were harvested from intertidal and/or shallow water. Sand oysters are a type of oyster that typically grows in intertidal and/or shallow water. Bed oysters can grow in intertidal and shallow water as well as deeper waters.

The oyster type data and the mud worms provide insight into the type of substrate on which the oyster lived. Bed oysters typically grow on muddy sand bottoms. The high occurrence of mud worms also indicates that the oyster grew on muddy bottoms. Mud worms were found in similar amounts for all three proveniences. The muddy bottoms are more common in the Chesapeake Bay then harder sand and gravel bottoms.

The different oyster types are found in relatively similar percentages in all three proveniences. The slightly higher amount of sand oyster from Test Unit 2 could suggest a distinctive episode of collecting. However, the small sample size could account for the high percentage of sand oysters. The limited amount of channel oysters suggests that some oysters were collected from deeper waters. The different types of oysters suggest

that oysters were collected from two different habitats (shallow water/intertidal and deeper water).

The valve size and age was also recorded. Valves range in size from small spat (1 cm) to 14 cm in height. Calculating an average size is not possible because only the larger oysters and larger valve fragments were measured. Shell fragmentation also complicates calculating shell size. Measuring umbo length is alternative to measuring valve length that could provide data on relative shell size (Claassen and Whyte 1995: 70). Yet, this measurement was not taken.

Oyster age was evaluated under the microscope while drawing the valves for the seasonality data. Oysters range in age from young spat less than a year old to fourteen years old. Calculating the average age of the oyster would be misleading because the valves analyzed under the microscope were typically at least four years old. The sample is biased towards oysters four years old and older.

The oyster habitat analysis indicates that most of the oysters were probably harvested from aquatic environments around Holland Point. Historic maps of oyster bed locations on the Chesapeake Bay indicate that during historic times oysters were abundant in the middle portion of the Chesapeake Bay (Lippson 1973). Hooper Cove to the north, and the shoreline adjacent Holland Point along the bank of Slaughter Creek, is the two most likely collection areas. Most oysters were collected from the tidal flat environments. Individual oysters and clumps of oysters were collected. Canoes could have been used to transport oyster back to the site. This could explain why oysters from different salinity regime are present in the midden. The absence of oysters from Salinity



Regime IV indicates that oysters were not being brought to Holland Point from the southern portion of the Chesapeake Bay.

Table 9 summarizes the growth index used to determine the season of harvest. Figure 45, Figure 46, Figure 47, and Figure 48 are histograms showing the relative quantity of valves with different growth indices. Seventeen valves were measured which had less than three years of growth. These valves are not included in the calculations of the growth index and are not included in the figures and tables. Growth indices greater than one indicate that the oyster was harvested in the fall or winter. The three histograms for the individual proveniences show some variability in the growth indices. Yet, the average growth index and the standard deviation indicate that the variation in the histograms is not dramatic. The combination of data from all three proveniences does not dramatically skew the data. The average growth index and the standard deviation for all three proveniences are similar to the values for the individual provenience samples. The growth indices for the individual proveniences suggest that season of harvest extends from the late summer through the fall. The high value for the standard deviation is common for oysters harvested in the fall (Custer and Doms 1990: 156). Combining all three proveniences also suggests that oysters were harvested during the late summer-fall. The spread in Figure 48 suggests that oysters might have been harvested during the summer also.

The composition of the shell midden deposit as described in Chapter 5 indicates that single-harvest assemblages of oysters could not be delineated within the midden. The analysis of the growth rates did not reveal any patterns in abnormally high or low

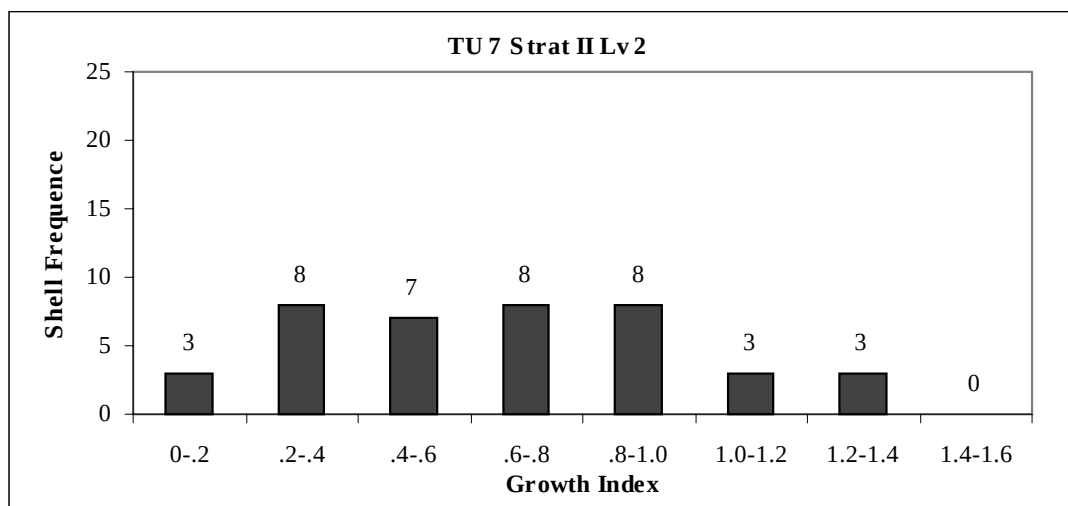


Figure 45. Growth index variation for valves measured from Test Unit 7 Stratum II Level 2

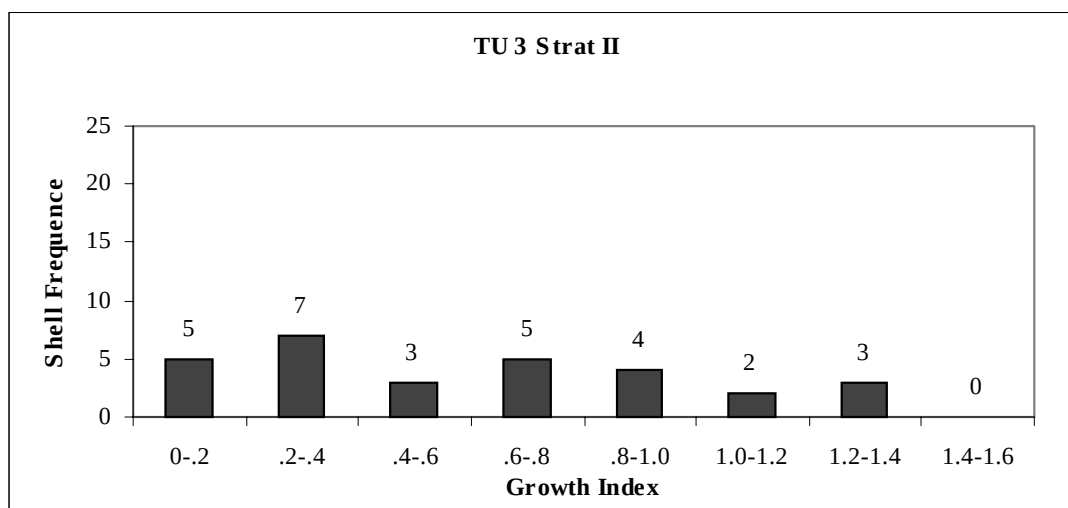


Figure 46. Growth index variation for valves measured from Test Unit 3 Stratum II

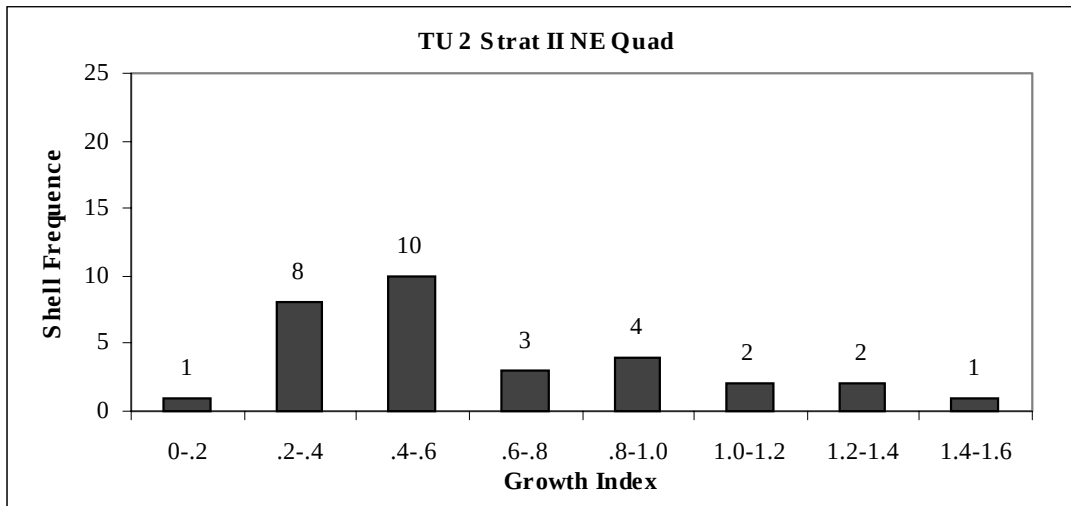


Figure 47. Growth index variation for valves measured from Test Unit 2 Stratum II northeastern quadrant

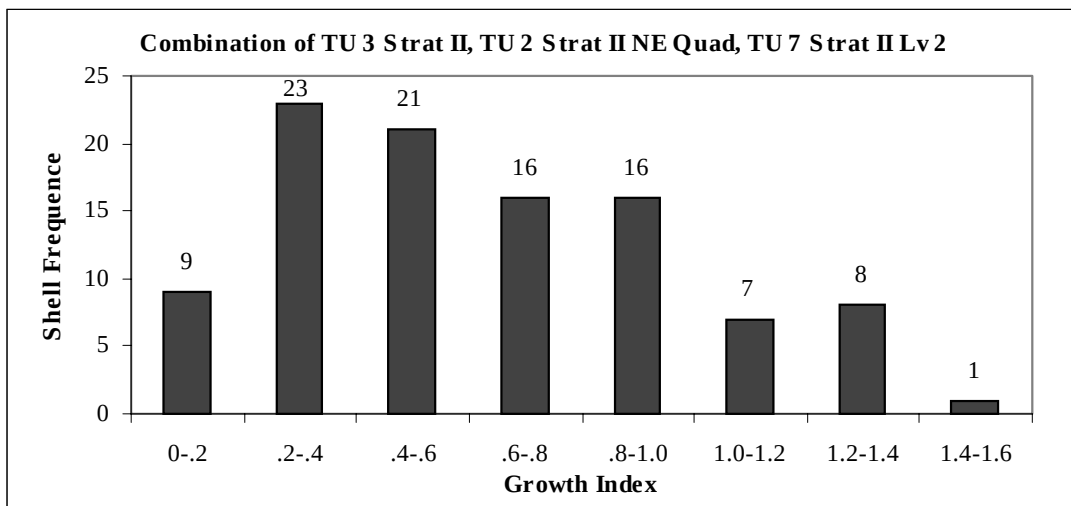


Figure 48. Growth index variation for valves measured from all three proveniences (Test Unit 7 Stratum II Level 2, Test Unit 2 Stratum II Northeastern Quadrant, Test Unit 3 Stratum II)

amounts of growth or distinctive storm breaks that could be interpreted as marker years. The absence of marker years is another piece of evidence suggesting that the oysters do not represent single-harvest assemblages. The valves measured for season of harvest reflect multiple episodes of refuse disposal that could have extended from 950 B.P. to 350 B.P. The general trends in the growth indices suggest that most of oysters, in the part of the midden excavated, were harvest during the late summer through fall.

A growing body of data on oyster season of harvest in the Chesapeake and Delaware Bays allows for limited comparisons across time and space. Season of harvest data from three other Late Woodland sites (18ST634, 18ST570, and 18DO117) in the Chesapeake region is available for comparison to Holland Point. Oysters from two pit features, dated to early Late Woodland times at the Aud Site (18ST634), were analyzed for season of harvest (Herbert and Steponaitis 1998: 62). The Aud Site is located on the lower St. Marys River, Maryland. Relatively small samples of oysters from the two features were measured. Fourteen valves from one feature and twenty-five valves from the other feature were used to estimate the season of harvest. The season of harvest for the two assemblages is from the summer through the early fall. The two shell assemblages from the Aud Site represent single harvest assemblages. Oyster from the early Late Woodland shell midden at the Thomas Point Site (18ST570) were obtained from eight column samples for seasonality analysis. Thomas Point is located on the lower Patuxent River in Maryland. The analysis of two hundred and ninety-three valves suggests that most oysters were harvested from the late summer through the winter.

Oysters from eight features at Locust Neck (18DO117) containing Townsend pottery were analyzed for season of harvest (McNamara 1985: 89). Locust Neck is

located on the Choptank River up stream from Cambridge, Maryland. The amount of valves analyzed from each feature is not reported, but from fifteen features analyzed at the site a total of six hundred and fifty-eight valves were inspected (McNamara 1985: 91). The assemblage of oysters from each feature more then likely represents a single-harvest assemblage, yet McNamara did not discuss the nature of the shell assemblage. Oyster from the eight Late Woodland features were harvested in the spring and fall. The three Late Woodland sites from the Chesapeake Bay Region do not show a consistent inter-site pattern in the season of harvest.

The data from Holland Point, Thomas Point, and the Aud Site suggest that oysters were harvested at roughly the same time of year at all three sites during the Late Woodland Period. The Locust Neck Site is closest to Holland Point, but spring and fall oyster harvesting is different from that of Holland Point. The data from the Late Woodland sites in the Chesapeake Bay region indicates that there is no one specific season for oyster harvesting.

Oyster seasonality has been evaluated on three other sites (18KE128, 18KE17, Area D of the Patuxent Point Subdivision Property) in the Chesapeake Bay Region, but these sites do not date to the Late Woodland Period. 18KE128 is an Early Woodland shell midden in Kent County, Maryland. Oyster seasonality at 18KE128 indicates a late summer/early fall (August/September) season of harvest (Custer, et al. 1997: 56). 18KE17 is a Middle Woodland shell midden located near 18KE128. The oyster seasonality analysis at 18KE17 suggests a fall through spring harvest (Custer 1987). Oysters from four Middle Woodland features in Area D of the Patuxent Point Subdivision Property were analyzed for season of harvest (Doms n.d.). The Patuxent

Point Site is located at the mouth of the Patuxent River near Solomons, Maryland. The oysters at Patuxent Point were harvested from fall through early winter (September-December). The seven sites (18DO220, 18ST634, 18ST570, 18DO117, 18KE128, 18KE17, and Patuxent Point) where oyster seasonality has been conducted in the Chesapeake Bay Region suggest that oysters are not typically harvested during early/middle summer months.

In the Delaware Bay Region, oysters have been analyzed for season of harvest from sixteen components from ten different Late Woodland sites (see Custer and Doms 1990: Table 3). Oysters from Late Woodland contexts in the Delaware Bay Region were harvested during the early spring at four components, during the summer at five components, during the spring at three components, during the late spring-summer at one component, during the spring-summer at one component, and during the fall-early spring at one component. The Late Woodland oyster seasonality data suggest that this resource in the Delaware Bay Region was exploited at various times throughout the year. Based on the oyster seasonality data and other ecofact analysis, Custer and Doms (1990: 159) argue that oysters served primarily as supplemental food that allowed groups to winter over at coastal sites. Yet, summer and late fall season of harvest suggest that oysters were also exploited in warmer months.

A clear pattern in oyster seasonality during the Late Woodland is not evident from the published data in the Middle Atlantic Region. Future research needs to examine the relationship between agriculture and oyster harvesting. Would the growing of crops affect the timing of oyster harvesting in the Middle Atlantic Region? Two patterns in oyster seasonality could exist during the Late Woodland in the Middle

Atlantic Region. One pattern could be linked with groups that farm and other pattern could be linked to groups on the Eastern Shore of Maryland and other areas where maize was not grown.

A total of nine pebbles were collected from the midden. The pebbles were probably brought on site attached to oysters. The pebbles are not broken or modified in any manner that suggests utilization. Pebbles are not common in the natural soil around Holland Point. Large quantities of pebbles have been recovered from other shell middens also suggesting they were fortuitously brought on site while harvesting oyster (cf. Waselkov 1982: 146).

Other invertebrate remains identified in the shell midden deposit are presented in Table 21. Most of the species recovered from the shell midden deposit have habitats in waters that are adjacent to Holland Point. Oyster, Atlantic ribbed mussel, soft-shell clam, stout razor clam, and marsh periwinkle were species purposely exploited by Native Americans for nutritional value or other utilitarian reasons. Assumptions that all molluscan remains are exploited for food should be evaluated carefully. Ethnographic observations of shellfish exploitation highlight that shellfish meat is utilized as bait for catching other aquatic animals (Claassen 1998: 176-178). The meat from marsh periwinkle could be used as fish bait (Darrin Lowery, personal communication 7/20/2000).

Atlantic ribbed mussel cannot move once they have attached themselves to something. They are commonly found half-buried in the mud and around marshes

|                                             |        |         |          |         |           |
|---------------------------------------------|--------|---------|----------|---------|-----------|
| family Unionidae Fresh water mussel         |        | X       |          |         |           |
| Triphora (Marsallora)                       |        | X       | X        |         |           |
| Littorina irrorata Marsh Periwinkle         |        | X       |          |         |           |
| Urosalpinx cinerea Atlantic Oyster Drill    |        | X       | X        |         |           |
| Gemma gemma                                 |        | X       |          |         |           |
| Boonea impressa Impressed Odostome          |        | X       | X        |         | X         |
| Melampus bidentatus Eastern Melampus        | X      | X       | X        | X       |           |
| Crepidula Slipper shell                     |        | X       | X        | X       |           |
| Tagelus plebius Stout Razor Clam            |        | X       |          |         |           |
| Mitrella (Astyris) lunata, Lunar Dove Shell |        | X       | X        | X       |           |
| Mya arenaria, Softshell Clam                |        | X       |          |         |           |
| Geukensia demissa, Ribbed Mussel            |        | X       |          |         |           |
| Balanus ssp., Barnacle                      |        | X       | X        | X       |           |
| Crassostrea virginica, Eastern Oyster       | X      | X       | X        | X       | X         |
| Taxon                                       | Stra I | Stra II | Stra III | Stra IV | Feature 1 |

Table 21. Aquatic mollusc species



(Lippson and Lippson 1997: 92). The species cannot dig deeper for defensive purpose making them relatively easy to collect. Stout razor clams were probably harvested using a digging implement (Quitmyer 1985: 30-31). As a defensive mechanism, jack knife clams react to the pressure of someone walking on the substrate by digging deeper. They can dig up to one meter below the surface (Quitmyer 1985: 31). Soft-shell clams are another burrowing species of clam that was probably harvested in the sub-tidal or inter-tidal environment using a digging stick.

One piece of a marsh periwinkle shell was found in the shell midden at Holland Point. The fragmentary nature of the shell suggests the marsh periwinkle was broken open to extract the meat. Marsh periwinkles have been recovered from several shell middens in the Middle Atlantic region. At the Thomas Point Site (18ST570) on the lower Patuxent River in St. Marys County, Maryland, a limited amount of marsh periwinkles were recovered from the late Middle Woodland/early Late Woodland shell midden. At the White Oak Point shell midden, marsh periwinkles are present in 11 out of 17 components ranging in age from the Late Archaic to Contact periods (Waselkov 1982: Table 37). Dense concentrations of marsh periwinkles occur in a Middle Woodland pit (Geier, et al. 1986a: 344) at the Addington Site (44VB9) Virginia Beach, Virginia suggesting that they were boiled or roasted to cook the creatures and facilitate meat extraction (Whyte 1986: 48).

The freshwater mussel valve fragment from the shell midden deposit, identified by Aurther Bogan, represents a species that would not have been available in the waters off of Holland Point. The nearest modern fresh water source would be located inland

and to the west in the headwaters of some of the smaller drainages roughly 20 km away from Holland Point. Historic distribution maps of freshwater mussels on the Eastern Shore suggest that the nearest habitats are located around 40 km inland from Holland Point (Bogan and Proch 1997). The recovery of this freshwater mussel provides insight into the range of environments exploited by Native Americans at Holland Point. It suggests that part of their settlement pattern involved exploiting aquatic resources located in more interior settings. The transportation of freshwater shell into marine environments may suggest that Native Americans did not move that far between settlements on the outer neck lands and more interior locations. Why transport shell far distances unless it had some religious significance? There was not systematic attempt to locate the closest fresh water habitat to Holland Point. The identification of fresh water shellfish in a marine dominated midden has never been reported on the Delmarva Peninsula. Future analysis of small fragments of shell from midden deposit could lead to new discoveries of freshwater shellfish in midden dominated by saltwater species.

Table 22 presents the species of land snails recovered from the shell midden deposit. Ideally land snail analysis should involve quantification of species from a uniform amount of sediment verse a presence/absence approach (Claassen 1998). The various species identified provide general impressions of the paleoenvironment. The species represented in the midden suggest that the environment and vegetation at Holland Point consisted of marshes, wooded environment, and well-drained sunny locations. The land snail habitat information indicated that marshes may have fringed the landform, but the site was located in a wooded environment. The land snail data reinforces the paleoenvironmental impressions that the saltmarsh did not cover the

| Habitat                         | “This species is found in so many habitats that in seems impossible to pinpoint its requirements. It is found in low, wet places, as well as paces which are dry. In is also found in sunny roadsides and along railroads and in leaf litter in deep woods (page 8).” | Seven modern species habitats range from “Climbing on plants in brackish marshes” to “found in pine woods on the coastal plain” or “wet ground of marshes (page 16”. | A species with a wide habitat tolerance. Found in woods about logs, hollow trees, and rocks; in weedy roadsides and along railroads; in urban areas in vacant lots and gardens (page 18)”. | “Found on wooded hillsides and in ravines, under logs and rocks, in leaf litter, and along roadsides and railroads; on waste ground in urban areas (page 49)”. | “Found in a wide variety of habitats. Usually in floodplain woods under leaf litter, but also found on hillsides and in ravines, on roadsides and along railroads; in meadows and marshes, and in waste ground and in gardens in urban areas (pages 45-46)”. | “Habitat: Found in a variety of habitats, but usually found in upland woods in leaf litter and under logs and rocks: also along roadsides, railroads, and old pastures: and on waste ground in urban areas (page 46)”. | “Found in the same habitat as Strobilops labyrinthica (which is) on logs in wet weather and in leaf littler in dry weather (page 13)”. | “ A species of bare ground, roadsides, old quarries, glades and waste ground, usually in calcareous areas (emphasis added) (page 8). | Wide variety of habitats (pages 20-22). |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Species                         | <i>Gastrocopta contracta</i>                                                                                                                                                                                                                                          | <i>Catinella</i> ssp.                                                                                                                                                | <i>Anguispira alternata</i>                                                                                                                                                                | <i>Neohelix albolabris</i>                                                                                                                                     | <i>Mesodon thyroidus</i>                                                                                                                                                                                                                                     | <i>Triodopsis tridentate</i>                                                                                                                                                                                           | <i>Strobilops aenea</i>                                                                                                                | <i>Pupoides albilabris</i>                                                                                                           | <i>Helicodiscus</i> ssp.                |
| Stratum II                      | X                                                                                                                                                                                                                                                                     | X                                                                                                                                                                    | X                                                                                                                                                                                          | X                                                                                                                                                              | X                                                                                                                                                                                                                                                            | X                                                                                                                                                                                                                      | X                                                                                                                                      | X                                                                                                                                    | X                                       |
| Strata III & IV                 | X                                                                                                                                                                                                                                                                     |                                                                                                                                                                      |                                                                                                                                                                                            | X                                                                                                                                                              | X                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                        | X                                                                                                                                      | X                                                                                                                                    | X                                       |
| Strat II (Column Samples)       | X                                                                                                                                                                                                                                                                     | X                                                                                                                                                                    | X                                                                                                                                                                                          | X                                                                                                                                                              |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                        | X                                                                                                                                      | X                                                                                                                                    | X                                       |
| Strat III & IV (Column Samples) | X                                                                                                                                                                                                                                                                     |                                                                                                                                                                      |                                                                                                                                                                                            |                                                                                                                                                                |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                        | X                                                                                                                                      |                                                                                                                                      | X                                       |

Table 22. Land snail species (Note that page numbers are from Hubricht (1985). Species obtained from the column samples have a better contextual data.)

landform during the time of occupation. The presence of *Mesodon thyroidus* and marsh periwinkle does suggest that fringing saltmarsh environments existed at the time of site occupation. The decaying tree stump found along the shoreline, which appears to be in situ, also suggests forest cover at the site. The occurrence of *Pupoides albilabris*, which prefers open environments, may indicate that large shell deposits altered the forest vegetation or Native American land clearing practices were reducing the forest cover. Hubricht (1985: 8) indicates that *P. albilabris* are attracted to “calcareous areas” which suggests they would be present in the carbonate-rich sediments of a shell matrix site. The identification of land snails, whose habitats include sparse vegetation, has been recovered in shell midden deposits at 18KE128, in Kent County Maryland. The land snail data from 18KE128 also suggest the opening up of forest environments because of extensive shell midden deposits (Custer, et al. 1997). The recovery of *P. albilabris* from the Strata III and IV in test units may not be a valid association since the test units were excavated with water in them and the land snails tended to float in the standing water. The presence of *P. albilabris* from only Stratum II in the column samples where better excavation control was possible confirm the association of this species with the shell midden deposit. Other researchers have remarked about how shell middens create sunny habitats that also have plant communities which are distinctive from the surround vegetation (Claassen 1998: 227).

## 2. Vertebrates

Table 23 summarizes the vertebrate faunal remains recovered from the shell midden deposits. The identified elements of white-tailed deer provide insight into hunting and butchering behavior. One common method of hunting deer used by Native Americans and documented in the ethnographic record from the Middle Atlantic region is to drive them into a body of water and from a boat kill the animal (McCabe and R. 1984: 50). In the water, the deer's mobility is seriously compromised. Native Americans at Holland Point might have used this method of deer hunting. The identified deer bones suggest that head, trunk, and hind leg portions of the body were brought back to the site. The absence of fore limb bones (i.e. humerus, radius, ulna, and metatarsals) suggests this portion of the deer might have been removed at the kill site during initial butchering. This interpretation should be considered cautiously since only a limited portion of the shell midden deposit was investigated. A large sample could contain more identifiable whitetail deer elements. The whitetail deer elements found along the shoreline give a general impression of which portions are brought back to the site. The presence of teeth in the shell midden deposit without other cranial fragments may indicate that the maxilla and/or mandible regions of the skull were brought back to the site. These elements containing teeth could have been used for tools. Ethnographic data from the Seneca in New York indicates that they used deer jaws (i.e. mandibles) as scrapers to remove green corn from the cob (Parker 1983: 53-54). One of the only intact (i.e. not shattered) bones from the shoreline faunal assemblage is a large portion of white-tailed deer mandible (Artifact 2.2959). This white-tailed deer jawbone might

| Species                                                | Element/NISP/Side/Portion                                                                                                      | Total Weight g<br>(Count) of NISP | MNI |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----|
| White-Tailed Deer<br>( <i>Odocoileus virginianus</i> ) | Tibia (NISP=1 right distal end), Premolar (NISP=1 upper), Molar (NISP=7), Astragalus (NISP= 1 left), rib (NISP=1 proximal end) | 33.43 (11)                        | 1   |
| Raccoon ( <i>Procyon lotor</i> )                       | Canine (NISP=1 Upper Right), M1 (NISP=2 Upper Left), Maxilla (NISP=1 Right)                                                    | 1.43 (3)                          | 1   |
| Turtle ( <i>Chelonia</i> )                             | Carapace (NISP = 3 fragment), Carapace (NISP = 3 whole), Carapace (NISP = 2 Center/Axial)                                      | 3.55 (6)                          | 1   |
| bony fish<br>( <i>Osteichthyes</i> )                   | Vertebra (NISP = 1)                                                                                                            | 0.05 (1)                          | 1   |
| indet. mammal                                          | Long bone (NISP = 19 shaft), Mandible/Maxilla (NISP = 1 fragment), Unidentified (NISP = 3)                                     | 17.44 (23)                        |     |
| indet. large mammal (larger than raccoon)              | Long bone (NISP = 9 shaft), Long bone (NISP = 2 Unidentified End),                                                             | 21.76 (11)                        |     |
| unidentified vertebrate                                | Long bone (NISP = 20 shaft), mandible (NISP = 1), Mandible/Maxilla (NISP = 2) Unidentified (NISP = 343)                        | 96.24 (366)                       |     |
|                                                        | Total:                                                                                                                         | 174.01 (421)                      |     |

Table 23. Stratum II faunal remains from the test units and column samples

not have been splintered for its marrow because the element was used as a tool. In the faunal assemblage from Holland Point, almost all of the large marrow producing bones have been splintered. Most of the marrows producing bones, including low kcal phalanges, from the shoreline context have been split open for marrow. The unidentified bone from the shell midden deposit, in particular the larger shaft fragments, might be from white-tailed deer long bones. The white-tailed deer and raccoon identified from the shell midden suggest terrestrial animals found in marshy areas made a significant contribution to the diet.

One unidentified long bone fragment has a splintered break that is indicative of green stick fractures. In general, larger skeletal elements such as long bones are less than 3 cm in greatest dimension (Figure 49). The fragmentary nature of the long bones

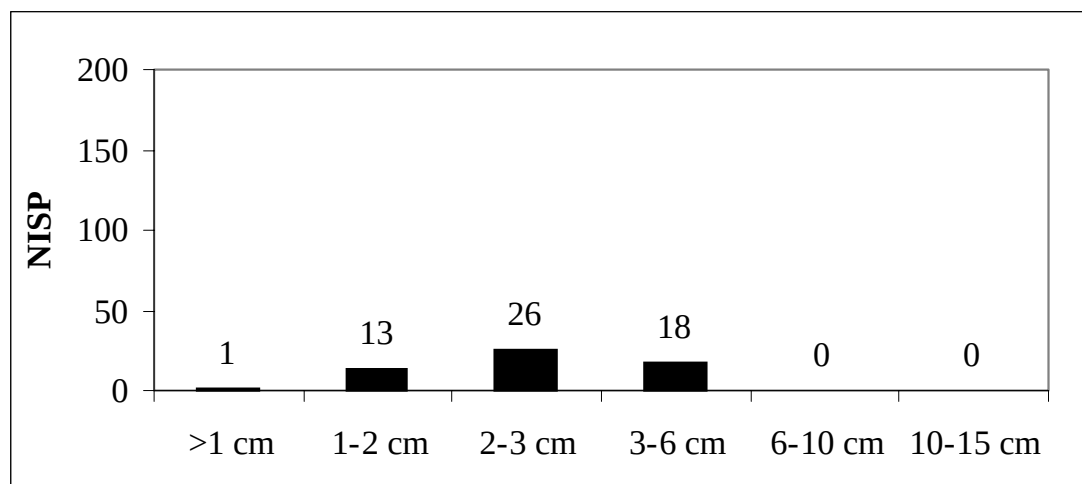


Figure 49. Size distribution of larger skeletal elements recovered from the test units and column samples from the Late Woodland shell midden deposit, note that smaller unidentified bone fragments, teeth, and turtle shell fragments have not been included in the graph

and the relative small size of the overall bone assemblage suggests that elements were processed after the meat was removed. Marrow rich bones were broken open to extract their nutrients. The white-tailed deer tibia has the highest kcal yield in marrow out of all the major white-tailed deer long bones (humerus, radius, metacarpal, femur, and metatarsal) (Madrigal and Capaldo 1999: 243-244). Bones may have been further fractured after marrow extraction to facilitate boiling the bone to obtain grease and collagen (Brennan 1981; Lyman 1994: 217). Another common characteristic of bone boiling is that fragments after processing are typically not burned (Lyman 1994: 217). The unburned condition of most pieces of bone suggests that vertebrate remains are leftover from bone boiling. Splintered bones may have served secondarily as fragments to be reworked into bone tools (Dugas 1996). Large bone fragments may have been culled from the assemblage for use as tools after marrow extraction and before boiling.

A portion of the vertebrate faunal assemblage shows evidence of heat alteration (Figure 50). A portion of the right distal end of white-tailed deer tibia was carbonized. The distal end of the tibia is covered with a relatively thin layer of soft tissue suggesting that this portion of the bone might not have been defleshed when it was burned. The distal end of the tibia is a possible location where individuals might sever the meat rich hindquarters from the bony portion of the lower leg (Stransky 1984: see Figure 133). May be the tibia burning occurred because this end was exposed to heat while cooking the hindquarters (i.e. shank cuts or round cuts). All other buried bones could not be identified to a taxonomic level. None of the calcined bone could be identified to a particular animal. Overall, the portion of the bone assemblage which has been burned, suggests discard in a fire. The small size of pieces of burned bone is indicative of taphonomic processes linked to the effects of heat alteration on bone. Burned bone is more brittle and therefore degrades faster than unburned bone (Lyman 1994: 389). The bulk of the bones could represent hearth refuse.

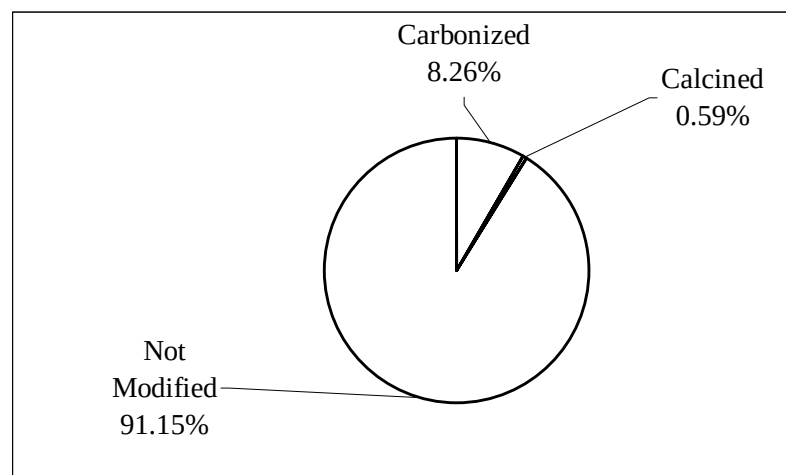


Figure 50. Percentage of modified bone and non-modified bone by total vertebrate bone weight from the Late Woodland shell midden deposit



### 3. Floral Remains

Table 24 presents the types of macrobotanical remains recovered from the different analytical contexts. Before evaluating the macrobotanical remains from the shell midden deposit, floral remains believed to be (modern) contaminants from Stratum IA/B and the sand overwash deposit will be discussed. The non-carbonized nature of the *Datura stramonium* (jimson weed) seeds suggests they are probably modern in origin. The carbonized *Phytolacca americana* (poke) and *Polygonum pensylvanicum* (Pennsylvania knotweed) are also modern in origin or from a historic context. The annual burning of the saltmarsh by the property manager could explain the carbonized condition of the poke and Pennsylvania knotweed seeds. Alternatively, the poke and knotweed could be fortuitously incorporated into the overwash deposit or saltmarsh root mat during erosion of the *in situ* archaeological deposits, and subsequent deposition of sediment on top of the saltmarsh. Both poke and knotweed are common on the Eastern Shore (Rountree and Davidson 1997: 258-259).

A small assemblage of carbonized hickory (thick-walled type) nutshell was recovered from proveniences that could not be strictly assigned to the shell midden or underlying analytical context. Five hickory nutshell fragments weighting 0.14 g were recovered from the clean up of Test Unit 2. These five fragments could either be from the Stratum II or Stratum III. Four hickory nutshell fragments weighting 0.22 g were recovered from Test Unit 3. The stratigraphic association of the nutshells was lost during the laboratory analysis of the material. These nutshell fragments and their weight are not included in Table 24.

| Context                                          | Strat I & sand<br>overwash | SII  | STRAT<br>III & IV | TU 4 | Totals |
|--------------------------------------------------|----------------------------|------|-------------------|------|--------|
| WOOD CHARCOAL (carbonized) (total count)         | 0                          | 5    | 4                 | 1    | 10     |
| total weight (grams)                             | 0                          | 0.63 | 0.24              | 0.03 | 0.9    |
| Pinus sp. (pine)                                 | 0                          | 2    | 4                 | 0    | 6      |
| Quercus sp. (white oak group)                    | 0                          | 1    | 0                 | 0    | 1      |
| deciduous taxa                                   | 0                          | 2    | 0                 | 0    | 2      |
| unidentifiable                                   | 0                          | 0    | 0                 | 1    | 1      |
|                                                  | 0                          | 0    | 0                 | 0    |        |
| NUT REMAINS (total count)                        | 0                          | 52   | 104               | 7    | 167    |
| total weight (grams)                             | 0                          | 1.98 | 4.52              | 0.05 | 6.77   |
| Carya sp. (hickory-thick walled type)            | 0                          | 49   | 101               | 7    | 161    |
| Carya sp. (hickory)                              |                            | 1    | 1                 |      | 2      |
| Juglans (walnut)                                 |                            | 1    | 0                 |      | 1      |
| Juglans nigra (black walnut)                     | 0                          | 0    | 0                 | 0    | 0      |
| Quercus sp. (acorn)                              | 0                          | 0    | 1                 | 0    | 1      |
| unidentifiable nutshell fragment                 | 0                          | 1    | 0                 | 0    | 1      |
|                                                  | 0                          | 0    | 0                 | 0    |        |
| SEED REMAINS (non-carbonized) (total count)      | 1                          | 3    | 1                 | 1    | 6      |
| Datura stramonium (jimson weed)                  | 1                          | 2    | 0                 | 1    | 4      |
| Liriodendron tulipifera (yellow poplar) fragment | 0                          | 0    | 1                 | 0    | 1      |
| Liriodendron tulipifera (yellow poplar) entire   | 0                          | 1    | 0                 | 0    | 1      |
|                                                  | 0                          | 0    | 0                 | 0    |        |
| SEED REMAINS (carbonized) (total count)          | 2                          | 11   | 8                 | 2    | 23     |
| total weight (grams)                             | 0                          | 0.02 | 0.01              | 0    | 0.03   |
| Amaranthus sp. (pigweed)                         | 0                          | 1    | 0                 | 0    | 1      |
| Ilex opaca (American holly) fragment             | 0                          | 1    | 3                 | 0    | 4      |
| Ilex opaca (American holly) entire               | 0                          | 0    | 1                 | 0    | 1      |
| Phytolacca americana (poke)                      | 2                          | 0    | 0                 | 0    | 2      |
| Polygonum pennsylvanicum (Pennsylvania knotweed) | 0                          | 0    | 1                 | 1    | 2      |
| POLYGONACEAE (knotweed family)                   | 0                          | 5    | 0                 | 0    | 5      |
| POACEAE (grass, large-seeded, eroded) fragment   | 0                          | 1    | 0                 | 0    | 1      |
| unidentifiable eroded seed (seed coat absent)    | 0                          | 0    | 1                 | 1    | 2      |
| unidentifiable seed                              | 0                          | 0    | 1                 | 0    | 1      |
| unidentifiable seed fragment                     | 0                          | 2    | 1                 | 0    | 3      |
| possible eroded seed ?                           | 0                          | 1    | 0                 | 0    | 1      |
|                                                  | 0                          | 0    | 0                 | 0    |        |
| OTHER PLANT REMAINS (total count)                | 1                          | 20   | 30                | 0    | 50     |

Table 24. Floral remains

The carbonized floral remains found in the Late Woodland shell midden deposit consist of several nuts and seed species (Table 24). Holly (*Ilex* sp.) seeds have been recovered from a late Middle Woodland feature at the Addington Site (44VB7) near Virginia Beach (Geier, et al. 1986c: Table V: 13), from the Plum Nelly Site (44NB128) in Lower Potomac, which also dates to the late Middle Woodland Period (Potter 1993: 73), and from the Gnagey Site (36SO55) a Late Woodland Monongahela site in western Pennsylvania (Blake and Cutler 2001: 136). The leaves of American Holly can be brewed into a healing tea or the leaves and bark can be applied as a hot paste for relieving pain, or the ashes of the leaves can be made into another tea for whooping cough (Vitale 1997: 166). The American Holly seeds were probably brought onto the site with the leaves and discarded in fires. The Delaware Indians from Oklahoma report using holly root as a medicinal tonic (Tantaquidgeon 1972: 118-199). American Holly is a tree species associated with seasonally flooded palustrine (nontidal) forested wetlands communities in Dorchester County (Tiner and Burke 1995: Table 6-13). Seeds of American Holly ripen from September to December and can remain on the tree throughout the winter.

*Carya* sp. (hickory-thick walled type) nut fragments are the most common nuts recovered. The “thick walled” or “true” hickories present on the Eastern Shore consist of mockernut (*C. tomentosa*) and shagbark hickory (*C. ovata*) (McKnight 1999: B-12; Rountree and Davidson 1997: 254). The hickory nutmeat can be harvested between September and October (McKnight 1999: B-15). In the column samples associated with Test Unit 2 and Test Unit 1, hickory nut fragments are found in the middle portion and lower portion of the shell midden. The vertical distribution may suggest patterns in the

shell midden deposit. Or the vertical distribution may suggest that plant remains along with other small objects have been vertically displaced through the profile. The nut fragments show that mast food resources were incorporated into the Native American diets. The nut remains contain a large amount of oil. The most effective way to process hickory nuts is to crush them into pieces, heat them in water, and skimming off the nutmeat and oil (Talalay, et al. 1984). Alternatively, approaches to eating nuts are either the “snarfing-and-spitting” method or the “cracking-and-picking” method (Gardner 1997). Ethnographic accounts indicate that the oil and meat of hickory are important source of food (Swanton 1979: 365). Large quantities of hickory nut hulls have been recovered from the Hughes-Willis Site in Delaware in association with Townsend Pottery suggesting extensive hickory nut processing (Thomas, et al. 1975: 77). Hickory has been recovered from pit features and shell middens associated with Townsend series ceramics (Custer and Griffith 1986: Table 3; Herbert 1995: Table 26, 88-92). Hickory nutshells produce a hot and almost smokeless fire. The ubiquity of charred hickory in the shell midden could be a reflection of its incendiary properties (Smith 1985: 121) as well as the thickness of the nutshell which enhances its preservation.

*Juglans* sp. (Walnut) is limited to one fragment. Walnut was probably processed in a similar fashion to hickory. Black walnut is common in forests of the upper Eastern Shore of Maryland and tapers off to the south (Rountree and Davidson 1997: 257). The black walnut husk can be used to make “a rich, durable purple/brown dye for fabric, leather, and basketry” (McKnight 1999: B-15). *Juglans* sp. has been found in Late Woodland ditch feature at the Potomac Creek Site (McKnight 1999: Table B-2) and Protohistoric/Early Historic shell midden deposits at the White Oak Point Site

(Waselkov 1982: Table 59). Walnut is present in Late Woodland deposits in the Middle Atlantic region, but it is not as ubiquitous as hickory.

*Amaranthus* sp. (pigweed) can be hard to distinguish from chenopods because they have a similar morphology. Amaranth cannot be easily identified to the species level because of similarity in seed morphology between species (LeeDecker, et al. 1996: 133). Domesticated species of Amaranth have not been identified in the Middle Atlantic region, but are known from elsewhere in the east Ozarks (Smith 1992b: 113). Both amaranth and chenopods have similar colonizing behavior (Dickau 1999: 234). Amaranth grows in waste-places as an invasive weed (Dickau 1999: 234). The seeds can be milled into a paste for food (Dickau 1999: 234-237). The Mohegan of Connecticut use the leaves for medicine (Tantaquidgeon 1972: 70). One species Amaranth (*A. cannabinus*), commonly referred to as water hemp, is frequent on the Virginia Eastern Shore (Rountree and Davidson 1997: 252).

*Poaceae* (Grass) seed is only identified to the family level. The Grass family is an extremely large family (Dickau 1999: 265). The grass seeds identified to the family-level do not provide any specific information about Native American plant utilization practices.

*Polygonaceae* (knotweed family) is generally considered a weedy pest (Stewart 1994b: 149). Knotweed and smartweed are used for food and medicinal purposes (LeeDecker, et al. 1996: 133-134). Various species of knotweed (*Polygonum* spp.) are common on the Eastern Shore (Rountree and Davidson 1997: 259). Without more specific taxonomic identification, information about the importance of the seed to Native Americans cannot be evaluated.

The carbonized nature of the nut and seed remains suggests that the material might be hearth refuse deposited in the midden. The carbonized wood charcoal identified consists of *Pinus* sp. (pine), *Quercus* sp. (white oak group), and unidentified deciduous taxa. The carbonized wood should not be considered representative of all the species because a non-random sample of the floral remains was sent for analysis. The focus of the macrobotanical analysis was on identifying carbonized seeds and nuts not, woody plant parts.

Non-carbonized remains are limited to two *D. stramonium* (jimson weed) seeds and one complete *Liriodendron tulipifera* (yellow poplar) seed. The yellow poplar seed was recovered from the lower level of the midden in Test Unit 6. The jimson weed seeds were found in the upper most level (Level 3) within the shell midden from the column sample associated with Test Unit 1. Both species may be a modern introduction into the midden because they are not carbonized. The saturated condition of the deposits at Holland Point might favor the preservation of non-carbonized floral remains. If they are modern contaminants in the midden, they suggest vertical displacement of small objects through the shell midden. Non-carbonized pieces of wood were found in the shell midden deposit, yet it was unclear if wood had been utilized/altered by Native Americans or was natural in origin. The bark of poplar has medicinal uses among the Nanticoke and Delaware of Canada (Tantaquidgeon 1972: 109, 126). The seeds and leaves of jimson weed have medicinal uses among the Nanticoke and Delaware (Tantaquidgeon 1972).

Macrobotanical remains from Test Unit 4 listed in Table 24 cannot be correlated with the shell midden (Stratum II) or Stratum III. One *P. pensylvanicum* carbonized

seed and one non-carbonized jimson weed seed was recovered from an excavation context. This context included Stratum I, the sand overwash deposit, and the A-horizon in Test Unit 4. *P. pensylvanicum* is an invasive weedy species which is common throughout the Eastern Shore (Rountree and Davidson 1997: 259). The seeds of Pennsylvania knotweed are edible. The seven carbonized hickory nutshell fragments were found in the A-horizon in Test Unit 4. This A-horizon cannot be correlated with Stratum III found in Test Unit 1, 2, 3, 5, 6, and 7.

#### D. Horizontal Patterning of Cultural Materials

In order to evaluate variations in the artifacts across the test units and column samples the relative percentages of cultural materials are compared. The cultural materials found in the column samples associated with Test Unit 1 and 2 are combined with their respected test units. The limited amount of bone, pottery, and lithic material collected during the clean up of Test Unit 2, which could have been from Strata II or III, is not included in this analysis. This analysis excludes material from Test Unit 4 because the shell midden was not encountered in this unit. The most common classes of cultural material (ceramics, debitage, FCR, and bone) are used for comparison. The distribution of flake tools, bifaces, and cobble base implements are not included because of their overall infrequency in the shell midden. Faunal material evaluated only includes bones of vertebrate animals. Mollusc shells such, as oysters are not included in this analysis. Table 25 presents the total counts and weights for the various classes of material from all of the test units. Figure 51 presents the percentages of different classes

of artifacts by material type. The debitage count was used instead of weight to evaluate relative density of debitage across the shell midden deposit. Weights were used to compare the rest of the cultural material. The percentage is based on the totals for all the test units combined.

| Pottery Weight (g) | Pottery Count | Debitage Weight (g) | Debitage Count | FCR Weight (g) | FCR Count | Faunal Weight (g) | Faunal Count |
|--------------------|---------------|---------------------|----------------|----------------|-----------|-------------------|--------------|
| 561.62             | 308           | 108.72              | 67             | 1088.48        | 61        | 174.01            | 423          |

Table 25. Summary of cultural material from Strata II in all the excavated units and column samples

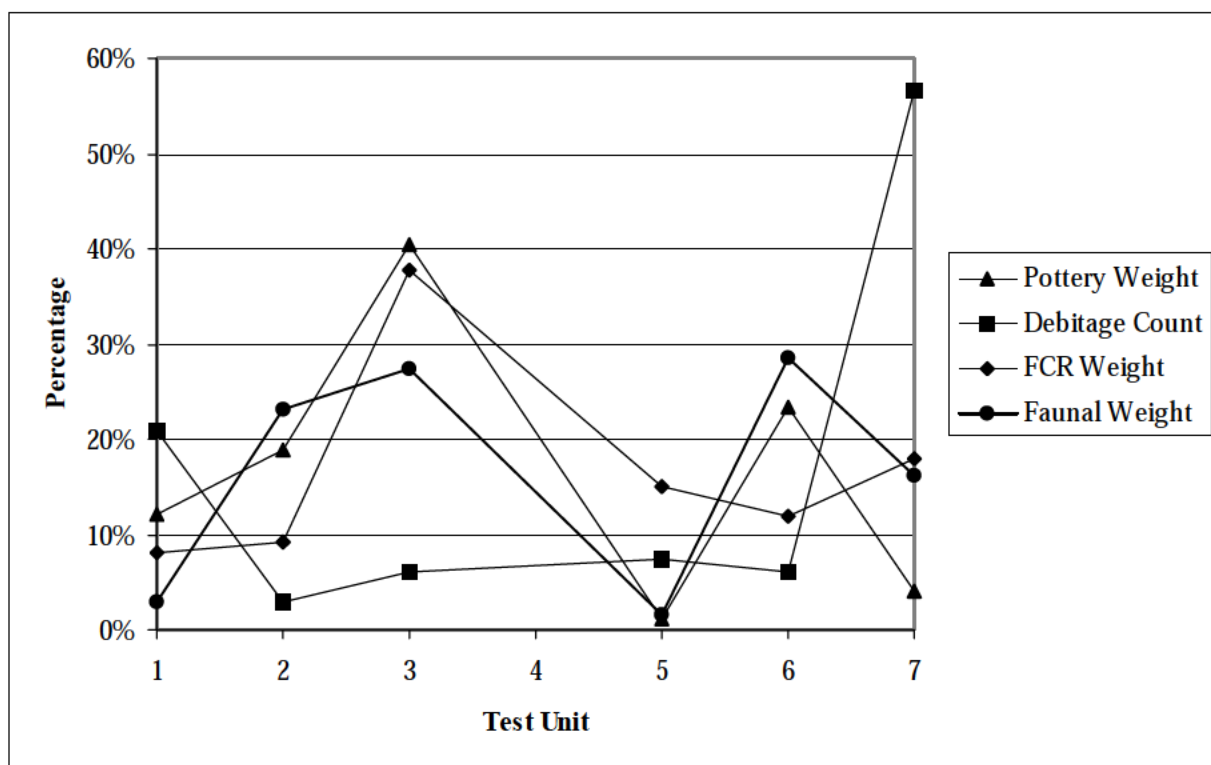


Figure 51. Percentage of cultural material by test unit for the Late Woodland analytical context



The patterns in quantities of different material highlight the horizontal variability in the shell midden deposit. One dramatic pattern is the overall low quantity of material from Test Unit 5. The shell midden in Test Unit 5 ranges from 6 to 8 cm in thickness. In comparison to the test units where the midden was encountered, the shell midden in Test Unit 5 is roughly half as thick as the midden in the other units. The thickness of the midden is one likely explanation for the lower quantity of artifacts in Test Unit 5.

Two other possible explanations for the lower amount of cultural material in Test Unit 5 are hypothesized. One possibility is that the shell midden deposit in the area around Test Unit 5 was partially reworked by high-energy wave conditions created during storm surges. Test Unit 5 is located along the north shoreline. Running along the north shoreline is a low ridge-like topographic feature created by the overwash of sand size sediments onto the edge of the saltmarsh. Test Unit 5 is situated on this feature. The landform on which Test Unit 5 is located is roughly 30 cm higher than the current ground surface of the interior portion of the saltmarsh. Test Unit 2, 3, 4, 6, and 7 are located on the low interior portion of the saltmarsh. Test Unit 4 is located on the same overwash sand berm. The berm is not as high around Test Unit 4 as it is around Test Unit 5. The north shoreline during northwestern storms is subject to intense wave energies generated on the large expanse of open water to the north of Holland Point. Just to the north of Test Unit 5, Feature 3 was discovered. This pit is believed to be a depression that was filled in by natural processes. The filling of the pit may have been the fortuitous result of intense wave energies generated during storm surges. The high-energy environment along the north shoreline might have reworked the shell midden

deposit in Test Unit 5 to a limited degree. During this reworked cultural materials could have been removed or may be redeposit into the more interior portion of the marsh just south of the sand ridge. This reworking of the midden would have had to occur prior to the deposit of overwash sand deposit.

The other possible explanation for the low quantity of cultural materials in Test Unit 5 relates to cultural processes. The difference in artifact distribution could be the result of different activities or discard patterns across the site. The buried land surface underneath the shell midden that is represented by the Stratum III (Ab-horizon) is higher in Test Unit 5 than in the interior area of the site. Activities might have been concentrated on the higher ground in this part of the site. The lower ground around Test Unit 2, 3, 6, and 7 might have been used more consistently as the dumping ground. The greater degree of shell fragmentation observed in the midden in Test Unit 5 suggests that the shell was trampled to a greater extent than in the shell deposit in lower interior portion of the midden around Test Unit 2, 3, 6, and 7. The amount of shell fragmentation in Test Unit 5 is based on general field observations. The collection of equal volumes of shell from the ridge area of the site and the lower area of the site would be necessary to confirm the field observations about the different degrees of trampling in the two areas.

The variation in the other cultural material across the other test units could be a reflection of shell midden formation processes. Dumping of basket loads of shell versus the tossing of individual shell would lead to difference in vertical and horizontal accumulations rates across the site. The dip in the orientation of the shell observed in the south wall profile of Test Unit 3 and 6 suggest shells were dumped in larger

quantities. However, this pattern was not visible anywhere else. The dumping of basket loads of shell might have been associated with cleaning up the general habitation area. Refuse such as broken pots, lithic debris, and cracked bones might have been thrown in baskets with the shell before dumping the refuse. The discard pattern is hypothesized in the area of the site around Test Unit 2, 3, 6, and 7. However, other patterns such as tossing individual shells onto the pile might have taken place in the area around Test Unit 2, 3, 6, and 7. Digging into the midden and filling in the might not be obvious give the limited amount of excavations. The limited amount of the shell midden excavated prevents any definitive statement concern the nature of the shell and refuse discard behavior. The portion of the site investigate is the remnant of a once much larger shell midden. The area around Test Unit 2, 3, 6, and 7 would have been the tail end of the midden. The deposits in this portion of the site could reflect the gradual horizontal expansion of midden as shell is being dumped further and further from the shoreline.

## CHAPTER 7

### LATE WOODLAND-LATE ARCHAIC CONTEXT (STRATA III AND IV)

#### A. Lithics

##### 1. Cores

Cores were not recovered from this context.

##### 2. Debitage

A total of 129 pieces ofdebitage were recovered from Strata III and IV (Table 26 and Table 19). The limited quantity ofdebitage recovered from this analytical context only allows for general interpretations of activities. A limited quantity of jasper and chert was heat-treated. Also one potlid spall from thermal shock was recovered. The material classified as “Other” consists of unidentified basalt, an unknown rock type, and unidentified igneous rock. All the lithic material utilized except rhyolite and ironstone is common in local cobble outcrops. Rhyolite outcrops are located north and west of the Delmarva Peninsula (Stewart 1984a; Stewart 1984b). The single piece of rhyolite reflects the regional exchange of this exotic material. The greatest volume of rhyolite exchange occurs during the Middle Woodland Period (Custer 1989: 299; Stewart 1984b: 39; Stewart 1989a: 63). Ironstone is the only locally available primary material recovered from Strata III and IV. The occurrence of ironstone in Late Woodland through Late Archaic deposits correlates with timing of regional patterns of

| <b>Material Type</b> | <b>Total Number of Debitage (Weight g)</b> | <b>No. of Debitage # 1 cm (Number w/ cortex)</b> | <b>No. of Debitage 1–2 cm (Number w/ cortex)</b> | <b>No. of Debitage 2-5 cm (Number w/ cortex)</b> | <b>No. of Debitage 5&gt; cm (Number w/ cortex)</b> | <b>Decortication Debitage (% of total)</b> |
|----------------------|--------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|----------------------------------------------------|--------------------------------------------|
| Chert                | 51 (17.71)                                 | 21 (3)                                           | 29 (17)                                          | 1 (1)                                            | 0                                                  | 41.1                                       |
| Jasper               | 19 (4.84)                                  | 6 (1)                                            | 11 (2)                                           | 2 (1)                                            | 0                                                  | 21.1                                       |
| Quartz               | 7 (.99)                                    | 6 (1)                                            | 1 (0)                                            | 0                                                | 0                                                  | 14.3                                       |
| Quartzite            | 46 (10.05)                                 | 37 (1)                                           | 8 (2)                                            | 1 (1)                                            | 0                                                  | 8.7                                        |
| Rhyolite             | 1 (1.63)                                   | 0                                                | 1 (0)                                            | 0                                                | 0                                                  | 0                                          |
| Ironstone            | 1 (.14)                                    | 1 (0)                                            | 0                                                | 0                                                | 0                                                  | 0                                          |
| Other                | 4 (2.69)                                   | 2(0)                                             | 1 (0)                                            | 1(0)                                             | 0                                                  | 0                                          |
|                      |                                            |                                                  |                                                  |                                                  |                                                    |                                            |
| Totals:              | 129 (38.37)                                | 73 (6)                                           | 51 (21)                                          | 5 (3)                                            | 0                                                  |                                            |

Table 26. Summary ofdebitage from Strata III and IV

ironstone utilization. Analysis of ironstone utilization patterns indicates that this resource is a component of low-level exchange networks on the Delmarva Peninsula during the Late Archaic and Early Woodland periods (Ward 1988; Ward and Doms 1984).

The percentage of cortex bearing debitage indicates a utilization pattern that is centered on local cobble resources for jasper and quartz. The percentage of debitage with cortex falls within the expected range of 15 to 50 percent for late-through early stage reduction of cobbles based on experimental analysis (Ranere and Ressler 1981). Other possible activities that may be responsible for the high percentage of decortication flakes are presented above in the debitage analysis for the shell midden deposit. Almost half of the debitage consists of shatter, which is not indicative of particular lithic reduction activity. As suggested above in the analysis of the debitage

from the shell midden, shatter is a common by-product of bipolar reduction. The recovery of a bipolar flake reflects a reliance on this approach of lithic reduction.

A low percentage of quartzite debitage with cortex may be reflective of the stage of lithic reduction. The quartzite debitage is mostly less than 1 cm in diameter and 39 out of 46 pieces are shatter. Shatter is produced in all stages of lithic reduction, yet earlier episodes of reduction would produce a high amount of the cortex bearing shatter. Alternatively, the larger flakes bearing cortex may have been culled from the lithic debris and further reduced elsewhere. The reduction of quartzite cobbles is inferred based upon presence of cortex bearing debitage. Ironstone and rhyolite do not occur in cobble form; therefore absence of cortex bearing debitage is expected.

The overall small size of the pieces of debitage may indicate the following: reduction of small cobbles, late stage reduction activities, selection/culling of larger flakes for further reduction into stone tools, or the utilization/culling of larger pieces for tools. Seventy-one percent of the platforms are triangular in shape suggesting bifacial thinning was the primary reduction activity. The presence of prepared platforms is also indicative of bifacial reduction. The attribute analysis suggests a greater emphasis on bifacial reduction over core reduction in this analytical context. Five biface thinning flakes and seventeen pressure flakes have been classified based on general morphological attributes. The pressure flakes are suggestive of later stages of biface reduction or tool maintenance activities. Aggregated analysis of debitage, in which the entire assemblage is stratified using a uniform criterion such as weight or size, has shown that through the production sequence debitage generally becomes smaller (Andrefsky 1998: 126). The relatively small size of the debitage suggests that it is the

by-product of later stage reduction. Two pieces of debitage have been designated a blade-like flake based on their length-to-width ratios. In general, the debitage from Strata III and IV represents a focus on later stage biface reduction activities.

A total of eight pieces of chert debitage was recovered during the cleaning up of Test Unit 2, which could have been either associated with Strata II or IV. The debitage consists of six flakes and three pieces of shatter.

### 3. Flake Tools

Five were recovered from Strata III and IV. Artifact 136.25 exhibits pronounced distal edge step damage. General observations concerning the hardness of the material worked can be made based on observed wear patterns (Katz 2000: 63). The edge damage on Artifact 136.25 can be attributed to working moderately hard materials. This tool might have been used as a scraper. Artifact 113.14 can be classified as a backed flake. One of the lateral edges contains isolated scalar and step damage on the ventral and dorsal aspect. This is the working edge of the tool. The edge damage can be attributed to working moderately hard materials. A portion of the opposing lateral edge contains purposeful retouch. Retouch on this edge functioned to dull an edge in order to provide a comfortable location for prehension. Artifact 113.14 was selected for use as a tool because of its opportunistic edge. Minimal modification of this flake allowed for its use as an effective tool. This flake is one of the larger pieces of debitage from the Strata III and IV debitage assemblage. Artifact 164.5 is a broken retouched flake. The presence of a striation and edge rounding on Artifact 164.5 suggest that the tool was

used on both hard and soft material. Artifact 160.2 is graver. Extensive retouching along the terminal and lateral edge of both the dorsal and ventral surface of Artifact 160.2 functioned to increase the edge angle and strengthen the edge. Artifact 160.1 is a utilized jasper blade-like flake. Polish on the ventral aspect is probably indicative of working wood. The isolated scalar on the dorsal aspect is also associated with use. Artifact 160.1 contains proximal and distal end compression damage indicative of bipolar reduction. Similar utilized flakes have been found in the Delaware valley in Middle to Late Woodland contexts (Stewart 1989b). The selection of flakes for use as expedient tools may account for the overall small size of the debitage fragments. Large flakes may have been culled from the assemblage.

#### 4. Cobble-Based Implements

Three hammerstones were recovered from Strata III and IV. A quartzite hammerstone (97.62 g) was found in Test Unit 1. A sandstone hammerstone (68.45 g) was found in Test Unit 4. Another quartzite hammerstone was recovered from Test Unit 6. The Test Unit 6 hammerstone shows evidence of use as an anvil. Only 18 pieces of debitage were recovered from Test Unit 6. In general, the hammerstones are not found with concentrations of flakes, suggesting that the location of the hammerstone may not correlate with the location of lithic reduction areas.



## 5. Other Lithic Artifacts

A total of 743.5 g (N=28) of FCR was recovered from this analytical context. The FCR consists of quartzite, sandstone, and unidentified igneous. Seven manuports weighting 89.92 g consist of schist, sandstone, unidentified sedimentary, quartzite, quartz, and unidentified rock. The schist manuport is very small and might be a fragment of a gorget or debris associated with making gorgets. Gorgets found along the shoreline were made of schist. The manuport classification is assigned to lithics that do not show characteristics of being flaked or subjected to heat alteration.

A fragment of a fossilized shark's tooth was recovered from Test Unit 7. Shark teeth have been found in Middle Woodland and Late Woodland contexts in the Middle Atlantic region (Stewart 1989a: 62, 64). Thirty-two fossilized shark's teeth were found in a late Middle Woodland/early Late Woodland burial at the Hand Site in Southampton County, Virginia. Three fossilized shark's teeth have been found in a burial at the Island Field Site (Custer, et al. 1990). At the Skiffes Creek Site, a fossilized shark's tooth was found in a Middle Woodland context (Geier 1983: 97). A fossilized shark's tooth was found in a Late Woodland ditch feature discovered during a recent investigation at the Potomac Creek Site (Blanton 1999: 83). Fossilized shark's teeth have been recovered from shell middens in the region. At the White Oak Point shell midden, shark's teeth were found in both Middle Woodland and Late Woodland contexts (Waselkov 1982: 241, 247). Geological strata containing fossilized shark's teeth are located on the lower Choptank River and in some Choptank tributaries (Darrin Lowery, personal communication 6/17/2002).

Two manuports (54.9 g) and one piece of FCR (0.44 g) were recovered during the clean up of Test Unit 2, which could have been either associated with Stratum II or III. The piece of FCR is sandstone. The manuports consist of quartzite and unknown rock material.

## B. Ceramics

As discussed in Chapter 5 the ceramics from this analytical context date from the Early Woodland through Late Woodland periods (2950-300 B.P.). The majority of the ceramic types date from 1050-350 B.P. Types I A, I C, I ND, II B, II ND and III A are comparable to Townsend series ceramics. Type I A is similar to Rappahannock Fabric Impressed ceramics. Dates associated with Rappahannock Fabric Impressed ceramics span the entire Late Woodland Period from 1050-350 B.P. Portions of the surface of Townsend series ceramic (i.e. Townsend Corded, Rappahannock Fabric Impressed, and Rappahannock Incised) vessels are typically smoothed, especially near decorated rims where decoration is applied (Blaker 1963: 15). Townsend vessels with the whole surface smoothed have been reported in Delaware (Griffith 1982: 56). Type I C and Type II B body sherds, which have smoothed over surfaces, are comparable to historic ceramic types. Type I C and Type II B could either be classified as Rappahannock Fabric Impressed or Yeocomico Plain ceramics. Yeocomico Plain ceramics date to the later portion of the Late Woodland. One rim sherd of Type I C with incised decoration is comparable to Rappahannock Incised. The rim sherd is relatively small preventing classification into one of the eight Rappahannock Incised types defined by Griffith.

Rappahannock Incised dates from 1050-665 B.P. (Griffith 1980: 30). The limited quantity of Type IV ND can be roughly compared to Killens or Currioman ware, which is contemporaneous with Townsend ceramics. Type I D is similar to Yeocomico Cord Marked and Sullivan Cord-Marked ceramics. Yeocomico Cord Marked dates to the end of the Late Woodland in the Lower Potomac River Valley (Waselkov 1982: 296, 252-253). Sullivan Cord-Marked recovered from Thomas Point Site dates to late Middle Woodland to the early Late Woodland (Herbert 1995: 66-69). The concentration of Type I D in Stratum III suggests that this type dates to the late Middle Woodland/early Late Woodland. The temporal range for Yeocomico Cord Mark is later than the age of the A-horizon deposit.

Several Middle Woodland and Early Woodland ceramic types were recovered from this analytic context. Four sherds (13.49 g) of Type XI A were recovered from Test Unit 4. Type XI B and XI ND were recovered from Test Unit 1, 4, and 7. Ceramic Ware XI is tempered with finely crushed quartz. Ceramic Type XI A has cord marked exterior surfaces. The exterior surface of Type XI B is smoothed. Ceramic Ware XI is comparable to Middle Woodland Hell Island ceramics. Type VIII A and VIII ND are tempered with crushed hornblende. Two sherds of Type VIII A weighting 64.16 grams were recovered from Test Unit 1. A smaller amount (4.33 grams) of Type VIII ND sherds were recovered from Test Unit 1, 4, and 7. Ware VIII is comparable to Dames Quarter ware, which dates to the Early Woodland. Dames Quarter ware is a historic ceramic type unique to the Delmarva Peninsula (Custer 1989: 233-235). Ceramic Ware XII is tempered with crushed quartz and a soapstone-like material. Type IX ND is

tempered with coarsely crushed quartz. The small quantity of the Ware XII and Type IX ND sherds precludes comparisons to historic ceramics types.

Estimates of vessel size or shape cannot be made for any of the types since there are no reconstructed portions of vessels from Strata III or IV. A minimum of three vessels is estimated based on groupings of rim sherds that could belong to the same vessel and refitted rim sherds. The rim sherd assemblage suggests two vessels of Type I A and one vessel of Type I C. Ceramic types with total amounts of body sherds weighing over 5 g suggest another vessel for Type I D, Type IV ND, Type II ND and Ware XI, Ware VIII, Ware IX and Type I D.

A total of 86.21 grams of ceramics were recovered during the cleanup of Test Unit 2 that could not be associated with Strata II or III (Table 27). All of the ceramics from this context date from 1050-350 B.P., which correlates with the age of both Strata II and III. Type IA, I D, and I ND from other excavated contexts are found in both Strata II and III. The two sherds of Type II A may be associated with Stratum II.

Only body sherds were found in the cleanup (Table 27). The sherds could be lumped with vessel group estimates in Stratum II or Stratum III. Two body sherds of Type II A are similar to the partially reconstructed vessel from Stratum II, which is designated as Vessel Lot II A – 1. One body sherd of Type I D is similar to other sherds of Type I D recovered from Stratum III. There are no additional vessel lots that can be made from this cleanup assemblage.

| Type  | Weight (g) |
|-------|------------|
| I A   | 52.8       |
| I D   | 5.33       |
| I ND  | 4.02       |
| II A  | 19.37      |
| ND    | 4.69       |
| Total | 86.21      |

Table 27. Amount of ceramics collected during cleanup of Test Unit 2 that could not be associated with Stratum II or Stratum III

### C. Biological Remains

#### 1. Invertebrates

A limited amount of oyster shell was collected from the Late Archaic-Late Woodland deposits (Strata III and IV). Some of the oyster shell, especially in the upper portion of the deposit, is probably from the overlying shell midden. The small sample of oyster shell prevents any analysis of oyster habitats or season of harvest. A concentration of weathered/chalky oyster shell was found in Test Unit 1 (Figure 14). A total of twenty-two pebbles were collected in Strata III and IV. Eleven out of twenty-two pebbles came from Test Unit 1 Stratum IV which was associated with the concentration oyster shell. The pebbles were probably brought on site attached to oysters.

Other invertebrate remains identified are presented in Table 21. Several smaller size shells species were recovered from the Late Archaic-Late Woodland deposits. The small size of the barnacle, Lunar Dove Shell, Slipper shell, Eastern Melampus,

Impressed Odostome, Atlantic Oyster Drill, and Triphora (Marsallora) may have allowed for them to be displaced from the overlying stratum. As indicate in the invertebrate analysis of the shell midden deposit, the size of these species would have limited their nutritional value. The Eastern Melampus is probably modern in origin because the periostracum (outer protein layer) is still preserved. The periostracum is first to degrade during shell deterioration (Claassen 1998: 67). The Eastern Melampus could have been accidentally collected during the excavation of Stratum III because Eastern Melampus were observed floating in the water of the test units during excavation.

A similar array of land snail species is present in Stratum III and IV as in Stratum II (Table 22). The occurrence of *P. albilabris* may indicate that prior to the presence of extensive shell deposits Native Americans were thinning the forest canopy creating a more open environment. The recovery of *P. albilabris* from column samples verse general excavations suggest the species was not fortuitously mixed with Late Archaic-Late Woodland deposits. The process of forest alteration at Holland Point probably began around the time of intensive shell dumping since both the shell midden and the underlying strata date to Late Woodland periods. The harvesting of wood for fuel, tools, and in other uses would lead to forest clearing. Covering the ground with shell would have limited growth of forest vegetation at Holland Point.

## 2. Vertebrates

Table 28 summarizes the vertebrate faunal remains recovered from the Late Archaic-Late Woodland deposits. Both the shell midden and the underlying deposits contain a similar array of species suggesting a continuation of existing hunting and butchering practices is represented in both deposits. White-tailed deer elements recovered indicate that hind leg, front leg, and head portions of the body were brought back to the site (Table 28). The white-tailed deer phalanges indicate that distal end of the legs, which are low in meat yield were brought back to the site. May be the marrow

| Species                                                | Element/NISP/Side/Portion                                                                                                                                                                                                                                                      | Total Weight g<br>(Count) of NISP | MNI |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----|
| White-Tailed Deer<br>( <i>Odocoileus virginianus</i> ) | Tibia (NISP=1 right distal end), Premolar (NISP=1 upper right), Molar (NISP=2), Metacarpal (NISP=2, distal end, right proximal end), Mandible (NISP=1 left), Antler (NISP=1 cannot determine side), 2 <sup>ND</sup> Phalange (NISP=1, right) Humerus (NISP=1 right distal end) | 92.22 (11)                        | 1   |
| Raccoon ( <i>Procyon lotor</i> )                       | M1 (NISP=1 Upper Right), M2 (NISP=2 Right, Upper Right), M3 (NISP=1 Right)                                                                                                                                                                                                     | 1.53 (4)                          | 1   |
| Turtle ( <i>Chelonia</i> )                             | Carapace (NISP=1)                                                                                                                                                                                                                                                              | .04 (1)                           | 1   |
| indet. mammal                                          | Long bone (NISP=11 shaft),                                                                                                                                                                                                                                                     | 9.6 (11)                          |     |
| indet. large mammal<br>(larger than raccoon)           | Long bone (NISP=20 shaft), Long bone (NISP=2 unidentified end), Long bone (NISP = 1), Unidentified (NISP=3) Vertebra (NISP=1)                                                                                                                                                  | 77.22 (27)                        |     |
| rodent (smaller than squirrel)                         | Tooth (NISP=1)                                                                                                                                                                                                                                                                 | .01 (1)                           |     |
| unidentified vertebrate                                | Long bone (NISP= 8 shaft), Long bone (NISP=2 Unidentified End), Unidentified (NISP=151)                                                                                                                                                                                        | 39.29 (161)                       |     |
|                                                        | Total:                                                                                                                                                                                                                                                                         | 220.27 (216)                      |     |

Table 28. Totals of Strata III and IV faunal remains from test units, column samples, and bank cut (Lot# 3)

and grease in these bones was rich enough to warrant bring these portion of the animal back to the site or that the whole deer was brought on site for butchering. The presence of white-tailed deer teeth and a portion of the mandible without other cranial fragments may indicate deer jaws were used as bone tools. The range of white-tailed deer elements suggests that the whole carcass could have been brought back to the site.

The splintered nature of seventeen larger long bones fragments is indicative of green stick fractures. Most of the splintered long bones were found in the bank cut assemblage. The white-tailed deer humerus has a green stick break. This suggests that marrow rich bones were broken open for nutritional yields. Splintered bones may have served as blanks to be reworked into bone tools (Dugas 1996). Figure 52 reveals that large elements were fragmented. The overall small size of the large elements suggests that first the marrow was removed and then the bone might have been boiled to extract grease and collagen (Brennan 1981; Lyman 1994: 217).

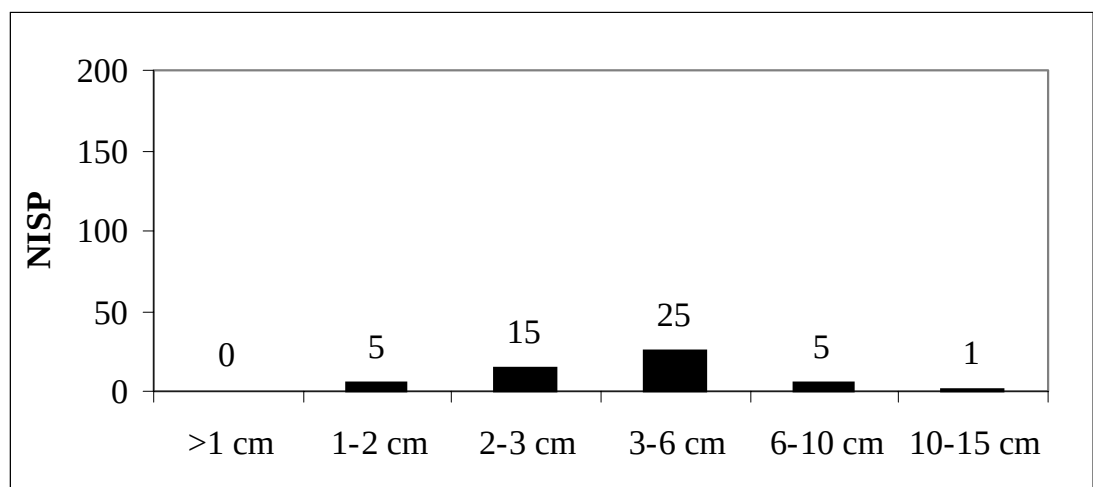


Figure 52. Size distribution of larger skeletal elements recovered from the test units, column samples, and bank cut from the Strata III and IV; smaller unidentified bone fragments, teeth, and turtle shell fragments have not been included in the graph



A portion of the vertebrate faunal assemblage shows modification in the form of burning and being calcined. Figure 53 shows the proportion of the assemblage that is heat altered in comparison to the unburned bone. None of the burned or calcined bone could be identified to a taxonomic category below the vertebrate level. Two vertebrate long bones are burned and one vertebrate long bone is calcined.

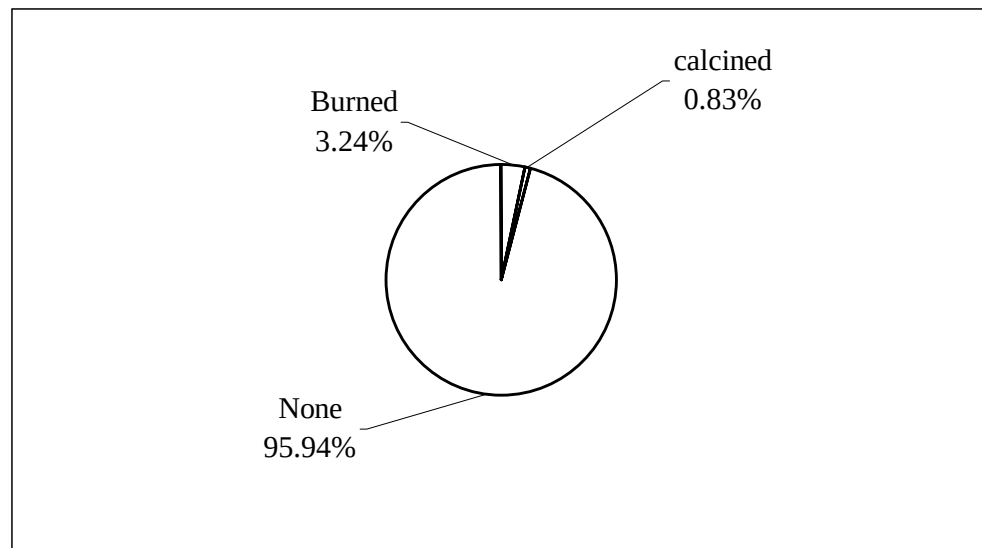


Figure 53. Percentage of modified bone and non-modified bone by total vertebrate bone weight from the Late Woodland-Late Archaic deposits (test units, column sample, and bank cut)

### 3. Floral Remains

Several of the same types of macrobotanical remains that were found in the shell midden deposit are also in the Late Archaic-Late Woodland deposits (Table 24). Interpretations of species found in both deposits are limited. Species discussions originally presented in the floral analysis of the shell midden deposit will not be

uplicated. Carbonized hickory nut is omnipresent across the site in the Late Archaic-Late Woodland deposits. Hickory nutshells has been found in Kent County Maryland at 18KE128 in Early Woodland shell midden deposits (Custer, et al. 1997: 55) and Early Woodland through Late Woodland shell midden deposits at the White Oak Point Site (Waselkov 1982: Table 59). The recovery of hickory nut fragments from Early Woodland deposits indicates that this is a common food resource.

The presence of *P. pennsylvanicum* (Pennsylvania knotweed) in the Late Archaic-Late Woodland suggests that Native Americans were consuming this species. The roots, leaves and possible seeds of *Polygonum* ssp. (knotweeds/smartweeds) are edible (Rountree and Davidson 1997: 259). The knotweed leaves can be eaten as greens during the early spring, but by early summer the leaves are no longer edible (Stewart 1994b: 149). The knotweed seeds are edible by late summer and can be dried, stored or processed into flour (Stewart 1994b: 149). Other varieties of knotweed/smartweed have been found at the Delaware Park Site (Crabtree and Langendorfer 1981) and the Snapp Site (Custer and Silber 1995: Table 4) in Delaware. Pennsylvania knotweed (*P. pennsylvanicum*) is not domesticated, but other knotweed species such as erect knotweed (*P. erectum*) are believed to be domesticated (King 1999: 12; Smith 1992a). Erect knotweed is considered to be one of the starchy-seed members of the Eastern Agricultural Complex (King 1999: 12). Yet debate over the domestication of erect knotweed and other seeds is on going (Winterhalder and Goland 1997: 144). The large quantities of *Amaranth/Chenopodium* recovered from sites on the Delmarva Peninsula warrant careful analysis geared towards identifying the presences or absences of domesticated species (King 1999: 20).

One fragment of *Quercus* sp. (acorn) was found in Stratum III of Test Unit 6. Acorn nutmeat can be dried over a fire for storage (McKnight 1999: B-14). The dried meat can be re-hydrated by boiling to eat raw or pounding into flour to make bread (McKnight 1999: B-14). In raw form the bitter toxin has to be removed through processing of the meat. Acorn nutmeat can be harvested between August and October (McKnight 1999: B-14). The acorn nutshells are not as thick as hickory nutshells (Milner 1998). Fewer acorn nutshells might survive when thrown into a fire than hickory nutshells. The low quantity of acorn might be a reflection of preservation conditions (Pearsall 2000: 244-245). Several varieties of oak are common in forest of the Eastern Shore of Maryland (Rountree and Davidson 1997: 260). Acorn has been found in Late Woodland ditch feature at the Potomac Creek Site (McKnight 1999: Table B-2), Late Archaic through Late Woodland shell midden deposits at the White Oak Point Site (Waselkov 1982: Table 59), late Middle Woodland/early Late Woodland shell midden at the Thomas Point Site (18ST570) (Herbert 1995: Appendix E), and in Kent County Maryland at 18KE128 in Early Woodland shell midden deposits (Custer, et al. 1997: 55).

The same two species of non-carbonized plant remains (jimson weed and yellow poplar) found in the shell midden deposit are also present in the Late Archaic-Late Woodland deposits. Simply discrediting the seeds as instructive might not be warranted because the saturated conditions of the sediments at the site have enhanced preservation.

Five pieces of carbonized hickory nutshell were recovered during the cleaning up of Test Unit 2, which could not be clearly associated with Stratum II or Stratum III.

#### D. Horizontal Patterning of Cultural Materials

This analysis employs the same methodology that was used in the analysis of horizontal patterning in the shell midden deposit. The bone, pottery, and lithics from the clean up of Test Unit 2, which could have been from Strata II or III, are not included in this analysis. Different percentages in artifacts and ecofacts are compared across the Late Archaic-Late Woodland analytical context. The cultural material recovered from the B-horizon (Stratum IV) in Test Unit 4 and the associated column sample is incorporated in this analysis. However, the A-horizon (Stratum III) found in across the rest of the site could not be correlated with the A-horizon encountered in Test Unit 4. A small amount of artifacts (one small piece of Native American pottery, one piece of quartz FCR, one chert flake, and one sandstone manuport) were recovered from the A-horizon and the sand deposit above the A-horizon in Test Unit 4. Table 29 presents the total weights and counts of the cultural material for the Late Archaic-Late Woodland analytical context.

| <b>Pottery Weight (g)</b> | <b>Pottery Count</b> | <b>Debitage Weight (g)</b> | <b>Debitage Count</b> | <b>FCR Weight (g)</b> | <b>FCR Count</b> | <b>Faunal Weight (g)</b> | <b>Faunal Count</b> |
|---------------------------|----------------------|----------------------------|-----------------------|-----------------------|------------------|--------------------------|---------------------|
| 480.7                     | 283                  | 38.37                      | 129                   | 99.65                 | 173              | 220.27                   | 216                 |

Table 29. Summary of cultural material from Strata III and IV in all the excavated units and column samples

Figure 54 shows that a limited amount of cultural materials were recovered from Test Unit 4. Both cultural and natural site formation processes might explain this patterning. Test Unit 4 is located near the shell midden in a shell free area of the site.

This area might have been portion of the site that was consistently used as a living area. Routine clean up of the living area could explain the low artifact densities in this portion of the site. Shell along with other refuse might have been systematically removed from this area of the site. The burial (Feature 1) was located adjacent to Test Unit 4. This suggests that this part of the site could have a specialized function related to religious activities. Feature 4 and other features (Feature 4, 5, and 6) were observed on the tidal flat in the general vicinity of Test Unit 4 and Test Unit 1 near the tip of Holland Point.

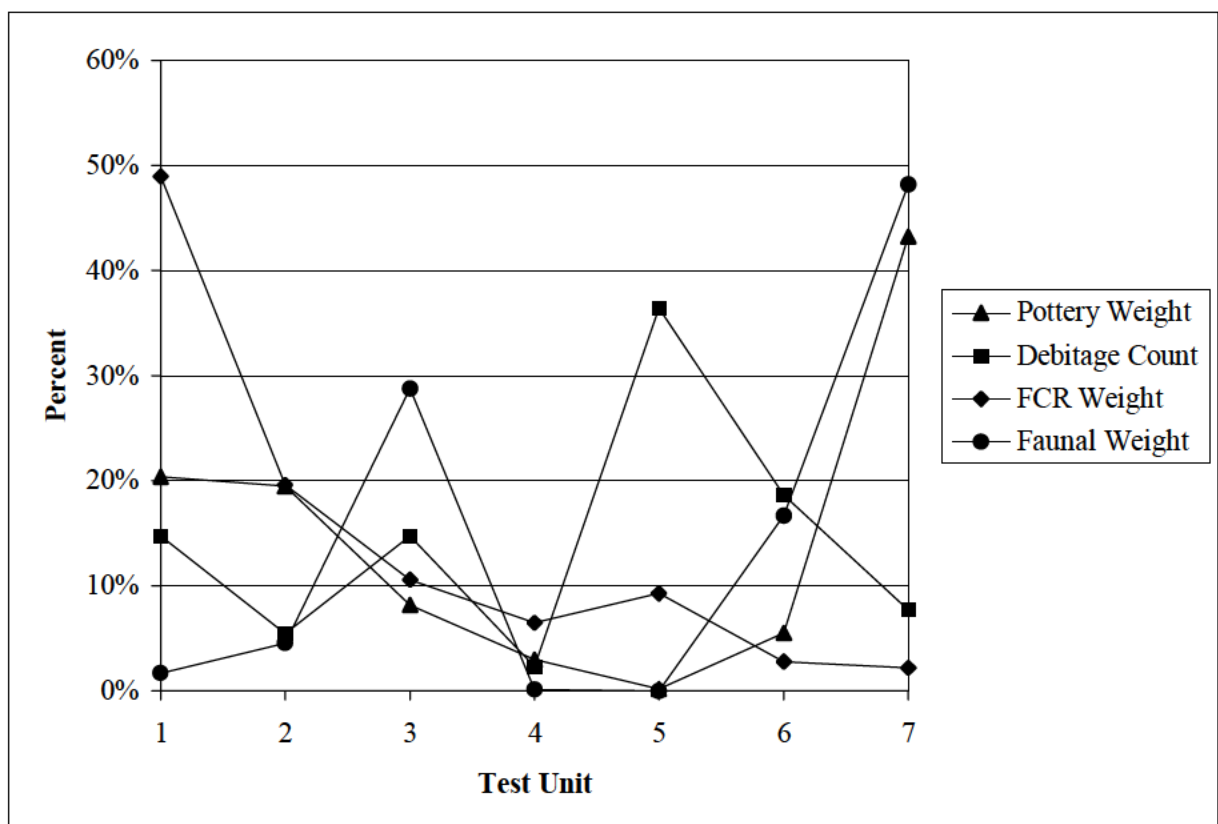


Figure 54. Percentage of cultural material by test unit for the Late Woodland-Late Archaic analytical context

The general concentration of features in the area between the tip of Holland Point and the island suggest that activities were concentrated on this portion of the landscape. This portion of the landscape, which once connected the island to the mainland at Holland Point, is believed to be a ridge-like landform that was slightly higher than the surrounding land. Native American activities at the site would have been logically concentrated on this higher ground. Features 1, 4, 5, and 6 were all located on the stretch of land between the tip of Holland Point and the island. The location of features in this general area suggests this portion of the landform was the focus of activities at Holland Point. Also this portion of the landform between the island and the tip would have had better drainage conditions. These observations about the relative drainage conditions on this portion of the site are hypothetical. It is difficult to assess this hypothesis because the area between the tip of Holland Point and the island has eroded over the last 8 years and been converted into a tidal flat.

The hypothesis presented above suggests that the shell free area around Test Unit 4 might have been or near the core area of the site where activities were concentrated and debris was regularly removed. General field observations, the location of features and the nature of the land surface underneath the shell midden deposit are used to support this interpretation.

Natural processes could also have affected the amount of cultural material in Test Unit 4 and the shell free area of the site. Several strata encountered in Test Unit 4 cannot be correlated with other strata found across the rest of the site. In particular, Strata II (shell midden) and III (Ab-horizon) were not encountered in Test Unit 4. The differences in the stratigraphy in the shell free area of the site and the rest of the shell

midden area suggest that natural processes such as shoreline erosion might have removed part of the stratigraphic profile in the shell free area of the site. This portion of the landform where the shell midden was not present is located along the northern shoreline near the tip of Holland Point. This position is subjected to intense wave energy created during Northwest storms. Big waves are generated because of the large expanse of open water to the northwest of Holland Point. Field observations indicate that shoreline erosion is greatest at this location along the shoreline. One possible explanation for the absences of Strata II and III in this portion of the site is that during storm events intense wave energies resulted in the erosion of upper portion of the profile in this portion of the landscape. During hurricanes several feet of water covered the Holland Point saltmarsh. Hurricane events, especially ones before the saltmarsh formed over the shell midden, might have eroded Strata II and III (the shell midden and Ab-horizon) in this portion of the site creating a depression in the landform. Sediment could have gradually filled in this erosional feature during saltmarsh genesis. This would have leveled off the modern land surface. The presence of *phragmites* around Test Unit 4 also suggest the stratigraphy is disturbed. *Phragmites* is typically found in disturbed soils (Tiner 1998: 131).

Another remote possibility for why a limited amount of cultural material was recovered from Test Unit 4 could be related to historic modification of the landscape. Large shell middens in the Chesapeake Bay were commonly “mined” for their oyster shell (Holmes 1907). The shell was burned to turn into lime, used as paving for roads, and to create walkways (Ceci 1984). The shell midden in the area around Test Unit 4 could have been systematically mined during historic times. The crater left would have

turned into a panne in which sediment gradually filled in the low spot. The consistence of the buried saltmarsh sediments (Strata IA and IB) in Test Unit 4 is different then the dense root mat (Stratum IA) encountered in Test Unit 1, 2, 3, 6, and 7. The density differences might suggest that the saltmarsh in the shell free zone is younger then the marsh across the rest of the landform. The density difference could also be linked to the bioturbation by *phragmites* rhizomes (roots) in Test Unit 4. *Phragmites* root bioturbation was apparent throughout the buried saltmarsh sediments (Strata IA and IB) and underlying A-horizon. The wavy soil horizon boundaries are the result of bioturbation (Figure 16). Thus the A-horizon and the saltmarsh sediments encountered in Test Unit 4 could be younger then the surrounding saltmarsh sediments.

In sum, both natural and cultural processes could have affected the stratigraphy in Test Unit 4 and the artifact densities. The location of the shell free zone near the north shoreline and the presence of *phragmites* suggest that natural processes are more likely to have affected the deposits in this portion of the site. These natural processes are believed to account for the low density of cultural material in Test Unit 4. One way to gain a better understand of the site formation processes around Test Unit 4 would have been to excavate a trench from Test Unit 4 south until the shell midden was encountered. Examining the stratigraphy at the contact between the shell midden and the strata in the shell free area could help clarify the site formation processes in this portion of the site. The limited amount of time in the field and small size of the field crew prevented the excavation of a trench between the two areas. Also removed the water from the trench to observe the stratigraphy would have been a logistical challenge.



Another pattern in the horizontal distribution of cultural material in the deposit below the shell midden is the low quantity of bone and pottery in Test Unit 5. Only two small ceramic sherds and one piece of bone were recovered from Test Unit 5. In general, the limited amount of bone fragments and ceramics in Test Unit 5 is in contrast the quantities of recovered from Test Unit 1, 2, 3, 6, and 7. This pattern suggests that activities in portion of site were different then other areas around Test Unit 1, 2, 3, 6, and 7. The landform on which Test Unit 5 is located is extension of the same ridge-like topographic feature on which Test Unit 4 is located. This ridge-like landform roughly follows the northern shoreline and may have extended to the island.

The higher ground on which Test Unit 5 is located might have functioned as the primary habitation area. Routine cleaning up of the living area on this ridge-like landform around Test Unit 5 might account of the limited amount of bone and pottery. The nature of the debitage profile also suggest that the cleaning up of the ridge-like landform. The debitage count in Test Unit 5 is relatively high. However, most of the debitage consists of small pressure flakes and shatter. The small pieces of debitage are almost all quartzite. Figure 24 shows the vertical distribution of the small and large flakes through the A-horizon (Stratum II) and B-horizon (Stratum III). The size distribution suggests that smaller pieces of debitage were possibly missed during the clean up of area around Test Unit 5. The vertical distribution of small flakes suggests that they were vertically displaced through the soil profile. Additional excavations along the ridge-like landform would be necessary to confirm if this part of the site was the primary living area that was regular cleaned up.

The amount of cultural material recovered from Test Unit 1, 2, 3, 6, and 7 shows some variation. There is no clear pattern showing a concentration of one particular class of cultural material around the group of test units (Test Unit 2, 3, 6, and 7) in the interior portion of the site. This portion of the site is probably close to the northwestern boundary of the site. The density of debitage is not as great as would be expected if this were the primary place where lithic reduction occurred. The area around Test Unit 2, 3, 6, and 7 was probably used for variety of activities. There is no indication of specialized activities occurring in this area.

The relative stability of the land surface under the shell midden probably resulted in blurring of discrete activity areas over time. Hypotheses about the discarding of shell and the lateral growth of the midden suggest that this portion of the landscape near Test Unit 2, 3, 6, and 7 might have been one of the last areas to be capped by the shell midden. Shell might have been more commonly dumped closer to the former shoreline, which prior to erosion was located farther from Test Unit 2, 3, 6, and 7. Shell dumping over time might have progressed landward. This interpretation about the spread of shell deposit from the former shoreline landward is only a hypothesized scenario. It cannot be evaluated given the amount of work conducted at the site and the amount of shoreline erosion that has destroyed the shell midden. If this scenario occurred, then the ground surface near Test Unit 2, 3, 6, and 7 would have been one of the last areas to be covered by shell.

The four postmolds in Test Unit 1 suggest that this area of the site might have been used as a habitation area. The postmolds are not in a pattern that is indicative of a house structure. Yet, postmolds could be associated with drying rack or other

superstructures located in the living areas. These postmolds are located near by other features observed eroding along shoreline near the tip of Holland Point. Test Unit 1 is located on ground that is slightly higher then Test Unit 2, 3,6, and 7. Test Unit 1 is located on the same ridge-like landform on which Test Unit 5 and 4 are located. The postmolds suggest this area of the site might have been used differently then the more interior portion of the site near Test Unit 2, 3,6, and 7. Artifact densities for Test Unit 1 are not dramatically different then densities for Test Unit 2, 3,6, and 7.

The limited amount of excavation at Holland Point only allows for tentative assessment of the horizontal distribution of artifacts across the site.

## CHAPTER 8 ANALYSIS OF THE FEATURES

### A. Introduction

The cultural material found in the features not associated with the test units is analyzed in this chapter. The age of the features is evaluated in Chapter 5. Table 1 and Table 17 present basic morphological information on the features and cultural/temporal periods assigned to the features. Features 2 and 6 cannot be evaluated because of the limited amount of information known about these features. Feature 3 is not analyzed because natural processes are believed to be responsible for the association of Native American and historic artifacts in this deposit (see Chapter 5).

### B. Feature 1

Feature 1 is a Native American burial.

[illegible]

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Table 30. Summary of debitage from Feature 1































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### C. Feature 4

The only artifacts found in the feature are Native American ceramics. The feature is not stratified suggesting that artifacts were deposited in one discrete episode reflecting a relatively short period of time. The nature of the Feature 4 deposit provides an opportunity to analyze the variability in ceramics that were manufactured, used, and discarded at roughly the same time. The ceramics (Type I B and III A) are identical to Rappahannock Fabric-Imprinted ceramics that have a date range of 1050-350 B.P. Rappahannock Fabric-Imprinted ceramics have a broad time range extending throughout the Late Woodland Period. All of the ceramics from the feature represent three partially reconstructed vessels (Vessel Lots IB-4, IB-5 and IIIA-1).

Several differences in ceramic paste, surface treatment and vessel form of the three partially reconstructed pots highlights the variability in Late Woodland ceramic technologies at Holland Point. The types of ceramics suggest that two different types of ceramic pastes were used to make the vessels at the same time. The major difference between the Ware I and Ware III paste is the presence of orange inclusions in Ware III paste. The orange inclusions are hypothesized to be a natural component of the clay (see Appendix A). Thin section analysis of the paste is necessary in order to identify the orange inclusions the paste of Ware III.

Vessel Lots IB-4 and IB-5 have fabric impression on both the interior and exterior surfaces while Vessel Lot IIIA-1 only has exterior surface impressions. Townsend ware (i.e. Rappahannock Fabric-Impressed, Rappahannock Incised, and Townsend corded) is only occasionally impressed on the interior surface near the lip/rim area with fabric (Blaker 1963: 15; Griffith 1982: 56; Lopez 1961: 6). These impressions are orient vertically and extend 8 cm down from the lip of Vessel Lot IB-4. Hodges (1998: 55) remarks that three Townsend vessels from the Great Neck Site Complex “are marked with the edge of fabric-wrapped paddle on the interior of the vessel just below the lip”. The patterns of impression on the interior surface of Great Neck Site Townsend vessels are similar to impressions have been observed on Vessel Lot IB-4. Eleven rim sherds of Rappahannock Fabric Impressed from the Mispillion Site have the same vertical orientation of fabric impression on the interior surface as the Holland Point vessels (Lopez 1961: 6). The interior surface impression on the Mispillion Rappahannock Fabric Impressed sherds only extends downward for a short distance, which is the same pattern that is observed on the Holland Point vessels (Lopez 1961: 6). The presence of both interior-and-exterior and exterior only fabric impressed Townsend ware suggests that interior fabric impressions are not a temporally diagnostic attribute for this historic ware. However, extensive analysis of sites with both interior/exterior and exterior only fabric impressed Townsend ware would be necessary to corroborate this hypothesis. Griffith (1977) did not analyze this attribute during his serration of Townsend pottery.

The reconstruction vessel portions provide information on vessel form. Vessel Lots IB-4 and IIIA-1 have different rim/neck shapes. Vessel Lot IB-4 has a slightly

constricted neck and/or everted (out flaring) rim profile. Vessel Lot IIIA-1 has a perpendicular (straight) rim profile. Both straight and everted rim profiles are documented for Townsend series pottery (Blaker 1963; Griffith 1977). Griffith's (1977: 100-104) serration analysis of Townsend series rim profiles (recorded as either perpendicular, everted, or inverted) revealed that this attribute is not temporally sensitive. The sooting around the rim of both Vessel Lots IB-4 and IIIA-1 suggests these vessels might have both functioned as cooking vessels (Stewart 1998b: 243-247). The soot accumulation is produced from directly heating a pot over an open fire (Hally 1983: 7-11; Rice 1987: 235). The two variations in rim forms possible served equally as effective for cooking purposes. Both Vessel Lots IB-4 and IIIA-1 have similar rim diameters. Vessel Lot IB-4 has a rim diameter of 15-16 cm while Vessel Lot IIIA-1's rim diameter is 13-15 cm. The interpretation of these two vessels (Vessel Lots IB-4 and IIIA-1) as cooking pots provides insights into mouth size of Late Woodland cooking vessels. Cooking pots used over direct heat would not have as large an orifice diameter as pot used for used for in stone boiling because inserting and removing rocks necessitates a wider mouth pot (Stewart 1998b: 252). The partially reconstructed body portion of Vessel Lot IB-5 suggests that the vessel has globular shape. The three pots from Feature 4 provide new insights into ceramic technologies during the Late Woodland on the Middle Delmarva Peninsula.



#### D. Feature 5

Only generalized interpretations of this feature are possible because the feature was not excavated. The postmolds around the feature suggest that a superstructure was located overtop of the shell filled feature. The depth below the ground surface of the feature is not known. The feature has a plan view shape and size comparable to semi-subterranean dwellings found in Carey/Late Carey Complex sites. However, semi-subterranean dwellings typically have postmolds on the inside edge of the pit (Griffith and Artusy 1975). William Henry Holmes (1907) may have been the first to hypothesize about semi-subterranean dwellings based on his analysis of these depression-like features at the Pope Creek shell midden in Maryland. The Pope Creek features are roughly the same size as the Feature 5 and 6 at Holland Point. A semi-subterranean dwelling with shell in the feature matrix was excavated at the Bay Vista Site (Doms, et al. 1985). The Bay Vista house feature had four postmolds around the perimeter of the feature. Townsend series ceramics were recovered from the Bay Vista feature matrix suggesting a Late Woodland date. Published reports of Middle Woodland Mockley shell filled semi-subterranean house features have not found in the general literature for Maryland's Eastern Shore. This feature at Holland Point could suggest that semi-subterranean house features also date to the Middle Woodland Period. The feature size and nature suggests that Middle Woodland occupations might not have been short-term at Holland Point. This interpretation is also supported by the Middle Woodland burial.

## CHAPTER 9

### ANALYSIS OF CULTURAL MATERIAL FROM THE THREE AGRICULTURAL FIELDS

#### A. Field 1

The artifacts and ecofacts collected and observed in Field 1 provide a general impression of Native American usage of this portion of the Holland Point Farm (Figure 19). The lithic material in the field consists of debitage, bifaces, FCR, possible net sinker, manuports, and a ground stone tool fragment. The debitage consists of four flakes and six pieces of shatter (Table 31). The flakes were not produced by an identifiable percussion technique (i.e. bipolar or blade methods). One piece of debitage was observed in the field, but not collected. The small assemblage of debitage cannot provide any detailed interpretations of lithic reduction activities. The debitage simply denotes the presence of limited lithic reduction activities across the field. The occurrence of cortex bearing debitage reflects the utilization of local secondary cobble resources. The lithic material types are all present within local cobble beds. One broken flat-shaped cobble (Artifact 106.1) appeared to have two notches removed from opposing sides of the artifact. This artifact might be a net sinker. The ground stone axe fragment suggests presence of wood working activities. The axe fragment appears to be a flake from the blade of the celt or axe. The flake might have spalled-off during use of the axe.

Three finished bifaces consisting of a contracting stem projectile point (Type 33), a weakly side notched/expanding stem (Type 26), and mid-section of an un-typed

| <b>Material Type</b> | <b>Total Number of Debitage (Weight g)</b> | <b>No. of Debitage # 1 cm (Number w/ cortex)</b> | <b>No. of Debitage 1–2 cm (Number w/ cortex)</b> | <b>No. of Debitage 2-5 cm (Number w/ cortex)</b> | <b>No. of Debitage 5&gt; cm (Number w/ cortex)</b> | <b>Decortication Debitage (% of total)</b> |
|----------------------|--------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|----------------------------------------------------|--------------------------------------------|
| Chert                | 2 ( )                                      | 1 (0)                                            | 1 (0)                                            | 0                                                | 0                                                  | 0                                          |
| Jasper               | 1 (.81)                                    | 0                                                | 1 (1)                                            | 0                                                | 0                                                  | 100                                        |
| Quartz               | 6 (44.08)                                  | 0                                                | 0                                                | 6 (3)                                            | 0                                                  | 50                                         |
| Quartzite            | 1 (1.44)                                   |                                                  | 1 (0)                                            | 0                                                | 0                                                  |                                            |
|                      |                                            |                                                  |                                                  |                                                  |                                                    |                                            |
| Totals:              | 10 ( )                                     | 1 (0)                                            | 3 (1)                                            | 6 (3)                                            | 0                                                  |                                            |

Table 31. Summary ofdebitage from Field 1

biface were recovered from the field. The relationship of Art# 107.11 and 106.6 (Type 26) to historically defined projectile point types was evaluated in Chapter 5 and in Appendix B.

Art# 107.11 (Figure 26C) is classified as either a Chesapeake Diamond or a variant of Poplar Island (see Appendix B) that dates from the late Middle Archaic to the Middle Woodland Period (Custer 2001: 43, 90-112). Art# 106.6 (Type 26, Figure 27A) is similar to the “Major Type” of Pequea defined by Custer (2001) that dates from late Middle Archaic to Middle Woodland.

The Native American ceramic assemblage consists of one small sherd of Type I (Townsend ware). The Townsend sherd suggests a Late Woodland utilization of the field.

The location of cobbles and FCR is plotted within 10-by-10 m square blocks across the field. A low wetland area was not surface collected. The property manager indicates that water is pumped into this portion of the field to flood the area during duck hunting season. The manuports and FCR were not concentrated in any particular area

with Field 1. A light scatter of oyster shell extends across the northeastern portion of the field. Concentrations of dense large fragments of oyster shell, typically indicative of subsurface features, were not apparent in the field. Artifacts were found both within and outside shell scatter. The oyster shell scatter also could be related to historic farming practices in which the shell is used a fertilizer. Townsend ceramic sherd and the Type 26 projectile point were both found within the oyster shell scatter during an informal surface collection of the field. Artifacts were found around both sides of the man-made pond. The ponds were probably made by excavated a basin below the existing ground surface. The sediment from the basins was placed around the perimeter of the ponds creating an elevated bank.

Historic Period activities are indicated by the presence of the hard shell clam roadbed and the historic artifacts scattered across the field. General observations of historic artifacts in the field suggest they reflect late nineteenth through modern day activities. The 1847 coastal survey map of Holland Point suggest that a structure might have been located in the northern portion of Field 1 roughly where the shell road ends in the field. Concentrations of brick or other structural material were not observed in any particular area in the field. Additional work is necessary in order to clarify the Historic Period activities in Field 1.

## B. Field 2

Only lithic artifacts were present in Field 2. FCR, manuports, a chert spoke shave (Art# 108.1) and a hammer stone (Artifact 108.2) found in the field provide a

general impression of Native American activities. The manuports suggest presence of Native American in the general area. The small chert spoke shave indicates that wood working activities were occurring at this location. The FCR in the field could indicate Native American fire related activities were performed in the area or that this material was discarded in the field.

Figure 55 shows the location of cultural material across the plowed field. Artifacts are concentrated toward the shoreline. Yet, the concentration is of low density suggesting that remnant portions of feature are probably not present below the plowzone.

### C. Field 3

Only lithic artifacts were present in Field 3. Debitage, bifaces, FCR, manuports, and cores found in the field provide a general impression of Native American activities. Three cores (1 chert, 2 quartz) reflect lithic reduction activities in the field. Two of the cores have compression damage in several orientations indicating they are multiple platform bipolar cores. One of the bipolar cores is relatively small and has numerous flake scars suggest that it has reduced to the point of exhaustion. This exhausted core is classified as a bipolar core nuclei. The other core is an irregular/multi-faceted core. Bipolar reduction in of itself is not indicative of a particular cultural/temporal period. Bipolar reduction has been documented in Paleoindian (Lowery 2002a) through Late Woodland contexts (Stewart 1987b). The debitage in the field consists of a basalt flake

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Figure 55. Field 2

and a chert piece of shatter. The chipped stone debris reflects limited lithic reduction activities in this field. The cobbles and FCR in the field suggest that the area may have been associated with fire related activities or that the FCR was discarded in the field.

Figure 56 shows the location of cultural material across the plowed field. The lithics in the field are concentrated on a gentle ridge oriented down the center of the field. On the eastern and western side of the ridge the landform is covered in high marsh vegetation and is poorly drained. Native American activities were concentrated on the ridge top that had better drainage conditions.

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Figure 56. Field 3



## CHAPTER 10

### ANALYSIS OF THE CULTURAL MATERIAL FROM THE SHORELINE ASSEMBLAGE

#### A. Introduction

Cultural material collected by Norman Brady and Darrin Lowery during the 1990s and collections made during the 2000 investigations as well as collections obtained while preparing the grant proposal are incorporated into the analysis of the shoreline assemblage. Material obtained during the controlled shoreline collection and from the island is also grouped with the general shoreline assemblage. To simplify the discussions in this chapter, the material obtained from the excavations of the units, features, column sample, and bank cut in 1998 is grouped together and referred to as the excavated assemblage. Norman Brady, an advocational archaeologist, donated the bulk of the material in the Holland Point surface collection. His visits to the site were driven by a concern for the loss of another site because of shoreline erosion. Most of the artifacts in Lot #2 are from Brady's gracious donation. Smaller proveniences were defined (and Lot Numbers assigned) for the controlled shoreline collection and the collection from the northern shoreline and island. The analysis is organized by the classes of artifacts and ecofacts. Extensive attempts were made to refit lithics, Native American pottery, and faunal remains from the shoreline assemblage with excavated assemblage. Yet refits between the two assemblages were not possible; thus none of the material from the shoreline assemblage could be linked to the two analytical context defined in Chapter 5. Only attributes and styles of artifacts that are diagnostic to a

particular temporal/cultural periods can be used to estimate the age of individual artifacts. The relative abundance of temporally diagnostic ceramics and projectile points provides insights into general site utilization over time at Holland Point. The focus of the shoreline assemblage analysis is on these “diagnostics”.

## B. Ceramics

Appendix A provides a detail description and analysis of the ceramics by ware/type. Table 32 presents the wares by weight, sherd size and vessel lots. The sherd size increments were arbitrarily chosen. The relationship of the wares to the historically defined ceramic types will be discussed first. The temporal/cultural affiliation of the wares is incorporated into discussion of each wares’ relationship to historically defined ceramic types. The reasons why certain ware/types have high vessel lot counts, but low sherd numbers and weights will be clarified. The analysis of vessel production and function presented at the end will provide a greater understanding of the overall ceramic technologies at Holland Point. Interpretation of vessel shapes from the shoreline assemblage is limited because only a few numbers of sherds could be refitted. When refits were found it was generally only two or three sherds that could be glued back together. The analysis of vessel size based on rim diameters will be presented in the final chapter where all measurable rims from Holland Point will be discussed.

| War  | Type | Weight  | % by total weight | <1 cm | 1-2 cm | 2-3 cm | 3-6 cm | 6-10 cm | Total # of Sherds | MNV based on rims | MNV based on other Criteria | Total MNV |
|------|------|---------|-------------------|-------|--------|--------|--------|---------|-------------------|-------------------|-----------------------------|-----------|
| I    | A    | 1813.3  | 22.8%             |       | 4      | 41     | 156    | 19      | 220               | 14                | 2                           | 16        |
| I    | B    | 241.96  | 3.0%              |       |        |        | 13     | 4       | 17                | 5                 | 1                           | 6         |
| I    | C    | 2125.69 | 26.8%             |       | 2      | 66     | 219    | 14      | 301               | 26                | 1                           | 27        |
| I    | D    | 170.85  | 2.2%              |       |        | 1      | 19     | 1       | 21                | 2                 |                             | 2         |
| I    | E    | 117.23  | 1.5%              |       |        |        | 1      | 3       | 4                 | 1                 |                             | 1         |
| I    | F    | 8.33    | 0.1%              |       |        |        | 1      |         | 1                 |                   | 1                           | 1         |
| I    | G    | 9.89    | 0.1%              |       |        |        | 1      |         | 1                 |                   | 1                           | 1         |
| I    | H    | 9.25    | 0.1%              |       |        |        | 1      |         | 1                 |                   | 1                           | 1         |
| I    | ND   | 509.92  | 6.4%              | 1     | 34     | 142    | 60     |         | 237               |                   |                             | 0         |
| II   | B    | 81.14   | 1.0%              |       |        |        | 6      | 1       | 7                 |                   |                             | 0         |
| II   | ND   | 22.13   | 0.3%              |       |        | 1      | 3      |         | 4                 |                   |                             | 0         |
| III  | A    | 251     | 3.2%              |       |        | 3      | 5      | 4       | 12                | 1                 | 1                           | 2         |
| III  | B    | 5.83    | 0.1%              |       |        |        | 1      |         | 1                 |                   |                             | 0         |
| III  | C    | 283.99  | 3.6%              |       |        | 4      | 28     | 3       | 35                | 1                 | 1                           | 2         |
| III  | ND   | 66.26   | 0.8%              |       | 1      | 5      | 9      | 1       | 16                |                   |                             | 0         |
| IV   | A    | 555.42  | 7.0%              |       |        |        | 21     | 9       | 30                | 1                 |                             | 1         |
| IV   | B    | 22.07   | 0.3%              |       |        |        |        | 1       | 1                 |                   |                             | 0         |
| IV   | C    | 307.65  | 3.9%              |       |        | 10     | 27     | 2       | 39                | 1                 |                             | 1         |
| IV   | D    | 36.65   | 0.5%              |       |        |        |        | 1       | 1                 |                   |                             | 0         |
| IV   | ND   | 164.64  | 2.1%              |       |        | 13     | 16     |         | 29                |                   |                             | 0         |
| IX   | A    | 65.62   | 0.8%              |       |        |        | 3      | 1       | 4                 | 1                 | 1                           | 2         |
| IX   | B    | 32.61   | 0.4%              |       |        |        | 3      |         | 3                 |                   |                             | 0         |
| IX   | C    | 26.77   | 0.3%              |       |        | 1      | 3      |         | 4                 |                   |                             | 0         |
| IX   | D    | 5.56    | 0.1%              |       |        |        | 1      |         | 1                 |                   | 1                           | 1         |
| IX   | ND   | 28.5    | 0.4%              |       | 1      | 5      | 4      |         | 10                |                   |                             | 0         |
| N    | ND   | 30.03   | 0.4%              | 1     | 35     | 47     |        |         | 83                |                   |                             | 0         |
| V    | A    | 36.78   | 0.5%              |       |        | 2      | 4      |         | 6                 | 1                 |                             | 1         |
| V    | ND   | 1.62    | 0.0%              |       |        | 1      |        |         | 1                 |                   |                             | 0         |
| VI   | A    | 153.33  | 1.9%              |       |        | 4      | 13     | 1       | 18                | 1                 |                             | 1         |
| VI   | B    | 21.3    | 0.3%              |       |        |        | 1      |         | 1                 |                   | 1                           | 1         |
| VI   | C    | 10.44   | 0.1%              |       |        | 1      | 1      |         | 2                 |                   |                             | 0         |
| VI   | ND   | 10.99   | 0.1%              |       |        | 1      | 2      |         | 3                 |                   |                             | 0         |
| VII  | A    | 128.49  | 1.6%              |       |        |        | 3      | 4       | 7                 |                   |                             | 0         |
| VII  | B    | 72.59   | 0.9%              |       |        |        | 1      | 1       | 2                 |                   |                             | 0         |
| VII  | ND   | 15.56   | 0.2%              |       |        | 2      | 1      |         | 3                 | 1                 |                             | 1         |
| VIII | A    | 202.81  | 2.6%              |       |        | 3      | 18     |         | 21                | 1                 |                             | 1         |
| VIII | B    | 78.87   | 1.0%              |       |        | 1      | 8      |         | 9                 |                   |                             | 0         |
| VIII | ND   | 24.91   | 0.3%              |       | 2      | 5      | 2      |         | 9                 |                   |                             | 0         |
| X    | A    | 123.38  | 1.6%              |       |        |        | 10     | 1       | 11                |                   |                             | 0         |
| X    | B    | 2.26    | 0.0%              |       |        | 1      |        |         | 1                 |                   |                             | 0         |
| X    | ND   | 10.9    | 0.1%              |       | 2      | 4      | 1      |         | 7                 |                   |                             | 0         |
| XI   | A    | 24.59   | 0.3%              |       |        | 1      |        | 1       | 2                 |                   | 1                           | 1         |
| XI   | ND   | 0.97    | 0.0%              |       | 1      |        |        |         | 1                 |                   |                             | 0         |
| XIII | A    | 14.08   | 0.2%              |       |        |        | 2      |         | 2                 |                   | 1                           | 1         |
| XIII | B    | 7.57    | 0.1%              |       |        |        | 1      |         | 1                 |                   |                             | 0         |
| XIII | ND   | 3.9     | 0.0%              |       | 2      |        | 1      |         | 3                 |                   |                             | 0         |
|      |      | 7937.63 |                   | 2     | 84     | 365    | 670    | 72      | 1193              | 57                | 14                          | 71        |

Table 32. Summary of the shoreline ceramic assemblage

The majority of the ceramics date to the Late Woodland (1050-350 B.P.). Types I A, I B, I C, II B, III A, III B, III C, and V A are generally comparable to Townsend ceramics. Body sherds of Types I C and III C might also be comparable to Yeocomico Plain. Correlating the shell tempered body sherds of Wares I, II, III, and V to historic types is challenging because they cannot be linked to rims or decorated portions of the vessel. The smooth surface body sherds (Types I C, II B and III C) could be classified as either Townsend or Yeocomico Plain ceramics. The Type I C, II B, and III C body sherds could either be from portions of fabric-impressed vessels (i.e. Townsend ware) where the surface has been smoothed. Smoothing of the fabric-impressed surfaces on Townsend vessels is common near the areas of decoration (Blaker 1963: 15). Townsend pots with completely smoothed surface have been reported in Delaware (Griffith 1982: 56). Townsend ceramics date from 1050 B.P. - 350 B.P. (Griffith 1977; Griffith 1980; Griffith 1982). Alternatively, the smooth surface (Types I C, II B and III C) body sherds could be typed as Yeocomico Plain. This historic type is defined as having completely smoothed interior and exterior surfaces (Waselkov 1982: 294-295). Yeocomico Plain found in the lower Potomac River Valley is associated with uncalibrated radiocarbon dates of  $410 \pm 55$  B.P. and  $440 \text{ B.P.} \pm 75$  (Waselkov 1982: Table 42). Yeocomico Plain dates to the terminal Late Woodland/Proto-Historic Period.

The interior/exterior fabric impressed shell tempered ceramic assemblage presents another classification challenge. Two partially reconstructed vessels (Vessel Lots IB-4 and IB-5) from Feature 4 reveal the limited extent of both interior and exterior fabric impressions on the vessel surfaces. The two pots show that the interior fabric impressions are confined to an area just below the rim. In Table 32 ratio of sherds

to vessel lots stands out as being abnormally high for Type I B. In other words, there are a lot of vessel lots for a small amount of Type I B sherds. Why is this the case? The observations from the partially reconstructed vessels (Vessel Lots IB-4 and IB-5) indicate that only a portion of the pot is fabric impressed on the both the interior and exterior surface. The body sherds from the lower portion of the Type I B pot, where the impressions are only on the exterior surface, would look identical to Type I A, II A, III A body sherds. Focusing ceramic analysis on vessel lots that are defined by distinctive groups of rim and refitted rims avoids the bias that would be inferred by simple sherd quantifications.

Table 33 classifies the individual vessel lots by historic types within the Townsend series following the typology and nomenclature developed by Griffith (1977; 1980; 1982). These further refinements in the classification of the Townsend pottery can be made on the basis of surface treatment and decoration. Types I ND, II ND, III ND, and V ND have paste characteristics that are grossly comparable to Townsend ware and Yeocomico ware. Yet, the small size of these sherds and/or eroded surfaces precludes more definitive classification of these types. Yeocomico ware in the lower Potomac River Valley has an uncalibrated date range of 440 to 260 B.P. (Potter 1993: 87, Table 4).

A critical component to Griffith's Townsend analysis was the creation of two "fields" of decoration "to delimit the location of the motif and aid in the definition of separate motif" (Griffith 1980: 26). Field 1 is the upper zone directly below the rim. Field 2 is the lower zone directly below Field 1. Griffith established several parameters concerning these "fields" of decoration. Certain parameters of Griffith's taxonomy are

| <b>Historic Types</b>                                                 | <b>Vessel Lots</b>                                                                                                                                                                                                                                                                                          | <b>Number of VL</b>                           |
|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| Rappahannock Fabric Impressed (Townsend Series)                       | I A – 1, I A – 4, I A – 5, I A – 9, I A – 10, I A – 11, I A – 12, I A – 16, I A – 17, I B – 2, I B – 3, I B – 7, I C – 28, III A – 3, V - 1                                                                                                                                                                 | 15                                            |
| Rappahannock Incised (Townsend Series)                                | I A – 13, I A – 7 (Similar to RI6), I B – 1(Similar to RI6), I C – 18 (Similar to RI2, RI3, & RI4), I C – 19 (Similar to RI4 or RI7), I C – 20, I C – 23, I C – 21 (Possible similar to RI2), I C – 22 (Similar to RI2), I C - 26 (Possible similar to RI5), I C – 27, I C – 26 (Similar to RI6), III C - 1 | 13                                            |
| Townsend Corded                                                       | I A – 6 (Pseudo-cord), I A – 8 (Direct Cord), I C – 2 (Direct Cord), I C – 4 (Direct Cord), I C – 5 (Direct Cord), I C – 8 (Direct Cord), I C – 9 (Direct Cord), I C – 17 (Pseudo-cord), I A – 18 (Pseudo-cord), III A – 2 (Pseudo-cord)                                                                    | 10<br>(Pseudo-cord: N=4;<br>Direct Cord: N=6) |
| Townsend Corded (Direct Cord; Similar to TC1)                         | I C – 1, I C – 3, I C – 6, I C – 7, I C – 16, IV C – 1, III C - 3                                                                                                                                                                                                                                           | 7                                             |
| Townsend Corded (Pseudo-cord; Similar to TC2 & TC3)                   | I C - 15                                                                                                                                                                                                                                                                                                    | 1                                             |
| Generalized Townsend/ Yeocomico Plain (Smoothed and small rim sherds) | I B – 6, I C – 10, I C – 11, I C – 12, I C – 13, I C - 14, I C – 29, III C -2                                                                                                                                                                                                                               | 8                                             |

Table 33. Classification of vessel lots from the shoreline assemblage by historic types within the Townsend Series as defined by Griffith. (TC = Townsend Corded, RI =Rappahannock Incised, the nomenclature used is the system developed by Griffith)

summarized below in order to clarify how the Townsend ware from Holland Point was classified. If there is no decoration in any of the fields, the vessel is classified as Rappahannock Fabric Impressed. If there is no change in the decorative motif on the vertical axis, than a motif is not recorded for Field 2. The motifs do not have to be recorded for both fields. The motifs consist of the following elements: horizontal bands, triangles, squares, zigzags, discrete lines, and curvilinear lines (see Griffith 1980: Figure 4). The decorative techniques consist of incising, direct cord impressions, and pseudo-cord impression. Appendix A contains a detailed description of the decorative techniques and motifs observed on the Holland Point Townsend ceramics.

All of the Townsend rim sherds from Holland Point could not be easily plugged into Griffith's typology. Phrases such as "similar to" and "possible similar to" are used in Table 34 because both fields of decoration could not be observed on the rim sherds. The small size of some rim sherds prohibits definitive classification of the vessel lots to specific Rappahannock Incised types and Townsend Corded types. At best, only gross comparisons can be made to certain Rappahannock Incised types and Townsend Corded types. The "Generalized Townsend/Yeocomico Plain" group consists of vessel lots with small rim sherds and rim sherds that have smoothed surfaces. This group could either be classified at Townsend or Yeocomico Plain for reasons discussed above. Both historic types date to the Late Woodland.

Griffith (1977; 1980) was able to show temporal changes in certain types within the Townsend series. Rappahannock Incised is believed to date to the early part of the Townsend sequence before 665 B.P., while Townsend corded generally post-dates 665 B.P. (Griffith 1980: 30). Additional radiometric dates for Rappahannock Incised

ceramics from the Middle Atlantic Coastal Plain generally corroborated the date range proposed by Griffith (see Appendix A). However, new calibrated radiometric dates and calibrations of older dates might warrant refinement of Griffith's temporal sequence for Townsend ceramics.

The direct cord technique is a relatively late attribute in the Townsend sequence that is believed to post-date 590 B.P. (Griffith 1980: 31). This decorative technique is hypothesized to have affinities with Potomac Creek ceramics in the lower Potomac River Valley (Griffith 1977: 147). Direct cord impressions are the defining attribute for one variety of Townsend Corded (TC1) (Griffith 1980: 30). Pseudo-cord impressions are the defining attribute for the other two Townsend Corded varieties (TC 2 and TC3). This decorative technique is a post-665 B.P. attribute (Griffith 1980: 32). Griffith's dates for the Townsend sequence are based on a limited number of uncalibrated assays. New calibrate dates, especially based on AMS dating of the residue on the sherds, would help to confirm and/or refine Griffith's sequence.

Using Griffith's scheme generalized statements concerning the age of the Townsend assemblage can be estimated. These temporal estimates are based on vessel lot quantities and not on individual rim sherds. Table 34 presents the number of vessel lots that can be assigned to uncalibrated temporal ranges based on Griffith's work. The broad time range for Rappahannock Fabric Impressed ceramics does not refine the timing of occupation at Holland Point. The presence of both early (i.e. Rappahannock Incised) and late (i.e. Townsend Corded) types suggests that occupations at Holland Point span from the early Late Woodland through late Late Woodland. The slightly greater number of Townsend Corded vessel lots could be explained in several ways.



| <b>Historic Townsend Types</b> | <b>Uncalibrated temporal range (Based on Griffith)</b> | <b>Number of Vessel Lots</b> |
|--------------------------------|--------------------------------------------------------|------------------------------|
| Rappahannock Fabric Impressed  | 1050 B.P. - 350 B.P.                                   | 15                           |
| Rappahannock Incised           | 1050 B.P. - 665 B.P.                                   | 13                           |
| Townsend Corded (Direct Cord)  | 590 B.P. - 350 B.P.                                    | 13                           |
| Townsend Corded (Pseudo-cord)  | 665 B.P.- 350 B.P.                                     | 5                            |

Table 34. Temporal range of historic types in the Townsend series compared to the number of vessel lots from the shoreline assemblage

First, greater number of pots could suggest a greater intensity of occupations during the late Late Woodland. Second the greater numbers could suggest later groups made more pots because of changes in activities at the site. Third, the greater numbers could suggest that larger groups of Native Americans were utilizing Holland Point in the later portion of the Late Woodland. All of these scenarios could be occurring to account of the difference in the early and later Townsend types. Without being able to look at the complete ceramic assemblage at Holland Point more definitive statements based on the Townsend ceramics is not possible.

Several other ceramic types from the shoreline assemblage are believed to date to the Late Woodland. The paste characteristics and distinctively scrapped surface of Type I E suggests that it is grossly comparable to descriptions of Yeocomico Scrapped (Waselkov 1982: 296) (See Appendix A for additional comments). The assemblage of Type I E rim and body sherds suggests a minimum of one vessel.

The paste characteristics of Ware IV are roughly comparable to Killens (Custer 1989: 308-309) or Currioman ware (Waselkov 1982: 293). Both Killens and Currioman are Late Woodland historic ceramic types. A minimum of two vessels is estimated for the Ware IV sherd assemblage based on groupings of rim fragments that could belong to the same vessel and refitted rim sherds. Vessel Lot IVC-1 is classified in Table 33 as Townsend Corded Horizontal. This classification is questionable because the Ware IV paste characteristics are not typical of Townsend pottery, yet the decorative motifs on Vessel Lot IVC-1 are similar to Townsend Corded Horizontal (see Appendix A for additional comments). The rim sherd used to define Vessel Lot IVC-1 is relatively small making the typing of it even more tenuous. Both Townsend and Killens types are roughly coeval alleviating concerns about whether Vessel Lot IVC-1 is one type or the other.

Types I F, I G, and I H have paste characteristics that are similar to Townsend series ceramic, but surface treatments of these types are not the same as surface treatments used to define the Townsend series. Fabric impressions, smoothed over fabric impressions, and smoothed surface, especially where decoration is applied, are the traditional surface treatment used historically to define Townsend series ceramics (Blaker 1963; Griffith 1977; Griffith 1980; Griffith 1982). The surface treatments of Types I F, I G, and I H consist of three different types of fabric impressions. These fabric impressions are distinctive from the fabric used to impress Townsend ceramics. Detailed descriptions of the fabric impression for Types I F, I G, and I H are presented in Appendix A. Types I F, I G, and I H are only represented by one sherd each. A minimum of one vessel lot is estimated for each of the three types. The three distinctive

styles of fabric used to make the impressions on these types combined with the fabric used to impress Townsend pottery suggest that minimum of four different types of fabric were used in the production of pottery at Holland Point. Wigglesworth's (1986) analysis of fabric types from the Gravelly Run site in the New Jersey Coastal Plain revealed that only four different types of fabric were used to make the impressions. Future work on the fabric-impressed pottery should seek to defined temporal trends in the fabric types and to look for variability in the fabric used to impress Townsend pottery.

Ware XIII has past characteristics similar to Minguannan ceramics (Custer 1989: 305) and Potomac Creek ceramics (Egloff and Potter 1982: 112; Potter 1993: 125) which both date to the Late Woodland. Varieties of both Minguannan and Potomac Creek have cord marked surfaces. Potomac Creek not widely recognized historic type on the Delmarva Peninsula. Potomac Creek is traditional defined as a lower Potomac Valley historic ceramic type. Minguannan is more common in the northern portion of the Delmarva and adjacent area to the north and west (Custer 1989: 308). The overlapping date ranges for both Minguannan and Potomac Creek span the entire Late Woodland (see Appendix A).

Type I D is similar to Yeocomico Cord Marked and Sullivan Cord-Marked ceramics. Yeocomico Cord Marked dates to the end of the Late Woodland in the Lower Potomac River Valley (Waselkov 1982: 296, 252-253). Sullivan Cord-Marked recovered from Thomas Point Site dates to late Middle Woodland to the early Late Woodland (Herbert 1995: 66-69). The hardness of the paste and the smaller size of the shell temper distinguish Type I D from corded marked varieties of Mockley. The

occurrence of shell tempered cord mark ceramics, which do not have paste characteristics similar to Mockley, is limited on the Delmarva Peninsula (see comments for Type I D in Appendix A). Grouping of Type I D rim sherds suggest a minimum of two vessels for this type.

A more limited amount of the ware/types can be correlated with historically defined ceramics that date to the Middle and Early Woodland. Type XI A and XI ND are tempered with finely crushed quartz. Ceramic Type XI A has cord marked exterior surfaces. Ceramic Ware XI is comparable to Middle Woodland Hell Island ceramics. Recently obtained calibrated dates for Hell Island suggest a revised date range of 1850-950 B.P. (see Appendix A). The traditional date range for Hell Island ceramics is 1350-950 B.P. (Custer 1989: 176). Based on the distinctive surface treatment of the one sherd of Type XI A a minimum of one vessel is suggested.

Ware VII is possibly tempered with crushed clay (i.e. grog). Dr. Myers (personal communication 3/10/2001) felt that orange color inclusions on the paste were probably grog. However, thin section analysis of the sherds would be necessary to confirm these initial observations about the use of grog temper. The quantity of orange color inclusions is significantly greater than amount of orange inclusion in the paste of Ware III. Ware VII is grossly similar to clay-tempered ware (i.e. Wilgus, Coulbourn, and Nassawango ceramics) from the Delmarva Peninsula. The uncalibrated date range for clay-tempered wares is 2750-1750 B.P. (Custer 1989: 173; Custer 1990: Figure 1). Recent excavations of a ceramic cache at the Hickory Bluff Site suggest that the Wilgus (clay and shell tempered) and Coulbourn (clay tempered) types can be combined (Liebeknecht 1999). Cross mending of sherds tempered with shell and clay, with only

clay tempered sherds highlights the variability in temper across portions of vessels from the Hickory Bluff cache. The one rim sherd and eleven body sherds of the clay-tempered assemblage could be grouped onto one vessel lot.

Ware VI has a distinctively smooth paste that is tempered with coarsely crushed shell. The sherds are generally thick. The paste of Ware VI is distinctive from the paste of other shell-tempered wares (i.e. Ware I, II, III, and V). Sherds of Ware VI are grossly comparable to Mockley ceramics. Types VI A, VI B, and VI C have cord marked, net marked, and smoothed surfaces respectively. All three of these surface treatments are documented for Mockley (Custer 1989: 174). On the Delmarva Peninsula, Mockley dates from 1950-950 B.P. (Custer 1990: Figure 1). Mockley ceramics are traditionally one of the most common varieties of Middle Woodland ceramics found on the Delmarva Peninsula and the Middle Atlantic Coastal Plain (Stewart 1992: 9). Groupings of Mockley sherds from Holland Point suggest a minimum of two vessels (one cord marked and one net marked) for Ware VI.

Ware IX is tempered with coarsely crushed quartz and quartzite. The sherds are generally thick. The paste characteristics of Ware IX are similar to Wolfe Neck ceramics. Wolfe Neck is a historically recognized type on the Delmarva Peninsula, which is comparable to other historic types in the Middle Atlantic Region such as Vinette I, Early Series-Exterior Corded/Interior Smoothed (Kinsey 1972: 453), and net-impressed Broadhead (Kinsey 1972: 456). Type IX A, IX B, and XI C have cord marked, net marked, and smoothed surfaces respectively. Both cord and net marked varieties of Wolfe Neck ceramics are known on the Delmarva Peninsula (Artusy 1976; Custer 1989: 171-173). The exterior surface of Type IX D is impressed with an open

loop-like net. Only one knot is visible consisting of a double loop knot. The net marking is distinctive from the net impression surface of Type IX B. This is the only sherd with this kind of net impression. The sherd is relatively small and is only grossly comparable to Wolfe Neck.

The traditional date range for the Wolfe Neck is 2650-2350 B.P. (Custer 1989: 171-173). At the Abbott Farm similar ceramics have a suggested date range of 2550-1750 B.P. (Stewart 1998b: 62). Wolfe Neck-like ceramics found at the Leipsic Site have a calibrated range of 2149-1949 B.P. (Custer, et al. 1996: 68-69), which may suggest that variants of Wolfe Neck ceramics have a range from 2650 to 1950 B.P.

Traditionally, Wolfe Neck dates to the Early Woodland. However the Leipsic date suggests that Ware IX might date later than traditional time range for Wolfe Neck.

Grouping of body sherds that could belong to the same vessel suggest a minimum of two vessels for Type IX A. The assemblage of Type IX B sherds could be grouped with the one Wolfe Neck sherd from Test Unit 6; thus one vessel is estimated for Type IX B. A minimum of one vessel is estimated based on the distinctive net impressed surface on the one sherd of Type IX D.

Ware VIII is comparable to Dames Quarter ware, which dates to the Early Woodland. Dames Quarter ware was associated with a broad blade point in platform hearth dated to  $2955 \pm 90$  B.P. (uncalibrated) at the Clyde Farm Site in New Castle County Delaware (Custer 1989: 169). The traditional date range for Dames Quarter is 2950-2650 B.P. Dames Quarter ware is a historic ceramic type unique to the Delmarva Peninsula (Custer 1989: 233-235). Smoothed surface and cord marked varieties of Dames Quarter are known (Artusy 1976: 2). Type VIII A has cord-marked exterior

surfaces and Type VIII B has smoothed exterior surfaces. Only one rim sherd of Dames Quarter was found. All of the rim sherds and the body sherds of Ware VIII, including the excavated sherds, could be grouped into one vessel lot.

Ware X is tempered with quartz sand, crushed angular quartz, and crushed shell. Type X A is cord-marked while Type X B is fabric impressed. The paste characteristics of Ware X are not comparable to any historic ceramic type. A limited amount of sherds with similar paste characteristics have been found in Kent County Delaware (Keith Doms, personal communication 1/7/2002). Net-impressed pottery with similar paste characteristics was found at the Martins Pond Site on the Western Shore of the Chesapeake Bay (Wright 1978: 20). An estimated uncalibrated date range of 1850 to 1650 B.P. based on stratigraphic analysis is suggested based on Wright's (1978: Table 2) chronology for the Severn River on the Western Shore. This suggested date range should be considered very tentative. One minimum of one vessel is estimated for all of the Ware X sherds (N = 19).

The shoreline assemblage of sherds provides a limited amount of information about the shape of the ceramic vessels. Basal sherds and small-reconstructed portions of the vessels provide reveal some information on vessel shape. Two small portions of Late Woodland shell tempered vessels (Vessel Lots V – 1 and IC-10) provide information on the rim/shoulder profiles. The curvature of in Vessel Lot V – 1 below the rim either suggests a constriction at neck or that the rim flares outward slightly. Vessel Lot V – 1 is classified as Rappahannock Fabric Impressed. The refitting of two sherds indicates that Vessel Lot IC – 10 (Artifact # 2.2496 and 2.2483) has an everted

rim with an abrupt angle change between the rim and body. Vessel Lot IC – 10 could be classified as either Yeocomico Plain or Townsend.

Only three basal sherds were found at Holland Point from the shoreline context. One basal sherd is classified as Type I A (Townsend). The Type I A base is rounded. Townsend ceramics occasionally have rounded bases (Blaker 1963: 16). The two other basal sherds are of Type IX A (Wolfe Neck). The Type IX A basal sherds are pointed. Wolfe Neck bases have a pointed shape (Lewis 1972).

Table 35 presents data on sherds from the shoreline assemblage where soot was observed. Only a very small amount of the shoreline sherds exhibited this encrustation. The number of sherds with soot probably has been affected by the abrasive conditions that the assemblage was subjected to along the shoreline. However, even some sherds with rounded edges from erosion still retain soot; thus soot does not come off the sherds easily. Sooting is a combustion by-product. Three sherds (two vessel lots) have sooting on the exterior surfaces on near the mouth of the vessels. This soot pattern is typical for vessels used over an open fire and suggests that these pots were used for cooking. The rim diameter measurements for Vessel Lots I C- 1 and I C –10 with the exterior soot are relatively similar and provide insight into the size of the pot used for cooking. Vessel Lot I C –10 has a uniquely out flaring rim. The function of the shape of this upper portion of the vessel is unclear. Vessel Lot IB-4, which also had a soot pattern suggestive of a use as a cooking pot, has an out curving rim profile. The role of this out flaring rim profile and its function in cooking need to be explored further in future research on Late Woodland shell tempered pottery. Vessel Lots IB-4 and IIIA-1 are the only two other pots with measurable rims that have soot patterns suggestive of use over



| <b>Lot#</b> | <b>Art#</b> | <b>Ware</b> | <b>Type</b> | <b>Soot Location</b> | <b>Vessel Lot</b> | <b>Portion Of Vessel</b> | <b>Rim Diameter (cm)</b> | <b>Historic Type</b>                |
|-------------|-------------|-------------|-------------|----------------------|-------------------|--------------------------|--------------------------|-------------------------------------|
| 2           | 2025        | I           | A           | Interior             | I A - 11          | Rim                      | 18-26                    | Rappahannock Fabric Impressed       |
| 2           | 2540        | I           | C           | Interior             | NA                | Body                     | -                        | Townsend/ Yeocomico Plain           |
| 2           | 2408        | I           | C           | Exterior             | NA                | Body                     | -                        | Townsend/ Yeocomico Plain           |
| 2           | 2277        | I           | C           | Exterior             | NA                | Body                     | -                        | Townsend/ Yeocomico Plain           |
| 2           | 2592        | I           | C           | Exterior             | I C - 1           | Rim                      | 15-21                    | Townsend Corded (Direct Cord TC1)   |
| 2           | 2483        | I           | C           | Exterior             | I C - 10          | Rim                      | 16-22*                   | Townsend/ Yeocomico Plain           |
| 2           | 2496        | I           | C           | Exterior             | I C - 10          | Rim                      | 16-22*                   | Townsend/ Yeocomico Plain           |
| 2           | 1866        | I           | D           | Interior             | NA                | Body                     | -                        | Yeocomico Cord Marked & Sullivan CM |
| 2           | 1989        | I           | D           | Interior             | NA                | Body                     | -                        | Yeocomico Cord Marked & Sullivan CM |
| 2           | 2044        | I           | D           | Interior             | I D - 3           | Rim                      | 14-19                    | Yeocomico Cord Marked & Sullivan CM |
| 2           | 1926        | I           | G           | Interior             | I G - 1           | Body                     | -                        | NA                                  |
| 19          | 13          | IV          | A           | Interior             | NA                | Body                     | -                        | Killens-Like                        |
| 2           | 1797        | IV          | A           | Interior             | NA                | Body                     | -                        | Killens-Like                        |
| 2           | 2332        | IX          | ND          | Interior             | NA                | Body                     | -                        | Wolfe Neck                          |
| 2           | 2187        | XIII        | B           | Both Inter /Exterior | NA                | Body                     | -                        | Minguannan /Potomac Creek           |

Table 35. Sherds from the shoreline assemblage that are sooted; \* Artifacts 2.2483 and 2.296 refit

an open flame. The rim diameters of Vessel Lots IB-4 (15-16 cm) and IIIA-1 (13-15 cm) are close to the rim diameters for Vessel Lots I C- 1 and I C –10 (see Table 35). The four sooted pots suggest the diameter a range of 13 to 22 cm was employed for cooking. All of the vessels that functioned, as possible cooking pots, are Late Woodland shell tempered varieties that lack “decoration”. Both fabric-impressed-exterior/smoothed-interior Townsend ware (Type III A) and fabric-impressed-exterior/fabric-impressed-interior Townsend ware (Type I B) appear to be used as cooking pots. The surfaces of the four pots are smoothed or fabric impressed. Could these “plain” pots have functioned as cooking vessels while the more decorative (i.e. Rappahannock Incised and Townsend Cord) shell tempered pots served other functions? Future functional analysis of Late Woodland pottery should seek to address this question. The pattern of soot on the other rim and body sherds in Table 35 is difficult to interpret. These sherds may have been discarded in or near a fire. Hally’s (1983) discussion of sooting highlights the complexity in interpreting use alteration. The Type XIII B sherd is completely encrusted with dark resin.

Three pieces of Native American clay pipes were recovered along the shoreline. One fragment consists of a heavily eroded pipe stem measuring 1 cm in length. The pipe stem is tempered with quartz sand. The second pipe fragment is a portion of a bowl. The bowl is tempered with quartz sand. The surface of the pipe is smooth. The bowl is decorated with vertical and horizontal incised lines. The decoration suggests the bowl dates to the Late Woodland (Stewart 1998b: 221-230). The third fragment is an elbow pipe. The fragment appears to be tempered with crushed shell. The paste is hard. The pipe is relatively thick. The fragment is from the middle portion of the pipe. The

elbow pipe is broken along the stem and at the base of the bowl. There is no decoration visible on this pipe fragment. Elbow pipes have been found in Late Woodland and Middle Woodland contexts at Great Neck (Hodges 1998: 72, 109-117).

## C. Lithics

### 1. Projectile Points

Table 36 presents the quantities of projectile points by material type from the shoreline assemblage. Tips and other broken fragments of projectile points will be discussed in the biface analysis. The two points (Type 23 and 33) from Field 1 are not included in Table 36. Several of the morphological types defined in this study cannot be correlated with one particular historic type. In Table 36 several of the types are given names like “Poplar Island/Piscataway-like” or “Bare Island-variant” while others are classified as “Unnamed stemmed type”.

Appendix B provides detailed morphological data on the projectile points and information about the relationship of the types defined in this analysis to existing historic point types. Preliminary discussion of the projectile points found along the shoreline was presented in Chapter 5. The major points of this earlier discussion warrant repeating in order make additional interpretations about the shoreline projectile point assemblage. A critical aspect of the earlier analysis is that several of the projectile point styles found at Holland Point are not simply diagnostic to a particular cultural/temporal periods. Certain names for historically defined point types in the archaeological

| <b>Projectile Point Morphology Type</b>           | <b>Crt</b> | <b>Jsp</b> | <b>Qrtz</b> | <b>Arg</b> | <b>Rhy</b> | <b>Qzte</b> | <b>Arg-like</b> | <b>Scht</b> | <b>Iron</b> | <b>Un-Sed</b> | <b>Total</b> |
|---------------------------------------------------|------------|------------|-------------|------------|------------|-------------|-----------------|-------------|-------------|---------------|--------------|
| Type 1: Triangular projectiles                    | 49         | 34         | 12          | 1          | 2          | 1           | 1               |             |             |               | 100          |
| Type 2: Susquehanna Broadspear                    |            | 1          |             |            |            |             |                 |             |             |               | 1            |
| Type 3: Jack's Reef Corner Notched                |            | 2          | 1           |            |            |             |                 |             |             |               | 3            |
| Type 4: Basal-Notched                             |            | 1          |             |            |            |             |                 |             |             |               | 1            |
| Type 5: Perkiomen-like                            | 1          |            |             |            |            |             |                 |             |             |               | 1            |
| Type 6: Unnamed stem/notched type                 |            | 1          |             |            |            |             |                 |             |             |               | 1            |
| Type 7: Fishtail                                  |            |            |             |            | 1          |             |                 |             |             |               | 1            |
| Type 8A: Poplar Island/Rossville/Piscataway       | 8          |            | 1           | 1          |            |             |                 |             |             |               | 10           |
| Type 8B: Small Poplar Island/Rossville/Piscataway | 2          | 2          |             |            |            |             |                 |             |             |               | 4            |
| Type 9: Small unnamed side notched                | 1          |            |             |            |            |             |                 |             |             |               | 1            |
| Type 10: Teardrop                                 | 2          |            | 3           |            |            |             |                 |             |             |               | 5            |
| Type 11: Poplar Island/Rossville-like             | 3          |            |             | 2          |            |             |                 | 1           |             |               | 6            |
| Type 12: Poplar Island/Piscataway-like            | 3          | 2          | 1           |            |            |             |                 |             |             |               | 6            |
| Type 13: Vosburg-like                             | 2          | 2          | 1           |            |            |             |                 |             |             |               | 5            |
| Type 14: Fox Creek-like                           | 1          | 1          |             | 1          |            |             |                 |             |             |               | 3            |
| Type 15A: Bare Island                             | 1          |            | 3           | 1          |            | 1           |                 |             |             |               | 6            |
| Type 15B: Bare Island/Piney Island variant        | 1          |            |             | 2          |            |             |                 | 1           |             |               | 4            |
| Type 16: Bare Island-variant                      | 1          | 1          |             |            |            |             |                 |             | 1           |               | 3            |
| Type 17: Bare Island-variant                      | 1          |            |             |            |            |             |                 |             |             |               | 1            |
| Type 18: Savannah River-like                      |            |            |             |            |            |             | 1               |             |             |               | 1            |
| Type 19: Bare Island variant                      |            |            |             | 1          |            |             |                 |             |             |               | 1            |
| Type 20: Piney Island/Poplar Island variant       |            | 1          | 1           |            |            |             |                 |             |             |               | 2            |
| Type 21: Broadspear                               |            |            |             | 1          |            |             |                 |             |             |               | 1            |
| Type 22: Side Notched/Selby Bay-like              | 1          | 1          | 1           | 1          | 3          |             |                 |             |             |               | 7            |
| Type 23: Unnamed side-notched                     | 4          |            |             |            |            |             |                 |             |             |               | 4            |
| Type 24: Selby Bay-like                           |            |            |             |            | 3          |             |                 |             |             |               | 3            |
| Type 25: Side-Notched variant                     | 1          |            |             |            | 1          |             |                 |             |             |               | 2            |
| Type 26: Unnamed SN/expanding stemmed             | 1          |            | 2           |            | 1          |             |                 |             |             |               | 4            |
| Type 27: Hellgramite-like                         |            |            | 1           |            |            |             |                 |             |             |               | 1            |
| Type 28: Unnamed stemmed type                     | 1          |            |             | 2          |            |             |                 |             |             |               | 3            |
| Type 29: Jack's Reef Pentagonal                   | 1          | 1          |             |            |            |             |                 |             |             |               | 2            |
| Type 30: Poplar Island-like                       |            |            |             |            |            |             |                 |             |             | 1             | 1            |
| Type 31: Unnamed expanding stem                   | 1          |            |             |            |            |             |                 |             |             |               | 1            |
| Type 32: Unnamed ear-notched type                 |            | 1          |             |            |            |             |                 |             |             |               | 1            |
| <b>Total:</b>                                     | <b>86</b>  | <b>51</b>  | <b>27</b>   | <b>13</b>  | <b>11</b>  | <b>2</b>    | <b>2</b>        | <b>2</b>    | <b>1</b>    | <b>1</b>      | <b>196</b>   |

Table 36. Projectile points by material type from the shoreline assemblage

literature have become intimately associated with particular cultural/temporal periods. Analysis by Custer (2001) and others (Dent 1995: 178-181; Miller 1998; Wall, et al. 1996a) of projectile points from dated context shows that certain styles of projectile points were in use for longer periods of time that traditionally assigned to these historic projectile point types.

The focus of earlier discussion was on using the shoreline projectile point assemblage to bracket the earliest age for deposits at Holland Point. The projectile point data suggest that the deposits and overall occupation of the site extends back to the Late Archaic. Occupations earlier than the Late Archaic Period are believed to be relatively ephemeral in nature because diagnostic point styles that could be attributed to cultural/temporal period earlier than the Late Archaic are not common at Holland Point. The Amos point is projectile point found along the shoreline is the oldest diagnostic from the site. Yet, the deposits associated with this Early Archaic diagnostic are hypothesized to currently be underwater.

Several point types found at Holland Point can be associated with confidence to the Late Archaic and/or Transitional Archaic. Four points (Types 2, 7, 5, and 21) from the shoreline assemblage clearly date Late Archaic and/or Transitional Archaic. Susquehanna BROADSPEAR points (Type 2), Fishtail points (Type 7), Perkiomen-like points (Type 5), and Unnamed BROADSPEAR points (Type 21) have uncalibrated date range of 4450 B.P. to 3450 B.P. (Custer 2001: 37, 41, 44; Dent 1995: Table 5.4).

A larger number of projectile point types have been found in dated contexts that range in age from the late Middle Archaic to the end of the Middle Woodland. Type 8A (Poplar Island/Rossville/Piscataway variant), Type 8B (Small Poplar

Island/Rossville/Piscataway variant), Type 11 (Poplar Island/Rossville-like), Type 12 (Poplar Island/Piscataway-like), Type 15A (Bare Island), Type 15B (Bare Island/Piney Island variant), Type 16 (Bare Island-variant), Type 17 (Bare Island-variant), Type 19 (Bare Island variant), Type 20 (Piney Island/Poplar Island variant), Type 23 (Unnamed side-notched), Type 25 (Side-Notched variant), Type 26 (Unnamed side-notched/expanding stemmed type), Type 28 (Unnamed stemmed type), and Type 30 (Poplar Island-like) are point styles that could date from the late Middle Archaic to the end of the Middle Woodland. All of the point types mentioned above are morphological similar to Custer's (2001: 25, 40-43) Bare Island, Poplar Island, Piney Island, and Pequea "Major Types" as well as several related "Minor Types". As previously discussed these four "Major Types" and their cognates could date from the late Middle Archaic to the end of the Middle Woodland. Type 23 points have shape characteristics that similar to the following historic types: Brewerton Side-Notched, Halifax, Pequea and Vernon. The overall morphology of Type 25 points can be grossly comparable to Brewerton Eared style points. Type 28 is grossly similar to Pequea "Major Type". These fourteen morphological types (fifty-four specimens) make up twenty-eight percent of the shoreline projectile point assemblage. Previous discussions argued that these point types are not believed to date to the late Middle Archaic at Holland Point. These styles of finished bifaces are felt to date from Late Archaic through the end of the Middle Woodland.

Several projectile point styles can be related to other historic types. Type 3 and 29 points are identical to corner-notched and pentagonal varieties of Jack's Reef points, which dates to the Middle Woodland. One point with basal notches (Type 4) is similar

to Eshback and Erb Basal-Notched. Discoveries of basal-notched points from several contexts in the Middle Atlantic indicate that they have a broad time range from the Late Archaic to the Contact Period. Type 10 points are comparable to Teardrop points which have been dated to the Early Woodland on the New Jersey Coastal Plain (Mounier and Martin 1994: 132). . However, data from Abbot Farm excavations suggest Teardrop-like points could also date from the late Middle Woodland through the Late Woodland (Wall, et al. 1996a: 74-75). As discussed in Chapter 4, the morphology of Type 13 points is only grossly comparable to Vosburg points. This historic type is not commonly found or recognized on the Delmarva Peninsula. Vosburg points are dated New York and the Upper Delaware Valley to the late Middle Archaic (uncalibrated 5620 B.P. to 4600 B.P.). Yet, this late Middle Archaic age is not consider valid for Type 13 points at Holland Point. The Type 14 points are grossly comparable to lanceolate varieties of Fox Creek Points, which date to the Middle Woodland Period. Type 18 is grossly comparable to the Savannah River Broadspear type. The comparison of Type 18 to this historic type is made cautiously since this specimen is not identical in morphology to the classic “Savannah River” type (Coe 1964: 42-45). Savannah Rivers traditionally date to the Late Archaic. However, this point type might also date to the Woodland Period (see Appendix B). The rhyolite side notched points of Type 22 and 24 are comparable to Selby Bay style bifaces. The Selby Bay type was defined based excavation on the Western Shore of Maryland (Wright 1978: 21). It refers to side notched projectile points made out of rhyolite that exhibit little to not secondary flaking (Potter 1993: 66; Wright 1978: 21). The Selby Bays are commonly associated with Mockley ceramics and date to the Middle Woodland Period. The four non-rhyolite

specimens classified as Type 24 are not considered Selby Bay points because they are not made of out rhyolite. These four side notched could also date to the Middle Woodland. However, generalized side notched points in the Middle Atlantic Region have a broad time range from the late Middle Archaic (ca. 6000 B.P.) to the end of the Middle Woodland (ca. 1000 B.P.) (Custer 1996: 143-44; Custer 2001: 66, 90, Figure 30, Figure 33). The shallow side notches and wide base of one point (Type 29) is grossly similar the Hellgramite type. Hellgramites date from the Late Archaic to the Early Woodland (uncalibrated 3,250 to 2750 B.P.).

Triangular shaped points made up fifty-one percent of the shoreline projectile point assemblage. In the Middle Atlantic, triangular points have been found in Middle Archaic, Late Archaic, late Middle Woodland, and Late Woodland contexts (Custer 2001: 84-88; Katz 2000: 28-41; Stewart 1998d; Stewart and Cavallo 1991; Wall, et al. 1996a). The overall abundance of Late Woodland ceramics from Holland Point suggests that most of the Holland Point triangles probably date to the Late Woodland Period. Yet, it cannot be said with absolute confidence that all of triangles are Late Woodland in age.

Several of the morphological types defined during the study of the Holland Point projectile points could not be correlated to any historic type recognized in Middle the Atlantic region. Comparison to historic types could not be made for Types 6, 9, 31, and 32.

Other interpretations concerning the projectile points are possible beside comparisons to historic types and age estimates. Additional observations about the point are concerned with the following topics: estimates of occupation intensity at Holland



Point, functional interpretation of finished bifaces, and biface production related issues. Estimating the overall intensity of occupation over time based on the known date ranges of the points can lead to arguments filled with numerous assumptions about Native American occupations at Holland Point. Directly equating the number of projectile points to the number of people is a problematic line of reasoning. Certain activities conducted at Holland Point such as hunting deer versus collecting oyster might have required greater production of projectile points. Yet, the same number of people might have been involved in these two procurement activities. One assumption, made with some reservation, concerns the number of triangular projectile points and the abundance of Late Woodland ceramics at Holland Point. Both the large quantities of triangles and Late Woodland ceramics suggest that greatest period of “intensive use” at Holland Point occurred during the Late Woodland. Additional questions and challenges with interpreting the nature of site usage over time will be explored in the final chapter.

The breakage patterns of the finished bifaces provide insight into biface function. The fracture patterns observed for the shoreline assemblage as well as numbers of whole bifaces to fragmented bifaces are presented in (Table 37). Three points (Jack’s Reef corner-notched, Basal-Notched, and Type 22/Selby Bay) that could be classified into morphological types have haft snaps. The breakage at the hafting elements might have occurred during use of the point as a projectile or a knife. It could have also occurred during reshaping. Eight other finished biface fragments that could not be classified into morphological types appeared to be broken at the hafting element. Many of the breakage patterns on the bifaces could not be interpreted as either a longitudinal macro-fracture or distal/transverse fracture. The longitudinal macro-

| <b>Projectile Point Morphology Type</b>           | <b>Total Amount</b> | <b>Fragment</b> | <b>Longitudinal</b> | <b>Distal/Transverse</b> |
|---------------------------------------------------|---------------------|-----------------|---------------------|--------------------------|
| Type 1: Triangular projectiles                    | 100                 | 64              | 16                  | 25                       |
| Type 2: Susquehanna Broadspear                    | 1                   | 0               |                     |                          |
| Type 3: Jack's Reef Corner Notched                | 3                   | 3               | 1                   | 2                        |
| Type 4: Basal-Notched                             | 1                   | 1               |                     |                          |
| Type 5: Perkiomen-like                            | 1                   | 1               |                     | 1                        |
| Type 6: Unnamed stem/notched type                 | 1                   | 0               |                     |                          |
| Type 7: Fishtail                                  | 1                   | 0               |                     |                          |
| Type 8A: Poplar Island/Rossville/Piscataway       | 10                  | 2               | 1                   | 1                        |
| Type 8B: Small Poplar Island/Rossville/Piscataway | 4                   | 0               |                     |                          |
| Type 9: Small unnamed side notched                | 1                   | 0               |                     |                          |
| Type 10: Teardrop                                 | 5                   | 0               |                     |                          |
| Type 11: Poplar Island/Rossville-like             | 6                   | 1               |                     | 1                        |
| Type 12: Poplar Island/Piscataway-like            | 6                   | 0               |                     | 1                        |
| Type 13: Vosburg-like                             | 5                   | 0               |                     |                          |
| Type 14: Fox Creek-like                           | 3                   | 1               |                     | 1                        |
| Type 15A: Bare Island                             | 6                   | 0               |                     |                          |
| Type 15B: Bare Island/Piney Island variant        | 4                   | 0               |                     |                          |
| Type 16: Bare Island-variant                      | 3                   | 0               |                     |                          |
| Type 17: Bare Island-variant                      | 1                   | 0               |                     |                          |
| Type 18: Savannah River-like                      | 1                   | 0               |                     |                          |
| Type 19: Bare Island variant                      | 1                   | 0               |                     |                          |
| Type 20: Piney Island/Poplar Island variant       | 2                   | 0               |                     |                          |
| Type 21: Broadspear                               | 1                   | 1               |                     | 1                        |
| Type 22: Side Notched/Selby Bay-like              | 7                   | 2               | 1                   |                          |
| Type 23: Unnamed side-notched                     | 4                   | 0               |                     | 1                        |
| Type 24: Selby Bay-like                           | 3                   | 1               |                     | 1                        |
| Type 25: Side-Notched variant                     | 2                   | 0               |                     |                          |
| Type 26: Unnamed SN/expanding stemmed             | 4                   | 1               |                     |                          |
| Type 27: Hellgramite-like                         | 1                   | 0               | 1                   |                          |
| Type 28: Unnamed stemmed type                     | 3                   | 0               |                     |                          |
| Type 29: Jack's Reef Pentagonal                   | 2                   | 0               |                     |                          |
| Type 30: Poplar Island-like                       | 1                   | 0               |                     |                          |
| Type 31: Unnamed expanding stem                   | 1                   | 0               |                     |                          |
| Type 32: Unnamed ear-notched type                 | 1                   | 0               |                     |                          |
| Total:                                            | 196                 | 78              | 20                  | 35                       |

Table 37. Breakage pattern of the shoreline projectile points

fracture pattern is interpreted as a type of a biface damage that can be associated with use of the point as a projectile. The longitudinal macro-fracture on the Hellgramite-like point was relatively small so the biface was classified as a whole specimen. The longitudinal macro-fracture observed on Types 1, 3, 8A, 22, and 27 indicated that these points were used as projectiles. The distal/transverse fracture type could be associated either with use of the biface as a projectile or a knife. This type of break can also occur during manufacturing process. All of the Jack's Reef corner-notched points are broken in the middle portion of the blade. The relatively thin nature of these bifaces is likely responsible for this breakage pattern. Reasons for this fracture pattern for Jack's Reef corner-notched points could be investigated in future research with larger sample sizes.

Almost all of the bifaces not made from exotic material are probably made from local cobbles. The manufacture of bifaces using local cobble resources may place constraints on attributes of finished bifaces. Small cobble size would lead to small projectile points. However, evaluating constraints of local cobble resources on lithic technologies can be problematic. Lowery (2002a: 202-204) observations of Paleoindian lithic technologies on the Delmarva Peninsula indicate possible material constraints. The rarity of large Paleoindian bifacial cores could in part relate to limitation of cobble size. However, the highly curated lithic technology of Paleoindians could also explain the rarity of bifacial cores. Resharpening is one possible factor that could affect the overall size of the biface. Approaches to reducing the cobbles would inherently be different than approaches to reducing slabs of ironstone or larger pieces of material from primary outcrops. Lowery (2002a: 174) has characterized Paleoindian lithic

reduction strategies as “flexible.” Paleoindians used both free hand, prepared blade core, and compression (bi-polar) techniques depending on size of the objective piece or on what kind of tool they were trying to produce. Later Native American cultures mostly likely also utilized several different reduction strategies to produce bifaces and other lithic tools. Bipolar techniques would have been ideal for initially creating striking platforms on relatively small cobbles and/or round cobbles. On large cobbles of non-spheroid shape, free-hand reduction techniques could have been used during initial flake removal. The core assemblage from Holland Point indicates that both free hand and bipolar reduction techniques were used. The relative percentage of bipolar verse free hand cores will be evaluated during the discussion of the cores from the shoreline assemblage.

Remnant cobble cortex was observed on several of the finished bifaces indicating they were made through cobble reduction. One Type 17 point had cortex on both aspects of the blade. A pattern observed on seven points (Type 8A, 8B, 12, 14, and 15B) was the presence of cortex on the base of these bifaces. The presence of cortex on point bases has been observed on regional points (Ritchie 1971: 29). A limited amount of pressure flaking could have easily removed this remnant cortex. The rest of the bifaces’ margins along the blade are carefully pressure flaked. Yet, the cortex appears to have been left on base of these points. Could the cortex on the bases been a substitution for grinding the bases? Future research on projectile point technologies where cobble cores are commonly used should see if similar patterns of basal cortex are present. The functional and relationship between basal grinding and this attribute warrants future investigation.

Three points (Teardrop, Jack's Reef pentagonal, Bare Island/Type 15A) retain morphological attribute that indicate flake blanks were selected for biface reduction. The use of flake blanks for making points highlights the different trajectories used to produce bifaces at Holland Point. Future research should seek to determine if there are temporal or intersite patterns in the production of points from reducing flake blanks. One possible hypothesis is that the sites located farther from the cobble sources would have a higher percentage of biface made from flake blanks.

## 2. Bifaces

Table 38 presents basic information on the 132 bifaces not classified into a morphological type. A large percentage of bifaces consist of fragmentary projectile points. The corner-notched jasper projectile point and the stemmed bifaces were too fragmentary to be classified into morphological groups. The earlier-stage bifaces that consist of broken fragments were generally discarded because they could not be successfully thinned. Four finished projectile points and one drill has longitudinal fractures that could be attributed to impact damage. The longitudinal breaks indicate these bifaces did break during use of the points. Numerous bifaces in different stages of reduction have distal/transverse fractures that could be associated with either production or use-related breakage. Thermal alteration of several chert and jasper bifaces indicates that heat treatment was employed in biface reduction or that the bifaces were discarded in fires, which caused thermal shock. The specific characteristics of the thermal alteration (crazing, pot lip fractures, and color changes) were not documented.

| Lithic Material    | Stage Of Reduction                      | Fragment/Shape                                                                     |
|--------------------|-----------------------------------------|------------------------------------------------------------------------------------|
| Chert (52)         | Heat Treat (6); Cortex (8)              |                                                                                    |
|                    | Stage 2: Edged Biface (13)              | Lanceolate (6); Triangular (1); Amorphous (1); Cannot Determine (5)                |
|                    | Stage 3: Thinned Biface (6)             | Lanceolate (1); Triangular (1); Amorphous (1); Cannot Determine (3)                |
|                    | Stage 4: Preform (2)                    | Distal (1); Cannot Determine (1)                                                   |
|                    | Stage 5: Finished Projectile Point (23) | Lanceolate (5); Distal (9); Medial (1); Proximal (3); Cannot Determine (15)        |
|                    | Stage 5: Finished Biface (6)            | Lanceolate (1); Distal (1); Medial (2); Cannot Determine (2)                       |
|                    | Stage 5: Finished Drill (1)             | Lanceolate (1)                                                                     |
| Quartz (21)        | Heat Treat (0); Cortex (4)              |                                                                                    |
|                    | Stage 2: Edged Biface (3)               | Distal (1); Amorphous (1); Cannot Determine (1)                                    |
|                    | Stage 3: Thinned Biface (4)             | Lanceolate (2); Distal (1); Cannot Determine (1)                                   |
|                    | Stage 4: Preform (1)                    | Cannot Determine (1)                                                               |
|                    | Stage 5: Finished Projectile Point (4)  | Lanceolate (1); Proximal (1); Medial (1); Stemmed (1)                              |
|                    | Stage 5: Finished Biface (1)            | Cannot Determine (1)                                                               |
| Jasper (31)        | Heat Treat (5); Cortex (5)              |                                                                                    |
|                    | Stage 2: Edged Biface (3)               | Lanceolate (2); Triangular (1)                                                     |
|                    | Stage 3: Thinned Biface (2)             | Triangular (1); Cannot Determine (1)                                               |
|                    | Stage 4: Preform (2)                    | Lanceolate (1); Cannot Determine (1)                                               |
|                    | Stage 5: Finished Projectile Point (20) | Corner Notched (1); Lanceolate (1); Distal (10) Proximal (3); Cannot Determine (2) |
|                    | Stage 5: Finished Biface (2)            | Lanceolate (1); Distal (1)                                                         |
|                    | Stage 5: Finished Drill (2)             | Lanceolate (1); Medial (1)                                                         |
| Quartzite (4)      | Heat Treat (0); Cortex (0)              |                                                                                    |
|                    | Stage 3: Thinned Biface (1)             | Lanceolate (1)                                                                     |
|                    | Stage 5: Finished Projectile Point (2)  | Distal (1); Medial (1)                                                             |
|                    | Stage 5: Finished Biface (1)            | Cannot Determine (1)                                                               |
| Argillite (10)     | Heat Treat (0); Cortex (0)              |                                                                                    |
|                    | Stage 1: Blank (1)                      | Ovate (1)                                                                          |
|                    | Stage 2: Edged Biface (2)               | Lanceolate (1); Cannot Determine (1)                                               |
|                    | Stage 3: Thinned Biface (4)             | Lanceolate (2); Distal (2)                                                         |
|                    | Stage 4: Preform (1)                    | Cannot Determine (1)                                                               |
|                    | Stage 5: Finished Projectile Point (2)  | Distal (1); Proximal (1)                                                           |
| Argillite-like (1) | Heat Treat (0); Cortex (0)              |                                                                                    |
|                    | Stage 5: Finished Drill (1)             | Cannot Determine (1)                                                               |
| Rhyolite (10)      | Heat Treat (0); Cortex (0)              |                                                                                    |
|                    | Stage 2: Edged Biface (1)               | Cannot Determine (1)                                                               |
|                    | Stage 3: Thinned Biface (1)             | Distal (1)                                                                         |
|                    | Stage 4: Preform (1)                    | Lanceolate (1)                                                                     |
|                    | Stage 5: Finished Projectile Point (5)  | Lanceolate (1); Distal (1); Amorphous (1) Cannot Determine (1)                     |
| Unknown (5)        | Heat Treat (0); Cortex (0)              |                                                                                    |
|                    | Stage 1: Blank (1)                      | Cannot Determine (1)                                                               |
|                    | Stage 2: Edged Biface (2)               | Lanceolate (1); Cannot Determine (1)                                               |
|                    | Stage 5: Finished Projectile Point (1)  | Distal (1)                                                                         |
|                    | Stage 5: Finished Drill (1)             | Distal (1)                                                                         |

Table 38. Shoreline assemblage of bifaces not classified into morphological types by reduction stage

General interpretations of the reduction sequence can be analyzed by looking at the width/thickness ratio. Figure 57 highlights general trends in the width/thickness ratio. Several of the stages have small sample sizes, which affects the averages for their width/thickness ratios. In general there is an increase in the width/thickness ratio from Stage 2 and 3 bifaces to Stage 5 (finished projectile points). An increase in the width/thickness ratio is expected throughout the reduction process (Andrefsky 1998: 180-181; Callahan 1979). Andrefsky (1998: 181) remarks that width/thickness ratio

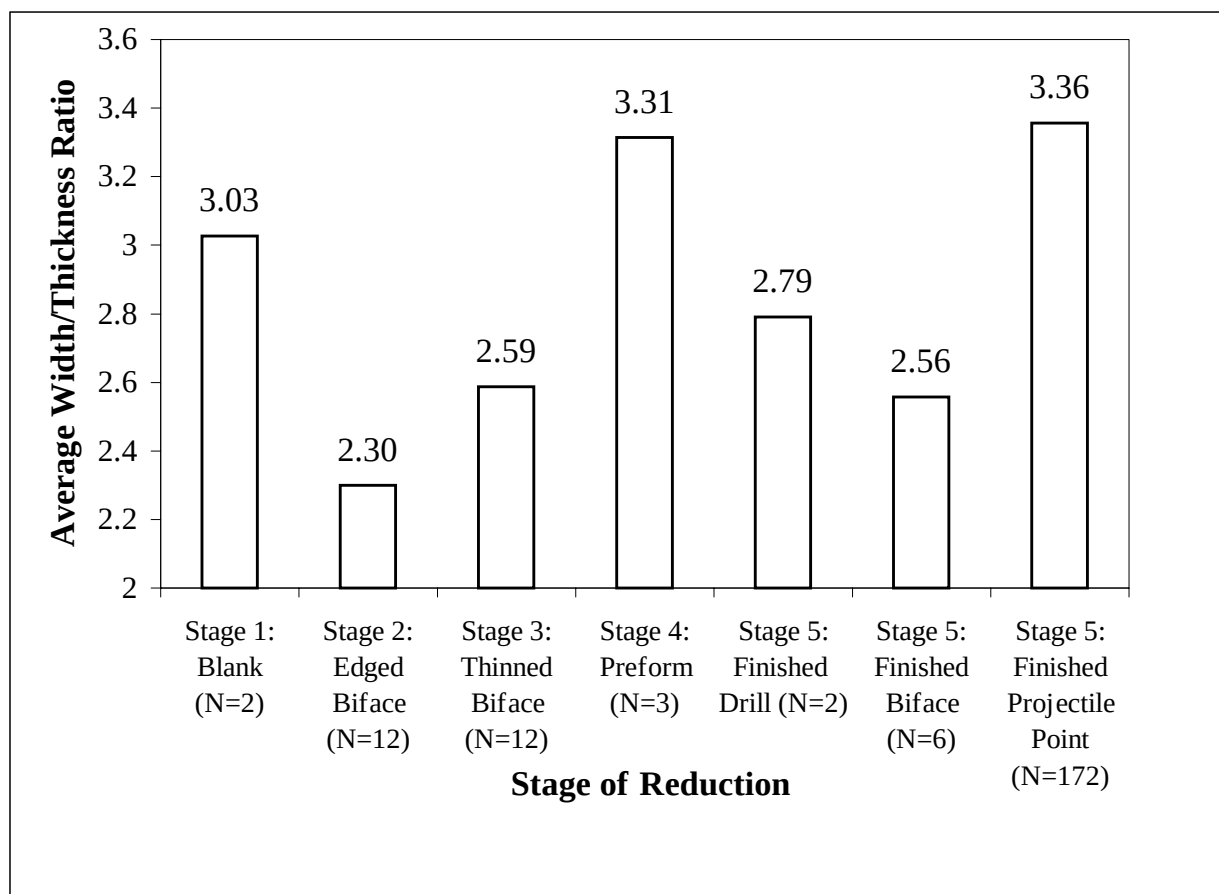


Figure 57. Average width/thickness ratio for measurable bifaces; projectile points that were classified into morphological types are included in the finished projectile point average, bifaces where the width and thickness could not be measured are not included

should only be used as a guide to analyzing the reduction process because aspects such as raw material type and finished biface type can affect the width/thickness ratios. Overlap exists between the reduction stage and width/thickness ratio. The different stages of reduction cannot be easily distinguished on the basis of the length and width measurements. The size of the cobbles selected for biface production affects the width/thickness ratios throughout the reduction sequence. Starting off with small cobbles is similar to skipping one or two the early reduction stages. Using a round cobble verse a lenticular cobble will affect the width/thickness ratio throughout the reduction sequence. The reduction analysis of argillite and rhyolite bifaces shows a tendency towards later stage bifaces. However, earlier stages are present. Interpretations of argillite and rhyolite exchange patterns emphasize that earlier stages of reduction occurred near quarries. Researchers have proposed that later stage bifaces were traded into the Delmarva region (Custer 1984b; Stewart 1984b). Thus the trade rhyolite and possible argillite material into the region might affect the nature of rhyolite and argillite biface assemblage. Later stage bifaces and resharpened bifaces would be expected. However, caches of large early stage rhyolite bifaces have been found in the Delmarva Peninsula (Darrin Lowery, personal communication 10/19/2002). The average width/thickness ratios that could be calculated for the Stage 5 rhyolite bifaces (N=12) is 2.4 while the average for the argillite Stage 5 bifaces (N=15) are 2.9. These values are below the values for the Stage 5 finished projectile points suggesting that rhyolite and argillite bifaces have been resharpened. The attributes of the argillite and rhyolite bifaces are generally characteristic of material that is being traded into the Delmarva Peninsula.



Five trianguloid bifaces reflect the earlier stages of triangular point production. The overall thick nature of these bifaces suggests they were discarded because they could not be effectively thinned. These early stage triangular bifaces highlight one of two probable methods for triangular point production. The gradual reduction of cobble is one approach employed. The other approach to making triangles is the use of flake blanks. Only one triangle (Art# 2.478) is clearly made from a flake blank. Artifact# 2.478 consists of an argillite-like material or slate-like material. Other triangles might have been made from flake blanks. This approach to triangle point production is hypothesized in the Middle Delaware Valley (Stewart 1987a: 298-299). However, the reduction of a flake into a triangle would probably obscure any original attributes of the flake blank, such as the platform or flake curvature. These attributes are apparent on Art# 2.478. Yet, the lithic material type for Art# 2.478 might be exotic in origin. Examples of triangles made from flake blanks from local cobble reduction are not present in the biface assemblage. Another biface at an early stage of reduction retains attributes that are characteristic of a flake. This early stage biface suggests that flake blanks were used to produce bifaces at Holland Point.

In sum, the assemblage of bifaces in various stages of reduction emphasizes that formalized approaches to lithic reduction are employed at Holland Point. The biface assemblage combined with the debitage assemblage suggests on-site biface production.

### 3. Cores

Table 39 summarizes the core types by lithic material. The presence of cortex on many of the cores and the overall all shape and size of the cores indicates that cobbles were almost exclusively used for lithic reduction. The rhyolite, ironstone, and possible argillite cores do not reflect the use of local cobble sources. The ironstone core is tabular in shape. The steps taken to prepare the cores for consistent size flake removal (i.e. blade production) is not evident in the flake scar patterns or general morphology of any Holland Point cores. The debitage assemblage does not contain any blades. Therefore a blade industry is not present at Holland Point.

The assemblage of cores from Holland Point indicates that both freehand and hammer-and-anvil (i.e. bipolar) approaches were used to reduce objective pieces. The

| <b>Material Type</b> | <b>Irregular/multi-faceted Core</b> | <b>Bipolar Multiple Axis Core</b> | <b>Bipolar Single Axis Core</b> | <b>Other or unknown Core</b> | <b>Bifacial Core</b> | <b>Total</b> |
|----------------------|-------------------------------------|-----------------------------------|---------------------------------|------------------------------|----------------------|--------------|
| Chert                | 25 (25)                             | 10 (8)                            | 61 (60)                         | 6 (6)                        | 2 (2)                | 104 (101)    |
| Jasper               | 10 (9)                              | 5 (2)                             | 12 (11)                         |                              | 3 (3)                | 30 (25)      |
| Quartz               | 16 (15)                             |                                   | 19 (11)                         | 17 (16)                      | 1 (1)                | 53 (43)      |
| Quartzite            | 2 (2)                               |                                   | 1 (1)                           |                              | 1 (1)                | 4 (4)        |
| Rhyolite             | 2                                   |                                   |                                 | 1                            |                      | 3            |
| Ironstone            | 1                                   |                                   |                                 |                              |                      | 1            |
| Argillite            | 1                                   |                                   |                                 |                              |                      | 1            |
| Unknown              | 3 (2)                               |                                   |                                 |                              | 1 (1)                | 4 (3)        |
| Total:               | 60 (53)                             | 15 (10)                           | 93 (83)                         | 24 (22)                      | 8 (8)                | 200 (176)    |
|                      |                                     |                                   |                                 |                              |                      |              |

Table 39. Core types from the shoreline assemblage by material (Number with cobble cortex)

irregular/multi-faceted, bifacial, and other/unknown core types all reflect the use of freehand reduction approaches. The two types of bipolar cores are indicative of compression reduction techniques using both a hammer and anvil.

The number of free hand cores and bipolar cores might not be a true reflection of how intensively these two approaches to lithic reduction were used. Both techniques could be used on the same core. However, the last technique used in reducing the objective piece is more likely to be apparent in the flake scar pattern while the earlier reducing techniques could be obscured. Objective pieces can be reduced to greater degree through bipolar reduction than freehand reduction. This approach is an ideal technique when raw material or objective pieces are constrained by size (Cresson 1977; Lantier 1958). Using a cloth or a small sapling as a wrap around the core to hold it in place during bipolar reduction allows for bashing smaller size cores than by simply supporting the core by hand (Hellweg 1996).

Studies of bipolar technologies have shown this approach is suitable for maximizing the use of lithic resources (Andrefsky 1998: 147-149). If bipolar cores are consistently smaller in size than freehand cores from comparable contexts, than using the bipolar process is hypothesized to be maximizing approach to utilizing raw materials. Previous analyses have used core volume measured in cubic centimeters to show that bipolar cores are significantly smaller than freehand cores in areas where raw material that is of high quality for chipping is rare (Andrefsky 1994a). Comparing the core size values for bipolar cores to freehand cores from Holland Point suggests that the bipolar approach was used to extract the most out of the raw material (see Table 40). One factor affecting interpretation of maximizing usage through bipolar reduction is

that cobbles selected for bipolar reduction would have been consistently smaller than cobbles selected for freehand reduction. Starting with smaller cobbles for bipolar reduction could result in discarding of smaller objective pieces. Yet, using smaller cobbles could also be viewed as a form of maximization. The quantification of flake scars suggests that a greater number of detached pieces were removed from bipolar cores than irregular/multi-faceted and other/unknown cores (Table 40). High flake scar count is supportive of maximizing approaches to lithic reduction.

| <b>Core Type</b>               | <b># of Cores</b> | <b>Min Size Value</b> | <b>Avg Size Value</b> | <b>Max Size Value</b> | <b>St Dev Size Value</b> | <b>Size Rank (Base on Avg Size Value)</b> | <b>Min # Of Flake Scars</b> | <b>Avg # Of Flake Scars</b> | <b>Max # Of Flake Scars</b> | <b>St Dev # Of Flake Scars</b> |
|--------------------------------|-------------------|-----------------------|-----------------------|-----------------------|--------------------------|-------------------------------------------|-----------------------------|-----------------------------|-----------------------------|--------------------------------|
| Bifacial Core                  | 7                 | 357                   | 2,012                 | 5,882                 | 2,011                    | 2                                         | 4.0                         | 7.0                         | 10                          | 2.2                            |
| Bipolar Multiple Platform Core | 15                | 78                    | 362                   | 878                   | 221                      | 5                                         | 2.0                         | 6.5                         | 13                          | 3.0                            |
| Bipolar Single Axis Core       | 93                | 30                    | 420                   | 2,999                 | 497                      | 4                                         | 1.0                         | 5.6                         | 13                          | 2.3                            |
| Irregular/multi-faceted Core   | 60                | 162                   | 3,379                 | 50,078                | 7,634                    | 1                                         | 1.0                         | 4.1                         | 11                          | 2.0                            |
| Other or unknown Core          | 25                | 181                   | 794                   | 1,878                 | 454                      | 3                                         | 1.0                         | 4.3                         | 9                           | 1.7                            |

Table 40. Summary of core size and number of flake scars

Core reduction might have involved both bipolar and freehand methods. The use of either technique was influenced by cobble size and changes in core size during reduction. Use of the bipolar technique after the freehand technique was no longer feasible for producing useful detached pieces might have been commonplace. Thus the

switch from freehand to bipolar methods through the overall core reduction sequence would support the hypothesis that the bipolar technique is a maximizing approach to lithic reduction at Holland Point.

The bifacial cores which have a high size value and the greatest number of flake scars suggest that this core type represents a more formalized approach to reducing objective pieces. There is a greater degree of core preparation in bifacial approaches to core reduction (Andrefsky 1998: 137). The bifacial cores are almost indistinguishable from earlier stage bifaces.

Variability in the extent to which bipolar technologies were used to maximize the resource is evident within the bipolar core assemblage. Comparing flake scar counts to core size among bipolar cores indicate that cryptocrystalline materials (cherts and jaspers) were more commonly used to the point of exhaustion than quartz and quartzite. However, the small and heavily reduce quartz and quartzite bipolar cores might have shattered into unrecognizable fragments during the final attempt to smash the objective piece. The material properties of cryptocrystalline bipolar cores are less likely to cause shattering of the small bipolar core into unidentifiable fragments. Thus it is possible that non-cryptocrystalline bipolar cores might have been reduced to similar extent as cryptocrystalline bipolar cores. Yet, the utility of the smaller cryptocrystalline detached pieces as tools would have been greater than the small non-cryptocrystalline detached pieces. The bipolar core assemblage from Holland Point suggests that cryptocrystalline objective pieces were reduced to a greater extent than their non-cryptocrystalline counter parts.

Several bipolar cores have low size values and high flake scar counts suggesting that they were discarded because suitable detached pieces could not longer be removed from the objective pieces. In the archaeological literature, these exhausted cores have been referred to as “core nuclei” (Leaf 1979) and “micro-cores” (Stewart 1987b; Stewart 1989b). In general, cryptocrystalline examples of these bipolar core nuclei are more common than quartz and quartzite examples. Thermal alteration of four cryptocrystalline nuclei suggesting that heat treatment was one process that was incorporated in the bipolar technologies to improve the quality of the raw material. Two other bipolar cores, which were not reduced to the point of exhaustion, are also thermally altered. These exhausted cores represent one of the more diagnostic by-products of bi-polar reduction.

The large numbers of bipolar cores indicated that this approach to lithic reduction is one of the major lithic reduction industries at Holland Point. Other lithic artifacts exhibit damage indicative hammer-on-anvil reduction. One basal portion of possible bifacial drill and a flake have flake scar patterns that are oriented in opposing directions. Also four possible wedges exhibit damage that is characteristic of compression damage. One possible implication is that these artifacts suggest that attempts were made to recycle detached pieces along with broken bifaces through bipolar reduction methods. The bipolar damage on the biface fragment and the flake highlight the fluid nature of lithic reduction strategies (Andrefsky 1997: 136-137). The recycling of artifacts through bipolar reduction suggests that lithic specialists were attempting to produce suitable detached pieces for uses as tools. The relative small size of the core nuclei also hint at intentional production of smaller size detached pieces to

be used for some unknown activity. Another interpretation is that bipolar damage was caused during the use of these artifacts as wedges. This functional interpretation will be evaluated in the flake tool analysis.

The core assemblage along with the biface assemblage indicates that both informal and formalized (bifacial) approaches to lithic reduction were employed at Holland Point. Andrefsky (1994b) has remarked that places where high-quality materials are abundant both informal and formalized approaches to lithic reduction are used. Holland Point fits within the generalized reduction pattern proposed by Andrefsky because it is situated in a lithic rich area where cobble resources contain significant qualities of cryptocrystalline rocks.

#### 4. Flake Tools

Table 41 and Table 42 summarized the flake tool assemblage. Two flakes appear to have been modified for use as drills. These drills are distinguished from the bifacially reduced drills that are grouped with the bifaces. Cobble cortex is present on roughly half of the flake tool assemblage. This indicates the blanks selected for use as tools were selected from debitage created through the reduction of the local cobbles. Twenty-two of the flake tools are in the 1-2 cm-size range. Eighty-eight are the 2-5 cm size range. One is greater than 5 cm in size. The use of relatively small and large flakes suggests two patterns of flake blank selection. One pattern is the culling of large pieces of debitage from the chipping debris for use as tools. Another pattern is the reduction of relatively small objective pieces to obtain detached pieces with suitable margins. As

| <b>Tool Type</b>       | <b>Chert</b> | <b>Jasper</b> | <b>Quartz</b> | <b>Rhyolite</b> | <b>Argillite</b> | <b>Total</b> |
|------------------------|--------------|---------------|---------------|-----------------|------------------|--------------|
| Utilized Flake         | 11 (7)       | 9 (4)         |               |                 |                  | 20 (11)      |
| Retouched Flake        | 23 (12)      | 14 (5)        | 1 (1)         |                 | 1                | 39 (18)      |
| Backed Flake           |              | 5 (1)         |               |                 |                  | 5 (1)        |
| Convex Scraper         | 1 (1)        | 2             | 2 (1)         |                 |                  | 5 (2)        |
| Straight Scraper       | 1 (1)        | 5             | 1 (1)         |                 |                  | 7 (2)        |
| Endscraper             | 4 (2)        | 1 (1)         |               |                 |                  | 5 (3)        |
| Unifacial Side Scraper | 7 (5)        | 2 (1)         |               |                 |                  | 9 (6)        |
| Bifacial Side Scraper  | 1            | 1 (1)         |               |                 |                  | 2 (1)        |
| Denticulate            | 2 (1)        | 4 (1)         |               |                 |                  | 6 (2)        |
| Graver                 | 3 (2)        | 1             |               |                 |                  | 4 (2)        |
| Possible Wedge         | 2 (1)        | 2 (1)         |               |                 |                  | 4 (2)        |
| Awl                    |              | 1             |               |                 |                  | 1            |
| Drill                  | 1            |               |               | 1               |                  | 2            |
| Total                  | 56 (32)      | 47 (15)       | 4 (3)         | 1               | 1                | 109 (50)     |

Table 41. Summary of flake tools by material type from the shoreline assemblage (Note that quantities in parenthesis are the number of artifacts with cobble cortex.)



| <b>Tool Type</b>       | <b>Edge Angle Avg/SD</b> | <b>Bifacial Thinning</b> | <b>Undiagnostic Flake</b> | <b>Bipolar Flake</b> | <b>Shatter</b> | <b>Blade-like Flake</b> | <b>Overshot Flake</b> | <b>Total</b> |
|------------------------|--------------------------|--------------------------|---------------------------|----------------------|----------------|-------------------------|-----------------------|--------------|
| Utilized Flake         | 34/11                    | 1                        | 15                        |                      | 2              | 2                       |                       | 20           |
| Retouched Flake        | 51/12                    | 6                        | 27                        |                      | 5              | 1                       |                       | 39           |
| Backed Flake           | 38/10                    |                          | 3                         |                      |                | 2                       |                       | 5            |
| Convex Scraper         | 57/11                    |                          | 4                         |                      | 1              |                         |                       | 5            |
| Straight Scraper       | 54/18                    |                          | 5                         |                      | 2              |                         |                       | 7            |
| Endscraper             | 72/10                    |                          | 3                         | 1                    | 1              |                         |                       | 5            |
| Unifacial Side Scraper | 56/9                     | 2                        | 4                         | 1                    |                | 2                       |                       | 9            |
| Bifacial Side Scraper  | 61/14                    |                          | 2                         |                      |                |                         |                       | 2            |
| Denticulate            | 46/18                    |                          | 4                         |                      | 1              |                         | 1                     | 6            |
| Graver                 | 51/9                     |                          | 3                         |                      | 1              |                         |                       | 4            |
| Wedge                  | 59/10                    |                          | 4                         |                      | 2              |                         |                       | 6            |
| Awl                    | 26                       |                          | 1                         |                      |                |                         |                       | 1            |
| Drill                  | 46/16                    | 1                        | 1                         |                      |                |                         |                       | 2            |
| Total                  |                          | 10                       | 76                        | 2                    | 15             | 7                       | 1                     | 111          |

Table 42. Flake tools by flake type from the shoreline assemblage

suggested in the core analysis, lithic specialists were using bipolar methods to reduce small cores and cobbles. The bipolar detached pieces were used as tools.

The majority of the flake tools are made out of cryptocrystalline materials. Observing the details of smaller flake patterns on quartz and quartzite material is difficult. These materials may have been used often as flake tools however recognizing tools made from quartz and quartzite is not as easy as identifying cryptocrystalline flake tools.

Seven of the flake tools are made from blade-like flakes. The lateral edges of these artifacts are retouched or show edge damage that is could be use related attrition. Right

and left lateral edges show modification. The dorsal surface usually shows modification. The working edge angles range from 55 to 20 degrees and the average edge angle is 34 degrees. These flake tools are similar to descriptions of utilized blade-like flakes from the Middle Delaware Valley (Stewart 1987b). Both the Middle Delaware Valley and Holland Point utilized blade-like flakes show lateral-edge modification. Analysis of debitage from experimental lithic reduction indicated that a blade-like flake is a by-product of bipolar cobble reduction. A total of eighteen blade-like flakes were recovered from the shoreline debitage assemblage. These eighteen flakes do not appear to be used as tools. Based on the general size of the utilized blade-like flakes Stewart (1989b: 49) has suggested these tools may have been hafted in a series as part of a composite tool. Detail use-wear analysis of possibly hafted flakes and microliths needs to be conducted in order to make more definitive statements about presence/absence of compound tool technologies in the Middle Atlantic Region.

Interpretations of function uses can only be conjectured because microscopic analysis was not undertaken on this assemblage. Only macroscopic observations were used to analyze the flake tools. For certain types of flake tools such as utilized flakes the numbers identified is a conservative estimate. Damage interpreted as relating to tool use related wear could be the result of natural tumbling along the shoreline. Only the most obvious example of flakes where damage could not be mistaken for attrition from shoreline tumbling were classified as utilized flakes.

One general interpretation concerns whether tools were used on hard verse soft material. Edge angles provide general impressions concerning the hardness of material worked and the nature of the use (i.e. scraping, cutting, or graving). Steeper edge-angles

(i.e. closer to 90 degrees) provide are more ridged tool margin suitable for scraping hides without cutting them (Andrefsky 1998). Acute edge angles are ideal for cutting. These interpretations should be considered as “possibilities” and not conclusive statements about tool function. The morphology of flake tool edge angles can also be related to use-life and raw material type (Andrefsky 1998). A heavily resharpened scraper nearing the point of exhaustion may have a different morphology than a new scraper that has not been subjected to cycles of use and resharpening.

The retouched flakes and backed flakes have edge angles that are roughly similar to each other. These edges angles are more acute than edge angles for various types of scrapers suggesting a functional difference. The edge angles of the retouched flakes and backed flakes are more suitable for cutting-like functions. The scrapers could have been used on various types of materials such as wood, bone, or hides. Gravers are generally interpreted as tools ideal for hard materials such as wood or bone. The awl and drills were used to penetrate through various materials.

The wedge-like tools are classified, as “possible wedges” because microscopic use wear analysis was not possible on these tools. Debates in lithic studies concerning the ability to distinguish wedge, *pieces equillees*, and bipolar cores highlight the need for use-wear studies in order to make functional interpretations (for review see LeBlanc 1992). The abrasive nature of the shoreline conditions would have affected microscopic wear patterns on these possible tools. The flake-scar patterns on the possible wedges are oriented in opposing directions suggesting that bipolar-like compression was applied to these artifacts. As stated above in the core analysis, the use bipolar reduction is prolific

at Holland Point. Even bifaces were recycled through bipolar reduction. These “possible wedges” could reflect attempts to produce small objective pieces to be used as tools.

One retouched flake has a unique morphology that is similar to Old World microliths. The microliths has a triangular shape with patterned retouch carefully executed along two margins of the flake. Along the third margin the retouch is more haphazardly spaced. Overall characteristics of this tool are grossly similar to descriptions of triangular microliths from Europe and Middle East (Curwin 1930). Microliths are typically inserted into slots onto shafts of wood or bone creating composite tools. The two flake margins with similar patterns of retouch could have been intentionally dulled for hafting purposes (Andrefsky 1998: 165). The other margin would have been the working edge. This tool was examined under the microscope for evidence of use-wear. No microtraces were visible on the artifacts. However, microtraces could have been erased by the abrasive conditions creating by the shoreline artifacts. As stated above Stewart (1989b: 49) and well as others (Custer, et al. 1997) have proposed that Native Americans in the Middle Atlantic Region might have used composite tools.

One straight side scraper (Artifact# 2.1054) appears to be made from a flake that was intentionally broken on an anvil. The flake is relatively thick and is snapped in the medial portion of the flake. The point of percussion where the flake was snapped is visible on the ventral surface. The flake was placed with the dorsal surface on the anvil when the impact was applied. Flakes with similar types of breakage characteristics have been found at the Topper Site in North Carolina (Jones 2002) and are known from Panama (Anthony Ranere, personal communication 7/05/2002). These types of flakes

fragments have been referred to as “Bend Break Flakes” and “Anvil Snap Flakes”.

More bend break flakes could be present in the lithic material from Holland Point. This example was identified at the end of the lithic analysis.

In sum, the collection of flake tools could have been used for a wide range of functions. Andrefsky’s (1997) review of the literature on the functional analysis flake tools highlights that flake tools can be used for a wide variety of activities. In general, the flake tools reflect the selection of detached pieces for opportunistic edges and overall lithic artifact shape. These tools could be characterized as informal flake tools. The smaller flake tools were probably hafted. The retouched edges of the backed flakes and some of retouched flakes would have dulled the flake margin to facilitate hafting (Andrefsky 1998: 164-165). Only five flake tools exhibit extensive retouch that has significantly modified the original shape of the flake blank. These tools (three endscrapers, one convex scraper, and one unifacial side scraper) could be considered formalized flake tools. The occurrence of more informally shaped flake tools than formalized tools could reflect the overall abundance of locally available lithic resources at Holland Point (cf. Andrefsky 1998: 222-225). This conclusion is cautiously made since the flake tool assemblage discussed is not from a controlled context. The expedient flakes from the excavated context are additional examples of informal flake tools. Their occurrence in both analytical contexts suggests that informal tool technologies were used from the Late Archaic to the Late Woodland Periods.

## 5. Debitage

Table 43 and Table 44 summarize the basic information on thedebitage from the shoreline assemblage. General interpretations of lithic utilization patterns at the Holland Point Site will be evaluated in the concluding chapter. Preliminary statements concerns lithic utilization patterns are evident from the shorelinedebitage analysis.

The material classified as “Other” consists in Table 43 and Table 44 consists of Gabbro (6), Schist (1), Miocene Silicified Sandstone (2), Slate (1), Unidentified Igneous (1), Unidentified Sedimentary (1), and “Aquia Formation” material (1). The overall quantities of chert, jasper, and quartzdebitage combined with the percentages cortex-bearingdebitage reflect a heavy reliance on local cobble resources.

Other lithic utilization patterns, which are not focused on local cobble resources, are indicated by the presence of rhyolite, argillite, ironstone, Miocene silicified sandstone, and “Aquia Formation” materials. The quantities of rhyolite and argillitedebitage reflect the trade and exchange of non-local material into the region. The presence of argillite in the local cobble outcrops warrants a revision of traditionally assumptions that argillite is a material that was exclusively brought into the Delmarva Peninsula. Primary sources of argillite are located in northwestern Maryland and southwestern Pennsylvania. Rhyolite outcrops are located north and west of the Delmarva Peninsula (Stewart 1984a; Stewart 1984b). The rhyolite and argillitedebitage is not exclusively limited to pieces associated with later stages of reduction or resharpening fragments. The presence ofdebitage larger than 5 cm as well as biface thinning flakes indicated that the rhyolite and argillite objective pieces brought to

| <b>Material Type</b> | <b>Undiagnostic Flake</b> | <b>Shatter</b> | <b>Bifacial Thinning Flake</b> | <b>Pressure Flake</b> | <b>Bipolar Flake</b> | <b>Blade-like Flake</b> |
|----------------------|---------------------------|----------------|--------------------------------|-----------------------|----------------------|-------------------------|
| Chert                | 306                       | 135            | 111                            | 25                    | 8                    | 15                      |
| Jasper               | 175                       | 55             | 131                            | 17                    | 9                    | 6                       |
| Quartz               | 145                       | 164            | 7                              | 2                     | 4                    |                         |
| Quartzite            | 50                        | 35             | 3                              |                       |                      |                         |
| Rhyolite             | 20                        | 6              | 8                              |                       |                      |                         |
| Argillite/Arg-like   | 30                        | 21             | 14                             |                       |                      |                         |
| Ironstone            | 3                         | 32             |                                |                       |                      |                         |
| Other                | 4                         | 8              |                                |                       |                      |                         |
| Totals:              | 733                       | 456            | 274                            | 44                    | 21                   | 21                      |

Table 43. Summary of debitage by flake type and material type from the shoreline assemblage

| <b>Material Type</b> | <b>Total Number of Flakes (Weight g)</b> | <b>No. of Flakes # 1 cm (Number w/ cortex)</b> | <b>No. of Flakes 1–2 cm (Number w/ cortex)</b> | <b>No. of Flakes 2-5 cm (Number w/ cortex)</b> | <b>No. of Flakes 5&gt; cm (Number w/ cortex)</b> | <b>Decortication Flakes (% of total)</b> |
|----------------------|------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|--------------------------------------------------|------------------------------------------|
| Chert                | 603 (1326.24)                            | 12 (2)                                         | 300 (113)                                      | 291 (181)                                      | 0                                                | 49.2                                     |
| Jasper               | 394 (534.65)                             | 14 (4)                                         | 228 (54)                                       | 149 (71)                                       | 3(0)                                             | 32.7                                     |
| Quartz               | 322 (1738.61)                            | 1(1)                                           | 76 (36)                                        | 243 (152)                                      | 2 (1)                                            | 58.7                                     |
| Quartzite            | 88 (1219.19)                             | 0                                              | 12 (4)                                         | 64 (45)                                        | 12 (10)                                          | 67                                       |
| Rhyolite             | 34 (129.56)                              | 0                                              | 17(0)                                          | 16 (0)                                         | 2 (0)                                            | 0                                        |
| Argillite/Arg-like   | 65 (533.12)                              | 0                                              | 17(0)                                          | 41 (0)                                         | 7 (0)                                            | 0                                        |
| Ironstone            | 35 (290.34)                              | 0                                              | 6 (0)                                          | 25 (0)                                         | 4 (0)                                            | 0                                        |
| Other                | 12 (45.3)                                | 0                                              | 2 (1)                                          | 10 (0)                                         | 0                                                | 8.3                                      |
| Totals:              | 1552 (5817.01)                           | 27 (7)                                         | 657 (208)                                      | 839 (449)                                      | 30 (11)                                          |                                          |

Table 44. Summary of debitage from the shoreline assemblage

Holland Point were not simply later stage bifaces. The debitage indicates that early stage reduction of rhyolite and argillite cores and bifaces occurred at Holland Point. The erosional processes affecting argillite along the shoreline might have lead to the complete disintegration of the smallest argillite detached pieces. The shoreline assemblage of argillite debitage is probably biased towards the preservation and discovery of large pieces. Pressure flaking, finishing stages of reduction, resharpening and tool maintenance activities associated with argillite bifaces and tools probably occurred on site.

The ironstone debitage recovered from Holland Point reflects limited use of this locally available primary lithic resource. A different size profile for the ironstone debitage than the argillite and rhyolite debitage is expected because ironstone outcrops are located near-by in the Choptank Drainage Basin (Lowery 2002a: 140). Yet, quantities of different size ironstone detached pieces are comparable to the size range distribution for rhyolite and argillite debitage. The recovery of a large ironstone slab and several other ironstone manuports suggest that freshly quarried pieces of ironstone were brought to Holland Point. The size of the large ironstone slab suggest that this material was directly procured from the quarry and not obtained from the low-level ironstone exchange network that existed during the Late Archaic and Early Woodland Periods (Ward 1988; Ward and Doms 1984).

The limited quantity of Miocene silicified sandstone debitage at Holland Point reflects utilization practices focused on a near-by primary local resources. A large inundated quarry of Miocene silicified sandstone is located at the mouth of the Choptank roughly 10 km from Holland Point. The two flakes are heavily eroded. The



quantity of silicified sandstone debitage is probably not a realistic representation of how intensively this resource was utilized. A large heavily weathered piece of silicified sandstone was also found at Holland Point. The piece contains numerous imperfections on the exterior surface making the piece less than ideal for processing into various stone tools. The irregularities within this piece might have indirectly led to the preservation of the piece in the shoreline context. The lithic specialists probably observed the irregularities in the pieces and discarded objective piece without further reducing it.

Lowery (2002a) has outline several factors influencing the preservation and disintegration of Miocene silicified sandstone artifacts in the archaeological record. One factor is artifact mass and size. The irregular clump from Holland Point was probably preserved because of the artifact's mass and size. The two pieces of debitage are mostly likely remnants of larger detached pieces that have since been heavily eroded. The "swash and berm" zone conditions are another factor affecting the preservation of silicified sandstone artifacts (Lowery 2002a: 142). Abrasive agents, such as oyster shell and, facilitate the destruction of silicified sandstone artifacts. The shell and sand lag along the shoreline at Holland Point acting as the abrasive agent would have pulverized the two smaller silicified sandstone artifacts. If other small-size silicified sandstone artifacts were presence along the shoreline, they were probably completely destroyed because of the shoreline conditions. The timely recovery of two smaller artifacts prevented their complete disintegration. The character of the silicified sandstone debitage assemblage cannot be confidently evaluated given the preservation factors affecting this lithic material. The presence of the larger irregular piece suggests that large pieces of the raw material were collected at the quarry and brought to Holland

Point. The silicified sandstone debitage is indicative of on-site reduction of this material. Lowery (1998) remarked that this material was not exploited after the Early Woodland Period because sea level rise has inundated the outcrops. Diagnostic silicified sandstone projectile points range in age from the Early Archaic to Early Woodland Periods. Paleoindian projectile points have not been found. Yet, lack of Paleo-Indian artifacts could be a reflection of the preservation factors affecting this lithic material (Lowery 2002a: 142).

Other local primary lithic material is represented by one piece of “Aquia Formation” conglomerate material (Lowery 1999:88-90). This artifact is a piece of shatter. The green glauconitic matrix is a diagnostic characteristic of this lithic material. Artifacts have been made out of both the finer and courser grain varieties of this “Aquia Formation” orthoquartzite (Lowery 1999: 89-90). The sample from Holland Point is comparable to the coarse variety. The only known terrestrial outcrop of this material is in Stafford County, Virginia, which is located in the northern portion of the state. Possible inundated quarry sites are located north of the Choptank River. Lowery (1999: 89-90) has found projectile points made from “Aquia Formation” orthoquartzite dating from the Paleo-Indian through Woodland Period on the Delmarva Peninsula.

The shoreline debitage assemblage provides insight into different approaches to lithic reduction. The discussion of shoreline debitage is presented in a more summary fashion than the debitage from the excavated context. Definitive statements regarding which methods of lithic reduction are more common are not made because the assemblage is from the shoreline. Other debitage attributes, such as platform size, platform shape, number of flake scars, etc. were recorded for the shoreline assemblage.

However, these detailed attributes are not analyzed because the shoreline debitage assemblage cannot be associated with the shell midden analytical context or the other Late Archaic-Late Woodland analytical contexts.

Free hand core reduction, bifacial reduction, and bipolar reduction were employed. Tool maintenance and resharpening activities are reflected by the smaller pieces of debitage and pressure flakes. Some of the cortex bearing flakes reflects earlier and later sequences in the reduction trajectory. The biface thinning flakes reflect formalized approaches to core/biface reduction. The bipolar flakes indicate that hammer-and-anvil approaches to lithic reduction were used. A bipolar core (Art# 2.592) was refit to a bipolar flake (Art# 2.625). The bipolar flake does not have a bulb of percussion. The sheering nature of the force applied in bipolar reduction typically results in relatively flat dorsal surface at the proximal end where the bulb is commonly located (Stewart 1989b). The distal end of the bipolar flake is broken, which is also common during the bipolar reduction. There is no impact damage to the distal end of the flake. The lack of both proximal and distal end damage on Art # 2.625 highlights the challenge of identifying individual pieces of bipolar debitage from other types of debitage. The numbers of bipolar and free-hand cores provide a reliable way to quantify the prevalence of these reduction techniques employed at Holland Point.

The assemblages of blade-like flakes could be from bipolar reduction. Bipolar reduction experiments indicate that blade-like flakes are typically produced in bipolar reduction as an incidental by-product (Stewart 1989b). Not all of the blade-like flakes were used as tools. Most of the blade-like flakes do not appear to have been utilized. Future research should focus on looking for patterns in the percentage of used verse

unused blade-like flakes. Are there certain attributes such as thickness of the blade-like flakes that make them ideal for utilization?

Table 45 summarizes amount of heat alteration observed in the lithic assemblage. The data indicate that several different lithic materials were subjected to thermal alteration. Since the morphological characteristic of the thermal alteration was not recorded the reasons for this type of treatment cannot be evaluated. Pot lids and crazing are typically associated with heat shock. Reddening of material is more characteristic of heat treatment used to improve the knapping qualities of the material.

| <b>Lithic Material</b> | <b>Piece of debitage exhibiting thermal alteration</b> | <b>Percentage of debitage by count from total shoreline assemblage that exhibits thermal alteration</b> |
|------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Chert                  | 51                                                     | 8%                                                                                                      |
| Jasper                 | 123                                                    | 31%                                                                                                     |
| Quartz                 | 6                                                      | 2%                                                                                                      |
| Quartzite              | 10                                                     | 11%                                                                                                     |
| Total:                 | 190                                                    |                                                                                                         |

Table 45. Summary of the thermally altered debitage from the shoreline assemblage

Based on general observations made during the cataloguing many of the heat-treated jasper, quartz, and quartzite were reddened indicated that thermal alteration processes were incorporated into the lithic technologies at Holland Point. Yet, the amount of reddening verse other types of thermal alteration was not quantified.

## 6. Cobbled-Based Implements

Cobble-based implements are for the most part tools where no specific attempts are made to alter the original cobble shape. Table 46 summarizes the cobble tool assemblage at Holland Point. Quartzite and sandstone are used for the cobble-based implements. Large numbers of the cobble-based tools are identified as quartzite. However, several cobbles are clearly quartzite while other could be similar to quartz. In general, it is difficult to distinguish between quartzite and quartz by only looking at the cobble cortex. Without seeing the internal composition of the cobbles some of the quartzite identifications should be considered tentative. Some of the quartzite material is

| <b>Implements</b> | <b>No. of Specimens</b> | <b>Average Weight (g)</b> | <b>Range Weight (g)</b> | <b>Comments</b>                                                                                                                                               |
|-------------------|-------------------------|---------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hammerstone       | 7                       | 167                       | 57-383                  | Three sandstone; three quartzite; one unidentified; one quartzite hammerstone is fragmented                                                                   |
| Anvil             | 3                       | 501                       | 97-989                  | One sandstone; two quartzite; the quartzite anvils also exhibits battering indicative of use as a hammerstone                                                 |
| Pitted Stone      | 4                       | 498                       | 261-1081                | One sandstone; three quartzite; one quartzite example is thermally altered; One quartzite specimen also exhibits battering indicative of use as a hammerstone |
| Mano              | 3                       | 360                       | 64-594                  | One sandstone; two quartzite; one quartzite mano used as an anvil                                                                                             |
| Waisted Stone     | 1                       | 205                       |                         | Unidentified material; possibly used as a hafted hoe                                                                                                          |

Table 46. Summary of cobble-based implements from the shoreline assemblage

not of as high quality as is necessary for making chipped stone tools. During the controlled shoreline collection, some of the material weighed as FCR might have been a cobble-based tools that were later intentionally heated for use as potboilers or other purposes. This assemblage is best viewed as representative sample of the cobble-based implements.

Several of the attributes of the implements warrant discussion. Hammerstones are characterized as cobbles that exhibit abrasion or battering on one or more locations.

Traditionally, hammerstone are interpreted as a tool used to hit objective pieces during lithic reduction activity. They could have been used for various types of heavy pounding activities such as breaking bone for marrow or cracking nuts. Anvils are stones that have flat surfaces with concentrated spots of abrasion or battering. These implements are traditionally interpreted as tools that provide a surface to support an objective piece during lithic reduction. Pitted stones contain one or more pits pecked into the surface of the rock. The pits served to help hold objects such as nuts or lithic cores in place. Traditionally, pitted cobbles were referred to as nutting stones. The presence of carbonized nutshell fragments suggests that these implements could have been used to process mast or other seeds. However, these tools functional equally as effective as anvil-like tools to support objective pieces for bipolar reduction. The abundance of small bipolar cores and exhausted cores also suggest that these tools employed in technique for lithic reduction. Pitted stone have been recovered from sites in the Middle Atlantic Region is contexts associated with bipolar cores support this interpretation for these implements (Geier 1990; Stewart 1987a: 119).

The manos are characterized as stone with flat surfaces that appear to have been worn down smooth from rubbing against another abrasive stone. These tools are sometime traditionally referred to as “plant processing-tools”. The function of these tools is unknown. They could have been used to process food or for grinding other material such as shell for temper in pottery production. The wasted-stone appears to be a cobble with a limited amount of flakes that are bifacially removed. Two wide shallow notches are located in the mid point of the artifact. The notches may have served as hafting element. The tool could have been used to assist in gathering oysters. Other functions for the tool are also possible.

## 7. Other Lithic Artifacts

Other lithic artifacts describe below include FCR, manuports, a soapstone pendant, pipe fragments, fossilized shark’s teeth, gorgets, and a bead. Most of the FCR from the shoreline was collected, weighted, and discarded in the field as part of the controlled shoreline collection. The lithic material type for the discarded material was not record. For data entry purposes, the discarded FCR was entered as an unknown lithic material type. This FCR is combined with the limited amount of FCR from the shoreline that was brought back to the lab. This FCR brought back to the lab was not systematically collected. It is not a representative sample of FCR from the site. These pieces received artifact numbers and the lithic material was identified. In the field, some of this FCR was thought to be another class of lithic artifact that is why it was brought back to the lab. Early artifact collections by Norman Brady and Darrin Lowery also

contained pieces of FCR that were assigned artifact numbers. The weight of both the FCR discarded in the field and the FCR analyzed in the laboratory consist: 172.45 g sandstone; 298.56 g quartzite, and 144525.3 g unknown.

Numerous manuports consisting of lithics larger than pebbles, which do not show evidence of modification or heat alteration, were found along the shoreline. Lithics that could not be classified as cores, bifaces, debitage or other types of lithic artifacts were categorized as manuports. The manuport assemblage weighing a total of 3 kg consists of the following materials: chert (N= 3), quartzite (N = 1), sandstone (N = 5), unidentified (N = 16), Miocene silicified sandstone (N = 1), ironstone (N = 8), schist (N = 3), and mica schist (N = 3) and silicified mudstone (N = 1). The silicified sandstone, ironstone, schist, and mica schist and silicified mudstone are conservatively classified as manuports. The physical attributes of these artifacts and their recovery along the shoreline make their classification problematic. One manuport (Art# 2.2912) could be a fossil that was brought on site. The artifact is heavily weathered making it difficult to clearly identify the fossil. The lithic material type of this possible fossil could not be identified.

The silicified sandstone manuport is same piece that was discussed in the debitage analysis. This artifact was previously interpreted as a piece that was possibly discarded because of its irregularity. The heavily weathered nature of the piece has obscured any flake scar pattern. Thus it cannot be conclusively determined if the fragment was worked.

A total of 8 pieces of ironstone that did not have any clear flaking patterns are classified as manuports. The largest fragment was mentioned in the ironstone debitage



analysis. The abrasive shoreline conditions might have eroded the flake scar patterns on these 8 ironstone artifacts making it impossible to determine if the material had been previously worked. Some of the pieces could have been detached pieces or objective pieces. One of the ironstone artifacts is cobble in shape and the other one is platy in shape. The large ironstone manuport along with the smaller ironstone manuports suggests that this material is obtained from local outcrops in the Choptank Drainage.

Mica schist and schist artifacts are discussed in greater detail with the other gorgets below. The surfaces of the metaphoric lithics are heavily weathered. These artifacts are possible gorgets or fragments of gorgets or related to the production or shaping of the gorgets.

The silicified mudstone manuport is another unique lithic material found at Holland Point. The specimen has a fragment of fossilized oyster shell in the rock matrix. This material is identical the silicified mudstone found along Atlantic coast barrier islands in the Virginia portion of the Delmarva Peninsula. The source of the material is believed to be associated with some offshore formations on the bed of the Atlantic coast shelf (Lowery 2002a). The fossils in the piece from Holland Point are characteristic of the low-grade varieties of the material. Higher-grade forms have a homogeneous fine-grained matrix and have a conchoidal fracture that is suitable for knapping. Projectile points made from the material have been found on the Delmarva Peninsula. The piece from Holland Point may have been discarded from Holland Point because of the irregularities in the material. A perplexing question is why did Native Americans transport a piece of such low quality silicified mudstone from the ocean side to the bay side of the Delmarva Peninsula.

One small cylinder shaped stone bead was found along the shoreline. The lithic material type could not be identified. The hole through the bead appears to be a natural hole in the stone or impurity in the material. The hole is not drilled. The bead has a smooth surface.

Several fragments of ground stone celts were found along the shoreline. All of the fragments have surface(s) that have been ground smooth. None of the celts have hafting grooves. The material consists of basalt, gabbro and other igneous rocks. The fragments consist of eight flakes and/or flake fragments (Art# 2.195, 2.144, 2.1585, 2.1615, 19.197, 2.1614, 2.1645, 2.1757) as well as 5 blade fragments (Art# 2.1752, 2.213, 3.11, 2.2691, 2.1756). Five of the axe flakes (Art# 19.197, 2.1615, 2.195, 2.144, 2.1757) have wide platforms and large diffuse bulbs of percussion. Three (Art# 2.1757, 19.197, 2.1615) of the five flakes have remnants of the blade edges. The flakes appear to have been removed from bit end of the celt blade. The general morphological character of the five flakes suggests they were detached from the axes while these tools were used as chopping implements. The width of the platform and shape of the bulbs of percussion have characteristics that are similar to flakes removed using softer hammer material (i.e. wooden billet) (Andrefsky 1998: 27-28; Whittaker 1994:185). This suggests that axes were used on wood-like material or other soft material when the flakes were removed. One of the bit/body fragments (Art# 3.11) appears to be thermally altered. The fracture pattern and thermal color alteration of Artifact 3.11 suggests that it could have been used for stone boiling. The ground stone axe assemblage from the site suggests that these tools were being used on site. Evidence for axe production is not apparent in the assemblage. Several artifacts (Art# 2.345, 2.341, 2.340, 2.344, 33.62,

19.226) of material that is similar to the ground stone material were made out of were found along the shoreline. The artifacts have an amorphous shape. They could be fragments of axes, but do not have smoothly ground surfaces that clearly indicate they are axe fragments. A minimum seven axes are suggested based on groupings of axes fragments by similarities in general morphology and lithic material.

One soapstone pendant (Art# 2.3039) with face-like design carved into one side was found along the shoreline (Figure 58). The pendant measures 40.07 mm long, 25.73 mm wide, and 5.9 mm thick. The pendant is relatively intact except for small chip taken off the back. The effigy face design consists of one line continuous with four right angles. The right angles in the line create the effigy. The two ends of the line defined the eyes. The U-shaped portion of the line defines the nose. The edge of the pendant above the face-like design is notched. The notching is suggestive of hair. The notching is not common on Delaware Valley effigy pendants (Kraft 2001: Figure 8.13). The pendant has a drill hole below the face. When the pendant is attached to a necklace and worn the face would have been oriented upside down. Other “upside-down” soapstone pendants with carved faces have been found in the Delaware Valley, which date to the Late Woodland/Contact Period (Bello and Veit 1999). The Holland Point pendant is grossly similar to the Delaware Valley examples and is believed to date to the Late Woodland and/or possibly the Contact Period. Soapstone masquettes, without drill holes, have also been found on Late Woodland Susquehannock sites in Pennsylvania (Kent 1984: Figure 36). The orientation of the face on the pendant highlights the personal and spiritual importance of this object to the Native American wearing it (Kraft 2001: 327).



Figure 58. Effigy face

A total of six fossilized shark's teeth were found at Holland Point. Five complete teeth are identified as extinct giant white shark's (*Carcharodon megalodon*) teeth (Darrin Lowery, personal communication 6/17/2002). Norman Brady and Darrin Lowery found three of the five in 2002 (Darrin Lowery, personal communication 6/17/2002). These three were not given artifact numbers and remain in Mr. Brady's possession. The fifth specimen is a fragment of fossilized shark's tooth. One fossilized tooth of a Snaggle Tooth Shark was also found. The teeth are not drilled. The teeth show some wear that might be related to shark mastication. The amount of fossilized shark's teeth from Holland Point is greater than most sites on the Delmarva excluding sites with burials. *C. megalodon* fossilized teeth are found in "all of the Miocene and Pliocene formations of the Chesapeake Bay Region (Kent 1994: 69)." Lippson and Lippson's (1997: 40) generalized map of fossil-bearing deposits suggest that sharks teeth could be found in the lower portion of the Choptank River. Fossilized teeth of both extinct giant white and Snaggle Tooth Shark can be found in the deposits around the Choptank River (Darrin Lowery, personal communication 6/17/2002). Shark teeth have been found in Middle Woodland and Late Woodland contexts in the Middle Atlantic region (see Chapter 7).

Two stem fragments from platform soapstone pipes were found. Both fragments are relatively small and broken along the axis of the borehole. One fragment (Art# 2.3047) has geometric designs carved on both the lower and upper exterior surfaces of the stem. The presence of incised designs on the pipe has not been documented on other platform pipes found in the Middle Atlantic Region. However, incised designs are

found on platform pipes from other parts of the Eastern Woodlands (see Coe 1995: Figure 11.1). The other pipe fragment is from the mouthpiece end of the stem. The pipe stem flares out from the mouthpiece creating the distinctive platform-like shape. Soapstone platform pipes have been found at the Island Field Site (Custer, et al. 1990: 161). Platform pipes made from other material beside soapstone have been found at the Oxford Site (18TA3) (Custer and Doms 1984). The platform pipes are artifacts that have been associated with the Webb Complex, which has an uncalibrated date range of 1,350 – 950 B.P. (Custer 1990). Other Webb Complex artifacts (Jack's Reef points) have also been found at Holland Point. Soapstone pipes have also been infrequently found in the Late Woodland contexts in the Middle Atlantic Region (Stewart 1989a: 63).

Several fragments of gorgets have been found at Holland Point. One gorget rectangular in shape is made of banded slate (Art# 2.3040). The gorget is broken at one end. Two holes are drilled through it. The gorget is 33.53 mm wide and 8.64 mm thick. Slate sources for gorget production are located “in portions of Pennsylvania and West Virginia” as well as “the Ridge and Valley province from Tennessee through Georgia and into central Alabama” (Stewart 1989a: 50). Band slate gorgets have been associated with the Delmarva Adena Complex on the Delmarva Peninsula (Stewart 1989a: 58).

Another gorget rectangular in shape was broken in the middle into two pieces (Art# 2.3042, 2.3043). The two halves mend. The gorget has three drilled holes and is made out of schist. A zig-zags incised decoration is orient along the long axis down one side of the gorget. The edge of with the incising is thicker then the other edge. The gorget is 96.83 mm long, 27.15 mm wide, and 6.15 mm thick.

A possible gorget is made of micaceous schist (Art# 6.12). The outline of Artifact# 6.12 is ovate to crescent-like in shape. In cross section, one side of the artifact is thicker and tapers to the other margin. There are no drill holes in the artifact. The general shape and size of the artifact is comparable to the other schist gorgets (Art# 2.3042 and 2.3043). The artifact is 82.72 mm long, 31.84 mm wide, and 11.43 mm thick. The general morphology of the artifact also suggests that it could be a bannerstone that is in the early stage of shaping.

A small piece of schist-like material (Art# 2.3041) is probably a fragment of a heavily eroded gorget. Artifact# 2.3041 has two drill holes through it.

Several pieces of micaceous schist and schist-like material were conservatively classified as manuports, but could be pieces of gorgets or material associated with gorget production. One piece of micaceous schist could be a broken gorget (Art# 66.1) because the material is the same material as Artifact# 6.12. Four piece of schist-like material (Art# 2.1594, 2.1617, 95.6, 2.1598) are similar to the small drilled gorget fragment (Art# 2.3041). These four pieces could be gorget fragments. The assemblage of gorgets and piece of comparable lithic material suggest a minimum of three drilled gorgets and one non-drilled gorget.

## D. Biological Remains

### 1. Introduction

The analysis of the biological remains is focused the vertebrate bones found along the shoreline. Oyster shell was the most common ecofact on the shoreline, yet the lack of contextual information for the shell did not warrant its analysis. Norman Brady and Darrin Lowery collected a few macrobotanical remains prior to the fieldwork. One uncarbonized peach pit and a partially carbonized black walnut shell found on the shoreline cannot be confidently associated with the archaeological deposits at the site. Both the seed and the nut could have floated on the shoreline from somewhere else. Peaches are an Old World domesticate and is believed to be modern in origin. All of the nutshell fragments found in the excavated context were carbonized and most of the seeds were carbonized suggesting that preservation conditions did not favor the survival of non-carbonized macrobotanical remains. The walnut shell is almost complete. The large size of the walnut fragment is also suspicious since most of the other nutshell fragments from the buried deposits were significantly smaller. One small piece of uncarbonized wood collected along the shoreline prior to the summer 2000 fieldwork. This piece of wood was originally thought to be associated with Native American activities. It is probably a piece of historic timber. As discussed previously, historic timbers were observed imbedded in the organic saltmarsh sediments. Non-carbonized twig-like fragments of wood were also encountered in the test units. All of wood from the test units was examined in the field for modifications by Native



Americans. The only marks on wood were the result of trowel and shovel damage. No pieces of non-carbonized wood could be clearly associated with Native American activities at Holland Point.

## 2. Vertebrates

Table 47 summarizes the faunal remains from the shoreline at Holland Point. The faunal remains are generally heavily eroded. Most of the bone was classified as unidentified vertebrate and unidentified mammal because of the fragmentary nature of the assemblage. Table 47 lists most of the species that were identified from the shoreline assemblage. Barry Smith had collected a plastron fragment from a sea turtle (*Chelonia* spp.) shell along the shoreline. This specimen was noted by R. Michael Stewart, but not analyzed in the laboratory. Lowery and Stewart (1999: 15) also report the presence of *Canis* spp. (wolf or dog) teeth at Holland Point. These teeth were not in the collection analyzed, thus they may have been part of Mr. Smith's collection. The sea turtle, dog/wolf, beaver, opossum, sheep, grey fox, diamondback terrapin, and muskrat are species that were not identified from the excavated contexts. The sheep tooth is believed to be modern in origin. The sea turtle shell could be from a modern animal that washed on shore. Sea turtles have not been commonly found on Native American sites in the Chesapeake Bay region. Alternatively, the sea turtle could reflect Native American exploitation of deep-water resources using watercraft. Or the sea turtle remains could have been scavenged from carcasses along the shoreline. All of the other

| Species                                             | Element/NISP/Side/Portion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Total Weight g<br>(Count) of<br>NISP | MNI |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----|
| White-Tailed Deer ( <i>Odocoileus virginianus</i> ) | Vertebra (NISP=4), Tibia (NISP=2, proximal end, left distal end), Ulna (NISP=1), Humerus (NISP=4, 4 right distal end), Scapula (NISP=3, 3 right), Radius (NISP=2, right and left proximal end), Calcaneus (NISP=7, 5 right, 3 left), Molar (NISP=6, 4 unidentified fragments, 1 whole unidentified, 1 lower right M2), Astragalus (NISP= 4, 1 left, 3 right), Rib (NISP=4, proximal end, shaft, 2 cannot determine), Tooth w/ mandible (NISP=2, right, left), Phalange (NISP=1, 3rd left), Innominate (NISP=2), Metatarsal (NISP=4, 2 right proximal end, 2 left proximal end), Metacarpal (NISP=1 right proximal), Antler (NISP=3, 2 cannot side, 1 right proximal), Unidentified foot bone (NISP=3, 1 right, 2 cannot side), Cranial (NISP=1) | 632.7 (51)                           | 5   |
| Raccoon ( <i>Procyon lotor</i> )                    | Mandible w/ tooth mandible (NISP=1 left), Mandible (NISP=1 left)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 6.78 (2)                             | 2   |
| Turtle ( <i>Chelonia</i> )                          | Carapace (NISP = 9 cannot determine)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 10.28 (9)                            | 1   |
| Opossum ( <i>Didelphis virginiana</i> )             | Scapula (NISP = 1 left)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3.76 (1)                             | 1   |
| Muskrat ( <i>Ondatra zibethicus</i> )               | Tooth (NISP = 1 cannot determine)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.18 (1)                             | 1   |
| Diamondback terrapin ( <i>Malaclemys terrapin</i> ) | Carapace (NISP = 2, nuchal, cannot determine)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 6.09 (2)                             | 1   |
| Grey Fox ( <i>Urocyon cinereoargenteus</i> )        | Atlas vertebra (NISP = 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 2.27 (1)                             | 1   |
| Beaver ( <i>Castor canadensis</i> )                 | Femur (NISP = 1 left)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 23.04 (1)                            | 1   |
| Domestic Sheep ( <i>Ovis aries</i> )                | Tooth (NISP = 1 cannot determine)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3.83 (1)                             | 1   |
| indet. Bird                                         | Longbone (NISP = 1 shaft)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1.07 (1)                             | 1   |
| indet. mammal                                       | Long bone (NISP = 71 shaft, 1 unidentified end), Tooth (NISP = 1 canine), Unidentified (NISP = 25)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 107.34 (98)                          | NA  |
| indet. large mammal (larger than raccoon)           | Long bone (NISP = 140, 131 shaft, 4 unidentified end, 5 unidentified), Tooth (NISP = 3, 2 canine, 1 cannot determine), Mandible/Maxilla (NISP = 2, Fragment), Rib (NISP = 1 cannot determine), Vertebra (NISP = 1), Unidentified (NISP = 8)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 637.15 (155)                         | NA  |
| unidentified vertebrate                             | Long bone (NISP = 4 cannot determine), Unidentified (NISP = 64)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 63.45 (68)                           | NA  |
|                                                     | Total:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1504.9 (391)                         |     |

Table 47. Summary of faunal remains from the shoreline assemblage

species identified from the shoreline assemblage are related to Native American activities at Holland Point.

The tracking and hunting of white-tailed deer might have lead to excursions into more inland areas up Slaughter Creek. White-tailed deer was the most commonly identified bone from the faunal assemblage. A minimum of five white-tailed deer is estimated from the shoreline collection based on the presence five calcaneus bones. No additional calcaneus bones were found in the excavated contexts. Comparisons of the other white-tailed deer elements identified from the excavated context suggest that the total white-tailed deer bone assemblage from Holland Point could be represented by a minimum of five specimens. The identified bones suggest that head, trunk, front leg and hind leg portions of the body were brought back to the site. The presence of foot bones suggests that even distal portions of the legs were brought back to the site. The shoreline deer bone assemblage can only provide some broad generalizations about hunting and butchering practices. This assemblage suggests that the whole deer carcass might have been brought back to the side for butchering. A boat could have been used to transport the kill back to the site. Bones from meat rich parts of the deer (i.e. proximal limb bones) as well as bones with little to no meat (i.e. foot bones) are present in the assemblage. This suggests that the whole carcass was butcher, processed and possibly consumed on-site. Some of the meat might have been removed from the bone and dried for later consumption. The access to larger waterways might have facilitated transporting complete carcasses from the kill site back to the camp. One basal portion of an antler has a cornua present indicating that the animal was killed from either the late

summer to early winter (White 1974: Figure 2). This element provides general insight into site seasonality at Holland Point.

The other species identified suggest that smaller mammals and reptiles rounded out the diet. Deer makes up the largest percentage of biomass for the faunal assemblage. In general, these animals, except for the deer specimen mentioned above, could have been hunted throughout most of the year. The presence of fur bearing animals such as the beaver, fox, and possible muskrat could reflect the trapping for furs to be used as clothing. The habitat of the beaver does not include saltwater environments (Hill 1982). This animal could have been caught in wetlands on the interior portions of Taylors Island or other inland wetlands. Beaver would not have been found in the saltmarsh habitats at Holland Point (Lippson and Lippson 1997: 212). The fox and raccoon along with deer are other species that would have been available in the woodlands interior from the surround saltmarsh. In contrast, muskrat and diamondback terrapin would be present in saltmarsh and shallow water environments (Lippson and Lippson 1997). The variety of mammals and reptile suggest the exploitation of animals in the immediate saltmarsh environments around Holland Point and from more interior settings.

Almost all of the bones that contain marrow have been broken. Only one intact long bone has not been splintered. This long bone shaft was from an unidentified mammal larger than a raccoon. Other bones without marrow such as the astragalus from *O. virginianus* and phalange from *O. virginianus* were not broken. Thirty-six long bone fragments have splintered breaks that are indicative of green stick fractures. A deer humerus and metatarsal fragments are the only elements that could be identified to a

species, which have green stick breaks. More breaks of fresh (green) bone are suspected, but the weathered condition prevents fracture pattern analysis. Thus the number of green stick breaks is a conservative estimate. The unidentified bone, in particular the larger shaft fragments, might be from white-tailed deer long bones. This pattern of bone breakage is probably common for most sites on the coastal plain (see Whyte 1986: 19), but is not consistently reported. The small size of the long bone shaft fragments and other elements suggest that after the marrow was removed the bones were broken into smaller pieces to facilitate boiling (Figure 59). Grease and collagen would have been obtained by boiling the bone (Brennan 1981; Lyman 1994: 217).

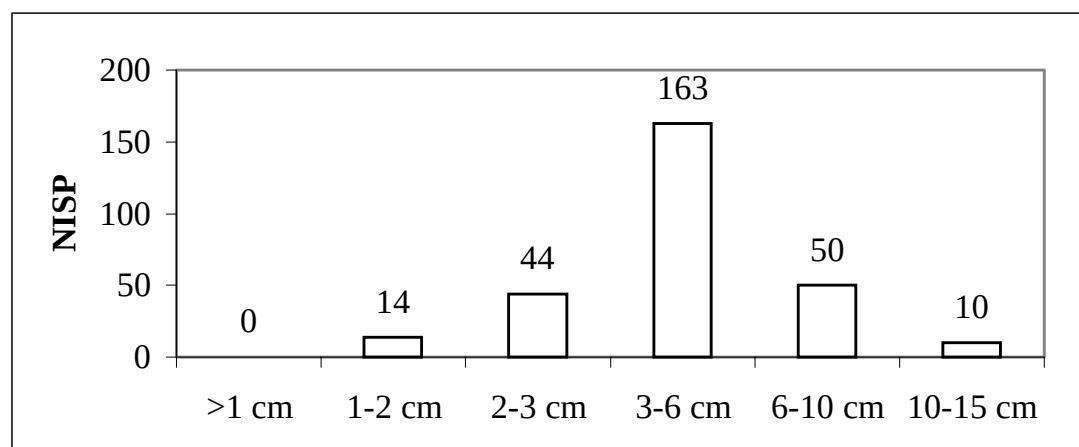


Figure 59. Size distribution of larger skeletal elements recovered from the shoreline context; smaller unidentified bone fragments, teeth, antler and turtle shell fragments have not been included in the graph

A limited amount of the bone assemblage shows alteration from heat or butcher marks (Figure 60). Identified elements of burned bone consist of one deer rib fragment, one deer vertebra, and one fragment of turtle carapace. The rest of the burned bone

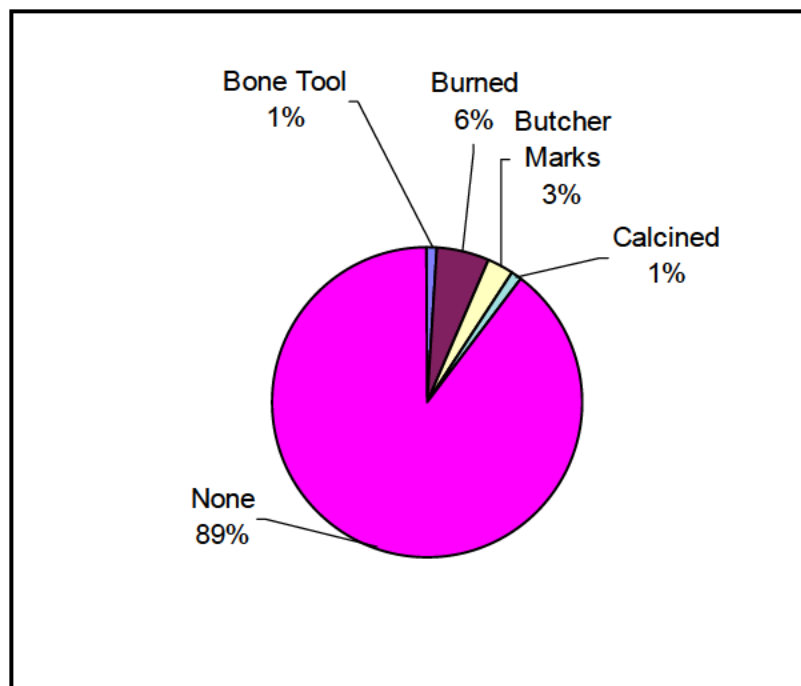


Figure 60. Modification types by percentage of the total weight for the vertebrate faunal remains from the shoreline assemblage

consists of unidentified fragments of long bones and smaller skeletal elements.

Identified calcined bone fragments consist of deer phalange and the sheep's tooth. The rest of the calcined bone assemblage consists of one unidentified canine, long bone fragments, and other smaller fragments that could not be identified to a species level.

The burned and calcined bones suggest that some of the faunal remains may have been discarded in the fire. The deer vertebrae might be only partially discolored suggesting that burning occurred while the meat was still on the bone. Only part of the vertebrae might have been exposed to the fire. The rest could have been protected from the intense heat by the flesh on the bone. Two bones (one deer metatarsal and one large mammal longbone) contain identifiable butcher marks. A deer scapula contains marks that could possibly be butchering marks.

Three bone fragments are modified into bone tools. The bone tools have one end that is sharpened to a point. The tools are classified as awls. The two of the tools (Art# 2.2893 and 2.2897) are made from long bone fragments that could not be identified to a species level. The third bone tool (Art# 2.2896) consists of the proximal end of a left deer metatarsal. Metapodial bones (metatarsals and metacarpals) are bones that are turned into tools because of their straight shaft and thickness of cordial bone (Dugas 1996: 15). The shaft of a metatarsal (Art# 2.2896) has been modified into a point. Analysis of metapodial tools indicates that systematic and unsystematic methods are used in bone tool production (Dugas 1996). The deer metatarsal tool (Art# 2.2896) probably reflects the systematic reduction of the bone. This tool is classified as an awl. The other two bone tools reflect unsystematic modification of bone splinters. The bone splinters could have been select from fragments produced while extracting the marrow. Some metapodials might have been systematically reduced in the tool production process and not simply broken for marrow (Dugas 1996: 113). Thus it cannot be definitively argued that all bone breaking at Holland Point was oriented towards marrow production or other nutritional needs. Utilitarian reasons for breaking bones may have been employed at Holland Point.

One other possible tool is a proximal end portion of antler that would have been suitable for use as a billet. The antler is heavily weathered making it impossible to clearly determine if it was used as a billet. The size and shape of the antler is suitable for soft-hammer percussion. This antler might have been used in the production of stone tools.

## E. Historic Artifacts

Norman Brady and Darrin Lowery collected a limited amount of historic artifacts from the shoreline prior to the 2000 fieldwork. Modern twentieth-century debris such as clear bottle glass was not collected. During the controlled shoreline collection no historic artifacts were collected. The historic artifacts consist of red ware, stoneware, olive green bottle glass, a corroded piece of iron, and two coins. Lowery (1999) found a blue glass bead in the upper portion of the shell midden deposit in the bank profile. The bead does not have any discoloration on the surface that is typical for old glass objects. The general shape of the bead is not similar to any glass beads that have been classified as trade beads. Thus the bead is not believed to be a trade bead.

Both coins (Art# 2.3050 and 2.2891) are copper. One of the coins has a small-drilled hole along the edge possibly to string the coin as a pendent. The surfaces of the coins are eroded. Nonetheless, the outline of Britannia can be distinguished on one side and an outline of a face can be distinguished on the other site. Both coins are similar to English halfpennies dating from the seventeenth and/or eighteenth centuries (Hume 1969: Figure 59, 156). Coins from Contact period sites in the Chesapeake Bay region are relatively rare. One possible English halfpenny was recovered from 7NC-E-42 in northern Delaware (Custer and Watson 1985: 105-106).

The British halfpennies are historic artifacts that suggest the portions of the deposits at Holland Point could date to the Contact period. There are no known seventeenth and/or eighteenth century Euroamerican sites at the tip of Holland Point. However, these artifacts were found along the shoreline. The circumstances under



which the coins were found make it difficult to definitely determine if they are related to Native American or Euroamerican activities at the site. Conservatively, the coins are believed to not be associated with Native American activities dating to the Contact period at Holland Point.

#### F. Analysis Of Controlled Collection And Tile Experiment

The controlled shoreline collection combined with the tile experiment provides a unique opportunity to analysis how cultural materials are distributed along the shoreline of the site. In addition, the natural and cultural processes affecting this distribution can be evaluated. Data sets analyzed in this discussion include (1) cultural material recovered from the one-time shoreline collection, (2) FCR, and (3) colored tiles released along the shoreline. Additional observations that were not systematically recorded will also be incorporated throughout this discussion. The major theoretical approach used in this analysis is to view the artifacts and ecofacts as types of sedimentary particles that are subjected to the same shoreline processes as the non-cultural sediments (Stein 1987). The artifacts/ecofacts are simply other particle types subjected to the same physical forces as natural sediments. Properties such as artifact size and weight affect how the cultural material and other sediments are distributed along the shoreline. These analyses will ultimately provide detailed insight into how coastal site formation processes affect the archaeological deposits at one particular locality. The data sets will be discussed in the following order: (1) the distribution of FCR by weight (2) cultural material (artifacts and ecofacts) distribution, and (3) colored tiles. The location of the

shell midden outlines the general area of the in-situ archaeological deposits. The data from all nine beach sections will be analyzed along with a detailed analysis of data from Beach Section 2. Beach Section 2 encompasses a cove that is bounded to the south by a point. The northern edge of Beach Section 2 is defined by a change in the shoreline geometry. The analysis of the data from Beach Section 2 will serve to highlight patterns that are apparent along other sections of the beach.

### 1. FCR distributional analysis

FCR along the shoreline shows less displacement from the *in situ* deposits (i.e. the shell midden) than other cultural materials. In general, most of the FCR has only moved a limited distance southwest along the shoreline towards Beach Section 8. Figure 61 shows that the FCR was concentrated in Beach Section 1 through 3. The distribution map for the complete shoreline (Figure 62) and for Beach Section 2 (Figure 63) reveals the effects of erosion, transportation, and deposition on the heaviest artifacts (i.e. FCR). Erosional processes affecting the shoreline adjacent to the intact deposits dislodged cultural material. The distribution of FCR indicates that this material is being transported southwest along the shoreline. Longshore currents generated by waves that strike the beach at oblique angles are responsible for the down-current transportation of FCR, other cultural material, and other non-cultural sediment. Littoral drift caused by longshore currents, beach drift and other processes are responsible for the movement of artifacts along the shoreline. The shoreline morphology is affecting FCR depositional processes. A uniform drop-off in FCR weight from the shell midden towards Beach

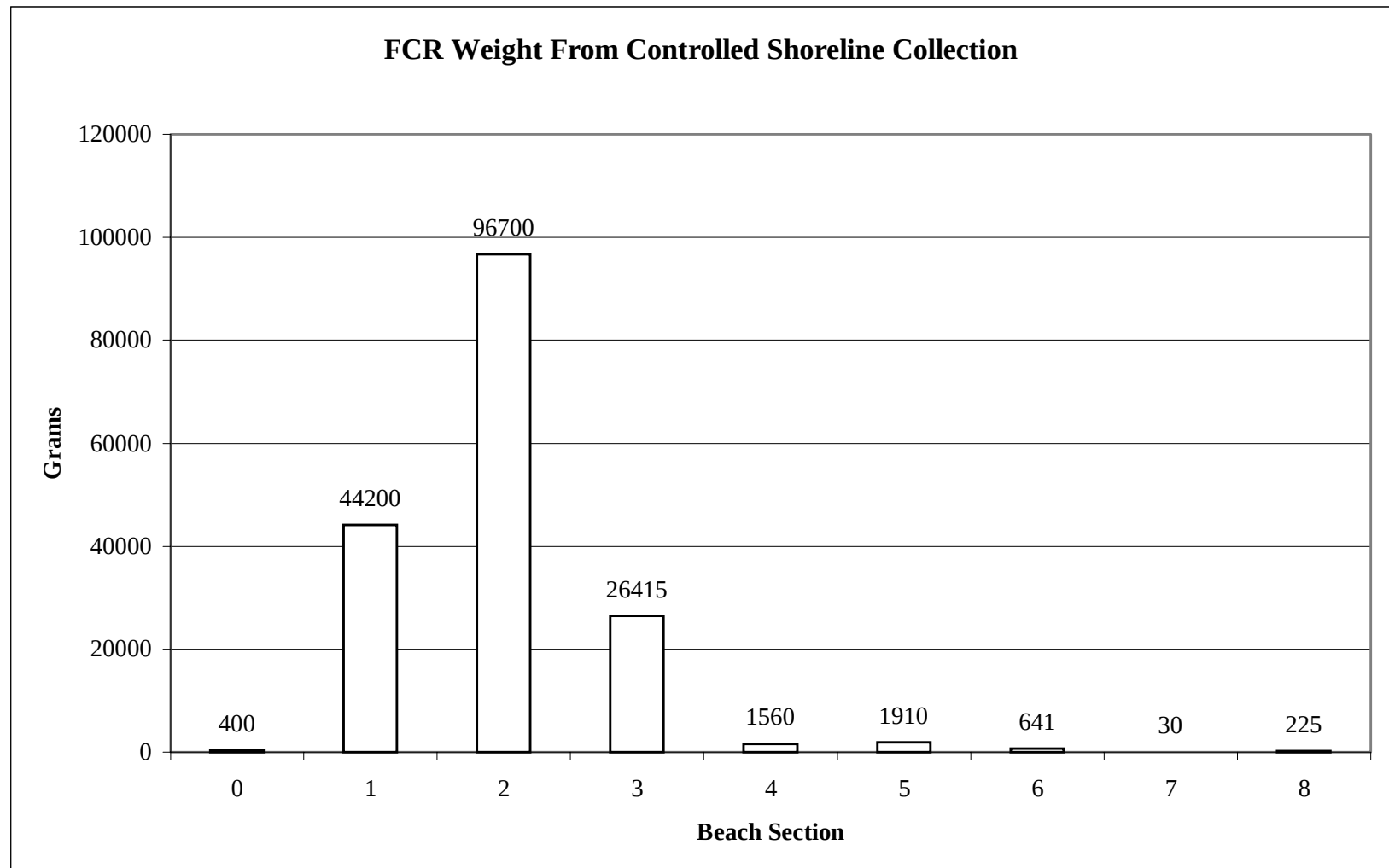


Figure 61. FCR weight for each beach section

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Figure 62. Distribution of FCR along shoreline

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Figure 63. Distribution of FCR in Beach Section 2

Section 8 does not exist. Most of the FCR was deposited in the southwest portion of Beach Section 2 near the tree trunk. The FCR is concentrated along the north side of the point at the southern end of Beach Section 2. A smaller concentration of FCR within Beach Section 2 is located on the high portion of the beach near the northern end of this beach section. This concentration is located in a position on the shoreline that is partially protected from littoral drift. Artifact weight and to a lesser extent size is a primary factor affect the distribution of FCR along the shoreline. The FCR distribution highlights the effects of weight on the distances that materials are transported down current. Similar observations of shoreline erosional processes affecting archaeological deposits have revealed that FCR and other heavy cultural material are transported shorter distances than lighter and smaller types of cultural material (Labadie 2001; Reinhardt 1993; Stright, et al. 1999: 294).

Differences in the amount of FCR found in the upper versus the lower portions of the beach collection areas are apparent to a limited degree. The concentration of FCR in the southern edge of Beach Section 2 is located on the lower portion of the beach. FCR in Beach Section 3 is more abundant on the lower portions in Beach Section 3 than in the upper portions. However, some concentrations of FCR are apparent in the upper portions of Beach Sections 1 and 2.

It was hypothesized that heavy artifacts would be more common in the lower portion of the beach. In the swash zone, the region between MLT and MHT, wave energies were hypothesized to sort artifacts and sediment by size and weight. The lower portion of the swash zone was hypothesized to contain a greater amount of larger and heavier artifacts. Weakening energies as the wave breaks would deposit heavier cultural

material lower on the beach. In contrast, lighter and smaller artifacts would be transported farther up the swash zone before being deposited. This hypothesis is generally supported by the FCR data. The concentration of FCR in Beach Section 1 on the upper portion of the beach could reflect artifacts that have recently eroded from the *in situ* deposits exposed on the shoreline. These artifacts may have yet to be transported. The FCR concentration in the upper section of the beach in the northern portion of Beach Section 2 around the 0 m to 5 m range does not fit the expected pattern of artifact transportation. The morphology of the shoreline in this portion of beach might be responsible for this FCR concentration.

Other patterns of size sorting are more common on beaches along ocean coastlines along oceans. On open coasts that face the ocean, storm surges create high-energy situations where gravels and large size particles are deposits higher on the beach than smaller size sediments (Wells 2001: 161). Gravel storm berms are not apparent at Holland Point. The shoreline at Holland Point is not subjected to the direct impact of storm events originating in ocean waters. Thus larger size artifacts and ecofacts are more common on the lower portion of the beach. The occasional occurrence of larger size artifacts higher on the beach could be the result of storm surges that impact Holland Point.

## 2. Cultural Material Distributional Analysis

The comparisons of artifact/ecofact counts to weight distributions along the shoreline highlight different affects of natural and cultural processes on these cultural

materials. The cultural materials include debitage, cores, chipped-stone tools, bifaces, faunal remains, cobble-based implements and Native American pottery. These objects are generally lighter in weight than FCR. The weight distribution map for the whole shoreline shows two concentrations (Figure 64). The weight concentration along the northeastern shoreline in Beach Section 1 is from the recovery of a hammerstone in that area (Figure 64). This weight concentration along the northeastern shoreline does not reflect the same pattern as the FCR weight distribution. However, this is one isolated artifact, which could have eroded from the *in situ* deposits along the adjacent bank cut. The recovery of several cores from the southern end of Beach Section 2 represents the bulk of the artifact weight, which defines the second concentration (Figure 64 and Figure 65). This weight concentration mirrors the concentration of FCR found in this same location. The artifact weight drops significantly southwest of Beach Section 4 toward Beach Section 8.

The bulk of the artifact/ecofact weight is concentrated in the lower portion of the swash zone. The weight concentration in Beach Section 1 is located in the upper portion of the beach. However, only one hammer stone defines this concentration which does not give an accurate depiction of the overall weight distribution pattern. The distribution map for Beach Section 2 indicates that the heavy artifacts are located on the lower portion of the swash zone (Figure 65). Artifact/ecofact weight in the small cove of Beach Section 3, which is immediately southwest of Beach Section 2, is concentrated in the lower portion of the swash zone. Field observations also support the data that lighter and smaller artifacts were found higher on the beach. The upper portions of the beach near the berm are generally covered in the sand-size sediment. The lower portions



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Figure 64. Distribution of artifact/ecofact weight along the shoreline

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Figure 65. Distribution of artifact/ecofact weight in Beach Section 2

of the beach, especially in Beach Section 2, are covered in pebble to gravel-size fragments of oyster shell. The particle size difference between sand and oyster shell sediments in the upper and lower portions of the swash zone correlated with artifact/ecofact weight distribution.

The distribution of artifact/ecofact counts along the shoreline reveals several concentrations (Figure 66). The greatest numbers of artifacts/ecofacts are located in Beach Section 2 and 3. The greatest concentration in numbers of artifact/ecofact is located in Section 2 in the same location as both the FCR concentration and the artifact/ecofact weight concentration (cf. Figure 63, Figure 65, and Figure 67). The artifact/ecofact count concentration in the small cove of Beach Section 3 is roughly located on the northern side of the southern point. This accumulation in the Beach Section 3 on the north side of the point is similar to the patterning on the point in Beach Section 2. Figure 68 indicates that the artifact/ecofact count does not drop off significantly in Beach Sections 5 through 8, which are increasingly distant from the *in situ* deposits. Moreover, there is a slight increase in the number of artifacts/ecofacts in Beach Section 8, which was 10 m shorter, than Beach Sections 1 through 7. Beach Section 8 is farthest from the *in situ* deposits. The artifact/ecofact counts do not drop-off from Beach Section 2 through 8 in the same manner as the artifact/ecofact weight and FCR weight (Figure 68). The artifact/ecofact counts level off from Beach Section 5 through 8. Comparing the artifact/ecofact counts and weights indicates that smaller artifacts are being transported south/southwest toward Beach Section 8.

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Figure 66. Distribution of artifact/ecofact by count along the shoreline

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Figure 67. Distributions of artifact/ecofact count in Beach Section 2

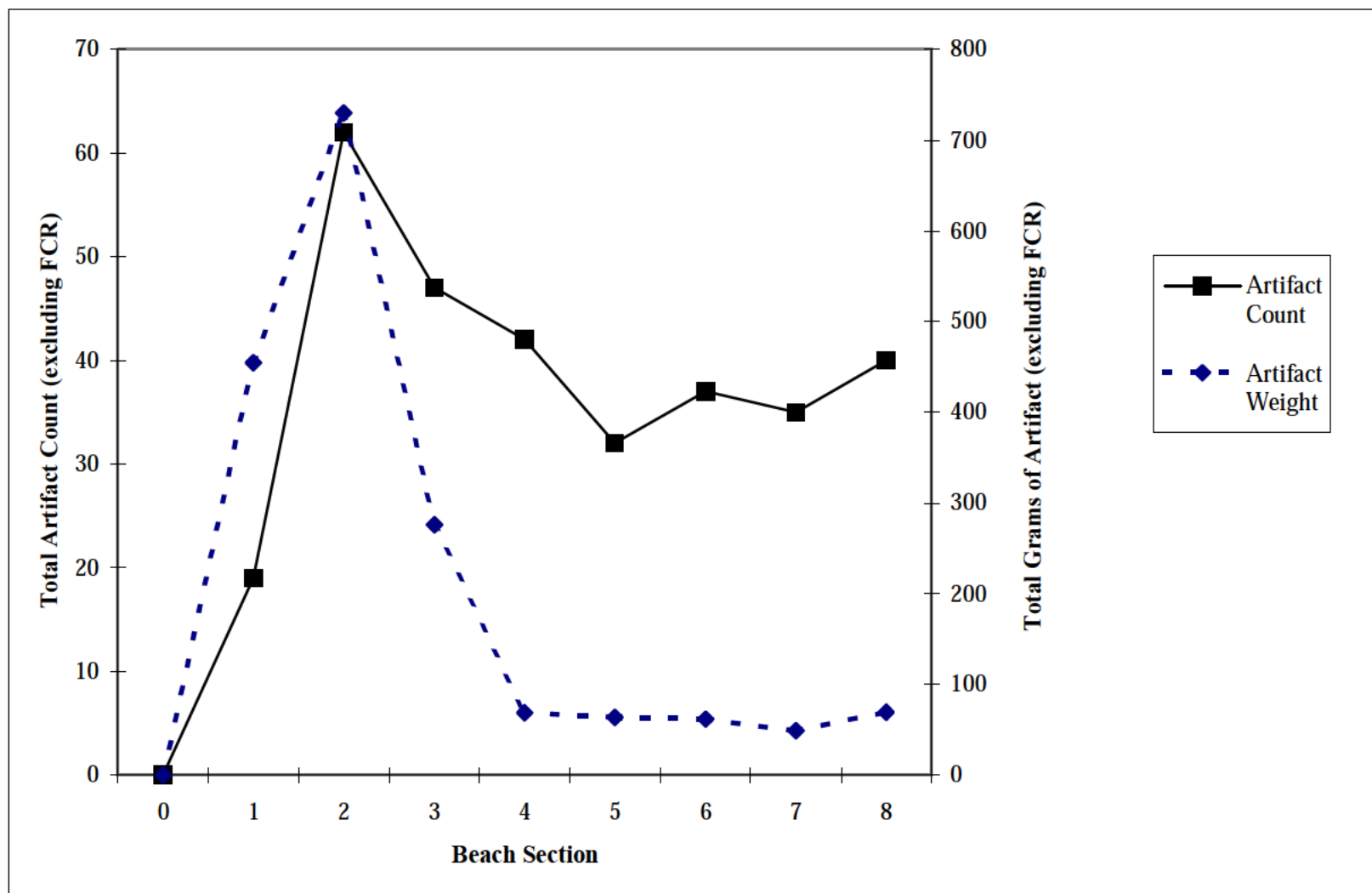


Figure 68. Comparison of artifact weight to count by beach section along the shoreline

### 3. Colored Tile Movement

The colored tile experiment provides a unique opportunity to gauge artifact movement along the shoreline at Holland Point because the drop-spots of the tiles are known positions. The above analysis of cultural materials assumed that material originated from around Beach Section 1 near the shell midden. It is also possible that cultural material from the beach could have come from deposits located off shore of the site that are now inundated. The five different drop-spots for the tiles provide insight into processes affecting sediments and cultural material from several locations along the shoreline. The tiles were released on July 17, 2000. The locations of the tiles were measured relative to their original drop-spots twenty-four days later on August 9, 2000. Figure 69 shows the amount of movement for all of the tiles that could be located on August 9, 2000. Close-up views of the amount of tile displacement are presented in Figure 70, Figure 71, Figure 72, and Figure 73. The tile movement will be discussed by individual drop-off location.

Seventeen of the thirty tiles dropped at Section 1 (0 m) were relocated (Table 48). The tiles from this drop-spot on the north shoreline show the least amount of movement out of all the drop-spots. A close-up figure of the tiles from this drop spot was not drafted because of the limited amount of displacement. Sixteen of the tiles were located within a 60 cm radius around the drop-spot on the tidal flat. One 5-by-5 cm tile was located 120 cm from the drop-spot. This tile moved south towards the bank edge. The amount of tile movement at this drop-spot suggests that waves predominant break perpendicular to the northern shoreline.

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Figure 69. Tile movement at all drop locations along the shoreline





Figure 70. Tile movement at Beach Section 1 (15 m)

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Figure 72. Tile movement at Beach Section 3 (40 m)/Section 4 (0 m)

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Figure 73. Tile movement at Beach Section 6 (40 m)/Section 7 (0 m)

| <b>Drop-off location</b>   | <b>Range in linear distance of movement after 24-days (m)</b> | <b>2.5 X 2.5 cm tile</b> | <b>2.5 X 5 cm tile</b> | <b>5 X 5 cm tile</b> | <b>5 X 7.6 cm tile</b> | <b>7.6 X 7.6 cm tile</b> | <b>Total</b> |
|----------------------------|---------------------------------------------------------------|--------------------------|------------------------|----------------------|------------------------|--------------------------|--------------|
| Sec. 1 (0 m)               | 0.10-1.20                                                     | 11                       | 2                      | 3                    | 1                      | 0                        | 17           |
| Sec. 1 (15 m)              | 5.00-9.20                                                     | 2                        | 1                      | 3                    | 1                      | 0                        | 7            |
| Sec. 2 (35 m)              | 1.25-21.05                                                    | 3                        | 0                      | 2                    | 0                      | 1                        | 6            |
| Sec. 3 (40m) /Sec. 4 (0 m) | 8.45-47.4                                                     | 3                        | 0                      | 0                    | 1                      | 0                        | 4            |
| Sec. 3 (40m) /Sec. 4 (0 m) | 8.1                                                           | 0                        | 0                      | 0                    | 0                      | 1                        | 1            |
| Total                      |                                                               | 19                       | 3                      | 8                    | 2                      | 2                        | 35           |

Table 48. Numbers of different size tiles mapped in after 24 days from the 5 drop-off locations

Seven tiles were found that were dropped at Section 1 (15 m) (Table 48). The tiles show a uniform movement northwest towards the saltmarsh (Figure 70). Several of the tiles were found wash up on the land over the bank cut near Test Unit 1. The tiles were displaced between 5 m to 9.2 m from the drop-spot after twenty-four days. The different distances that the various size tiles moved suggests sorting by size and weight. The smaller tiles were generally transported farther than the larger tiles (Figure 70).

A pile of oyster shell, which was created from the excavation of the shell midden in the test units, showed a similar direction of movement as the tiles. The oyster shell pile was located southeast of Test Unit 1 on the saltmarsh. Most of the shell from this pile had moved northwest washing into Test Unit 1. The movement of the tile and oyster shell pile indicates that waves surged over the bank edge onto the land from the northwest. The matted nature of the saltmarsh grasses and the presences of other debris,

such as driftwood, on top of the saltmarsh indicate that waves frequently break over the bank edge and onto the land on this portion of the landform. Thunderstorms, hurricanes, episodes of ground water runoff up stream, abnormally high tides, and wakes from boats are some natural and cultural processes causing waves to break over the bank edge and onto the saltmarsh. The predominant direction of wave energies near Beach Section 1 (15m) is oriented obliquely to the shoreline at the tip of Holland Point. Erosion was greater at the tip of the Holland Point near Beach Section 1 (15m) than at other areas along the shoreline. At the tip of Holland Point near Beach Section 1 (15m), a wooden duck blind was positioned at the bank cut edge. The duck blind was originally on stable ground at the start of the fieldwork. Three months later the duck blind began to tilt into the water because the bank cut had eroded undercutting the ground below the duck blind.

The drop-off spot at Beach Section 2 (35 m) is located on the north side of the point where oyster shell fragments and lag deposits appear to be accumulating (Figure 74). Two different patterns in tile movement are apparent in Section 2 (Figure 71). The four tiles that moved less than six meters represent one pattern. These tiles moved a limited distance, but remained in the general vicinity of the southern end of the cove in Beach Section 2. The direction of littoral drift appears to be toward the Beach Section 2 (35 m) drop-spot. The morphology of the shoreline around the southern end of Beach Section 2 creates an environment where cultural material and other sediment is trapped along the northern side of the point. The concentration of cultural material in this area near the tree trunk highlights the depositional nature in this portion of the shoreline. These tiles appear to have been caught in the currents oriented towards the Beach

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Figure 74. Thickness of the lag deposit along the beach based on auger testing

Section 2 (35 m) drop-spot. The point of land defining the southern end of Beach Section 2 appears to prevent the tiles moving past the point and down the shoreline towards Beach Section 8. Two of smallest tiles, which moved north over 12 m from the drop-spot, reflect the second pattern of tile transportation. These tiles are moving in the opposite direction of the littoral drift. This pattern of tile movement does not fit the expected pattern of sediment movement along the shoreline. However, ebb currents combined with boat-generated currents could be responsible for the northward movement of the tiles. Boats traveling toward the Chesapeake Bay create waves that travel in a northerly direction. The north to northwesterly movement of the tiles highlight that sedimentary processes are complex along the shoreline at Holland Point.

The four tiles relocated from the Beach Section 3 (40 m)/Beach Section 4 (0 m) drop-spot consistently moved the greatest linear distance (Figure 72). The drop-spot is located on the northern side of a large broad cove that encompasses Beach Sections 4 through 7. The direction of tile movement indicated that littoral drift is moving cultural material and sediment southwesterly along the shoreline towards the southern end of Beach Section 7. The smaller tiles from this drop-spot have been transported a greater distance than the larger tiles suggesting that the littoral drift processes also sort particles and cultural material by size and weight.

The one tile was relocated from the Beach Section 6 (40 m)/Beach Section 7 (0 m) drop-spot (Figure 73). This tile shows a similar pattern of southwesterly displacement as the tiles from the Beach Section 3 (40 m)/ 4 (0 m) drop-spot. The Beach Section 6 (40 m)/ Beach Section 7 (0 m) drop-spot is located at the southern end of the large cove. The southern end of the cove near the point in Beach Section 7 is



expected to be a portion of the shoreline where sediment and cultural material accumulated. A moderate concentration in the numbers of artifacts/ecofacts (see Figure 66) is apparent in this portion of the shoreline.

#### 4. Interpretation of Shoreline Processes

Littoral drift is primarily transporting material from near the shell midden (Beach Section 1) southwesterly towards Beach Sections 7 and 8. The fall off patterns in the cultural material from the shoreline reflect the down-current movement of material. The tile experiment generally corroborates the expected pattern of movement. The morphology of the shoreline also affects the distribution of cultural material and sediment along the shoreline. Four coves roughly define the shoreline adjacent to Slaughter Creek. The coves and the points of land that defined the boundaries of the coves influence shoreline processes. The northwestern sides of the points of land along the shoreline appear to be acting as locations where sediment and cultural material are accumulating. The relative thickness of the lag deposit along the shoreline reveals that the northwestern sides of the points are accretional locations along the shoreline (Figure 74). The lag deposit consists of loose unconsolidated sediment that is made up of predominantly sand and shell fragments. The thickness of the lag deposited was determined by using a 3-inch bucket auger to measure the depth from the current beach surface to the O-horizon or the B-horizon at 10 m intervals along the shoreline.

The pattern in the thickness of the lag deposit also highlights the predominant direction of littoral drift. The shoreline around Beach Section 0 and 1 contains little to

no sediment on the beach area. The water during average high tides covers the beach area and waves strike the bank cut at a perpendicular angle. The B-horizon is exposed on the tidal flat at low tides around Beach Section 0 and 1. The shoreline from Beach Section 2 through Beach Section 8 is covered by varying amount of lag. Sediment eroded from the point in Beach Section 1 is being transported towards Beach Section 8. The shoreline around the point of land in Beach Section 1 is a regressive shoreline (Wells 2001: 155, Figure 6.2). The southwestern portion of the shoreline around Beach Section 7 and 8 is progradational shoreline (Wells 2001: 154, Figure 6.2). The shoreline in this area near Beach Section 7 and 8 is growing seaward toward the main channel of Slaughter Creek. The thickness of the lag around Beach Section 4 and 5 suggests that sediment is accumulating in the middle of the large cove. The relative thinness of the lag deposits around Beach Sections 5 and 6 combined with the presences of a rotting *in situ* cedar stump in the area indicates a rise in the paleo-topography of the land surface below the saltmarsh in this area.

Several of the shoreline processes that are responsible for this pattern of erosion and littoral drift at Holland Point have been discussed to a limited degree. A more comprehensive discussion of these processes is warranted. Other possible factors affecting the destruction of archaeological deposits along the shoreline will also be evaluated. Both cultural and natural processes cause the erosion of the archaeological deposits. Sea-level rise is the primary factor facilitating shoreline erosion at Holland Point. The breaking of waves generated by natural and cultural processes contribute to erosion of the shoreline, especially around Beach Sections 0 and 1. The size of the waves impacting the shoreline is dictated by the following factors: (1) amount of open

water in which winds can generate waves (fetch), (2) storm events, (3) currents, (4) tides, (5) bathymetry (the offshore topography of the ground below the water), (6) boat speed, (7) draw of the boat, and (8) boat size. These factors are discussed below.

Fetch distances from Holland Point vary dramatically based on wind direction. Greater distance and width of open water allow wind energies to generate larger and more intensive waves (Will and Clark 1996: 505). Winds from the south-southwesterly direction travel across approximate one kilometer of open water from the eastern shoreline of Slaughter Creek back towards Holland Point. Winds from the west travel less than a kilometer from the eastern shoreline of Slaughter Creek. The island east of the point near Beach Section 1 protects this portion of the shoreline from westerly winds and waves. Northeasterly winds coming from northern shorelines of Little Choptank River blow across 5.5 km of open water towards Holland Point. The erosion of Hooper Point allows north-northwesterly winds from across the Chesapeake Bay to impact the tip of Holland Point near Beach Section 0 and 1. North-northwesterly winds can travel over 40 km of open water from the Western Shore toward Holland Point. The greatest fetch distance is from the north-northwesterly direction. Historic shoreline erosion maps indicate Hooper Point and the shoreline near Beach Section 0 have receded dramatically since the late nineteenth century, which reflects the erosional impact of north-northwesterly fetch processes. Storms coming from north-northwesterly direction will have the greatest impact on the north shoreline at Holland Point around Beach Section 0 and 1.

Storms are infrequent events that affect the archaeological deposits at Holland Point. However, the intensity and duration of storms can have a greater impact than

daily tidal and current process. Field observations indicate that during certain storm events the saltmarsh at Holland Point is completely inundated. The devastating effect of storms and hurricane related events on coastal archaeological deposits have been documented worldwide (Bird 1992; Hughes and Sullivan 1974). The presences of a boulder-size piece of marsh mat weighting several hundred kilograms washed on top of the saltmarsh along the north shoreline at Holland Point highlights the magnitude of storm generated wave energies.

Currents, tides, and bathymetry are factors affecting the shoreline with greater regularity than storm related processes. Currents impact sediments below the water level. Tidal fluctuation, water runoff, and other processes create currents. Currents are typically stronger in deeper channels. Currents affect how sediment is being eroded and deposited along the western side of the island. A deeper channel exists on the western side of the island. Sediment in this channel appears to be moving southward creating a spit at the southern end of the island. The current is generated by the bathymetry on the western side of the island.

Systematic measurements of water depths along the shoreline at Holland Point were not conducted. An understanding of the bathymetry around Holland Point is based on field observations. The ground surface below the water around Beach Sections 0 to 2 appears to gradually slope up way from the shoreline. The gradual slope of the ground causes the waves to start breaking farther out from shoreline and reduces their impact. The bathymetry offshore from Beach Section 3 to 6 is not clearly understood. The ground surface below the water near the juncture of Beach Section 7 and 8 is relatively

deep near the shoreline. Wave energy are not dissipated by slope of the below water ground surface at the juncture of Beach Section 7 and 8.

Tidal fluctuations dramatically affect where waves impact the shoreline. Waves directly impact the bank edge in Beach Section 0 and 1 during average high tides while at low tide the water does not typically impact this section of the bank edge. The bank edge in rest of the beach sections is not typically impacts by waves during average high tides. The points of land, which jut out from the shoreline, are subject to greater wave impact and erosion during high tide than the cove portions of the shoreline. Storm events that coincide with high tide could have a greater impact on the archaeological deposits than storms occurring at low tide.

Boat traffic is one cultural process generating waves that impact the Holland Point shoreline. Most of the boat traffic is associated with a marina located on Slaughter Creek up stream from Holland Point. The size of wake-generated waves is dependant on the boat speed, draw of the boat, and boat size. A Coast Guard Cutter that is stationed out of the marina creates some of the largest waves on a regular basis. The wake-generated waves, which originated from the main channel of Slaughter Creek, strike the shoreline from Beach Section 1 through 7 at a more perpendicular angle than certain fetch related waves. The boat traffic on Slaughter Creek generates waves that impact the archaeological deposits from a different approach than other waves. Most of the fetch related waves originate from north-northwest striking the shoreline near Beach Section 0 and 1 at a perpendicular angle and the shoreline along Beach Section 2-7 at a more oblique angle. Restrictions on boat traffic would help reduce the shoreline erosion at Holland Point.

Other factors affect the archaeological deposits at Holland Point that do not directly relate to wave or water related processes. The plants and animals living around Holland Point and in the sediments are additional factors affecting the site. The root system of marsh grass creates a dense mass that is resistant to erosion. Several of the points which jut out from the shoreline have established marsh grass making these portions of the shoreline less prone to erosion. The growth of the saltmarsh on top of the archaeological deposits has help to reduce the rate of shoreline erosion. The *phragmites* rhizomes (i.e. roots) do not form as dense a mass as the *spartina* grass roots. The shoreline near Test Unit 4 and 5 where the phragmites is located is not as resistant to erosion as other portions of the shoreline where *spartina* grows. Roots from the saltmarsh vegetation could also be responsible for the movement cultural material. Saltmarsh vegetation roots have partially contributed to the fragmentation of the oyster shell in the upper portion of Stratum 2. Trees and other forest vegetation that was growing at the site prior to sea level rise and saltmarsh genesis impact the archaeological deposits. Vertical and horizontal displacement is likely resulted from the paleo-vegetation.

Faunalturbation by crabs and shellfish living along the shoreline is another process affecting the site. The burrowing of fiddler crabs (*Uca pugnax*) and softshell clams was observed during the fieldwork. A living softshell clam had burrowed into the matrix of Feature 1. Softshell clams and stout razor clam (*T. plebius*), which were recovered from the shell midden, are two species that burrow into the tidal flat. Their burrowing could be responsible for the downward displacement of cultural material in the B-horizon, especially near the shoreline portion of the site. A portion of the

saltmarsh root mat on the western side of the island had an abundance of fiddler crab burrows. The burrowing of fiddler crabs can turn over an extensive amount of marsh sediment and increase the marsh surface area (Katz 1980). The effect of burrowing by the fiddler crab reduces the rigidity of saltmarsh soils making them more susceptible to shoreline erosion. Fiddler crab burrowing can also result in vertical displacement of cultural material (Lowery 2002b).

The physical properties of the A-horizon (Stratum III) and B-horizon (Stratum IV) soil affect erosional processes. The relative density of Strata III and IV sediment prevents these soils from being as easily eroded. Other shorelines in Chesapeake Bay consisting primarily of loose aeolian sand deposits are more rapidly eroded than the Holland Point shoreline. Once the sediment from the Holland Point shoreline is eroded the clay and silt size fraction is transported farther than the sand size fraction. This finer-size sediment can be carried away by currents and/or deposited in deeper water environments (Wells 2001: Figure 6.3). Eroded sand accumulates as a component of the lag deposit (Wells 2001: Figure 6.3). Thus much of the sediment making up the A-horizon and B-horizon is not deposited along the shoreline.

The oyster shell deposit is eroded relatively easy because of the porous nature of the shell midden matrix. Swash zone processes fragment the oyster shell sediment. The impact of dislodged oyster shell fragments by waves into the exposed bank cut facilitates shoreline erosion.

The shoreline factors impacting the archaeological deposits at Holland Point highlight current site formation processes. Temporal changes in the site formation processes reflect the dynamic nature of coastal settings. A major change in the shoreline

processes at Holland Point occurred with the creation of the island near Beach Section 1. The island was created around 1990. The land between the island and the mainland has eroded over the last decade. Prior to the erosion of the land between the island and the mainland, the shoreline on the south-southwest side of the island and the point was more protected from the fetch generated waves coming from the north. The cove in Beach Section 2 would extend toward the island. Limited augering of the beach area in the northern portion of Beach Section 2 suggests that intact shell midden deposits exist off shore. This portion of the shoreline was protected from northerly fetch generated waves prior the erosion of the land between the island and the current shoreline. The shell midden in this area is inundated during average high tides. The impact of late Holocene sea level rise does not appear to have led to the erosion of shell midden in this portion of the site. In contrast, the impact of northerly fetch related waves as sea levels rose caused the erosion of shell midden along the northern shoreline near Beach Section 0.

Northerly fetch related waves began to have an increasing impacted on the shoreline in Beach Section 2 and 3 as the gap between the mainland and the island increased with ongoing erosion in the 1990s. The general pattern of littoral drift from Beach Section 1 to 8 began to emerge as the gap widen between the island and mainland. The lag deposit, which had accumulated along the northern shoreline of the island and the spit of land that extended to the island, was transported southwesterly towards Beach Section 8. Either this sediment was deposited off shore in deeper waters or was transported along the shoreline in Beach Section 2 through 8. Cultural material in the lag deposit was also subjected to the same pattern of movement and deposition.



Shoreline progradation around Beach 7 and 8 occurred more consistently after both the formation of island and the southwesterly pattern of littoral drift began to emerge.

In sum, the patterns in shoreline erosion, sediment transportation, and deposition have been analyzed to provide insight into the processes affecting the distribution of cultural materials at Holland Point. These dynamic processes affect the recovery of cultural material from the shoreline. Several patterns in artifact recovery are apparent. More artifacts are typically found along the shoreline where lag deposits are thickest. Repeated collections from the southern portion of Beach Section 2 near the tree trunk produced a greater amount cultural material than other portions of the shoreline. The relatively thick lag deposits in this portion of the shoreline contained an abundance of cultural material. A greater abundance of artifacts are found closest to the *in situ* deposits. Smaller artifacts are found down current from the shell midden along the shoreline.

Another pattern is that not all the cultural material eroded from the site can be recovered along the shoreline. The tile experiment highlights how many of the objects are lost in the littoral environment. All of the tiles could not be relocated after the twenty-four day period. A similar experiment along the coast of Maine also revealed that a certain amount of objects left along the shoreline could not be relocated (Will and Clark 1996). The differential recovery of objects along the shoreline could be caused by several factors such as material being transported off shore, artifacts being wedged between larger rocks below the ground surface, and artifacts being buried in the lag deposit. Over time, buried artifacts could resurface and/or be transported off shore.

This analysis contributes to the growing body of research on site formation processes in coastal environments by providing a detailed look at factors affected one location in the Chesapeake Bay region. In contrast, Lowery's (2001; 2002b) shoreline surveys of the Delmarva region provide a regional perspective on processes and factors affecting archaeological resources.

## CHAPTER 11 SUMMARY AND CONCLUSIONS

### A. Site Chronology

Based on the radiocarbon assays the latest reliable date for the occupation is 660 Cal B.P. (Beta-159985) while the earliest date is 2310 Cal B.P. (Beta-159989). The Amos point found along the shoreline might represent the earliest usage of the site. Yet, this artifact might be associated with a component that is currently offshore and located under water. This Early Archaic diagnostic is not felt to be a valid indicator for the deposits encountered during the excavations. The variety of stemmed and notched points along with the Susquehanna BROADSPEAR (Type 2), PERKIOMEN-like point (Type 5), unnamed broadspear (Type 21) and fishtail point (Type 7) indicate that the earliest deposits encountered during the excavations and represented in the shoreline deposit date to the Late Archaic Period. The stemmed and notched points, which are similar to several different historic types, could date as early as the late Middle Archaic (ca. 6500 B.P.). However, because bifurcated points, which have been confidently dated to the Middle Archaic, were not found at Holland Point the late Middle Archaic date is not felt to be valid.

The two British halfpennies indicate that the occupations at Holland Point date to the late seventeenth and/or early eighteenth century. Since these coins were not found during the excavations it is possible that they might be associated with early colonial occupations. The coins indicate that occupation of the site whether by Native Americans or colonists, could date to as late as the early eighteenth century.

Two major analytical contexts were defined for the deposits encountered in the shell midden portion of the site. The shell midden is one analytical context that dates to the Late Woodland. This context is believed to have a date range spanning from 950 to 350 B.P. based on the associated Native American pottery and the radiocarbon dates. The other analytical context consisted of the buried A-horizon and B-horizon. This context has a broad time range from the Late Archaic to the Late Woodland periods. This context is believed to have a date range spanning from 4500 to 350 B.P. The cultural material from these two soil horizons could not be separated into distinctive analytical units. The two analytical contexts both date to the Late Woodland Period. However, the based on the Law of Superposition, the shell midden must be younger then the underlying analytical context. The relatively rapid rate of shell midden formation suggests that this analytic context is only slightly younger then underlying analytical context.

The different lengths of time represented by the two analytical contexts are a direct reflection of different rates of sediment accumulation. The shell midden was deposited rapidly. In contrast, the land surface represented by the Late Archaic-Late Woodland analytic context is relatively stable with little to no sediment deposition over time or deposition that is balanced by erosion. Artifacts with a broad time range are not vertically separated in the sediments below the shell midden. The cultural stratigraphy in the land surface capped by the shell midden is compressed because of the relative stability of the landform.

Dates for features and artifacts from the plowed fields were evaluated. The features encountered along the shoreline could not be stratigraphically linked to any

particular analytical context. Yet, temporal range for the features overlaps with the cultural/temporal periods represented in the two analytical contexts. Since they were exposed on the shoreline their absolute points of origins could not be determined. The features represent shorter amounts of time than the analytical context encountered in test unit excavations. The artifacts found on the surface of the plowed field represent a broad temporal range. The diagnostics artifacts from Field 1 reflect occupations dating from the Late Archaic to the Late Woodland. The cultural material in the other two fields probably has a comparable time range. The material from the three agricultural fields has a temporal range that overlap with age estimates for deposits in the saltmarsh area of the site.

The intensity of site occupation over time can be evaluated based on the overall abundance of diagnostic artifacts (ceramics and projectile points) and features. The term “intensity” is employed in the broadest sense. The intensity of occupation could mean that there were simply lots of people at Holland Point during a particular time period. Or it could mean that a large group of people visited the site on a regular basis over many years. Or the data could suggest that smaller groups visited the site on a more frequent basis. More detailed patterns of site usage over time are, at best, difficult to analyze because most of the cultural material at the site was found along the shoreline. Thus, this evaluation is cautiously made.

The projectile point data is evaluated first and followed by the ceramic data. The two data sets are used together to discuss intensity of site occupation. Table 49 and

| <b>Group Name</b>     | <b>Morphological Types</b>                                                             | <b>Number</b> |
|-----------------------|----------------------------------------------------------------------------------------|---------------|
| Stemmed/Notched       | 8A, 8B, 11, 12, 15a, 15b, 16, 17, 19, 20, 22 (4 chert samples), 23, 26, 25, 28, 30, 33 | 63            |
| Middle Woodland       | 14, 22 (3 rhyolite sample), 24                                                         | 9             |
| late Middle Woodland  | 3, 29                                                                                  | 5             |
| Late Archaic          | 2, 5, 7, 21                                                                            | 4             |
| Triangle              | 1                                                                                      | 100           |
| Teardrop              | 10                                                                                     | 5             |
| Possible Late Archaic | 13, 18                                                                                 | 6             |
| Basal-Notched         | 4                                                                                      | 1             |
| Hellgramite-like      | 27                                                                                     | 1             |
| No Temporal Period    | 6, 9, 31, 32                                                                           | 4             |

Table 49. Grouping of morphological types for all the projectile points from the site

Figure 75 show groupings of projectile point morphological types and individual types for this analysis. Points from the shoreline assemblage and the plowed fields are combined in Table 49 and Figure 75. The only point excluded is the Amos point. The rational used for grouping different types together is explained below. The earliest occupation dating to the Early Archaic Period is believed to be ephemeral in nature because only one Early Archaic diagnostic point (Amos) was found at the site. The next period of occupation dates to the Late Archaic. A Susquehanna BROADSPEAR point, Perkiomen-like point, fishtail point, and the Type 21 broadspear point are diagnostics that date to the Late Archaic. These four point types are lumped together under the “Late Archaic” group. The “Late Archaic” group represents morphological types with a restricted time range that is only associated with the Late Archaic Period. Many other morphological point types are associated with broader time ranges that are not exclusive to the Late Archaic Period.

The several varieties of stemmed and notched points may date to the Late Archaic Period. The points lumped into the “stemmed/notched” group is comparable

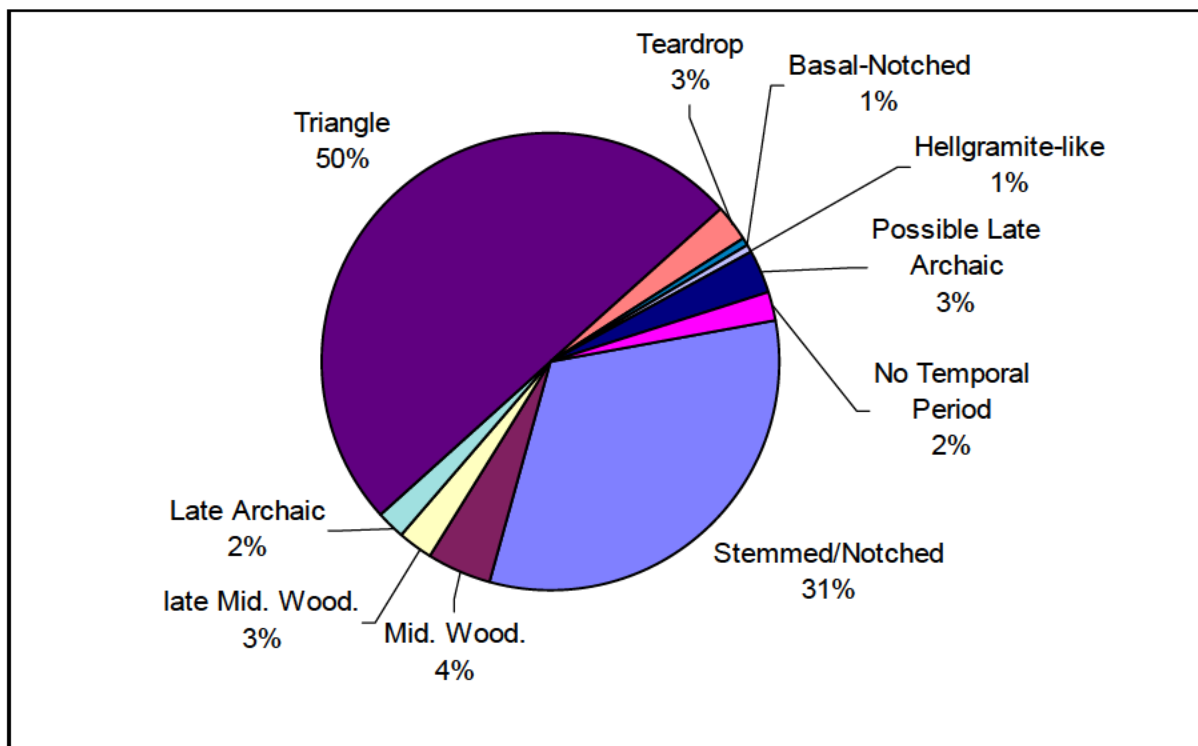


Figure 75. Total number of projectile points by gross temporal groups and types; note data is derived from the Table 49

to Brewerton points, Bare Island points, Piney Island points, Poplar Island points, Pequea points, Rossville points, Chesapeake Diamond points, Piscataway points, Vernon points, Halifax points, and Lackawaxen points. The four chert specimens of Type 22 are generalized side notched points that are morphological similar to variants of Selby Bay, but are not made of rhyolite. The chert Type 22 points probably have a broader time range than Selby Bay points. These stemmed and notched points might not exclusively date to the Late Archaic. They could date as late as the Middle Woodland Period. The broad time range of these point styles makes it difficult to use stemmed and

notched point styles to evaluate the relative intensity of site usage during the Late Archaic Period.

The “Possible Late Archaic” group consists of Vosburg-like points (Type 13) and a Savannah River-like (Type 18) point. Teardrop points, Basal-Notched points, and triangular shape points all have temporal ranges that include the Late Archaic as well as other temporal/cultural periods. These types do not exclusively date to the Late Archaic Period.

The Late Archaic Period is hypothesized to be a time when the site was occupied on a more regular basis. The earliest exploitation of shellfish resources in the Chesapeake Bay Region dates to the Late Archaic (Custer 1988) suggesting that the occupation at Holland Point might have been oriented towards estuarine resource exploitation.

Several point styles found at Holland Point are types that have been found in Early Woodland contexts in the Middle Atlantic region. Many of these types could also date to other cultural/temporal periods. The “stemmed/notched” and teardrops could date to the Early Woodland. The Hellgramite-like point is the one projectile point style that exclusively dates to the Early Woodland. The point styles at Holland Point suggest the presence of Early Woodland occupations. Analyses of the Early Woodland ceramics, in terms of numbers of vessel lots, provides a better means to gauge the relative intensity of the occupation during this time period. The vessel lot analysis is presented below. In general, the ceramics provide a better means of chronological control and intensity of occupation during the Woodland Period than the projectile points.



Several Middle Woodland points were found at Holland Point. The “Middle Woodland” group consists of six rhyolite Selby Bay style points and three Fox Creek-like points. The “late Middle Woodland” group consist of two Jack’s Reef Pentagonal and three Jack’s Reef Corner Notched points. The Basal-Notched point and the “Stemmed/Notched” group of points could also date to the Middle Woodland. Points from both the “Middle Woodland” and the “late Middle Woodland” groups can be strictly fall within the Middle Woodland Period. Thus a total of fourteen points date to the Middle Woodland.

Most of the triangular points are probably Late Woodland in age, because of the abundance of Late Woodland shell tempered ceramic types. Half of the projectile points from Holland Point are triangles (Figure 75). This suggests that the greatest intensity of occupation occurred during the Late Woodland.

The ceramic data provided another means to evaluate intensity of use during the Woodland Period. The ceramics from the excavations, shoreline, and features are grouped together for this analysis. Vessel lots are used to explore trends through time. Sherd counts and weight would probably show similar trends in quantities of ceramics throughout time. Figure 38 shows the general weight proportions. Table 50 presents the number of vessel lots for each ware/type. The wares without the sub-designation of a type indicate that several types within the ware could be grouped together on the basis of paste characteristics. The table shows how the vessel lots were defined. Most of the vessel lots are defined by uniqueness of rim sherd(s). Only three basal sherds were found at Holland Point. One of the basal sherds of Type IA could be grouped with Type IA rims sherds. Two basal sherds of Type IXA helped define the vessel lots for this

| Ware | Type | MNV based on one unique rim sherd | MNV based on unique group of rim sherds | MNV based on unique group of rim & body sherds | MNV based on one unique sherd for Ware/Type | MNV based on unique group of refitted sherds | MNV based on unique group of sherds for Ware/Type | Total |
|------|------|-----------------------------------|-----------------------------------------|------------------------------------------------|---------------------------------------------|----------------------------------------------|---------------------------------------------------|-------|
| I    | A    | 11                                | 4                                       | 1                                              |                                             | 1                                            |                                                   | 17    |
| I    | B    | 4                                 |                                         |                                                |                                             | 2                                            |                                                   | 6     |
| I    | C    | 16                                | 12                                      |                                                |                                             |                                              |                                                   | 28    |
| I    | D    | 2                                 | 1                                       |                                                |                                             |                                              |                                                   | 3     |
| I    | E    |                                   |                                         |                                                |                                             | 1                                            |                                                   | 1     |
| I    | F    |                                   |                                         |                                                | 1                                           |                                              |                                                   | 1     |
| I    | G    |                                   |                                         |                                                | 1                                           |                                              |                                                   | 1     |
| I    | H    |                                   |                                         |                                                | 1                                           |                                              |                                                   | 1     |
| II   | B    |                                   |                                         |                                                |                                             | 1                                            |                                                   | 1     |
| III  | A    | 1                                 | 1                                       |                                                |                                             | 1                                            |                                                   | 3     |
| III  | C    |                                   | 2                                       |                                                |                                             |                                              |                                                   | 2     |
| IV   | A    |                                   | 1                                       |                                                |                                             |                                              |                                                   | 1     |
| IV   | C    |                                   | 1                                       |                                                |                                             |                                              |                                                   | 1     |
| V    |      |                                   |                                         |                                                |                                             | 1                                            |                                                   | 1     |
| VI   |      |                                   |                                         | 1                                              |                                             |                                              |                                                   | 1     |
| VI   | B    |                                   |                                         |                                                | 1                                           |                                              |                                                   | 1     |
| VII  |      |                                   |                                         | 1                                              |                                             |                                              |                                                   | 1     |
| VIII |      | 1                                 |                                         |                                                |                                             |                                              |                                                   | 1     |
| IX   | A    |                                   | 1                                       |                                                |                                             |                                              | 1                                                 | 2     |
| IX   | B    |                                   |                                         |                                                | 1                                           |                                              |                                                   | 1     |
| IX   | D    |                                   |                                         |                                                | 1                                           |                                              |                                                   | 1     |
| X    |      |                                   |                                         |                                                |                                             |                                              | 1                                                 | 1     |
| XI   | A    |                                   |                                         |                                                |                                             |                                              | 1                                                 | 1     |
| XII  |      |                                   |                                         |                                                |                                             |                                              | 1                                                 | 1     |
| XIII |      |                                   |                                         | 1                                              |                                             |                                              |                                                   | 1     |
|      |      | 35                                | 23                                      | 4                                              | 6                                           | 7                                            | 4                                                 | 79    |

Table 50. Vessel lot determinations by ware/type for the total ceramic assemblage at Holland Point

type. The vessel lots for Type IXA that are listed “as based on unique group of sherds” include a basal sherd in that grouping. Another Type IXA basal sherd is grouped with a rim sherd for Type IX, which defined the second vessel lot for Type IX. Most of the vessel lots are defined on the basis of single or unique rim sherds. Figure 76 graphically displays the number of vessel lots based on the data presented in Table 50.

Two types of Early Woodland ceramics (Dames Quarter and Wolfe Neck) were found at Holland Point. The assemblage of Dames Quarter ware (Ware VIII) could be all grouped into one vessel lot. Sherds of Wolfe Neck ware (Type IXA and IXB) could be grouped into two vessel lots based on differences in surface treatment. Vessel Lot IXD – 1 has paste characteristics that are similar to Wolfe Neck, but this vessel lot only consists of one small sherd. The sample size is too small to confidently know if Vessel Lot IXD – 1 is definitely comparable to Wolfe Neck. The minimum vessel estimate for the Early Woodland ceramics is three. The assemblage of Early Woodland ceramics could suggest limited usage of the site during this time period. However, the amount of Early Woodland vessels might not be a good indicator of relative intensity of occupation. Stewart (1998c) has argued that ceramics are not fully incorporated into container technologies until the Middle Woodland Period in the Middle Atlantic region. The relative quantity of ceramic vessels from Early Woodland contexts is highly variable and dependent on site function.

Three types of ceramics (Mockley, clay tempered ware, Hell Island) are assigned to the Middle Woodland Period. Two vessel lots (cord-marked and net marked) of Mockley are estimated based on the assemblage of Ware VI sherds. As discussed earlier, the paste in Ware VII might be crushed clay, but thin section analysis

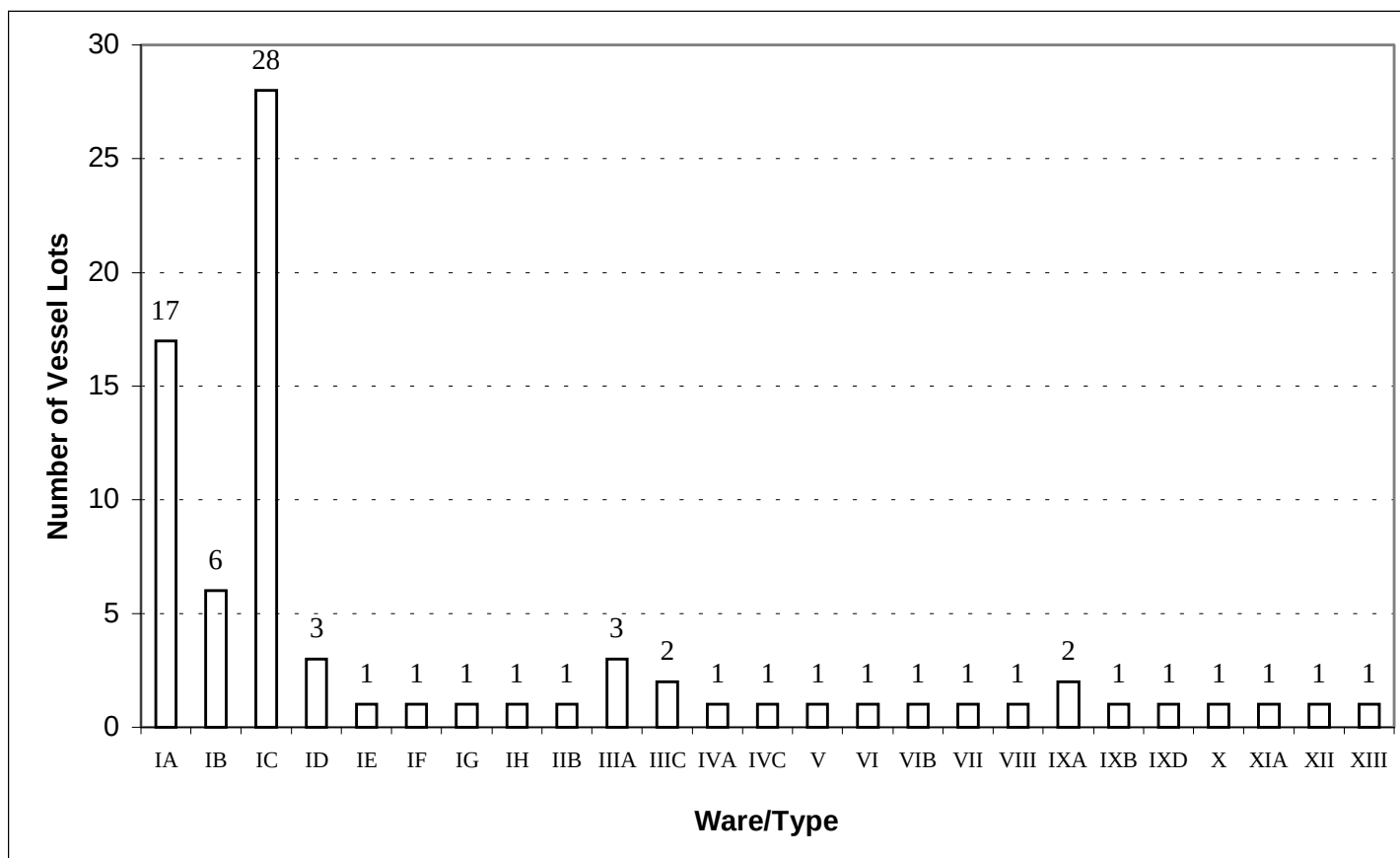


Figure 76. Vessel lot by ware/type for total ceramic assemblage at Holland Point

is necessary to confirm this identification. The assemblage of rim and body sherds of Ware VII is estimated to represent a minimum of one vessel. Ware VII is also similar to Wilgus, Coulbourn, and Nassawango ceramics. One Hell Island vessel is estimated from the assemblage of Ware XI sherds. A total of four vessels (two Mockley, one clay tempered, and one Hell Island) could date to the Middle Woodland Period. The limited amount of Mockley ceramics at Holland Point is curious because Mockley ceramics are commonly found at oyster shell middens in the Chesapeake Bay region. There is also a limited number of Fox Creek and Selby Bay type points, which are typically associated with Mockley pottery. The quantity of Middle Woodland pottery (Mockley, clay tempered ware, Hell Island) suggests the site was not intensively used at this time.

The majority of ceramics from Holland Point are comparable to Late Woodland varieties (Townsend/Yeocomico, Sullivan/Yeocomico Cord-Marked, Killens, Minguannan/Potomac Creek-like). Most of the Late Woodland shell tempered ceramics (Type IA, IB, IC, IIB, IIIA, IIIC, and V) are comparable to the Townsend and Yeocomico types. This grouping of shell-tempered wares represents sixty-one vessel lots. The group of Townsend/Yeocomico vessel lots accounts for approximately three-quarters of the vessel lots at Holland Point. The cord marked shell tempered ceramics with a compact paste (Type ID) are comparable to Sullivan Cord-Marked and Yeocomico Cord-Marked ceramics. A minimum of three vessels is estimated for Type ID. Several of the shell-tempered ceramics (Types IE, IF, IG, and IH) have paste characteristics similar to Late Woodland ceramics, but have unique surface treatments that are not comparable to historically defined ceramic types. The vessel lots associated with Type IE, IF, IG, and IH are represented by a limited number of sherds.

One Killens vessel is estimated based on grouping similar rim sherds of Type IVA. Ware XIII has paste characteristics that are similar to Minguannan and Potomac Creek ceramics. One vessel is estimated for Ware XIII. A total of sixty-three vessels are believed to date to the Late Woodland Period. This figure excludes vessel lot estimates for Type IE, IF, IG, and IH since they cannot be correlated to historically defined Late Woodland ceramic types. The quantity of Late Woodland ceramics from Holland Point suggests intensive use of the site during this time period relative to other cultural historic periods. As stated above most of the abundant triangle points are also believed to date to the Late Woodland Period.

The projectile point and ceramic data sets provide general information on site usage over time. The data sets compared together suggest a possible visit to the site during the Early Archaic, sporadic or occasional use of the site from the Late Archaic through the Middle Woodland periods and regular use of the site during the Late Woodland Period.

The degree of weathering of rhyolite artifacts also provides insight into the intensity of site usage over time. Analysis of the rhyolite weathering process has shown that over time older artifacts exhibit a greater degree of weathering than younger artifacts (Stewart 1984a). A total of 16 projectile points and fragments of projectile points made from rhyolite were found at Holland Point. Three general grades of weathering (heavily weathered, moderately weathered, and relatively fresh/unweathered) are distinguishable in the rhyolite point assemblage. The base of one small-resharpened side-notched point (Type 24) is heavily weathered. Four Selby Bay style points are moderately weathered and three Type 22 points are unweathered. All of

the rhyolite points probably date from the Late Archaic to the end of the Middle Woodland. The three different grades of weathering suggest a minimum of three occupations from the Late Archaic to the end of the Middle Woodland. The other rhyolite pieces of debitage and bifaces also exhibit three different grades of weathering.

The features found at Holland Point along the shoreline also provide information about the nature of occupations during the Middle Woodland Period. The burial (Feature 1) is indicative of a more intensive use of the site during this time. Burials are typically associated with longer-term occupations or with places that are revisited on a more regular basis in the settlement system. The burial suggests that the site was not simply being used as a temporary camp during the Middle Woodland Period, but rather served as a base camp at times in the settlement system. The large shell filled pits along the shoreline observed by Lowery and Stewart may date to the Middle Woodland. However, the age estimates for these features is made cautiously because the features were not excavated and artifacts were not collected. The Middle Woodland portions of the site could also now be underwater. If these possible Middle Woodland deposits are now located underwater and are not being actively eroded, then the recovery of Middle Woodland diagnostics along the shoreline would be unlikely.

The abundance of Late Woodland ceramics and triangle points are indicative of intensive use of the site during this time period. Feature 4, which contained three partially reconstructed Townsend pots, also confirms the intensity of occupation during the Late Woodland. The digging of pits is an on-site activity that can be suggestive of semi-sedentary to sedentary permanent site usage (Moeller 1992). The four postmolds

found in Test Unit 1 might be associated with the Late Woodland occupations. These features would also be indicative of more intensive site utilization.

The limited amount of early Colonial artifacts (two coins) suggests the presence of relatively late occupations at Holland Point. These artifacts are believed to be associated with early Colonial Period occupations.

### B. Typological Concerns

The investigations at Holland Point only allow for a limited assessment of typological issues because most of the diagnostic artifacts (projectile point and ceramics) were found from surface collecting. Several of the projectile point types conform to historically recognized types that date to relatively short time periods. Many other morphological point types could have broader time ranges, encompassing several cultural/temporal periods. One question for future research is the chronology of relatively small-stemmed points found at Holland Point. Morphologically, these are similar to small variants of the “Poplar Island Major Type”. It is suspected that they have the same broad time range as the “Poplar Island Major Type.” The point size probably relates to the constraints placed on their manufacture by the smaller size of the cobble or pebble sources locally available. Finding these points in a dated context would confirm this hypothesis.

The ceramics recovered from the excavations and Feature 4 provide insights into ceramic typologies at Holland Point. The variety of ceramics recovered from the shoreline also raises questions about variability in ceramics from the middle portion of



the Delmarva Peninsula. The association of radiocarbon dates from the shell midden deposit with Rappahannock Fabric Impressed pottery corroborates the accepted date range for this ceramic type. The association of Rappahannock Incised pottery with calibrated radiocarbon dates that post-date 665 B.P. suggests that the traditional time range for Rappahannock Incised pottery presented by Griffith might need to be reconsidered. Two calibrated dates for Rappahannock Incised pottery have a two sigma range that is younger than 665 B.P. (Davis, et al. 2002), also suggesting that Rappahannock Incised pottery might not strictly date to the later part of the Late Woodland.

The use of calibration curves to convert radiocarbon years into calendar years might partially explain the discrepancy between Griffith's original dates for Rappahannock Incised pottery and the newly obtained dates. Yet the use of calibrated dates provide a means to filter out the variability in atmospheric carbon that affects radiocarbon years and interpretations of uncalibrated dates. Griffith (1977: 96) used only five uncalibrated radiocarbon dates in his original seriation of Townsend series ceramics. Directly dating Rappahannock Incised pottery using AMS methods would provide more definitive interpretations of the time range for this ceramic type.

Cord-marked shell tempered pottery (Type ID) that is similar to Sullivan Cord-Marked and Yeocomico Cord-Marked was found in the shell midden. Pottery of this type is probably a variation on Late Woodland shell tempered pottery that is found in limited quantities on the Delmarva Peninsula and in the Chesapeake Bay region. Pottery similar to Type ID has been found in both early Late Woodland and late Late Woodland contexts in the Chesapeake Bay region (see Appendix A). This type spans the entire

Late Woodland Period. When pottery comparable to Type ID is found, it is commonly associated with other Townsend styles of pottery. The recover of Type ID pottery from a dated context is the first time an absolute age for this ceramic type has been reported for the Eastern Shore of Maryland. Type ID highlights the range in variability of surface treatments that were used on shell-tempered pastes during the Late Woodland on the Delmarva Peninsula and confirms similar patterns recognized in the Chesapeake Bay region.

The direct date of one partially reconstructed Rappahannock Fabric Impressed pot from Feature 4 (Vessel Lot III A-1) confirms the traditional date range for this ceramic type. In the future, directly dating Townsend Corded and Rappahannock Incised and the calibration of the dates would help document stylistic changes in Late Woodland shell tempered pottery in the Middle Atlantic Region. Recent dates for Rappahannock Incised suggest that Griffith's chronology for Townsend pottery, which is over 20 years old, needs to be revised.

Three stylistic attributes that are found on Townsend series pottery might provide a new means to look at changes in Late Woodland pottery over time. One attribute is lip treatment. Lip treatments in the form of cord marked impressions and fingernail-like impressions were found on seven vessel lots of Townsend pottery. This treatment gives a "pie-crust", "scalloped" or "nicked" appearance to the lip. This type of lip treatment has been documented on other Townsend vessels from the Middle Atlantic Region (Blaker 1963: 16; Gleach 1987: 219; Hutchinson 1967: 7, Figure 43; Lopez 1961: 10).

The second attribute is the impression of fabric on the interior surface near the rim. Interior fabric impression on Townsend pottery has been found infrequently at other sites in the Middle Atlantic Region rim (Blaker 1963: 15; Griffith 1982: 56; Hodges 1998: 55; Lopez 1961: 6).

The third attribute to consider is the orientation of fabric impressions. The orientation of fabric impression is defined as the direction of the weft elements in relation to the rim of the vessel. The weft element is the vertical element around which the warp element is wrapped or woven upon. The impressions of the warp are usually more visible than the weft elements. The cordage for the weft element is usually so thin that the impressions are typically blurred or worn off the surface. Horizontally and obliquely oriented impressions were observed on the exterior surface of Townsend pots. Two combinations for the orientation of fabric on the interior and exterior surfaces were observed. Two vessel lots had exterior surfaces with fabric impressions oriented horizontally and interior impressions oriented perpendicular to the rim. Five vessel lots had exterior surfaces with fabric impressions oriented obliquely to the rim and interior surface impressions were oriented perpendicular to the rim. Future research should focus on determining if the frequency of these attributes varies during the Late Woodland on Townsend pottery.

Five vessel lots of Type IC have smoothed surfaces without any decoration. These shell-tempered vessels are grossly comparable to Yeocomico Plain. These undecorated vessels probably date to the Late Woodland. Yet, on the Delmarva Peninsula they have not been recovered from dated contexts. The sherds of the five

vessel lots of Yeocomico Plain-like ceramics from Holland Point were found along the shoreline.

One ceramic ware from Holland Point has paste characteristics that are not comparable to any historically recognized ceramic types. Ware X is tempered with quartz sand, crushed angular quartz, and crushed shell. The shell is only found in limited quantities. Keith Doms (personal communication 1/3/2002) notes ceramics with a similar temper and paste as Ware X in Delaware. The small assemblage of Ware X sherds was found along the shoreline. Pottery with paste characteristics similar to Ware X was found at the Martins Pond Site on the Western Shore of the Chesapeake (Wright 1978: 20). An estimated uncalibrated date range of 1850 to 1650 B.P. is suggested based on stratigraphic analysis using Wright's (1978: Table 2) cultural chronology for the Severn River on the Western Shore. This date should be considered as a tentative estimate until ceramics similar to Ware X are found in a dated context.

### C. Activity Areas

The analysis of intrasite patterning is focused on looking at the activity areas around the shell midden portion of the site and activities in the tilled fields. The location of features and distribution of cultural materials facilitates the analysis. Interpretations of activity areas were presented in the discussion of the analytical contexts. The shell midden deposit could not be subdivided into separate analytical contexts. Horizontal variation in artifact densities in the shell midden suggests that two possible activity areas are present. The shell midden in Test Unit 5 has a greater degree of fragmentation

and fewer artifacts. The midden is not as thick as in Test Unit 1, 2, 3, 6, and 7. These observations suggest that the higher ridge-like landform on which Test Unit 5 is located functioned as a primary living area. The shell and other debris accumulated on the ridge-like landform may have been regularly cleaned up and removed from the living area. In contrast, the shell deposits in Test Unit 1, 2, 3, 6, and 7 are believed to be the results of refuse dumping. It cannot be determined with confidence if refuse was dumped by the basket-load or if shell was tossed into these areas. The shell midden in the portion of the site centering around Test Unit 1, 2, 3, 6, and 7 does not appear to have been used as a living surface. It is possible that portions of the shell midden deposit that have since eroded away were lived on.

The shell-free area of the site around Test Unit 4 is difficult to interpret. The location of this shell-free area and the presence of *phragmites* suggest that natural processes may have affected the deposits in this area. However, the shell-free area is located on the ridge-like landform that once may have extended to the island. Features are concentrated near both Test Unit 4 and the shell-free area. This absence of the midden in this area could reflect the intensive use of this part of the site and the discarding of shell away from the core area of the site. Yet, greater artifact densities would be expected in the upper portion of the B-horizon (Stratum III) if this were the core area of the site. Both natural and cultural site formation processes might explain the absence of shell in this area.

Specific activity areas in the Late Archaic-Late Woodland analytical context in Test Unit 2, 3, 6, and 7 cannot be isolated. The densities of cultural material in these units suggest these areas were on the edge of the core area of the site. The four

postmolds found in Test Unit 1 suggest the construction of super-structures. Postmolds are features typically associated with the habitation area of a site. The associated super-structures may not be a dwelling. The postmolds in Test Unit 1 indicate habitation areas were located on the higher ground. The ridge-like landform on which Test Unit 1, 4, and 5 were placed would have provided better drainage than the areas around Test Unit 2, 3, 6, and 7. The concentration of features observed on the tidal flats around the tip of Holland Point suggests that this ridge-like feature once extended further out toward the island. The general topography of the land surface exposed at low tide near the tip of Holland Point appears ridge-like in shape suggesting that this area was higher than the surrounding area. The ridge-like landform appears to have been the core habitation area of the site.

In the shell midden portion of the site, the general abundance of food refuse, broken pottery, and lithic material indicates that a full range of activities was conducted. The Middle Woodland burial suggests that during the Middle Woodland Period that there was at least one occasion when the site functioned as a base camp. The overall abundance of Late Woodland artifacts from the site suggests that the site during the Late Woodland was not simply a place to gather shellfish. The material recovered from the shell midden deposit indicates that during Late Woodland times a variety of activities were occurring on site. The characteristics of the Holland Point shell midden are different than those associated with specialized shell collecting station; thus arguing for a more sedentary occupation during the Late Woodland.

The limited quantity of artifacts recovered from the three agricultural fields investigated suggest that these areas saw only limited use over a broad time range

dating from the Late Archaic to the Late Woodland. There is no indication that these areas set back away from the shell midden served as habitation areas during the Late Woodland or any other cultural/temporal periods. The area around the house is on relatively high ground on the Holland Point Farm. This area was not investigated. The topography of this area suggests archaeological deposits could be encountered near the house.

#### D. Insights from Floral and Faunal Remains

The biological remains recovered during the excavations and the shoreline collections provide insight into subsistence practices, resource exploitation patterns, microenvironments, and seasonality of site utilization. Temporal patterns or changes in the utilization of biological remains can also be explored to a limited degree, by looking for differences between the analytical contexts. The analysis of the ecofacts does allow for limited statements concerning dietary reconstruction. However, quantifying the relative dietary importance of certain species cannot be rigorously assessed.

The range of faunal species identified highlights the diet breadth. Several of the same vertebrate species were identified from the two analytical contexts. Several additional species not present in the excavated bone assemblage were recovered from the shoreline. The occurrence of large and small vertebrates in the shell midden deposit indicates that Holland Point was not a specialized shellfishing station. The MNI of white-tailed deer from Holland Point indicate that this was the most common vertebrate species. The white-tailed deer elements identified indicate that large portions of the

animal were brought back to the site for processing. Almost all of the marrow rich bones from Holland Point were split to obtain this resource. The breaking of bone to obtain marrow and for the extraction of bone grease and collagen is a pattern observed throughout the Middle Atlantic region and Northeast in Archaic and Woodland period contexts (Amorosi 1991; Brennan 1981; Claassen and Whyte 1995: 77; Custer, et al. 1997; Whyte 1986). Future research should look for cases where bones are not broken for marrow or for boiling. This would clarify patterns in bone processing behavior.

One surprising find was the limited amount of fish bones recovered at the site. Given the site's location a greater quantity of fish remains would have been expected. The use of ¼-inch wire mesh instead of smaller size screen could be the primary factor biasing the sample from the site (Reitz and Wing 2000: 119-121). However, one large sample of matrix from the shell midden was screened through 1/16-inch mesh in order to try and recover smaller vertebrate remains. This sample did not contain any fish bones. The use of 1/16-inch mesh was not feasible during the fieldwork for logistical reasons related to the field conditions. Thus the quantity of fish and other small faunal remains might not be an accurate reflection of the relative importance of these resources. Also, fish bones might not preserve as well as larger faunal remains.

The recovery of freshwater mussel shell represents a unique find not documented in other oyster shell midden sites on the Delmarva Peninsula. The freshwater bivalve was recovered from sediments screened through 1/16-inch wire mesh and identified by a freshwater shellfish malacologist. The current habitats for freshwater mussels are located 20 to 40 km inland from Holland Point. During the Late Woodland, freshwater mussel habitats would have been farther in-land than modern



habitats based on reconstructions of the salinity changes in the Chesapeake Bay, which were caused by an increase in freshwater discharge from extensive land clearance and intensive farming during the eighteenth century (Cooper and Brush 1991).

The freshwater mussel could have been obtained on foraging trips from Holland Point. Alternatively, the freshwater mussel shell could have been brought to the site from another site for other reasons not linked to consumption. The reflective properties of mussel shell might have been ritually important and explain why the freshwater mussel shell was brought to Holland Point. The burning of mussel shell as described in Lenape mythology (Bierhorst 1995: 44) suggests that this type of shellfish has special significance among Eastern Woodland Native Americans groups. Oyster and freshwater mussel have been found together in features at the Taft Site (44FX544) on the Virginia side of the Potomac River (Norton and Baird 1994: 113). At the Taft Site, both oyster and freshwater mussel were exploited during the Middle Woodland (Norton and Baird 1994: 113).

The general impression from the faunal assemblage is that both aquatic and terrestrial resources were consumed at Holland Point. The Late Archaic-Late Woodland analytic context contained a small amount of oyster shell in Test Unit 1 suggesting that shellfish harvesting was practiced on a limited basis. The lower sea levels prior to the Late Woodland could have restricted oyster habitats near Holland Point. This may have made oyster harvesting less than ideal around Holland Point prior the Late Woodland. It is also possible that pre-Late Woodland shell midden deposits have since been lost to erosion at Holland Point. The remnant portion of the shell midden investigated might not represent the complete temporal range of shellfish harvesting at Holland Point. The

presence of two distinct strata in the shell midden in the bank cut observed by R. Michael Stewart and Darrin Lowery in 1998 suggests that pre-Late Woodland shell midden deposits might have existed at Holland Point.

The floral remains from Holland Point highlight the dietary importance of mast resources. Nutshell remains are found in general contexts which are not associated with features or hearths. The carbonized nutshell from the shell midden could be associated with hearth cleaning activities. Hickory is found in both analytical contexts and is more abundant than other nut resources. Hickory is typically one of the more common macrobotanical remains found on Archaic and Woodland sites in the Middle Atlantic region and in the Eastern Woodlands. The ubiquity of hickory might be related to taphonomic factors instead of their relative dietary importance (Holt 1997). Acorn and walnut are not found in both analytical contexts. This could suggest that different types of nuts were exploited over time. However, a greater amount of excavations at Holland Point along with the analysis of the heavy fraction would be necessary to confirm if acorn and walnut are restricted to one analytical context. The recovery of pigweed (*Amaranthus* sp.) from the shell midden and Pennsylvania knotweed (*P. pennsylvanicum*) from the underlying analytic context reflect the exploitation of wild starchy seeds. The presence of pigweed and knotweed suggest modification of the natural vegetation and soils at Holland Point to create habitats more suitable for these weedy plants. The presence of certain species of land snail (e.g. *P. albilabris*) in the shell midden also suggests vegetation clearing during the Late Woodland at Holland Point (Custer, et al. 1997).

Wild and possibly domesticated varieties of starchy and oily seeds (i.e. amaranth, chenopods, and sumpweed) have been found on numerous Woodland Period sites on the Delmarva Peninsula (Crabtree and Langendorfer 1981; Custer, et al. 1997; Custer and Griffith 1986: Table 3; LeeDecker, et al. 1996). The variety and quantity of seeds that have been found in Early Woodland contexts suggest that these resources could have been exploited throughout the Woodland Period on the Delmarva Peninsula. *Amaranth/Chenopodium* and nuts were found at 18KE128, an Early Woodland shell midden in Kent County (Custer, et al. 1997). The floral and shellfish from 18KE128 combined with the floral remains from Holland Point suggest that mast, seed, and shellfish harvesting were coexisting subsistence strategies used throughout the Woodland Period on the Delmarva Peninsula.

The absence of maize or other cultigens from Holland Point is not surprising given the rarity of corn on the Delmarva Peninsula. The absence of maize suggests that plant exploitation patterns during the Late Woodland Period in the middle portion of Delmarva Peninsula might have not been dramatically different from the pre-Late Woodland patterns. Botanic and isotopic evidence on the Outer Coastal Plain of New Jersey also suggests that maize was not consumed (R. Michael Stewart, personal communication 3/10/2002). The lack of maize during the Late Woodland in the middle portion of Delmarva Peninsula and the Outer Coastal Plain of New Jersey suggests these groups might not have been as sedentary as Native Americans in the interior regions along the Potomac, Susquehanna, and Delaware River Valleys. Future isotopic analysis of both human remains and micro-botanicals (i.e. phytoliths) would be necessary in

order to corroborate the macro-botanical data on the relative importance of maize in the Middle Delmarva Peninsula.

Holly recovered from Holland Point is not a typical plant species found on sites in the Middle Atlantic region. Holly has only been reported from three sites (44VB7, 44NB128, and 36SO55) in the Middle Atlantic region (see Chapter 6). The holly could be used for a variety of Native American medicinal purposes (see Chapter 6). Holly is one floral resource that is not exploited for food.

Almost all of the floral and faunal species recovered can be found within a 5 km range from Holland Point. Most of the oysters were probably harvested from tidal flats and shallow waters around Holland Point. Only a limited amount of oysters were harvested from deeper waters. The freshwater shellfish is the only ecofact that would be located some distance from Holland Point. The variety of ecofacts from Holland Point suggests that the site catchment area extends over Taylors Island and inland to the east for roughly 5 km.

The biological remains recovered from the site provide insight into the environments around Holland Point. The terrestrial vertebrate species indicate that wooded habitats and marshes were present in the site's environs. Floral remains indicate that dry (hickory) and semi-wet (holly) forests were located near-by Holland Point. The decaying cedar stump along the shoreline indicates that a forest covered Holland Point prior to sea level rise. The marsh periwinkle and one type of land snail (*M. thyroidus*) indicate that by at least Late Woodland times and probably earlier, fringing saltmarshes had formed along the shorelines around Holland Point. The *P. albilabris* land snail species suggests a reduction in forest cover around Holland Point related to human

activities. More open environments could be related to extensive shell deposits covering the ground and altering the vegetation (Custer, et al. 1997).

Several lines of evidence provide an indication of the season of occupation at Holland Point from the Late Archaic through Late Woodland times. The charred nutshell remains are traditionally assumed to reflect harvesting and processing of mast resources during the fall when nuts mature. The charred nutshells from both analytical contexts suggest a fall occupation from the Late Archaic through Late Woodland times. The holly seeds in both analytical contexts suggest a fall through winter occupation from Late Archaic through Late Woodland times. The knotweed (*P. pennsylvanicum*) seed found in the deposits below the shell midden suggests late summer occupation for the Late Archaic through Late Woodland occupations. Knotweed seeds are edible by late summer and can be dried, stored, or processed into flour for use during the fall and winter (Stewart 1994b: 149). The oyster harvesting during the Late Woodland occurred from the late summer through the fall. The seasonality of the site's occupation is only applicable to the portion of the site investigated. Greater variability in the season of oyster harvesting could exist. A portion of white-tailed deer antler attached to the skull suggests that the animal was killed during the late summer or early winter. The antler cannot be associated with a particular deposit because it was found along the shoreline.

Season of occupation at Holland Point cannot be isolated for individual components, but ecofacts provide a general range of seasonality at Holland Point. The biological remains from the shell midden provide a more refined understanding of seasonality applicable only to the Late Woodland Period. The ecofact data from the Late Woodland shell midden analytical context suggest that the site was occupied from

the late summer through the winter. The data from the underlying Late Archaic-Late Woodland analytical context suggests occupation could have occurred in the late summer through the winter.

## F. Lithic Technology

The analysis of lithic technologies at Holland Point considers procurement/utilization practices, production technologies, and functional interpretation of stone tools. The procurement practices are evaluated by comparing the various lithic material types. Figure 77 and Figure 78 present the count and weights for the different lithic material types. These figures combine debitage, cores, flake tools, bifaces, and cobble-based implements. The FCR is not included in these figures. Most of the FCR was found along the shoreline and weighed in the field. It accounts for the bulk of the stone by weight at Holland Point. A limited amount of FCR was found in subsurface testing, however it is not included in the pie charts.

The varieties of lithic resources utilized at Holland Point can be organized into three broad categories. One type of resource heavily exploited is secondary cobbles. Chert, jasper, quartzite, quartz, sandstone, schist, gabarro, and basalt cobbles are common in the Choptank and Little Choptank drainage basins. The second type of resource is local primary lithic material, which includes ironstone, Miocene silicified sandstone, silicified mudstone and “Aquia Formation” material with glauconitic matrix. The final category is non-local primary lithic resources that include argillite, rhyolite,

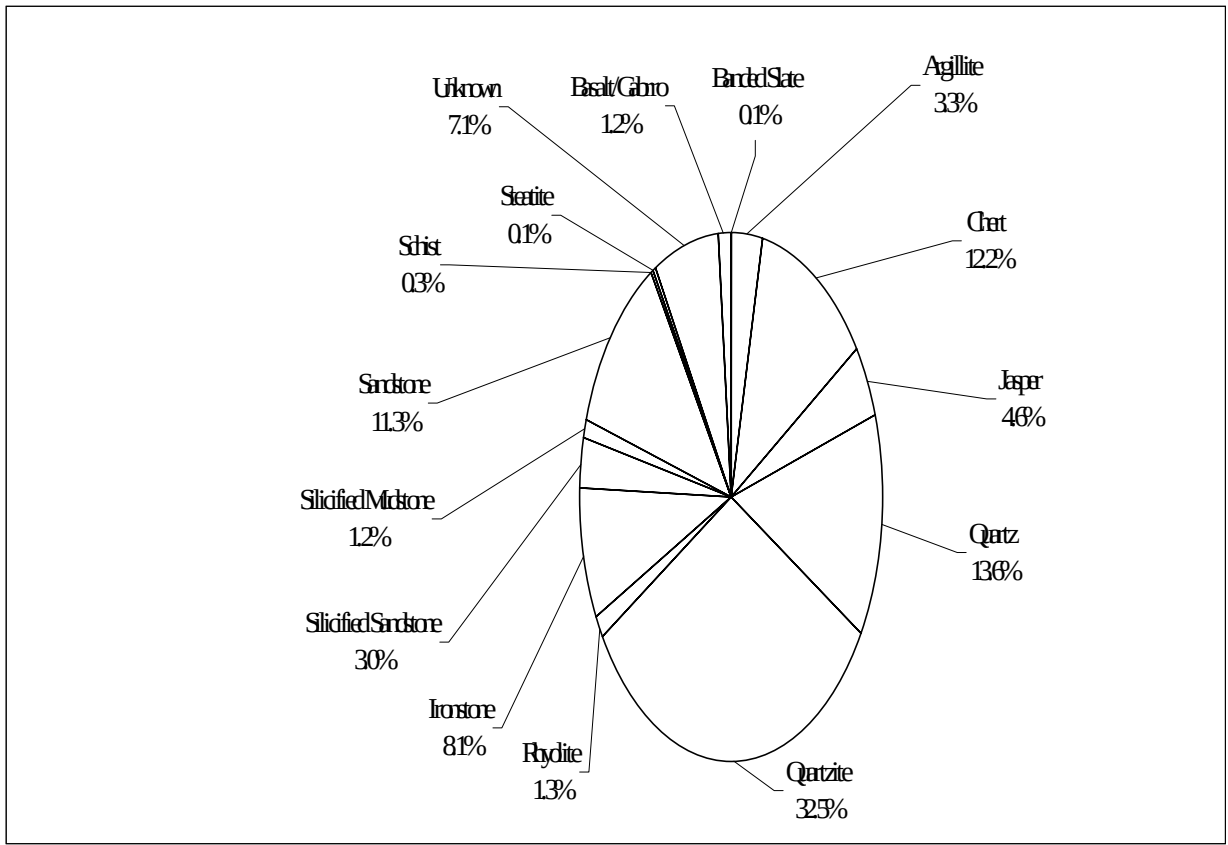


Figure 77. Graph comparing weights of lithic artifacts by material type

soapstone, and banded slate. Argillite is also present in the local cobbles so this material is not exclusively a non-local material type. The analysis considers the utilization patterns for these three categories of materials.

Local cobble resources are the most readily abundant material around Holland Point. The quantity of chert, jasper, quartzite, and quartz in terms of artifact counts and weight are the predominate material exploited by Native Americans in this area. The percentage of lithic artifacts with cortex indicates that cobbles were extensively utilized. One interesting pattern of the cobble utilization relates to the relative quantity of quartzite. Lowery (2002a: 135-136) has remarked that high quality quartzite that is

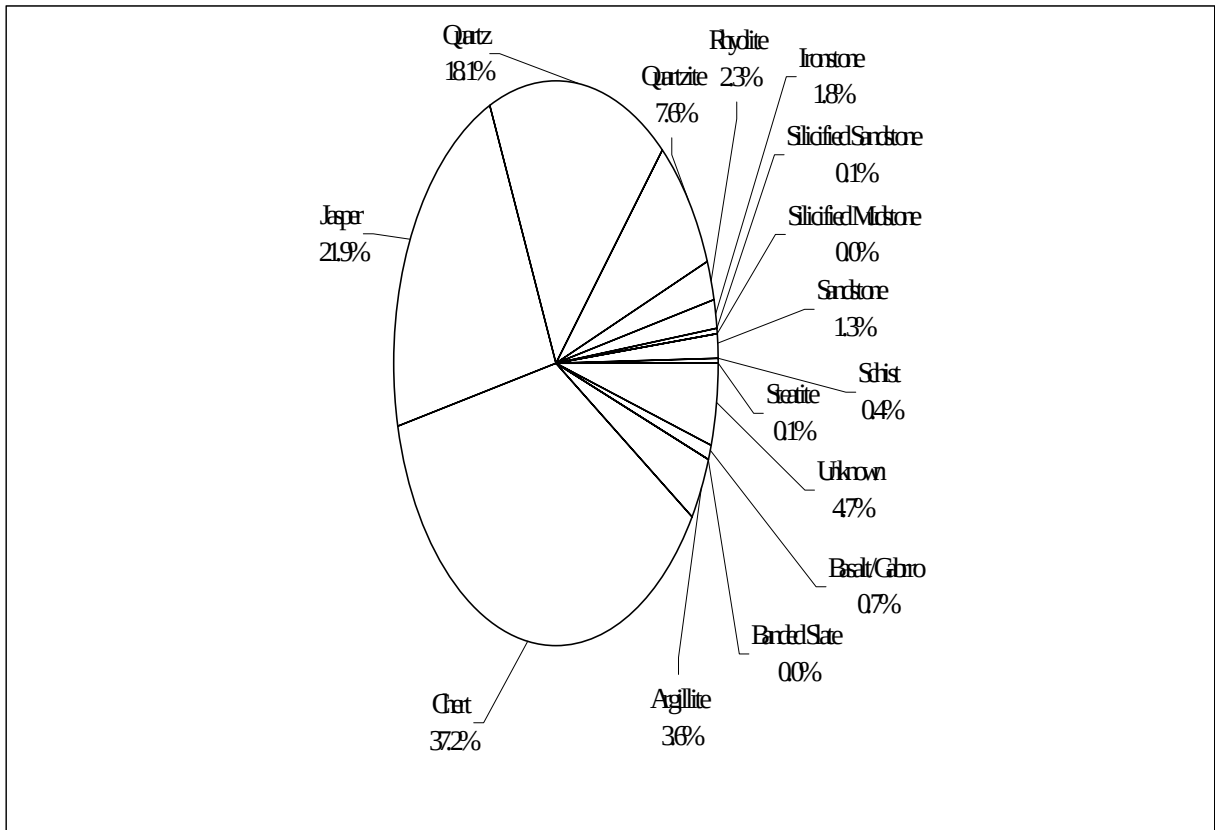


Figure 78. Graph comparing counts of lithic artifacts by material type

more suitable for chipped stone technologies is less abundant in the cobble beds north of the Pocomoke River than in beds to the south.

The amount of quartzite by weight from Holland Point is somewhat misleading. The thirteen quartzite cobble-based implements account for most of weight for this lithic material. Fifty-seven percent of the cobble-based implements are made out of quartzite. A limited number of artifacts associated with chipped stone technologies are made from quartzite. Quartzite makes up only six percent of the debitage by count and two percent of the bifaces and cores. There are no quartzite flake tools. The nature of the assemblage of quartzite artifacts suggests that local quartzite cobbles are being



utilized. The higher quality quartzite cobbles common south of the Pocomoke River are not being used at Holland Point.

The limited amount of primary lithic material (i.e. ironstone, silicified sandstone, silicified mudstone and “Aquia Formation” material) could indicate how far lithic procurement forays extended from Holland Point. The closest outcrop of ironstone is roughly 25 km from Holland Point. The closest source of silicified sandstone is located about 13 km of Holland Point. The closest known source of silicified mudstone is located around 100 km from the site. Sources of Aquia Formation material have yet to be located on the Delmarva Peninsula, but geological maps suggest that possible inundated outcrops could be located north of the Choptank River (Lowery 1999: 89-90). Thus sources of Aquia Formation material would be at least 20 to 40 km from Holland Point. Alternatively, this material provides special insight into the settlement patterns. The sources of ironstone and silicified sandstone are located within the Choptank drainage basin. The large slab of ironstone suggests that large pieces of material were directly procured from the outcrops and brought to Holland Point. Yet, there is a limited amount of ironstone debitage and only one projectile point made from this material. The ironstone outcrops might have only been exploited on a limited basis given the quantity of this material. If regular direct procurement and subsequent reduction of ironstone on site occurred at Holland Point, a greater amount of ironstone debitage would be expected.

The amount of silicified sandstone material recovered from Holland Point is probably not a direct reflection of how intensely this resource was utilized. The weathering of the material typically results in smaller artifacts of silicified sandstone

being completely destroyed. The proximity of the silicified sandstone quarry, which is under the Choptank River at its mouth, would have made it relatively accessible to Late Archaic groups at Holland Point. After the Late Archaic the quarry was probably inundated by sea level rise (Lowery 1999: 88). The “Aquia Formation” material may be available just north of the Choptank River. The one piece of “Aquia Formation” material identified makes it impossible to interpret usage patterns. The silicified mudstone, with its source on the ocean side of the Delmarva Peninsula, reflects the transportation of the material across a considerable distance. As discussed in the previous chapter, the presence of the chunk of silicified mudstone at Holland Point is perplexing. The irregularities in the material made it unsuitable for reduction. Silicified mudstone pieces with irregularities would probably have been discarded closer to the source of the material on the ocean side of the Delmarva Peninsula. This piece at Holland Point could have been detached from a much larger block of material that contained usable material.

A limited amount of the lithic assemblage consists of non-local primary lithic materials (argillite, rhyolite, soapstone, and banded slate). The argillite and rhyolite debitage suggest that the reduction of the material was not limited to working later stage bifaces. One of the rhyolite points and some of the argillite points show evidence of resharpening. Resharpening bifaces to extend the use-life of the artifact would be expected for non-local material. The limited quantity of argillite from Holland Point parallels regional trends in the distribution of argillite on Maryland’s Eastern Shore. This material is more commonly found in Delaware than in Maryland (Lowery 1999:

82). Large quantities of rhyolite have been found on Eastern Shore sites adjacent to the Chesapeake Bay shoreline, which suggest the direct procurement of this material.

The amount of rhyolite at Holland Point suggests that Native Americans might have received this material through down the line trade with other sites on the Eastern Shore. The six Selby Bay style points indicate that rhyolite was traded during the Middle Woodland Period. These Selby Bay points are not as heavily weathered as some of the other rhyolite artifacts suggesting that some of trade in rhyolite might predate the Middle Woodland Period. The soapstone artifacts consisting of pipe fragments and a pendant reflect limited trade of this material. Soapstone artifacts are not common in the Choptank drainage basin. Most of the soapstone artifacts found within the basin consist of bowl fragments (Lowery 1999: 81). The banded slate gorget reflects long distance trade of this material from west and/or south of the site. This material can be found in the states of Pennsylvania, West Virginia, Tennessee, Georgia, and Alabama (Stewart 1989a: 50).

In sum, the patterns of lithic procurement reflect a focus on local cobble resources. Figure 77 and Figure 78 graphically display the importance of local cobble utilization over other types of lithic resources. Non-local primary materials are found in limited quantities at Holland Point. Some temporal trends in lithic utilization patterns were discussed above. However, only a limited assessment is possible.

The core assemblage provides the clearest indication of methods of lithic reduction. The number of bipolar cores present indicates that the hammer-and-anvil approach to lithic reduction was commonly used. The popularity of this technique is a reflection of trying to reduce relatively small objective pieces. The small size of some

of the exhausted bipolar cores suggests reduction of cores to produce flake blanks used as tools. The discovery of one bipolar flake used as an expedient flake tool suggests the use of a core and flake technology. The reduction of bipolar cores to the point of exhaustion is perplexing because new cobbles were readily available in nearby beds. Future research should look for changes in the percentage of exhausted cores in relation to distance from the cobble beds. The use of bipolar reduction served as a means to obtain the maximum amount of the detached pieces from objective pieces. The exhausted bipolar cores and flakes with bipolar damage suggest that hammer-and-anvil reduction provided a maximizing approach to lithic reduction. The biface with bipolar damage suggest that it could have been used for a secondary purpose like wedging.

Biface core reduction and later stage bifacial reduction provide a structured means of reducing objective pieces. Flakes produced from bifacial reduction were also selected for use as tools. This structured approach to lithic reduction served to complement the more informal approach of bipolar reduction. Depending on the size, shape, and quality of the objective piece, the knapper selected the most suitable method to effectively reduce the objective piece. It is suspected that bipolar and bifacial reduction techniques were probably used concurrently throughout occupations at Holland Point.

Two different approaches to biface and finished projectile point production are evident at Holland Point. The presence of bifaces in various stages of reduction indicates that the bifacial reduction methods used to produce finished points. Points with remnant flake attributes indicate the suitable size flakes were selected as blanks to

be further reduced. Triangular points were made through both a staged biface reduction sequence and flake blank reduction.

Function interpretations of the lithic artifacts provide insight into the range of activities that occurred at Holland Point. The microscopic examination of all debitage from the excavated contexts enabled the identification of expedient flake tools that typically are not recognized in archaeological assemblages. The presence of expedient tools from both analytical contexts suggests that informal flake tool technologies were likely used from the Late Archaic through Late Woodland times. A total of nine flake tools were found from the excavated contexts. Three tools exhibited polish micro-traces. Use-wear analysis of the flake tools indicate they were used to work wood and possibly hides. Also soft (meat-like) materials and hard (wood/bone-like) materials were worked based on observations of edge damage. The flake tools from the excavated context indicates that debitage with suitable edges were culled from the lithic debris. The use of bipolar blade-like flakes as an expedient tools confirms a similar pattern in flake tool technologies that has been observed in the middle portion of the Delaware Valley during the Middle Woodland and Late Woodland periods (Stewart 1989b). Other blade-like flakes that were retouched along a lateral margin are also similar to flake tools found in the Delaware Valley. These blade-like flakes are produced as a fortuitous by-product of bipolar approaches to core reduction (Stewart 1987b; Stewart 1989b).

Informal tools dominate the flake tool assemblage from the shoreline. A limited amount of formalized flake tools were present at Holland Point. Use-wear analysis of these informal and formal flake tools from the shoreline was not possible. Conservative functional interpretations were presented which suggest that the tools could have been

used for a wide range of functions. The greater quantity of informal/expedient versus formal flake tools could reflect the overall abundance of locally available lithic resources at Holland Point (cf. Andrefsky 1998: 222-225). Other possibilities for the ratio of informal to formal flake tools could relate to the functional needs of activities carried out at the site. Future research could focus on looking for intersite patterning in the ratio of informal to formal flake tools. Are certain patterns more common at shell midden sites or sites in more interior settings?

Breakage patterns for twenty finished projectile points indicates that certain styles of points were used as projectiles. Five point styles (Type 1: Triangular projectiles, Type 3: Jack's Reef Corner Notched, Type 8A: Poplar Island/Rossville/Piscataway, Type 22: Side Notched/Selby Bay-like, Type 27: Hellgramite-like) have longitudinal macrofractures. This is a breakage pattern that is clearly indicative of projectile impact damage. More points were probably used as projectile given the number of distal/transverse fractures. In addition, projectile points might have also been used as knives.

## G. Ceramics Technologies

The abundance of Native American ceramics at Holland Point allows several questions about ceramic technologies to be addressed. This analysis focuses on three topics: production, usage, and discard behaviors. Some preliminary statements concerning ceramic technologies have been presented in the previous chapters.

Attempts were made to refit pottery found in the excavations to those from the general

shoreline collection. However, no refits between the two assemblages could be made. Numerous refits within the excavated sherd assemblage and the shoreline sherd assemblage enabled larger vessel sections to be analyzed and facilitated interpretations of ceramic technologies.

Several production-related research questions can be answered to varying degrees. Evidence for on-site ceramic production is limited. Sherds and reconstructed pots that appeared to be firing failures were not found. Fracture patterns, such as dunting cracks, that are indicative of firing related breakage were not observed. One piece of possible temper was found in the excavations. This igneous rock is comparable to material used to temper Dames Quarter ware. The total assemblage of Dames Quarter ware could be grouped into one vessel lot. The limited amount of Dames Quarter ware suggests that this ceramic type was not produced on-site. The overall abundance of Late Woodland shell tempered pottery suggests that this material may have been produced on site. Clay sources around the site have not been systematically documented. Coring and soil boring data from the lower portion of Slaughter Creek drainage indicate that the clay fraction is not abundant in the sediments close to the surface (Jacobs 1980). However, clay sources for making historic bricks were relatively common on the Eastern Shore (Ries 1902). Several of the soil series mapped near Holland Point, such as the Elkton series, contain sediments with a high clay fraction that could be suitable for making pots (Brewer, et al. 1998). The processing of sediments and soils with high clay content by various means to remove larger sizes particles could also improve the workability of the clay (Rice 1987: 118; Rye 1981: 36-37).

Most of the shell used as a tempering agent at Holland Point is believed to be crushed oyster shell. The small size of the temper makes mollusk species identification difficult. One sherd contained an impression of ribbed mussel shell where the temper had leached from the paste. Other researchers analyzing temper on Townsend ceramics from the western side of the Chesapeake Bay indicate that ribbed mussel shell was commonly used (Hodges 1998: 49).

The most common method of vessel construction is coiling. Breakage patterns indicate sherds separated along coil breaks. Two sherds of Wolfe Neck (Type IXA) and one Type VIIA sherd are possible coils. The three possible coils range in thickness from 13 to 14 cm. This sherd provides insight into coil size. The scraping and thinning of the vessel wall could have modified the coil thickness. Smoothing over of coil seams is visible in the cross section of some sherds. Future research could be attuned to looking for coil thickness and changes over time or changes related to vessel size.

The production of surface treatments is evaluated through observations of the sherds at Holland Point as well as observations made during experimental reproduction of pots. A variety of cords, nets, and fabrics were used to create surface treatments at Holland Point. All three types of impressions will be evaluated.

One aspect of cord impression that is commonly evaluated is direction of final cordage twist. Cordage twist direction is believed to have cultural meaning because the production of cordage is considered to be isochrestic habit (Carr and Maslowski 1995). Members of a cultural group teach individuals how to produce cordage in a particular manner. The direction of cordage twist is passively learned (Carr and Maslowski 1995). Certain Native American cultures such as the Monongahela are believed to make



cordage with one predominate direction of final twist. However, variation in cordage twist can also linked to handedness, fiber material type, and what is being produced (nets or individual primary cords) (Carr and Maslowski 1995). Cultural and non-cultural reasons for variation in cordage twist make it difficult to imply that the differences in cordage twist can be used to trace ethnic group affiliation.

The direction of final cordage twist for surface treatments and decorative elements are analyzed together. Decorative impressions were observed on direct cord impressions of Townsend Cord vessels and other types. The surfaces of sherds with cord-mark surface treatments were also analyzed for direction of final twist. The final cordage twist direction was recorded as the direction that the cords were twisted and not the twist direction of the impressions. On almost all of the fabric-impressed surfaces on Townsend series pottery, the direction of cordage twist for the primary cords used to weave the fabric could not be determined. However, the direction of final cordage twist in fabric impressions of one vessel lot of Rappahannock Fabric Impressed could be observed because the impression were made when the surface was still wet. The impressions were deep enough that the primary cord (the weft element) twist direction was recorded as Z-twist. At the Potomac Creek Site, one Rappahannock Fabric Impressed sherd was S-twist (Blanton 1999:Table E-4). William Johnson and D. Scott Speedy (1992: 99) remark that Rappahannock Fabric Impressed ceramics from Prince George County, Virginia are predominantly Z-twist. However, Johnson and Speedy use sherds and not vessel lots to quantify cordage twist data. William Johnson (1996: 148, 150, 154) has had both successes and failures in attempts to determining final twist

directions for fabric impressions on Townsend and Rappahannock Fabric Impressed ceramics in the Potomac River Basin.

Table 51 presents the final cordage twist data by vessel lot and ware/type. The vessel lots are used wherever possible in order to prevent bias in analysis that could arise when using sherd counts to make interpretations. A greater number of direct-cord impression decorations on Late Woodland shell tempered pottery are Z-twist. Decorative elements on Potomac Creek ceramics at the Potomac Creek Site are also predominately Z-twist (Blanton 1999: 62). These data could suggest cultural connections between groups in the Lower Potomac River Valley and Maryland's Eastern Shore. Future research to generate a larger sample would be necessary to more rigorously test this hypothesis.

The rest of the ware/types where twist direction was visible are small samples that prevent any conclusive statements to be generated. The cordage twist direction of the Wolfe Neck vessel lot is the same as cordage twist record for Wolfe Neck ceramics from 18KE128 and the Snapp Site (7NC-G-101). Both of these sites are located on the Delmarva Peninsula. As the data set on the direction of cordage twist for Wolfe Neck ceramics increases interpretations can be presented. The data from Holland Point helps increase the overall sample size of cordage twist data from the Delmarva Peninsula for future research.

A limited amount of pottery from Holland Point was net-impressed. Four different ceramics types [Types IV B (Mockley-like), IX B (Wolfe Neck), XII A, and IX D (Wolfe Neck-like)] had net-impressed exterior surfaces. Two possible types of netting were used. The sherd of Type IX D has an impression that is similar to an open

| <b>Ware/<br/>Type</b> | <b>Nature of Cord<br/>Impression</b> | <b>S-Twist</b>            | <b>Z-Twist</b>                                       | <b>Related Historic<br/>Ceramic Type</b>          |
|-----------------------|--------------------------------------|---------------------------|------------------------------------------------------|---------------------------------------------------|
| IC                    | Decoration                           | I C - 7, I C - 8, I C - 9 | I C - 1, I C - 2, I C - 3, I C - 4, I C - 5, I C - 6 | Late Woodland Shell Tempered (Yeocomico/Townsend) |
| IIIC                  | Decoration                           |                           | III C - 3                                            | Townsend Corded                                   |
| VIIIA                 | Surface treatment                    |                           | 3 sherds                                             | Dames Quarter                                     |
| VIA                   | Surface treatment                    | VI - 1                    |                                                      | Mockley-like                                      |
| IXA                   | Surface treatment                    | IX A - 1                  |                                                      | Wolfe Neck                                        |
| ID                    | Surface treatment                    |                           | 2 sherds                                             | Sullivan Cove/Yeocomico Cord Marked               |
| IVC                   | Decoration                           | IV C - 1                  |                                                      | Townsend/Killen-like                              |
| XIIIA                 | Decoration                           | XIII A - 1                |                                                      | Potomac Creek Minguannan-like                     |
| XIA                   | Decoration                           | XI A - 1                  |                                                      | Hell Island                                       |

Table 51. Ceramics where the final cordage twist could be identified

loop net. Only one knot is visible consisting of a double loop knot. This net marking is distinctive from all of the net impressed pottery at Holland Point. The sherd is relatively small and is only grossly comparable to Wolfe Neck ceramics. The rest of the net impressions consist of knotted nets. The knots on one Type IX B sherd are spaced from 3 to 5 mm apart. The unevenly spaced knots and possible overlap of impressions suggest the use of a balled up net. Net marked surface treatment is found throughout the Middle Atlantic Coastal Plain after 2550/2350 B.P. (Stewart 1998b: 172).

The abundance of fabric marked pottery and large sections of vessels with fabric-impressed surfaces allows for several observations to be made about this type of surface treatment. A minimum of four different types of fabrics could have been used to

make the impression on pottery at Holland Point. This minimum count does not include the different types of netting use to execute surface treatments. Pottery Types I F, I G, and I H have unique fabric impressions. The most common fabric type is visible on Townsend series ceramics and ceramics similar to Killen ware. Detailed descriptions of these fabric impressions are presented in Appendix A. The Townsend style fabric impressions could be created using a series of dowels interwoven with cordage. A series of experiments to reproduce impressions similar to the Townsend style fabric suggests that dowels plaited together with cordage are visually comparable to the Townsend fabric impressions. Using thick cordage for the horizontal element also could produce impressions that are similar to plaited dowels and Townsend fabric impressions. Johnson (1996) suggests that plaited dowels were used to create the impressions on Townsend and Rappahannock Fabric Impressions ceramics. Analysis of large sections of Townsend pots would help clarify the type of material used to make the impressed surface treatments.

Partially reconstructed Townsend vessels from Holland Point provide insights into how the fabric impressions were applied. The impressions on exterior surfaces are oriented horizontal and perpendicular to the rim on different vessels. Some overlap of impressions is apparent. Surfaces with overlapping impressions were paddled using a fabric wrapped paddle. On certain vessels, overlapping of impressions is not apparent. The consistent orientation of the fabric indicates that the fabric was not haphazardly impressed on to the pot's surface. Different orientations of fabric impressions on exterior surface were not observed on the same pot. Thus fabric was carefully impressed on the surface pottery. A limited number of rim sherds have fabric impressions that

extend from just below the lip and cover the lip. It appears that the fabric was folded over on the lip to create the impressions. Observations of fabric impressions on large sections of Townsend vessels from the Mispillion Site in Sussex County, Delaware indicate that two methods of creating the surface treatments were used. The uninterrupted continuity of impressions indicates a large piece of fabric carefully pressed against the exterior surface. Overlap of impressions also indicates that a fabric wrapped paddle was used to create the surface treatment.

In general, the weft elements (vertical element) of the fabric are not as visible as the rib-like impressions created by the warp element (horizontal element). One vessel lot is unique from the rest of vessel lots and sherds because of the clarity of the fabric impressions. The poor clarity of the weft cordage on the fabric impressions suggests that surface treatment was applied after the clay had reached a leather hard stage. Experiments to reconstruct the fabric used on pots revealed that if the clay is not leather hard when the surface treatment is applied the vessel's shape is compromised. Waiting until the vessel is leather hard provides the necessary rigidity to apply the surface treatment. Experimental reproduction of fabric-impressed surfaces also indicated that the fabric would have to be wrapped around a paddle in order to provide enough heft to make visible impressions. If something comparable to plaited dowels were used to make the impressions, than a heavy object would have to be attached to the back of the plaited dowels to give added heft. Additional experiments reproducing fabrics and impressing pottery are necessary in order to gain a better understanding about how this form of surface treatment was executed.

Interpretations of usage patterns of ceramics are evaluated by analyzing sooting patterns and rim diameters of vessels. In addition certain types of temper, such as crushed shell, might have been used because of the functional attributes inherent in shell temper. Experimental analysis of shell tempered vessels and non-shell tempered (grit) vessels by Michael Budak (1999) revealed differences in permeability and heat conductivity between shell and grit-tempered pottery. Shell tempered pots do not absorb water as fast as grit-tempered pots. This suggests that shell tempered pottery retains water better than grit tempered pottery. The absorption capacity of grit-tempered pottery can be improved by coating the interior surface with grease. The shell tempered pottery conducts heat as well as grit tempered pottery that is sealed with grease on the interior surfaces. The experiments comparing shell and grit tempered pottery suggest that shell tempered pottery could have been more effective as a cooking vessel than an ungreased grit tempered pot.

Pottery specialists have remarked at the difficulty of producing shell-tempered pots because firing shell tempered ceramics to around 700°C or greater will cause lime popping after the vessel cools (Bronitsky and Hamer 1986; Rice 1987: 10). The shell temper when heated to above 700°C alters the calcium carbonate (Bronitsky and Hamer 1986; Rice 1987: 10). Over time the shell rehydrates and the temper expands causing the pottery to spall and fall apart. The difficulty in controlling the heat using an open fire can lead to overheating shell tempered pottery and pot breakage. However, roasting the shell could prevent the rehydration problem that occurs with overheating the shell-tempered pottery. Experimental production of shell-tempered pottery by the author suggests that by heating the shell above 500° C before using it as temper prevents lime

spalling. Heating the shell turns it to calcite raising the thermal coefficient of thermal expansion (Rice 1987: 410). Calcined shell is more suitable as a tempering agent for used in vessels that are going to be use as cooking pots (Rice 1987: 410).

The challenges of not over firing shell-tempered pottery could be out weighed by the benefits of heating liquids in shell-tempered pots. If both shell tempered pottery and grit-tempered pottery were being used at the same time, it is possible that the shell-tempered vessels might have been used for heating liquids while the grit tempered vessel served other purposes. Future research should seek to determine if vessels were coated with grease or some other substance. Is grease present on both shell tempered and grit tempered vessels that are contemporaneous? Grit tempered vessels with sooting patterns that are characteristic of use on an open fire would be the best candidates for pots that might have residues from coatings.

The sooting patterns of four Townsend/ Yeocomico vessels indicate that they were probably used as cooking pots. The four cooking pots have two different rim profiles. Two vessels have an outward flaring rim and the other vessels have relatively straight rim profiles. The four probable cooking pots have rim diameters that ranges from 13 to 22 cm. Pots found at the Gropp's Late Site in middle portion of the Delaware Valley that are believed to be cooking vessels have similar rim diameters to the cooking vessels at Holland Point (Stewart 1998b: 243-247). Rim diameters alone are not an attribute that can be used to identify cooking pots. Sooting patterns, wall thickness, and nature of the archaeology context where ceramics are recovered from need to be used to assess vessel function.

Figure 79 presents the rim diameters for all the measurable vessel lots. Some rim sherds were relatively small. The small size made it difficult to isolate a narrow range for the rim diameter. The different colors are used to highlight any possible trends in orifice diameter. Vessel lot IVC-1 in Figure 79 is classified as Townsend Corded based on decorative attributes, yet the paste is similar to Killens Ware. In general, most of the vessels have a range from 14 to 21 cm. The three vessels with the ranges greater than 25 cm suggest that these vessels might have been used for non-cooking functions such as storage. The rim diameters of the twenty-seven Late Woodland shell tempered ceramics are relatively consistent in size. Historically defined types in the Townsend ceramics do not show any trends over time. Both Rappahannock Incised, dating to the early portion of the Late Woodland, and Townsend Cord, dating to the later portion of the Late Woodland, have comparable orifice diameters. If the Griffith's Townsend chronology is still valid then the orifice diameter data from Holland Point suggest that there is not a noticeable change in shell tempered vessel size during the Late Woodland Period at Holland Point.

Comparisons of rim diameter for Holland Point vessel lots are made to other reported rim diameters. The Wolfe Neck rim sherd (Vessel Lot IXA-2) diameter is a little smaller than the rim diameter from a Wolfe Neck pot found on the Indian River in Delaware. The orifice diameter of this vessel was 31 cm (Lewis 1972). The differences are not that great between the Indian River pot and the Holland Point rim sherd. Rim diameters for Killen pottery (Ware IV) have not been found in the regional archaeological literature. The rim diameter of the clay-tempered vessel (Vessel Lot VII – 1) is significantly smaller than the rim diameter of a clay tempered pot found



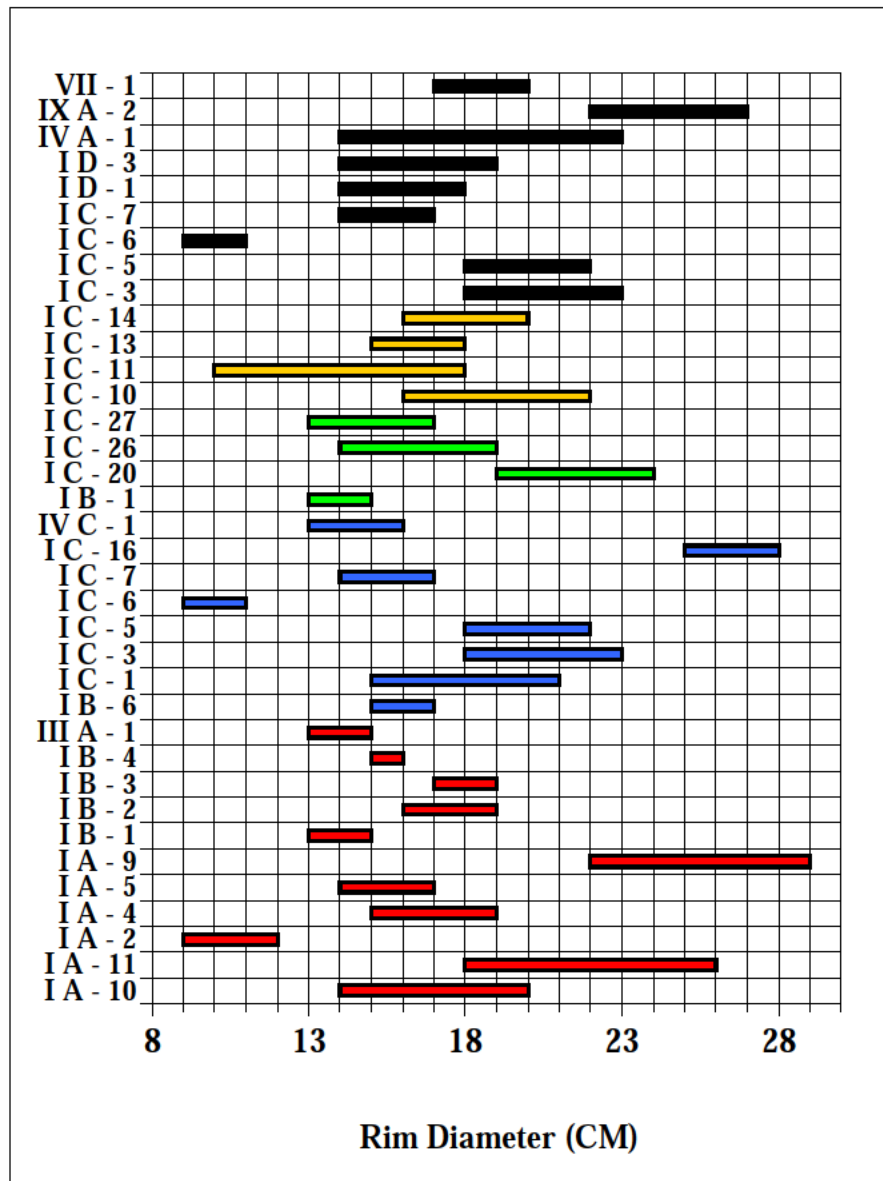


Figure 79. Vessel lots with measurable rim diameters, (note: Rappahannock Fabric Impressed is in red; Rappahannock Incised is in blue; Townsend Corded is in Green; Yeocomico/Townsend Plain is in yellow)

at Coulbourn Site in Kent County, Delaware. The Coulbourn Site pot has diameter of 32 cm (Wise 1974). The rim sherd of clay-tempered pottery from Holland Point was relatively small making the measurement difficult. Diameter difference from the Coulbourn Site pot and the Holland Point vessel suggest that clay temper pottery could have a wide size range.

The publication of rim diameters for Townsend series pots allows for comparisons to Holland Point Townsend series vessels. Townsend ceramic series vessels from the Townsend Site have an average rim diameter of 21 cm (Blaker 1963: 16). A vessel described as a “Townsend Incised type” (possible similar to Rappahannock Incised) has a diameter of 28 cm (Blaker 1963: 16). A Rappahannock Incised rim sherd from the Townsend Site has one of the largest diameters measuring 35 cm (Blaker 1963: 16). The average diameter of Townsend Corded Horizontal vessels at the Townsend Site is 19 cm (Blaker 1963: 19). The average diameter of Rappahannock Incised vessels at the Townsend Site is around 20 cm (Blaker 1963: 17-18). The overall abundance of Townsend vessel recovered from the Townsend Site provides one of the largest sample size assemblages for Townsend vessels in the Middle Atlantic region. The average rim diameter for the different historic types of Townsend ware from the Townsend Site are relatively similar. The Townsend Corded and Rappahannock Incised data from the Townsend Site suggests that orifice diameter did not change from early Late Woodland to late Late Woodland times.

Rim diameter measurements for Townsend vessels from the Mispillion Site are reported (Lopez 1961: 6). The largest rim diameter is 23-25 cm. The smallest diameter is 12 cm. Lopez’s (1961: 6) reporting of the vessel assemblage makes it difficult to

known how many Townsend vessels had measurable rim diameters. Four rim diameter measurements for “miniature” Townsend vessels are less than 10 cm.

Three partially reconstructed Townsend vessels from the Great Neck Site (44VB7) have measurable orifice diameters. The rim diameter measurements for the Great Neck Site Townsend vessels are 32 cm, 25-30 cm, and 30 cm (Hodges 1998: 49). The rim diameters for the Great Neck Site Townsend vessels are significantly greater than the averages for the vessels from the Townsend Site. However, the sample size is relatively small. The one Rappahannock Incised rim sherd with a 35 cm diameter from the Townsend Site has a comparable diameter to the Great Neck Site vessels.

The Townsend/Yeocomico style vessels at Holland Point have rim diameters that are generally slightly smaller than measurements reported for the vessels from the Townsend Site. However, at Holland Point there are larger pots (Vessel Lot IC-7) and smaller pots (Vessel Lot IC-6). Calculating average rim diameter for certain historic types from Holland Point is difficult because the rim diameter was recorded as a size range and not measurement to one specific centimeter. The difference in rim diameter between Townsend Site vessels and Holland Point vessels could relate to the relatively small size of some of Holland Point rims that were measured. Or it could indicate variation in sizes of Late Woodland shell tempered pottery on the Delmarva Peninsula.

In sum, the rim diameter data from Holland Point contributes to the database on rim diameter in the Middle Atlantic region. Future research could look for trends in rim size over time or across space, which might highlight functional differences in pottery technologies.

The recovery of ceramics from Holland Point reflects the discard behaviors of Native Americans. Several patterns in the ceramic assemblages suggest discard behaviors. The abundance of rim fragments that could not be refitted with body sherds suggests that when upper portions of the vessel broke the whole pot was not thrown away. The three large vessel sections that were reconstructed from Feature 4 suggest that the breakage of these vessels rendered them unusable and they were discarded in the pit. Only three basal sherds (1 Type IA, and 2 Type IXA) were recovered from the Holland Point ceramic assemblage. In general, basal sherds are relatively thick and would likely survive the abrasive conditions along the shoreline. The natural (shoreline) processes are not believed to be biasing the number of basal sherds found at Holland Point.

There is a dramatic difference between the minimum estimated number of vessels and the number of bases. The low quantity of basal sherds suggests that if the upper portion of a vessel broke the lower portion of vessel was not discarded. These lower portions of the pots could have served as cups. The absence of basal sherds has been documented at other sites in the Middle Atlantic that have a large ceramic assemblage (Geier, et al. 1986b: 24-25). Other ceramic analysts (Custer and Mellin 1987: 39; Custer, et al. 1996: 93) have hypothesized that basal portions of vessels were reused and not discarded. The smaller size of the remnant cup-like vessel would make them more suitable for transport to other sites during settlement movements. Thus the basal portion might be removed from the site. Certain sites in the Middle Atlantic, such as 44VB7 in the Great Neck Site Complex, have large numbers of basal sherds. At 44VB7 an abundance of Mockley basal sherds were found. At 44VB7, the general

nature of the Mockley components in terms of artifacts and features suggest that the site served as a base camp during the Middle Woodland. The intensity of debris and abundance of Middle Woodland features suggest that occupations were not short term (Hodges 1998: 200-201). During the relatively long occupations at 44VB7, the upper portions of Mockley ceramics might have broke and the cup-like fragments could have been used until they also fractured. Occurrence of numerous basal sherds at 44VB7 could be a reflection of the relative length of occupation at the site. Future research should focus on determining any correlation between degree of sedentism and the ratio of vessel lots to basal sherds. Based on this interpretation of Middle Woodland pottery at 44VB7, the lack of Late Woodland basal sherds suggest that Late Woodland occupations at Holland Point were short in duration. However, the abundance of Late Woodland pottery suggests that Holland Point was intensively used during the Late Woodland. Thus Late Woodland occupations at Holland Point might reflect repeated short-term occupations.

#### H. Site Formation Processes

The different analytical contexts defined in Chapter 5 reflect the depositional conditions affecting the archaeological deposits at Holland Point. Landform stability and sea level rise are two major factors dictating site stratigraphy. The large amount of time represented by the Late Archaic-Late Woodland analytical context is a reflection of the relative stability of the land surface prior to sea level rise. In parts of the Middle Atlantic region, aeolian processes result in vertically separate Archaic and Woodland

period contexts (Curry and Custer 1982; Stewart 1994c). Yet at Holland Point aeolian processes do not appear to be creating depositional environments that have vertically separated Archaic and Woodland period cultural material. The orientation of Holland Point on the landscape may be a factor responsible for the lack of noticeable aeolian deposition.

Cultural material is generally confined to the Stratum III (A-horizon) and the upper portion of Stratum IV (B-horizon). Individual occupations could not be vertically separated in the Late Archaic-Late Woodland analytical context. The vertical distribution of cultural material in Strata III and IV could reflect limited slope wash of sediment from high portions of the landform or limited aeolian deposition. The trampling of cultural material could cause downward movement of artifacts through the soil profile. Tree roots and the downward movement of water through the soil profile could cause vertical displacement of cultural material, prior to sea level rise. This vertical displacement would be likely in the B-horizon. After post-Pleistocene sea level rise, the downward movement of artifacts would be less likely because of the new hydrologic conditions at the site. The porous shell midden would act as an aquifer facilitating the lateral movement of cultural material through the shell matrix. During high tide the shell midden matrix is saturated and at low tide water drains seaward out of the midden matrix. This hydrological condition could lead to horizontal displacement of cultural materials within the shell midden.

The portion of the shell midden investigated is an anthropogenic sedimentary unit that was deposited relatively rapidly during the Late Woodland Period. The wet field conditions inhibited the ability to isolate individual components within the shell

midden. Individual occupations would have been easily mixed in the remnant portion of the midden that was excavated. Field observations prior to the excavations in 2000 indicate that the portions of the midden closer to the Slaughter Creek were stratified. Yet, shoreline erosion has destroyed this portion of the shell midden.

Sea level rise has been both beneficial and detrimental to the site. The formation of the saltmarsh over the archaeological deposits, because of sea level rise prevented this area from being suitable for farming. In contrast, the archaeological deposits in Field 1, 2, and 3 were subjected to agricultural disturbance. The saturated soil conditions resulting from sea level rise facilitated the preservation of biological remains. Initial observation suggested that wooden artifacts would be preserved at the site. However, non-carbonized plant remains could be not confidently associated with the Native American activities at the site. The amount of time that elapsed between the deposition of perishable materials (i.e. non-carbonized plant remains) and the inundation of the site by sea level rise was not short enough to facilitate the preservation of these materials.

Sea level rise exacerbated shoreline erosion at Holland Point. The analysis of the controlled shoreline collection and the tile experiment identified patterns of erosion, transportation, and deposition at Holland Point. Shoreline erosion is greatest at the tip of Holland Point near the remaining portion of the intact shell midden. Cultural materials and natural sediments appear to be moving down the shoreline towards Beach Sections 7 and 8. The shoreline around Beach Sections 7 and 8 is expanding seaward towards the main channel of Slaughter Creek because of sediment deposition. The analysis of the controlled shoreline collection material and the tile experiment combined with augering

across the saltmarsh indicated that the distribution of cultural material along the shoreline covers a greater linear distance than the *in situ* archaeological deposits. The distribution of artifacts along the shoreline is not a reliable indicator of site size.

Shoreline geometry, long shore current processes, thickness of the lag deposits, artifact weight, and artifact size dictates the distribution of artifacts along the shoreline. Long shore current processes dictate the movement of material. Natural and cultural materials are moving from Beach Section 1 to Section 8. The coves and points, which create complex shoreline geometry, affect the artifact distribution. Natural and cultural materials accumulate on the northern side of these points of land jutting out from the shoreline. This is where there is the greatest accumulation of lag deposits. Areas with thick lag deposits also contain higher amounts of artifacts. In general, heavier artifacts and larger artifacts such as FCR show the least amount of movement down the shoreline while small lightweight materials show the greatest amount of movement.

Fortuitous mixing of Native American and historic artifacts in Feature 3 highlights the dynamic conditions along the shoreline. This feature is located along the northern shoreline where fetch related processes generated the largest size waves that impact Holland Point. The high-energy conditions are responsible for the amalgamation of artifacts in this feature. The high-energy impact of waves along the shoreline could also be responsible for the absence of the shell midden around Test Unit 4. The *phragmites* in this portion of the site suggests that soils have been disturbed. The processes creating the stratigraphy in this portion of the site are not clearly understood. The horizontal variability in the stratigraphy between the shell-free portion of the site



and the shell midden portion of the site highlights the complexity of site formation processes at Holland Point.

### I. Settlement and Subsistence Patterns

The interpretations presented below are based on the excavation data, artifact analysis, and general observations. A large amount of information about the site, especially about features, concerning the site has been lost to shoreline erosion. A greater number of features probably existed than have been documented at the site. The following analysis is cautiously made given these limitations.

Evidence of Paleoindian and Middle Archaic occupations were not found at Holland Point. The isolated Amos projectile point reflects an ephemeral presence of Early Archaic cultures at Holland Point. The reason that Holland Point was not used by early cultures can be attributed to three factors: (1) the physiographic setting of the site and the biota potential around the site; (2) low population densities; and (3) relatively large exploitative territories combined with relatively mobile settlement practices. A nature factor, not related to above-mentioned factors, obscuring data is the potential for sea level rise to inundate earlier components at Holland Point. The Early Archaic component is believed to be associated with the inundated portions of the site. Holland Point from circa 12,000-6,000 B.P. would have been located along a small brook, which had yet to be embayed by rising sea levels. The bathymetry of Slaughter Creek suggests the drainage was not embayed until the end of the Late Archaic (c. 3000 B.P.). Riverine localities that are presently under the Chesapeake Bay along higher order streams, such

as the ancestral Susquehanna, would have been more attractive to earlier populations than the Holland Point landscape. Paleoindian and Early Archaic sites are concentrated on mid-peninsular and interfluvial areas near freshwater springs and spring-fed wetlands (Lowery 2002a: 102-103). These sites would have been interior upland settings on the Delmarva Peninsula prior to sea level rise. Locations farther upstream in the Slaughter Creek drainage basin would be more attractive settings than Holland Point for earlier cultures. Holland Point is roughly situated between the lower riverine productive localities and the more interior hunting localities utilized by early cultures. Low population densities during the Early Archaic would not have made it necessary for earlier populations to focus on environmental settings comparable to Holland Point. The degree of settlement mobility among earlier populations and their relatively large territories would have reinforced a focus on settlements in riverine and interfluvial locations.

The Late Archaic cultures represent the earliest substantial occupation of Holland Point. Population increase, changing aquatic conditions, and a decrease in settlement mobility are factors favoring the utilization of Holland Point during Late Archaic times. The Late Archaic Period represents a cultural/temporal period with a noticeable population increases in the Choptank drainage basin (Lowery 1999) and the Delmarva Peninsula (Custer 1989). At this time, the lower reaches of the Slaughter Creek around Holland Point would have been embayed and tidal. Sea level curves combined with bathymetry data for Slaughter Creek suggest that during the Late Archaic the freshwater/saltwater interface may have been located around Holland Point. The saltwater/freshwater zone provides biotic resources that would have attracted Late

Archaic groups to Holland Point. The creation of oyster habitats would have probably begun during the Early Woodland Period.

The excavations, features, and diagnostic artifacts allow for tentative statements concerning the character of the occupations through time. However, the non-diagnostic cultural material from the Late Archaic-Late Woodland analytical context cannot be associated with a particular temporal/cultural period. The Late Archaic and Early Woodland projectile points and ceramics represent a limited amount of the overall diagnostics from the site. The absence of features and structures associated with the Late Archaic and Early Woodland periods suggest relatively short-term occupation. The quantity of Early Woodland ceramic sherds, especially Dames Quarter ware, is more plentiful than on many other Early Woodland sites in the middle portion of the Delmarva Peninsula (Darrin Lowery, personal communication 7/20/2000). The overall amount of Early Woodland ceramics in term of vessel lots is limited, but typical for sites of this time period. The presence of pottery suggests a lesser degree of settlement mobility during the Early Woodland Period than the Late Archaic Period because of inherited logistics in ceramic container technologies. Diagnostic Late Archaic and Early Woodland artifacts suggest that during these cultural/temporal periods Holland Point functioned as a procurement site.

Features and diagnostic artifacts provide insight into the nature of the Middle Woodland occupations. The features dating to the Middle Woodland Period consist of a human burial and two large oval shaped pits (Feature 5 and 6) filled with the shell. The size of Features 5 and 6 along with the postmolds associated with these features postmolds suggests they might have functioned as semi-subterranean dwellings.

Features 5 and 6 at Holland Point are grossly comparable to semi-subterranean dwellings found at Mispillion Site (Thomas and Warren 1970), the Popes Creek shell midden (Holmes 1907), the Bay Vista Site (Doms, et al. 1985) and other sites (Griffith and Artusy 1975) on the Delmarva Peninsula. The burial goods from Feature 1 highlight the range of activities that occurred during the Middle Woodland Period. The feature's ecofacts reflect the harvesting of shellfish, the hunting of birds, and hunting of other mammals. The broken condition of the mammal remains and the calcined condition of some bone fragments suggests the processing of bone. The charcoal, thermally altered debitage, and FCR from the burial suggests that hearth related activities could be associated with Middle Woodland occupations. The overall small size and quantity of debitage from the burial is indicative of tool maintenance activities. The burial and the associated materials in Feature 1 reflect religious, sacred, and ceremonial activities. The presence of the burial suggests a greater duration in occupations during the Middle Woodland Period than during previous times at Holland Point. The two large features observed along the shoreline could be the remains of permanent structures indicative of a longer-term habitation. The Middle Woodland feature data suggest a lesser degree of mobility than during preceding time periods.

The overall quantity of Middle Woodland diagnostics is conspicuously low given the types of features present at Holland Point. It is possible that Middle Woodland deposits at Holland Point are currently underwater. If underwater Middle Woodland deposits were not being actively eroded, than associated artifacts would not likely be found along the shoreline. Middle Woodland ceramics (Mockley, clay tempered ware, and Hell Island) make up five percent of the overall ceramic assemblage by vessel lot

from Holland Point. Middle Woodland projectile point types (Fox Creek, Selby Bay, Jack's Reef) make up seven percent of the overall projectile point assemblage. A greater number of Middle Woodland diagnostics would be expected given the types of features found at the site, which date to the same temporal/cultural period. The dwelling related features and burials suggest that Holland Point was used as a macro-band base camp during the Middle Woodland Period. However, the low quantity of Middle Woodland diagnostic artifacts suggests that the duration of occupation was shorter than the traditional length of macro-band base camp occupations. Middle Woodland settlement patterns in the Middle Atlantic region indicate an increase in the size of coastal base camps and a greater focus on fish and shellfish resources than during the proceeding Late Archaic Period (Stewart 1995: 190). The feature data from Holland Point supports the general trends in this coastal aspect of Middle Woodland settlement patterns.

Interpretations of the Late Woodland Slaughter Creek Complex occupations at Holland Point are based on excavations of the shell midden deposit, Feature 4, and diagnostic artifacts. Direct evidence of permanent structures could not be associated with the Late Woodland deposits. The postmolds found in Test Unit 1, which suggest superstructure construction could date from the Late Archaic to the Late Woodland. The digging of Feature 4, which contains Townsend pottery, suggests a longer period of site utilization. The recovery of large portions of three ceramic vessels from Feature 4 highlights the importance of ceramic vessels in the Late Woodland container technologies. Two of the vessels from the feature have sooting patterns indicative of cooking vessels.

The cultural material recovered from the shell midden reflects a wide range of activities. The ecofacts from the shell midden reflect the following subsistence practices: shellfish harvesting, hunting of small and large animals, processing of bone, and the collecting and processing of mast resources. Activities associated with medicinal practices are indicated by the recovery of holly seeds. Lithic production activities during Late Woodland times include biface reduction, tool maintenance, core reduction and the utilization of expedient tools. These lithic activities are those likely in a micro-band base camp. The shell midden did not contain a high density of debitage suggesting that the amount of lithic reduction was limited and that some occupations might have been relatively short in duration.

The abundance of Late Woodland diagnostics suggests that site was intensively used during this time period. Late Woodland ceramics (Townsend/Yeocomico, Sullivan/Yeocomico Cord-Marked, Killens, Minguannan/Potomac Creek-like) comprise of eighty percent of the total vessel lot assemblage from Holland Point. Most of the triangular points, which make up half of the site's projectile point assemblage, are also believed to date to the Late Woodland Period. Triangular points could also date to the Late Archaic and Early Woodland periods. The effigy soapstone pendant is an ideotechnic artifact recovered from the shoreline that probably dates to the Late Woodland Period.

The intensive Late Woodland occupations at Holland Point could be related to group size, duration of occupation, and frequency of occupation. The absence of dwellings at Holland Point is not surprising given the scarcity of archaeological evidence for permanent structures dating to the Late Woodland Period on the Delmarva

Peninsula (Custer 1989: 319-321). In contrast, Late Woodland longhouses and stockaded villages in the surrounding Middle Atlantic region are more common than on the Delmarva Peninsula (Kent 1984; Potter 1993; Turner 1992). These data suggest a greater degree of sedentism and larger group cohesion in other portions of the Middle Atlantic region than on the Delmarva Peninsula (Stewart 1993). The practice of maize farming by Late Woodland cultures in areas adjacent to the Delmarva Peninsula is another indicator of more sedentary occupations by later groups in the surrounding Middle Atlantic region (Stewart 1993). The labeling of larger Late Woodland sites on the Delmarva Peninsula as “villages” or “macro-band base camps” might be problematic when considering Late Woodland settlement data from the other portions of the Middle Atlantic region. Larger Late Woodland sites on the Delmarva Peninsula have been classified as “hamlet-like settlements” when compared to other sites in the surrounding Middle Atlantic region (Stewart 1993).

These larger Late Woodland sites on the Delmarva such as Holland Point might reflect repeating reuse of the same location by one or a few families and not larger multi-family occupations (Custer, et al. 1996: 131). Holland Point could be classified as somewhere between a micro-band base camp and a macro-band base camp. Preliminary observations suggest that large Late Woodland sites are conspicuously absent from interior settings in the middle portion of the Delmarva Peninsula (Darrin Lowery, personal communication 7/26/2002). Interior Late Woodland sites generally contain a limited amount of ceramics and less diversity in other classes of artifacts (Darrin Lowery, personal communication 7/26/2002).

The cultural similarities between Late Woodland groups on the Delmarva Peninsula and on the other side of Chesapeake Bay in Maryland and Virginia suggest interaction between groups on both sides of the bay. Parallels are reflected in ceramic technologies and mortuary practices (Potter 1993: 147). Similarities in ceramic design motifs between Potomac Creek ceramics and Townsend corded ceramics suggest cultural connections across the Chesapeake Bay during the Late Woodland (Griffith 1980:36-37; Potter 1993: 147). Townsend series ceramics from sites on both sides of Chesapeake Bay are also indicative of pan-regional cultural connections. Ossuaries are present on both sides of the Chesapeake Bay (Curry 1999). A concentration of ossuaries is located on the Choptank River (Curry 1999: Figure 1). Larger ossuaries, with more than a hundred interments, are more commonly located on the western side of the Chesapeake Bay (Curry 1999: Table 1; Dent 1995: 255). The occurrence of large ossuaries is argued to coincide with the emergence of the Powhatan Chiefdom and other neighboring chiefdoms on the western side of the Chesapeake during the late portion of the Late Woodland (Curry 1999: 90-91; Potter 1993). In contrast, on the Delmarva Peninsula large ossuaries are rare. Delmarva ossuaries indicate a degree of social organization that was not on the same scale as the social organization on the other side of the Chesapeake Bay. Yet historic records suggest interaction between chiefdoms on the western side of the bay with groups on the Delmarva (Potter 1993: 40; Rountree and Davidson 1997: 44-45).

The abundance of Late Woodland diagnostics at Holland Point highlights the relative importance of this location in the settlement system and the economic productivity of shellfish and other resources. The data from Holland Point suggest that



this locality was used repeatedly as a base camp throughout the Late Woodland. The depositional intensity, especially in terms of ceramics, is greater than traditionally expected for micro-band base camps. The quantity of ceramics could relate to how the site functioned in the Late Woodland settlement system. The seasonality data from the Late Woodland shell midden are derived from oyster shell analysis, mast resources, and holly seeds. These data suggest a late summer through winter occupation. Other seasons of occupation during the Late Woodland are also probable given the variety of faunal resources recovered from the shell midden.

The two British coins could either relate to Native American or Euroamerican occupations at the site. The limited amount of early colonial artifacts makes it difficult to determine if the coins are related to Native American or Euroamerican occupations.

The limited amount of data on the Late Archaic and Early Woodland occupations prevents comprehensive statements about settlement patterns associated with the Late Archaic and Early Woodland cultural/temporal periods. Regional archaeological data combined with ecological data can be used to examine possible catchment areas incorporating hunting and foraging ranges. Ethnographic data concerning the distance hunter-gathers will venture away from an encampment suggest a minimum range of 5 to 10 km (Hassan 1981; Hunt 1992: 284). A maximum foraging range of 20 km is also considered. The use of watercraft would allow for greater distances to be covered. Catchment areas with the use of watercraft would be focused along navigable drainages. Native Americans at Holland Point and the surrounding region likely used boats, especially with rising sea levels that increased the amount of open water. Yet, the impact of boats is thoroughly considered in this settlement

analysis, because physical evidence of watercraft technologies on the Delmarva Peninsula is lacking. The ecological conditions during the Late Archaic and the Early Woodland periods were significantly different than during Late Woodland times because of lower sea levels. Around 4000 B.P. the Little Choptank River had yet to be embayed (Lowery 2001: Figure 10). The Choptank River was just starting to be embayed. Expansive lowland areas existed around the modern edge of Taylors Island. The salinity levels would have been lower during the Late Archaic and Early Woodland periods than during Late Woodland times. Holland Point would have served as a location set back from other sites along shorelines around 4000 years ago. Resources at the saltwater/freshwater interface would have been available at Holland Point. The site's environs may have provided more suitable habitats for terrestrial mammals. Late Archaic and Early Woodland groups could have either arrived at Holland Point from more coastal locations or interior settings. Tidal saltwater, tidal brackish water, tidal freshwater, and nontidal stream environments would fall within the 20 km catchment range.

Lithic utilization patterns provide insight into the nature of settlement movements. The assemblage of ironstone artifacts from the site provides insight into the position of Holland Point in Late Archaic and Early Woodland settlement systems. Utilization of ironstone on the Delmarva peaks during the Late Archaic and Early Woodland periods (Ward 1988; Ward and Doms 1984). The Holland Point ironstone assemblage consists of waste debris, a projectile point, and a relatively large plate-like manuport. The size of the ironstone manuport suggests direct procurement from primary sources in the Choptank drainage basin. Larger pieces of debitage also suggest early

stages of reduction. The locations of the ironstone sources suggest that Late Archaic/Early Woodland groups moved from more inland locations to Holland Point. The limited amounts of ironstone from the site suggest that a onetime visit to the source or only very infrequent visits.

The primary source of Miocene silicified sandstone at the mouth of the Choptank River is a resource within the catchment range at Holland Point that is available during Late Archaic times, but by the Early Woodland Period it is inundated. Late Archaic groups might have brought the silicified sandstone inland towards Holland Point. The locations of ironstone and Miocene silicified sandstone outcrops suggest two possible directions of settlement movement.

Interactions at Holland Point within the Late Archaic region exchange network are suggested by the presence of a rhyolite fishtail point and argillite-stemmed points. The argillite-stemmed points could also be associated with other cultural/temporal periods. Argillite is also present in local secondary cobble outcrops. Certain sites such as 18TA192, where high densities of rhyolite have been documented (Lowery 1999: Table 7), might have served as a trading hub for rhyolite coming into the Delmarva Peninsula. Visits to this rhyolite redistribution center might have been incorporated into the settlement movements during the Late Archaic. 18TA192 is beyond the 20 km catchment range suggesting that forays directly from Holland Point would be unlikely. Cobble resources in the Little Choptank River Basin are well within a 20 km radius of Holland Point. Procurement trips to cobble outcrops were probably a routine activity during all periods of occupation at Holland Point given the ubiquity of artifacts containing cobble cortex.

Settlement movements were probably dictated by character of drainage basins. An abundance of Late Archaic and Early Woodland sites are documented throughout the Choptank drainage basin and surrounding areas (Lowery 1999: 109-111, Figure 34, Figure 35). An inundation of Late Archaic and Early Woodland sites has obscured the nature of settlement patterns in lower coastal areas. Larger Late Archaic and Early Woodland macro-band base camp-like sites have been reported in Talbot County. 18TA221b, located on the low coastal plain, and 18TA347, located on the high coastal plain are two sites with high densities of Late Archaic diagnostic artifacts. The different physiographic settings for these sites suggest a focus on a settlement pattern on both the high and low coastal plain. Lowery (1995b: 5) has remarked that the larger Barker's Landing Complex sites are typically located next to "major estuaries along the shoreline and coves of the Chesapeake Bay". The density of Early Woodland sherds (Dames Quarter and Wolfe Neck) at 18TA347 in the interior high coastal plain of Talbot County (Lowery 1999: Table 15) is comparable to the amount from Holland Point. 18TA347 could represent an aspect of Early Woodland settlement that is focused on interior settings. In contrast, Holland Point reflects micro-band base camp focused on the low coastal plain closer to the major bodies of water.

Data from the Middle Woodland features and diagnostic artifacts allow for tentative statements concerning Middle Woodland settlement systems. The shellfish remains from the burial and Features 5 and 6 suggest that sea level rise had embayed Slaughter Creek. The variety of environments accessible within 20 km would be similar to earlier time periods except tidal freshwater and nontidal streams would be beyond the 20 km range. Lowland settings along the mouth of higher order drainages would be lost

to sea level rise. The expanding aquatic environment would provide ample opportunity for fishing and shellfish harvesting. The emergence of productive aquatic resources at Holland Point made this location more attractive during the Middle Woodland times than in preceding times. The types of features present reflect a greater duration of occupation during the Middle Woodland Period. Even with the low density of Middle Woodland diagnostic artifacts, Holland Point could be considered a macro-band base camp. Distributional data for the Choptank River basin indicates, “that the largest Middle Woodland sites are located near large bodies of open waters [, but] are not situated along the main channel of the Choptank River (Lowery 1999: 113).” Holland Point conforms to this pattern of macro-band site location. Several sites in the Choptank River basin contain an abundance of Middle Woodland rhyolite bifaces and associated lithic debris.

The location of macro-band Middle Woodland base camps around large bodies of water suggests that settlement systems were focused on coastal resources. Settlement movements to interior localities might involve a degree of group fission. Additional data on the location of Middle Woodland burials and dwelling-related features in the middle portion of the Delmarva Peninsula could clarify if large multi-family settlements are solely focused around large bodies of water.

The rhyolite Selby Bay style bifaces from Holland Point reflect the participation in Middle Woodland trading networks. Part of the settlement cycle might have involved visits to rhyolite distribution centers such as 18TA192. A greater focus on coastal environments during the Middle Woodland in the middle portion of Delmarva Peninsula is suggested by coastal sites with an abundance of rhyolite. Site location data

suggest that forays into interior settings during the Middle Woodland, especially away from major riverine settings, during the Middle Woodland were somewhat limited.

The Late Woodland deposits and diagnostic artifacts from Holland Point provide insights into later settlement systems. The environmental resources available within the 5 km range would be similar to the conditions during the Middle Woodland Period. The extensive wetland habits to the south around the Honga River and Blackwater River (see Tiner and Burke 1995) might have emerged during the Late Woodland Period. These saltwater wetland areas are within the 20 km catchment area and could be accessed using boats. The seasonality data from Holland Point suggested that Late Woodland occupations occurred during late summer through winter. The Late Woodland Holland Point components are believed to reflect repeated small group (micro-social) occupations of the site. The site could represent intensive seasonal use by a small group given the density of Late Woodland diagnostics.

A limited amount of data is available on Late Woodland sites and settlement patterns in the middle portion of the Delmarva Peninsula. Other Late Woodland sites in the Choptank River basin such as the Locust Neck Site lack evidence for long-term occupations (McNamara 1985). Most of the archaeological research on Late Woodland sites with Townsend ceramics has focused on localities in Delaware (Custer 1989: 318-322). Custer (1989: Table 38) lists several macro-band base camps from middle portions of the Delmarva Peninsula. The list indicates that larger Late Woodland sites are documented in interior floodplain settings and settings along embayed portions of the drainages adjacent to the Chesapeake Bay (Custer 1989: Table 38). Yet these sites have not been investigated. Interpretations of Late Woodland settlement patterns on the

Delmarva Peninsula outside of Delaware are limited. Preliminary observations concerning Late Woodland sites in the middle and lower Delmarva Peninsula by Custer (1989: 324) suggest that macro-band base camps are more commonly located inland along major drainages while micro-band base camps are found on the Chesapeake Bay. Also smaller micro-band base camps are more common in the middle and lower Delmarva Peninsula and macro-band base camps are more abundant in the upper portion of the Delmarva Peninsula (Custer 1989: 324). Lowery's observations about the lack of large interior Late Woodland sites conflicts with Custer's observations about the presence of interior macro-band base camps. Lowery and Custer's observations are primarily based on sites that have only been surface collected. Excavations of larger Late Woodland sites are necessary in the middle portions of the Delmarva Peninsula to see if these sites reflect repeated use by single-families or if big sites reflect large multi-family occupations.

Custer's preliminary data suggest that both interior and coastal settings are important focal points in Late Woodland settlement systems. Site seasonality data from Holland Point suggest settlement movement towards the coast during the late summer. Occupations extended through the winter at Holland Point. Seasonality data from Locust Neck suggest oyster harvesting also occurred during the spring (McNamara 1985). The freshwater mussel shell from the Late Woodland deposits suggest that groups arrived at Holland Point from more interior settings. The closest natural habits for freshwater shellfish are located at least 20 km inland from Holland Point. Foraging trips from Holland Point to freshwater habits would be unlikely given the distance.

Newly proposed settlement models for Late Woodland in upper portion of the Delmarva Peninsula in Delaware might be applicable in the middle portion of the Delmarva Peninsula (Custer, et al. 1996: 131-132). The critical difference between Custer's new settlement model and traditional models is the absence of macro-band base camps. Extensive excavations of large sites with Late Woodland components suggest that site size is a reflection of repeat visits and not group size. In this settlement model, individual families are predicted to move regularly between tidal marsh settings, well-drained woodlands and poorly drained woodlands. The Late Woodland archaeological database for the middle portions of the Delmarva Peninsula suggests that this small social unit settlement model is more applicable. There are fewer known large Late Woodland sites in the middle portions of the Delmarva Peninsula than in the northern section of Delmarva Peninsula which supports a settlement system centered on a small social unit in the middle portion of the Delmarva Peninsula. Group coalescing at larger base camps within this new model occurs infrequently.

The drop off in lithic exchange networks distinguishes the Late Woodland from the proceeding time period. The use of rhyolite dissipates in Late Woodland (Stewart 1984b; Stewart 1989a). The percentage of rhyolite triangular-shaped projectile (N = 2) points at Holland Point is comparable to the percentage of Late Woodland points made from this material type in the middle portion of the Delmarva Peninsula (see Lowery 1999: Table 8). Cobbles sources within the 20 km catchment zone serve as the primary lithic source during the Late Woodland Period. The occurrence of expedient tools in the Late Woodland shell midden deposit mirrors contemporaneous trends in the Middle Delaware Valley. Future research is necessary to see if the use of informal tool



technologies indicates a reduction in the size of group territories. Distributions of Minguannan, Killens, and Townsend ceramics suggest two distinctive Late Woodland territories on the Delmarva Peninsula (Custer 1990: Figure 1). The predominance of Minguannan and Killens ceramics in the northern portion of the Delmarva roughly defines a territory, which may extend into the Lower Delaware River Valley. The spread of Townsend pottery across the lower and middle portion of the Delmarva Peninsula could suggest one territory. More detailed attribute analysis of Townsend ceramics could delineate more restricted territories within the middle and lower portions of the Delmarva Peninsula.

#### J. Future Directions

The investigations at Holland Point have helped to answer several research questions while highlighting directions for future research. The site's location in a saltmarsh provided a unique opportunity to examine a shell midden that had not been subjected to plowing. The ability to temporally isolate the shell midden deposit to the Late Woodland Period allowed for a greater understanding of coastal aspects of Late Woodland cultures in the Chesapeake Bay region. Differences between shell midden sites on the Eastern Shore and Western Shore are apparent. The lack of maize at Holland Point is typical for Late Woodland sites on the Delmarva Peninsula. The absence of maize is one of the major characteristics of Late Woodland cultures on the Delmarva Peninsula that distinguishes them from contemporaneous groups on the other side of the Chesapeake Bay. Future research should be directed at understanding the

cultural impact of the absence of maize agriculture on Late Woodland groups in the middle portion of the Delmarva Peninsula. The possibility that Native Americans grew maize on the Virginia portion of the Delmarva needs to be investigated. Future macrobotanical analysis needs to be oriented towards attempting to identify seed crops and other possible domesticates of the Eastern Agricultural Complex. Starch grain and phytolith analysis need to be incorporated into research methodology to gain a better understanding of plant utilization practices.

A greater understanding of Late Woodland settlement patterns, especially in interior setting, is necessary in the middle and lower portion of the Delmarva Peninsula. The relative importance of coastal resources in subsistence practices cannot be evaluated without investigating subsistence practices in interior settings. The nature of occupations at large Late Woodland sites on the Delmarva Peninsula is not clearly understood. Recent research suggests that large Late Woodland sites reflect repeat reuse by small social groups. Additional work on large Late Woodland sites in the Delmarva Peninsula is necessary to confirm this interpretation.

The abundance of Late Woodland ceramics provided insights into the diversity of design attributes. Griffith's Townsend chronology needs to be re-evaluated because of the recent dates for Townsend Incised ceramics. New approaches in attribute analysis for Late Woodland ceramics should include the examination of lip decorations, orientation of fabric impressions, and the occurrence of interior fabric impressed surfaces. The first dates for Late Woodland shell tempered pottery with cord marked surfaces (Type ID) on the Delmarva Peninsula have been obtained at Holland Point.

The Late Woodland dates associated with Type ID correlates with dates for Sullivan Cord-Marked and Yeocomico Cord-Marked pottery, which is similar to Type ID.

The Middle Woodland burial provided insight into mortuary practices. The detailed analysis of all the associated material of the burial highlighted the range of objects that have heightened significance in mortuary contexts. Future analysis of burials should be oriented at describing all of the cultural material associated with human remains.

Augering across the site provided a unique insight into the geomorphology of the landscape under the saltmarsh. The excavations highlight the horizontal variability in the shell midden deposit. The association of prehistoric and historic artifacts in Feature 3 emphasizes the dynamic site formation processes impacting Holland Point. The controlled shoreline collection and the tile experiment provided insight into the complexity of site formation processes affecting Holland Point. These field methodologies developed in this project should be a standard procedure incorporated into investigations of sites along shorelines.

The microscopic flake tool analysis provided insight into expedient tool technologies. A number of flake tools were identified from a relative small assemblage of excavated debitage. The scanning of debitage under low power microscopes for utilization damage should become standard practice in lithic analysis.

The oyster seasonality analysis contributed to the growing database on oyster harvesting patterns in the Chesapeake Bay region. Oyster seasonality analysis should be a standard analysis performed on all sites containing oyster shells to expand the database on oyster harvesting patterns.

The investigations at Holland Point have provided a wealth of data concerning Native American culture on the Delmarva Peninsula. The erosion of Holland Point made the timing of this work critical. This research highlights the need to investigate sites in similar threatened settings, before the sites are lost to shoreline erosion. Ultimately, systematic efforts need to be developed for salvaging sites along the shorelines of the Delmarva Peninsula.

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## APPENDIX A

### CERAMIC WARE DESCRIPTIONS

#### WARE I

Paste: Temper consists of crushed oyster shell. Paste is hard and dense. Sherds range from thin to thick.

##### *Type IA*

Paste:

Temper: Temper consists of finely to coarsely crushed oyster shell. The crushed shell ranges in size from fine to 7 mm with average size around 3 mm. The sherds are moderately tempered. Paste is well mixed with temper. A very small amount of fine micaceous sand and quartz sand is occasionally present in paste. The sand is probably naturally in the clay.

Texture: Paste is smooth and dense. Paste has a laminated appearance in cross section. Shell temper on interior and exterior surface is oriented parallel to the surface. In cross section, shell temper orientation is haphazard. Shell temper is ranges from not leached to completely leached in excavated sherds. Voids are present where the shell has been leached. Overall the paste is dense and hard with little to no pore spaces or air bubbles. A limited amount of stress cracks are present and originate from around the shell temper. Breaks are predominately even. Coil breaks are present. Excavated sherds have crisp breaks that are not eroded or rounded.

Color:

Exterior: Ranges from 2.5YR 5/8 red and 10YR 6/3 pale brown to 7.5YR 2.5/1 black.

Interior: Ranges from 5YR 5/4 reddish brown and 10YR 6/3 pale brown to 7.5YR 2.5/1 black. Interior colors are typically darker reducing colors.

Core: Core color grades from interior to exterior colors.

Surface treatment:

Exterior: The exterior surface has been impressed with fabric. The fabric impressions are typically light. The wefts are 1-2 mm wide. The ribbed impression created by weaving the weft around the warp element ranges 3-6 mm wide with the average 5 mm. The fabric is tightly woven. The fabric used to make the impression is believed to be weft-faced fabric. Impressions are orient both parallel and oblique to the rim. The fabric impressions are occasionally smoothed over obscuring weft impressions. The deeper

parallel impressions created by the warp elements are present even after smoothing. Erosion of sherd surfaces from the shoreline context could also be responsible for obscuring the fabric impressions. Impression could also be partially smoothed or apply to after some hardening. One rim sherd contains deep fabric impressions made obliquely oriented to the rim. The primary cord (the weft) of this fabric impression has a final Z-twist. Impressions extend up to the lip and sometimes over the lip. Impressions are orient either oblique or parallel to the rim.

Interior: Interior surfaces are smooth and have been wipe. Light striations from wiping the surface are typically present. The striation marks on the rim sherds parallel the lip.

#### Decoration:

Decoration when present is restricted to the lip and rim. Lip decorations consist of impressions and incisions oriented perpendicular to the lip. The shallow impressions are made with a cord wrapped stick. These cord wrapped stick impressions are 4 mm wide and spaced 4 mm apart giving the lip a piecrust look. The cordage is tightly wrapped around the stick. One rim with cord-wrapped stick impressions also has incisions on the along the exterior surface. The shallow narrow incisions on the rim are oriented perpendicular to the lip. The incisions are 1 mm wide and spaced 5 mm apart. The decoration extends down from the lip about 9 to 11 mm. Another vessel contains incised lip decorations. The short indents have a U-shaped bottom profile. The incisions are 2 mm wide, 2 mm deep and spaced 3 mm apart. On one vessel narrow deep incisions extend from the lip down the rim on the exterior surface. The incisions are oriented perpendicular to the lip and are 17 mm long. Another decorative technique is pseudo-cord impressions using a very tightly wrapped cord. The tight wraps of the primary cord element are oriented perpendicular to the underlying stick or cord. This tightly wrapped cord impression is called pseudo-cord impressions (Griffith 1977: 59). The pseudo-cord impressions are oriented oblique and horizontal to the rim. One small body sherd contains a broad line incision.

#### Form:

Lip: Lip forms include flat, beveled outward, and round. A small overhang on the exterior side of the lip is present on some sherds. One lip appears to be folded over.

Rim: Rim forms are straight. Rims taper toward the lip. Range of rim thickness is 4 to 6 mm. Rim diameters range from 9 to 29 cm with the average around 20 cm.

Body: No data on vessel shape. Range of body thickness is 4 to 8 mm.

Base: Base form is rounded. Range of base thickness is 7 to 9 mm.

#### Comments:

Similar to Rappahannock Fabric Impressed ceramics which range in age from 1050 B.P. to 350 B.P. (Griffith 1977; Griffith 1980; Griffith 1982). Lip decorations in the form of indentations are known from the Willin Site (Hutchinson 1967: 7, Figure 43) and sporadically occurred at Townsend Site (Blaker 1963: 16) and the Mispillion Site (Lopez 1961: 10). In the archaeological literature this type of lip treatment is also referred to a “nicked rim”, “scalloped rim”, and “pie-crust-like rim”. A Townsend corded vessel with a “nicked rim” was recovered from the Reynolds-Alvis Site (44HE470) located near Richmond, Virginia (Gleach 1987: 219). The execution of the “nicked rim” decorative motif on Townsend Corded ceramics suggests that this type of decoration post-dates 665 B.P. Townsend Corded dates to the later portion of the Late Woodland Period (665-350 B.P.) (Griffith 1980: 30). Cord-marked and net-marked Mockley-like ceramics from the Great Neck Site near Virginia Beach, Virginia have “relatively thin nicks to broader scalloping, placed along the top or inner surface of the lip (Hodges 1998: 107).” The Mockley-like ceramics were recovered from three features have a two-sigma overlapping uncalibrated date range of 1660-1570 B.P. (Hodges 1998: 107). The Great Neck Mockley-like vessels with nicked rims suggest this stylistic attribute may have been used also during the Middle Woodland Period. This form of lip decoration is not common on Townsend ceramics from Delaware according to Keith Doms (personal communication 1/2/2002).

### *Type IB*

Paste:

Temper and texture same as Type IA.

Color:

Exterior: Ranges from 5YR 6/4 light reddish brown and 10YR 5/2 grayish brown to 7.5YR 2.5/1 black.

Interior: Ranges from 7.5YR 5/6 strong brown and 10YR 6/3 pale brown to 7.5YR 2.5/1 black. Interior colors are typically darker reducing colors.

Core: Core color grades from interior to exterior colors.

Surface treatment:

Exterior: The exterior surface has been impressed with fabric. The fabric impressions are typically light. The impressions are made with the same fabric used for Type IA. Impressions are orient both parallel and oblique to the rim. The fabric impressions are light and occasionally smoothed over obscuring weft impressions. The deeper parallel impressions created by the warp elements are present even after smoothing. Erosion of sherd surfaces from the shoreline context could also be responsible for obscuring the fabric impressions. Impressions extend up to the lip and sometimes over the lip. Fabric

impression can run at oblique angles or parallel to the rim. Impressions on a reconstructed vessel overlap suggesting use of a fabric wrapped paddle. Stress cracks are present around the shell temper.

Interior: Fabric impressions are limited to the rim of the vessel. Fabric impressions are oriented perpendicular to the rim. The impressions typically extend up to the lip. On one rim fragment there is 8 mm zone between the lip and the start of the fabric impression that has been smoothed. On this rim sherd the surface was probably smoothed before fabric impressions were applied. The impressions on one reconstructed vessel extend down 80 mm down from the lip. Typically the interior impressions are partially smoothed. The interior surface of the vessel body where the surface has not been fabric impressed is smoothed and wiped. Light striations from wiping the surface are present. Stress cracks are present around the shell temper. Surface is generally even.

#### Decoration:

Decoration when present is restricted to the lip and rim. Lip decorations consist of impressions oriented oblique to the lip. The impressions range from shallow to deep. The deepest impressions appear to be made with a cord wrapped stick. These cord wrapped stick impressions are 5 mm wide and spaced between 5-7 mm apart giving the lip a piecrust look. Other impressions are spaced 3-4 mm apart. Some of the impressions could be made with a cord or fabric wrapped paddle. Rim decoration consists of incisions and impressions. On one vessel narrow shallow incisions extend from the lip down the rim on the exterior surface. The incisions are oriented perpendicular to the lip and are 17 mm long. Another decorative technique is the use of pseudo-cord impressions, which are applied in herringbone or zig-zag design. The pseudo-cord impressions extended up to the lip. The pseudo-cord impressions are not as deep or distinctive as other pseudo-cord impressions on Type IA sherds. The pseudo-cord impressions appear to have been applied before the flattening of the lip. These impressions could also be created with a fabric wrapped paddle.

#### Form:

Lip: Several lip forms are present. Undecorated lip forms are flat or beveled. Decorated lips are flat and round. The deeply impressed lips have a crenellated appearance or piecrust like appearance. One lip has a slightly outward bulge.

Rim: Rim forms are generally straight. One vessel has a slightly excurvate rim profile. Rims taper toward the lip. Range of rim thickness is 4 to 6 mm. Rim diameters range from 13 to 19 cm.

Body: Body form on two partially reconstructed vessel shows a gradual transition from the base of neck to shoulder. Range of body thickness is 6 to 9 mm.

Base: No data.

#### Comments:

See comments for Type IA. The occurrence of both Type IA and IB in the same feature suggests that both ceramic types are contemporaneous. However, extensive chronological analysis of exterior fabric impressed/interior fabric impressed Townsend pottery has not been conducted. Interior surface fabric impression on Townsend ware does occur, albeit in low frequency near the rim (Blaker 1963: 15; Griffith 1982: 56; Lopez 1961: 6). Rappahannock Fabric Impressed pottery from the Mispillion Site has the same vertical orientation of fabric impression on the interior surface as the Holland Point vessels (Lopez 1961: 6). The interior surface impression on the Mispillion Rappahannock Fabric Impressed sherds only extends downward for a short distance, which same pattern observed on the Holland Point examples (Lopez 1961: 6). Hodge (1998: 55) remarks that three Townsend vessels from the Great Neck Site Complex “are marked with the edge of a fabric-wrapped paddle on the interior of the vessel just below the lip.” The patterns of impressions on the interior surface of Great Neck Site Townsend vessels is similar to impressions have been observed on Vessel Lot IB-4.

#### *Type IC*

##### Paste:

Temper and texture same as Type IA.

##### Color:

Exterior: Ranges from 10YR 6/4 light yellowish brown and 2.5YR 5/6 red to 7.5YR 2.5/1 black.

Interior: Ranges from 7.5YR 6/4 light brown to 7.5YR 2.5/1 black.

Core: Core color grades from interior to exterior colors.

##### Surface treatment:

Exterior: The exterior surface is smoothed and occasionally wiped. The smoothing has completely obscured any previous fabric impressions. This makes it difficult to know if the surface was originally fabric impressed prior to smoothing. Surfaces are pitted when shell has been leached.

Interior: Interior surface is smooth and wiped. Striations from wiping the surface are present.

##### Decoration:



Incising decorations are oriented horizontal, perpendicular, and obliquely to the lip. The incisions are generally broad, deep lines with a U-shaped profile. The broad lines are 3 mm wide. Sherds only contain a portion of the decorative motif making interpretation difficult. One rim sherd contains perpendicular incisions extending to the lip. A horizontal line is used to frame the end of the horizontal and obliquely oriented lines. One rim sherd contains a series of horizontal lines near the lip with a zone of obliquely lines below the horizontal lines. A sherd contains broad incised lines oriented in multiple directions. Another pattern consists of criss-cross oblique oriented broad deeply incised lines. The incision was executed when the surface was still wet because the impressions have a bulging boundary. The criss-cross pattern starts at the lip and extends 28 mm from the lip. The criss-cross pattern overlaps a horizontal incision at the base of the decoration. Two rim sherds contain short punctuate-like incisions defining the lower part of the incised decoration. These incisions are oriented perpendicular and obliquely to the lip. One rim sherd contains a zig-zag design made with narrow (1 mm) shallow incised lines. The zig-zag motif consists of columns of obliquely oriented incised lines. The slant of the oblique lines alternates between each column. Several different direct cord impressions are used for decoration. The cordage is between 1-3 mm thick. It consists of a twisted 2-ply primary cord. Both final S-twist and Z-twist are represented. Two rims contain obliquely oriented direct cord impressions that start at the lip. Three rims contain horizontally oriented direct cord impressions. Other rim forms contain direct cord impressions oriented in several overlapping directions. Pseudo-cord impressions are also applied as decorative technique. Rim sherds contain rectangular-like designs made with pseudo-cord impressions. These rectangular designs cannot be clearly discerned because of the limited size of the rim sherds. Another rim sherd contains pseudo-cord impressions oriented parallel to the rim. Pseudo-cord impressions oriented in several directions is present on another rim sherd. Several rims are completely smooth without any decoration.

Form:

Lip: Lip forms are flat or rounded. One rim sherd has a slightly folded inward lip while another lip is folded outward. Another lip overhangs in slightly an outward direction.

Rim: Rim forms are generally straight or everted. Vessel Lot I – C (Artifact # 2.2496 and 2.2483) has an everted rim with an abrupt angle change between the rim and body. Another rim is everted at the lip. Rims typically taper toward the lip. Range of rim thickness is 4 to 7 mm. Rim diameters range from 9 to 28 cm with the average around 19 cm.

Body: No data on body shape. Range of body thickness is 4 to 13 mm with the average 6-8 mm.

Base: No data.

Comments:

Similar to Townsend ceramics. Smoothed over fabric impressions especially near the lip is common for Townsend ceramics. Fabric impressed exterior surfaces are typically smooth around the rim where decoration is applied (Blaker 1963: 15). Fabric impressions that are smoothed over the whole vessel have been reported in Delaware (Griffith 1982: 56). Left over (remnant) warp impression typically visible after light smoothing is not visible on Type IC. This makes it challenging to determine if surfaces of Type IC are first fabric impressed and then smoothed. This type could represent portions of the Type IA vessels that are intentionally smoothed after fabric impressions are applied. Type IC is also comparable to Yeocomico Plain found in the lower Potomac associate with uncalibrated radiocarbon dates of  $410 \pm 55$  B.P. and  $440 \text{ B.P.} \pm 75$  (Waselkov 1982: Table 42). Yeocomico Plain is historically defined as smooth surfaced and shell tempered. Townsend ceramics date from 1050 B.P. to 350 B.P. (Griffith 1980; Griffith 1982). Analysis of Rappahannock Incised ceramics by Griffith found that this historic type has an uncalibrated date range from  $865 \pm 75$  B.P. to  $1285 \pm 85$  B.P. Rappahannock Incised dates to the early part of the Townsend sequence before 665 B.P., while Townsend corded generally post-dates 665 B.P. (Griffith 1980: 30). Several radiometric dates for Rappahannock Incised ceramics from Virginia corroborated the date range proposed by Griffith. At 44SK40 in the James River Basin, two features containing Rappahannock Incised have 2 sigma-calibrated dates of 910-660 B.P. and 970-740 B.P. (Blanton, et al. 2000). At Blue Fish Beach Site (44NB147) on the Lower Potomac Rappahannock Incised ceramics with complex geometric motifs have a 2 sigma-calibrated dates of 912-656 B.P. (Potter 1982). At the Thomas Point Site (18ST570) near the mouth of Patuxent River, Rappahannock Incised and Rappahannock Fabric Impressed ceramics in tree-fall depression are associated with an uncalibrated radiocarbon date of  $1060 \pm 80$  B.P. Several dates for Rappahannock Incised do not fall within the traditional date range for the type. Two sites (44JC118, 44JC41) in James City County Virginia (Muraca 1989; Outlaw 1990) have calibrated dates for Rappahannock incised that are younger than the traditional range for this type. Rappahannock incised was found in a feature at 18QU326 on Kent Island in Maryland associated with two calibrated dates (Davis, et al. 2002: 276). The two assays have two-sigma date range is 660-510 B.P. and 670-540 B.P. (Davis, et al. 2002: 276). The two dates from the same feature at 18QU326 provide convincing evidence that Rappahannock incised ceramics date to late Late Woodland contrary to Griffith's chronology for Townsend ceramics. The Vessel Lot IC - 19 with incised zig-zag design is comparable to either Rappahannock Incised type RI4 or RI7 (Griffith 1980: Figure 5) which dates early in the Townsend series. Vessel Lots IC-21 and IC-22 can be classified into the RI2 type they both have horizontal bands and a second band in field two. Vessel Lot IC-26 (2.2037) is similar to RI6.

### *Type ID*

Paste:

Temper and texture same as Type IA. Small-excavated sherd has leached shell and eroded edges.

Color:

Exterior: Ranges from 2.5YR 5/6 red to 2.5Y 4/1 dark gray.

Interior: Ranges from 7.5YR 6/4 light brown to 7.5YR 2/1 black. Most sherds have a dark interior.

Core: Range from 7.5YR 6/2 pinkish gray to 7.5YR 2/1 black.

Surface treatment:

Exterior: The exterior surface has been impressed with cord-wrapped paddle. The cordage ranges from fine to medium. The width of the cords ranges 2 to 3 mm. The cords are spaced 1-2 mm apart. The cordage is loosely wrapped around the paddle. The cord impressions are orient both in one direction and in multiple overlapping directions. One sherd has cordage impression with a final Z-twist. One rim sherd has the impressions oriented parallel to the rim. The impressions on this sherd extend over the lip.

Interior: Interior surfaces are smooth with some wiping. A limited amount of faint striations from wiping are present.

Decoration:

Rim sherd contains cord-wrapped stick impressions or impressions from the edge of cord-wrapped paddle. The impressions are oriented parallel to the lip. The cordage is loosely wrapped around the stick or paddle. The cordage is 2-3 mm wide and the stick/paddle edge is 4-6 mm wide. The impressions are deep.

Form:

Lip: Lip forms are round and flat. One lip is bulbous.

Rim: Rim forms are everted. One rim appears to have been everted by pressing it against a cord wrapped stick. Range of rim thickness is 4 to 5 mm. Rim diameters range from 14 to 19 cm.

Body: No data on body shape. Range of body thickness is 6 to 11 mm.

Base: No data.

Comments:

A few sherds similar to this type were found at the Townsend Site (Blaker 1963: 22, Plate 5A.) and the Hell Island Site (Thomas 1966: 14). This type is comparable to Miscellaneous Group E pottery from the Accokeek Creek Site (Stephenson and Ferguson 1963: 127). This type also shows affinities with cord-marked ceramics associated with Sullivan Cove Phase on the Western Shore of Maryland (Peck 1978; Potter 1993: 83; Wright 1978: 22-23, Figure 10A). This pottery referred to as Sullivan Cord-Marked was found at the Thomas Point shell midden on the Western Shore. Sullivan Cord-Marked, Mockley, Rappahannock Fabric Impressed, and Rappahannock Incised were associated with contexts that had an uncalibrated date range of 1070-880 B.P. in the shell midden (Herbert 1995: 66-69). The dates from the Thomas Point Midden suggest that Sullivan Cord Marked could date from the late Middle Woodland to the early Late Woodland. Peck (1979) reports an uncalibrated date of 565 $\pm$ 55 associated with Sullivan Cove Ware from Waveland Farm in Maryland. Type ID is also comparable to Yeocomico Cord Marked found at White Oak Point Site and is radiocarbon dated from 500 B.P. to 350 B.P. (Waselkov 1982: 296, 252-253). The cord wrapped stick decorations of Type I D are similar to the decorations on Yeocomico Cord-Marked (Waselkov 1982: Table 51).

#### *Type IE*

Paste:

Temper and texture same as Type IA.

Color:

Exterior: Ranges from 2.5YR 6/4 light yellowish brown to 5YR 4/3 reddish brown.

Interior: Ranges from 10YR 6/4 light yellowish brown to 10YR 4/1 dark gray.

Core: Range from 2.5Y 4/1 dark gray to 2.5Y 3/1 very dark gray.

Surface treatment:

Exterior: The exterior surface is scraped smooth. The surface is covered with striation marks create from the tool used to scrape the surface. The striation marks are mostly oriented in a uniform direction with secondary lighter striation marks overlapping in multiple directions.

Interior: The same surface treatment on the exterior was applied to the interior surface. The striations are generally oriented horizontal to the rim. The striations are executed in a uniform direction.

Decoration:

Decoration on one rim sherd is confined to the lip. The decoration consists of shallow incisions oriented oblique to the lip. The incisions are 1 to 2 mm wide and spaced 1 to 4 mm apart.

Form:

Lip: Lip form is flat.

Rim: Rim forms are straight to slightly everted. Rim thickness is 7 to 8 mm.

Body: No data on body shape. Range of body thickness is 6 to 9 mm.

Base: No data.

Comments:

Grossly similar to Yeocomico Scrapped (Waselkov 1982: 296). The scrapped surface creating shallow grooves-like is similar to descriptions of surface treatments for Yeocomico Scrapped (Waselkov 1982: 296). Similar scrapped surfaces have been noted on the interior surfaces of shell tempered Roanoke ware from the Great Neck Site Complex (Hodges 1998: 49). The general paste characteristics, which are comparable to Townsend Ware and Yeocomico and Roanoke, suggest that this type dates to the Late Woodland.

*Type IF*

Paste:

Temper and texture same as Type IA.

Color:

Exterior: Ranges from 10YR 6/4 light yellowish brown to 10YR 3/1 very dark gray.

Interior: Ranges from 10YR 3/1 very dark gray to 10YR 2/1 black.

Core: Core colors same as interior color.

Surface treatment:

Exterior: The exterior surface has been impressed with fabric that is different than fabric used to make Type IA impressions. The impressions are deep. The fabric could be classified as a balanced plain weave because the warp and weft are equally exposed. The warp (horizontal) elements are 1 mm wide and spaced 6 mm apart. The weft (vertical) elements are 3 mm wide and the spacing ranges from 0 to 3 mm apart. The

wefts are uneven spaced along the warps. A diagonal element with a width of 2 mm also crosses through the weft and warp. The fabric could be cross-warp wrapped or knotted net fabric.

Interior: Interior surface is smoothed. The surface is uneven.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: No data on body shape. Range of body thickness is 5 to 6 mm.

Base: No data.

Comments:

The general paste characteristics suggest this type post-dates 950 B.P. The use of fabric impressions suggests that this type post-dates 1150 B.P. (Stewart 1998b: 213-221). The fabric used to impress the surfaces appears similar to the Fabric Type 2 identified at Gravelly Run Site in coastal New Jersey (Wigglesworth 1986: 43, Figure 7).

### *Type IG*

Paste:

Temper and texture same as Type IA.

Color:

Exterior: The exterior color is 7.5YR 5/3 brown.

Interior: Ranges from 7.5YR 3/1 very dark gray to 7.5YR 2/1 black.

Core: Ranges from 7.5YR 5/3 brown to 7.5YR 4/2 brown.

Surface treatment:

Exterior: The exterior surface is fabric impressed. The weft element is 2 to 3 mm wide. The ribbed impressions created by the wefts being woven around the warps are 5 to 7 mm wide. Rolling a cord wrapped stick with tightly wrapped cordage could also create this surface treatment.

Interior: Interior surface is smoothed.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: No data on body shape. Range of body thickness is 7 to 9 mm.

Base: No data.

Comments:

The weft cordage of the fabric used to make the impressions is significantly wider than the weft cordage of fabric impressions on Type IA. The two different types of fabrics were used to create the surface treatment on Type IA and IG. The general paste characteristics suggest this type post-dates 950 B.P. The use of fabric impressions suggests that this type post-dates 1150 B.P. (Stewart 1998b: 213-221).

### *Type IH*

Paste:

Temper and texture same as Type IA.

Color:

Exterior: Ranges from 5YR 5/4 reddish brown to 7.5YR 3/1 very dark gray.

Interior: Ranges from 7.5YR 3/1 very dark gray to 7.5YR 2.5/1 black.

Core: Core colors same as interior color.

Surface treatment:

Exterior: The exterior surface is fabric impressed. The fabric has an open weave which could be a knotted net. The possible warp elements consist of 1 to 2 mm wide cordage spaced 2 to 3 mm apart. These warp-like elements are oriented parallel to each other. Rows of knot-like impressions, which are 3 to 4 mm wide, occur along the warp elements. The rows of knot-like impressions cut diagonally across the warps. Loosely

weaving and/or wrapping thick weft elements around the warps could also create these knot-like impressions.

Interior: Interior surface is smoothed. The surface is uneven.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: No data on body shape. Range of body thickness is 5 to 6 mm.

Base: No data.

Comments:

Type IH is not comparable to any historic types. The general paste characteristics suggest this type post-dates 950 B.P. The use of fabric impressions suggests that this type post-dates 1150 B.P. (Stewart 1998b: 213-221).

## Ware II

All of the sherds within this ware group are tempered with crushed shell. Shell tempered paste is crumbly. The paste is moderately hard. A moderate amount of temper is in the paste. Excavated sherds have pitted surfaces and rounded edges.

### *Type IIA*

Paste:

Temper: Temper consists of crushed shell. The crushed shell ranges in size from fine to 4 mm with the average size around 3 mm. The sherds are moderately tempered with shell. Shell temper ranges from partially leached to not leached. A minor amount of micaceous sand is present in the sherds. A small amount of fine orange inclusions, which may or may be naturally in the clay, are present in paste.

Texture: Paste is dense. Sherds have gritty feel because of the sand in the paste. Paste has a laminated appearance in cross section. Shell temper on interior and exterior surface is oriented parallel to the surface. In cross section shell temper orientation is haphazard. Small air pockets are present on the sherds where the shell has been leached. Interior and exterior surfaces have pitted look to them because of shell leaching. The



shell temper from excavated sherds is partially leached. Laminated and even breaks are present. Some coil breaks are present. Excavated sherds have eroded breaks.

Color:

Exterior: Ranges from 10YR 4/1 dark gray to 5YR 5/6 yellowish red.

Interior: Ranges from 10YR 3/1 very dark gray to 10YR 6/3 pale brown.

Core: Core colors grade from exterior to interior.

Surface treatment:

Exterior: The exterior surface has been impressed with fabric wrapped paddle. The fabric is the same as Type IA fabric. The impressions are light. A portion of a reconstructed vessel contains an area that shows the transition from a fabric-impressed surface to where the impressions have been smoothed over. The warp impressions are between 3-4 mm wide. Impressions overlap and are oriented in two different directions.

Interior: Interior surface is smooth and wiped. Striations from wiping the surface are present. Interior surface of the partially reconstructed vessel is pitted from the shell temper being leached.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: No data on body shape. Range of body thickness is 7 to 9 mm.

Base: No data.

Comments:

Similar to Rappahannock Fabric-Impressed ceramics which dates to the Late Woodland. See Type IA comments concerning Rappahannock Fabric-Impressed.

*Type IIB*

Paste:

Temper and texture of paste is same as Type IIA.

Color:

Exterior: Ranges from 2.5YR 5/6 red and 7.5YR 5/4 brown to 7.5YR 3/1 very dark gray.

Interior: Ranges from 10YR 5/4 yellowish brown to 10YR 2/1 black.

Core: Ranges from 7.5YR 4/3 brown to 10YR 2/1 black.

Surface treatment:

Exterior: The exterior surface is smoothed and even. The surface is pitted because of shell leaching.

Interior: Same as exterior, but not as pitted.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: No data on body shape. Range of body thickness is 7 to 9 mm.

Base: No data.

Comments:

Similar to Townsend ceramics and Yeocomico Plain ceramics which dates to the Late Woodland. See comments for Type IC concerning Yeocomico Plain.

Ware III

The sherds in this ware group are tempered with crushed shell. Orange inclusions, which may be crushed ceramics or natural inclusions, are incorporated throughout the paste. The paste is hard and dense. Sherds are generally thick.

*Type IIIA*

Paste:

Temper: Temper consists of finely to coarsely crushed oyster shell. The crushed shell ranges in size from fine to 8 mm with average size around 2 mm. Orange (Munsell 2.5YR 4/6 red) inclusions are also present in the paste. The low percentage of these inclusions in the paste suggests they are natural. The inclusions do not appear to be temper indicating that they are probably not grog. The sherds are moderately tempered. Paste is well mixed with temper. A very small amount of fine micaceous sand and quartz sand is occasionally present in paste. The sand is probably occurs naturally in the clay.

Texture: Paste is smooth and dense. Paste has a laminated appearance in cross section. Shell temper on interior and exterior surface is oriented parallel to the surface. In cross section shell temper orientation is haphazard. Shell temper is partially leached in excavated sherds. Voids are present where the shell has been leached. Overall the paste is dense and hard with little to no pore spaces or air bubble. A limited amount of stress cracks are present and originate from around the shell temper. Breaks are predominately even. Coil breaks are present. Excavated sherds have slightly round breaks.

Color:

Exterior: Ranges from 5YR 5/4 reddish brown to 5YR 2.5/1 black.

Interior: Ranges from 10YR 6/4 light yellowish brown to 10YR 3/1 very dark gray.

Core: Ranges from 10YR 6/4 light yellowish brown to 10YR 5/1 gray.

Surface treatment:

Exterior: The exterior surface is impressed with a fabric wrapped paddle. The fabric is the same weave as Type IA fabric. The impressions have been partially smoothed generally obscuring the weft element. The wefts on one sherd are 2 mm wide. The rib-like impressions made cordage wrapped around the warps are visible. The rib-like impressions are oriented obliquely and horizontal to the rim on two different vessel segments. One rim sherd has faint impressions (which may or may not be fabric impressions) that are oriented vertically. The surface is partially pitted because of shell leaching.

Interior: The interior surface of two partially reconstructed vessels is wiped smooth with faint striations occasionally present. This surface is also partially pitted because of shell leaching.

Decoration:

One partially reconstructed vessel contains pseudo-cord impressions. The rim is broken below the lip making interpretations of the complete decorative motif impossible. The portion of the decoration that is present consists of pseudo-cord impressions arranged in

a filled rectangular motif. There is one large rectangle with a smaller one placed inside and a horizontal line inside the smaller rectangle. The decoration consists of vertical and horizontal impressions. The pseudo-cord impressions are 2-3 mm wide and the small strands wrapping around the cord are 1 mm wide.

Form:

Lip: The lip of one vessel is rounded and smoothed.

Rim: The rim form of Vessel Lot III A – 1 is straight. Range of rim sherd thickness is 6 to 7 mm. Rim diameter for Vessel Lot III A – 1 ranges from 13 to 15 cm.

Body: No data on body shape. Range of body thickness is 6 to 11 mm.

Base: No data.

Comments:

The undecorated body and rim sherds are similar to Rappahannock Fabric-Imprinted ceramics, which range in age from 1050 B.P. to 350 B.P. (Griffith 1977; Griffith 1980; Griffith 1982). One partially reconstructed vessel that can be classified as Rappahannock Fabric-Imprinted ceramics (Vessel Lot III A – 1, Artifact # 110.19) has a two-sigma calibrated date of which intercepts the calibration curve twice at 1240-1040 Cal B.P. 1030-1000 Cal B.P. (Beta-159993). Vessel Lot III A - 2 (Artifact # 2.3013) with the pseudo-cord impressions in a nested rectangular motif can be classified as Townsend Corded.

*Type IIIB*

Paste:

Temper and texture same as Type IIIA.

Color:

Exterior: The exterior color is 10YR 5/3 brown.

Interior: Same as exterior color.

Core: Core color is 10YR 5/1 gray.

Surface treatment:

Exterior: The exterior surface is fabric impressed. The fabric is the same weave as Type IA fabric. The wefts are 2 mm wide. The rib-like impressions made cordage wrapped

around the warps are visible. The rib-like impressions are 4 mm wide and oriented horizon to the rim.

Interior: Same treatment as the exterior surface except the impressions is oriented perpendicular to the rim.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: No data on body shape. Body thickness is 8 mm.

Base: No data.

Comments:

Same comments apply as for Type IIIA. Interior fabric impression on Townsend ware does occur albeit in low frequency near the rim (Blaker 1963: 15; Griffith 1982: 56). See Type IB for additional comments on interior fabric impressions.

### *Type IIIC*

Paste:

Temper and texture same as Type IIIA. Temper also contained crushed mussel shell.

Color:

Exterior: Ranges from 7.5YR 6/6 reddish yellow to 7.5YR 3/1 very dark gray.

Interior: Ranges from 7.5YR 6/4 light brown to 7.5YR 2.5/1 black.

Core: Grades from exterior to interior color.

Surface treatment:

Exterior: The exterior surface is smoothed and partially pitted because of shell leaching.

Interior: Interior surface is smoothed without wipe marks. This surface is also partially pitted because of shell leaching.

#### Decoration:

Decoration confined to the rim includes incising, pseudo-cord impressions and direct cord impressions. The incising consists of broad (2 mm) and narrow (1 mm) lines. The incisions have both flat and round profiles. The partial design on one rim consists of zip-zag lines that frame obliquely oriented incisions. The pseudo-cord impressions consist of nested rectangles. There might be two rows of nested rectangles on the rim. The pseudo-cord impressions are 2-3 mm wide and the small strands wrapping around the cord are 1 mm wide. The direct cord impressions consist of two horizontal bands of lines. The cordage is 2 mm wide and has final Z-twist. The rim sherd is small and may contain only a portion of the larger design.

#### Form:

Lip: The lip form is rounded.

Rim: The rim form is straight and tapers slightly to the lip. Range of rim sherd thickness is 4 to 7 mm.

Body: No data on body shape. Range of body thickness is 6 to 8 mm.

Base: No data.

#### Comments:

The incised rim sherd (Artifact # 2.2004) is similar Rappahannock Incised (RI7 or RI5), which dated from 950-665 B.P. (Griffith 1980: 30). Two refitted rim sherds (Artifact # 2.1949 and 2.3015) with pseudo-cord rectangular impressed designs are similar to the Townsend Corded type. Pseudo-cord decorative technique is believed to post-date 665 B.P. (Griffith 1980: 32). The pseudo-cord impressed sherds are grouped together as Vessel Lot III C -2. The small rim sherd with horizontal direct cord impressions (Artifact # 2.1998) is similar to Townsend Corded Horizontal (TC1) (Griffith 1980: 30). The direct cord technique is a relatively late attribute in the Townsend sequence that is believed to post-date 590 B.P. (Griffith 1980: 31).

#### *Type IIID*

#### Paste:

Temper and texture same as Type IIIA.

#### Color:

Exterior: The ranges from 5YR 5/4 reddish brown to 5YR 5/3 reddish brown.

Interior: No data. Interior surface is eroded.

Core: The ranges from 5YR 5/1 gray to 5YR 4/1 dark gray.

Surface treatment:

Exterior: The exterior surface is impressed with a cord-wrapped paddle. The impressions are light. The cordage is thin (1 mm). Direction of twist cannot be determined. The cordage is loosely wrapped around the paddle. The spacing between cords is around 3 mm. Impressions are oriented in one direction.

Interior: No data. Interior surface is eroded.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: No data on body shape. Body thickness is 8 mm.

Base: No data.

Comments:

Type III D is roughly comparable to Sullivan Cord Marked and Yeocomico Cord Marked. See comments for Type I D concerned shell tempered Late Woodland Cord Marked ceramics.

Ware IV

Paste: Sherds of this ware group are heavily tempered with sand and varying amounts crushed shell. Sherds have a sandy feel and are generally thick. Sherd are heavy because the high percentage of sand in the paste. Surfaces pitted where larger quartz grains have been plucked from the surface.

*Type IVA*

Paste:

Temper: The temper consists of micaceous sand and crushed shell. A high percentage of the sand is in the paste. Sand is readily visible without a microscope. The micaceous sand gives sherds a slight "sparkle" appearance. A limited amount of a crushed shell is included in the paste. The crushed shell ranges in size from fine to 7 mm with the

average size being 5 mm. Isolated rounded pieces of clear and milk quartz is infrequently present in the paste.

Texture: The paste has a sandy feel because of the high amount of sand in the paste. Paste tends to crumble because of the high sand content. The sand temper is well mixed with the paste. The shell temper is not as well mixed and partially leached. The paste is dense with infrequent void where shell has leached. A limited amount of the sherds have exfoliating exterior surfaces. Breaks are generally even with some coil breaks. The smoothing over of a coil is visible on one sherd. One excavated sherd has eroded breaks.

Color:

Exterior: Ranges from 5YR 5/6 yellowish red to 7.5YR 4/1 dark gray. Most sherds are 10YR 5/2 grayish brown.

Interior: Ranges from 10YR 5/3 brown to 10YR 2/1 black. Two sherds have sooting.

Core: Ranges from 7.5YR 5/4 brown to 10YR 2/1 black.

Surface treatment:

Exterior: The exterior surface has been impressed with fabric. The impressions range from light to heavy. Abrasion of sherds along in the swash-berm zone of the shoreline could have lead to erosion of exterior surface treatment. The type of weave is the same as the Type IA fabric. However, the fabric has a more open weave then Type IA and the weft element is thicker. The ribbed impressions created by the weft wrapped around the warp and are between 5 and 6 mm wide. The thickness of the weft impressions is 2 mm. Impressions are oriented parallel to the rim and extend to lip. The exterior surface treatment is applied before lip decoration.

Interior: The interior surface is smooth and some may be wiped. Some striations are present. Stress cracks are infrequently present around shell temper.

Decoration:

Decoration is confined to the lip. Obliquely oriented fabric impressions are present on the lip. The fabric appears to be the same types used on the surface treatment. The impression could be either from the edge of a fabric wrapped paddle or the face of a fabric wrapped paddle. The impresses are spaced 6 mm apart.

Form:

Lip: Lip form is flattened with a slight outward bulge.



Rim: Rim form is slightly everted. Range of rim sherd thickness is 6-8 mm. Rim diameter for Vessel Lot IVA – 1 ranges from 14 to 23 cm.

Body: No data on vessel shape. Range of body sherd thickness is 7-10 mm.

Base: No data

Comments:

This type is similar to Killens and Currioman Fabric Impressed ceramics. Killens commonly co-occur with Townsend and Minguannan ceramics (Custer 1989: 308-309). This co-occurrence of Killens with other Late Woodland ceramics (i.e. Townsend and Minguannan) suggests Killens dates from 950 B.P. to 350 B.P. The only published radiometric date for Killens is from the Leipsic Site (Custer, et al. 1996: 69). Killens was found in a radiocarbon-dated feature, which had a calibrated date range of 910-560 B.P. (Custer, et al. 1996: 69). Type IVA is also comparable to Currioman Fabric Impressed which has been radiocarbon dated at the White Oak Point Site to  $630 \pm 60$  Cal. B.P. (Waselkov 1982: 287, 293-294). The flattened and fabric impressed lip of Type IVA is also a characteristic attribute of Currioman Fabric Impressed (Waselkov 1982: 287).

*Type IVB*

Paste:

Temper: The temper consists of micaceous sand and crushed shell. A high percentage of the sand is in the paste. Sand is readily visible without a microscope. The micaceous sand gives sherds a slight “sparkle” appearance. More crushed shell is present in the paste than in the Type IVA.

Texture: The paste is hard and has a slightly sandy feel. The sand and shell temper is well mixed with the paste. The leached shell leaves numerous voids in the paste. Breaks are uneven.

Color:

Exterior: Exterior color is 7.5YR 4/2 brown.

Interior: Ranges from 7.5YR 3/1 very dark gray to 7.5YR 4/1 dark gray.

Core: Same as exterior.

Surface treatment:

Exterior: The exterior surface has been impressed with fabric. The impressions are light. The warp impressions are between 5-6 mm wide. The fabric is comparable to the fabric impressions of Type IA. Impressions are oriented parallel to the rim and extend to lip.

Interior: The interior surface is fabric impressed with the same type of fabric used on the exterior. Smoothing of the surface has obscured most of the fabric impressions. The impressions are oriented vertically.

Decoration: None

Form:

Lip: No data.

Rim: No data. Body: No data on vessel shape. Body sherd thickness is 7 mm.

Base: No data

Comments:

The presence of interior fabric impression on Killens ware has not been published or documented. Yet, in other respects Type IVB is comparable to Type IVA and the comments for Type IVA apply to Type IVB.

### *Type IVC*

Paste:

Temper: The temper is the same as Type IVA except Type IVC has more crushed shell.

Texture: The paste has a sandy feel because of the high amount of sand in the paste. The paste is generally harder than IVA. The temper is well mixed with the paste. The paste is dense with infrequent voids where shell has leached. Some sherds have a friable paste. Breaks are generally even with some coil break. One excavated sherd has crisp non-rounded edges.

Color:

Exterior: Ranges from 7.5YR 6/4 light brown to 5YR 5/8 yellowish red to 7.5YR 2.5/1 black.

Interior: Ranges from 7.5YR 5/2 brown to 7.5YR 2.5/1 black. Most sherds have dark interior.

Core: Same as Interior colors.

Surface treatment:

Exterior: The exterior surface is smooth and some may be wiped. Surfaces are pitted because of leached shell and plucked temper.

Interior: Same as Exterior surface.

Decoration:

One rim sherd contains two bands of direct cord impressions orient horizontal to the rim. The cordage is between 1-3 mm of twisted 2-ply primary cord. The cordage has a final S-twist.

Form:

Lip: No data.

Rim: Rim form is round. Range of rim sherd thickness is 5-7 mm. Rim diameter for Vessel Lot IVC – 1 ranges from 13 to 16 cm.

Body: No data on vessel shape. Range of body sherd thickness is 5-10 mm.

Base: No data.

Comments:

One decorated rim sherd is unique to warrant classification into its own vessel lot. The vessel lot designation is Vessel Lot IVC-1. This sherd is grossly comparable to Townsend Corded Horizontal. However, the paste characteristics of the ware are not typical of Townsend ceramics. Blaker (1963: 14) does indicate that Townsend paste occasionally has white quartz sand. The amount of sand in Ware IV paste is significantly greater than the amount of sand observed in Ware I paste and other wares that are more similar to Townsend ceramics. The sand that Blaker describes could be a natural inclusion in the clay. Thus to definitively say if the Vessel Lot IVC-1 is Townsend Corded is problematic. This typological challenge reflects the limitation of using historic typologies to handle the variability in the ceramic assemblages. Vessel Lot IVC-1 probably dates to the Late Woodland based on its affinities with Killens ware. Same comments apply for Type IVA.

*Type IVD*

Paste:

Temper and texture same as Type IVA.

Color:

Exterior: The exterior color is 7.5YR 5/4 brown.

Interior: The interior color is 2.5YR 5/6 red.

Core: The core color grades from interior to exterior.

Surface treatment:

Exterior: The exterior surface is impressed with cord-wrapped paddle. The impressions are light suggesting that the surface was subsequently smoothed. Alternatively, the impressions could have been made when the clay was firm. The cordage is thin (1 mm) with a final Z-twist. The cordage is loosely wrapped around the paddle. The spacing between cords is ranges from 3 to 5 mm. Impressions are oriented in several different directions.

Interior: The interior surface is smooth and may have been wiped.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: No data on vessel shape. Range of body sherd thickness is 10-12 mm.

Base: No data.

Comments:

Same comments apply for Type IVA. It is not known if Killens traditionally has cord marked surfaces. Type IVD is believed to date to the Late Woodland.

Ware V

Paste: Ware is tempered with medium to finely crushed shell. The paste is friable and has a distinctive olive gray color.

*Type VA*

Paste:

Temper: Temper consists of crushed shell. Paste is well mixed with temper. The crushed shell ranges from fine to 5 mm. A moderate amount of shell temper is present in the paste. A very small amount of fine micaceous sand is naturally present in the clay.

Texture: Paste is dense. The sherds feel smooth. Paste has a laminated appearance in cross section. Shell temper on interior and exterior surface is oriented parallel to the surface. In cross section shell temper orientation is haphazard. There are little to no pore spaces or air bubbles. Sherd surfaces flake off along broken edges. Paste is brittle and breaks easily. Coil breaks are predominating.

Color:

Exterior: Ranges from 2.5Y 6/6 olive yellow and 7.5YR 5/8 strong brown to 7.5YR 3/1 very dark gray.

Interior: Same as exterior.

Core: Ranges from 2.5Y 6/6 olive yellow to 2.5YR 4/8 red.

Surface treatment:

Exterior: The exterior surface has been impressed with fabric. The fabric is the same as the fabric used in Type IA. The impressions are light. One portion of a reconstructed vessel the impressions are oriented parallel to the rim.

Interior: The interior surface has the same fabric impressions as exterior surface. The interior surface fabric impressions are oriented perpendicular to the rim. The fabric impressions are confined to the rim and the rest of the interior surface is smoothed.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: The curvature of the vessel below the rim either suggests a constriction at neck or that the rim flares outward slightly. Range of body thickness is 6 to 7 mm.

Base: No data.

Comments:

Similar to Late Woodland Rappahannock Fabric Impressed ceramics. Townsend series ceramics occasionally have interior fabric impression near the rim (Blaker 1963: 15; Griffith 1982: 56). See comments for Type VA and comment for Type IB on interior fabric impressions.

## Ware VI

Sherds are tempered with shell crushed. The paste is hard and dense. The sherds have a very smooth to soapy feel to them and a red color to them.

### *Type VIA*

#### Paste:

Temper: Temper consists of crushed oyster shell. The crushed shell ranges in size from fine to 6 mm with average size around 3 mm. The sherds are moderately tempered. Paste is well mixed with temper. Very small amounts of fine micaceous sand and quartz sand and orange inclusions are occasionally present in paste. The sand and orange inclusions probably occur naturally in the clay.

Texture: Paste is hard and dense. Paste has a distinctive soapy feel. Paste has a laminated appearance in cross section. Shell temper from shoreline line context is completely leached. Voids are present where the shell has been leached. A limited amount of stress cracks are present and originate from around the shell temper. Breaks are predominately even. Coil breaks are present.

#### Color:

Exterior: Ranges from 2.5YR 5/6 red and 5YR 5/6 yellowish red to 5YR 2.5/1 black.

Interior: Ranges from 2.5YR 5/3 reddish brown to 5YR 2.5/1 black.

Core: Core color grades from interior to exterior colors.

#### Surface treatment:

Exterior: The exterior surface has been impressed with cord-wrapped paddle. The cordage ranges from fine to medium. The width of the cords ranges 2 to 3 mm. The cords are spaced 2-6 mm apart. The cordage is loosely wrapped around the paddle. The cord impressions are generally oriented in one direction, but overlaps. Impressions are deep. One rim sherd has the impressions oriented oblique to the rim. Cord marking does not extend onto the lip.

Interior: Interior surfaces are smooth and have been wiped. Striations from wiping the surface are occasionally present.

Decoration: None

Form:

Lip: The lip form is flat.

Rim: The rim form is straight. No data on rim diameter. Rim thickness is 10 mm.

Body: No data on vessel shape. Range of body thickness is 7 to 10 mm.

Base: No data.

Comments:

Grossly compared to Mockley ceramics. On the Delmarva Peninsula, Mockley is dated from 1950-950 B.P. (Custer 1990: Figure 1). Mockley ceramics are hypothesized to evolve into Townsend ceramics (Custer 1989: 174). Mockley surface treatments consist of smoothed, cord marked, and net impressed (Custer 1989: 174).

### *Type VIB*

Paste:

Temper, texture, and color same as Type VIA.

Color:

Exterior: Ranges from 2.5YR 5/6 red to 2.5YR 4/1 dark reddish brown.

Interior: The interior color is 2.5YR 2.5/1 reddish black.

Core: Core color grades from interior to exterior colors.

Surface treatment:

Exterior: The exterior surface is net marked. Net impression consists of deeply impressed knots with connecting mesh visible. The knots range in size from 4-6 mm. The connecting mesh is 2 mm in width. The unevenly spaced knots range from 4-5 mm apart.

Interior: Interior surfaces are smooth and have been wiped. Striations from wiping the surface are present.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: No data on vessel shape. Range of body thickness is 12 to 13 mm.

Base: No data.

Comments:

Grossly compared to Mockley ceramics. See comments for Type VIA.

*Type VIC*

Paste:

Temper, texture, and color same as Type VIA.

Color:

Exterior: Ranges from 10YR 7/3 very pale brown to 7.5YR 6/6 reddish yellow.

Interior: Same as exterior color.

Core: Same as exterior color.

Surface treatment:

Exterior: The exterior surfaces are smooth and wiped.

Interior: Same as exterior.

Decoration: None

Form:

Lip: No data.

Rim: No data.



Body: No data on vessel shape. Range of body thickness is 10 to 11 mm.

Base: No data.

Comments:

Grossly compared to Mockley ceramics. See comments for Type VIA.

Ware VII

Paste: Sherds of this ware group are tempered with orange colored inclusions (possible grog), quartz sand, and crushed oyster shell. It is unclear if the orange inclusions are crushed pottery (i.e. grog). The paste is friable. The sherds are all tan in color and thick.

*Type VIIA*

Paste:

Temper: Temper consists of orange colored inclusions (possible grog), quartz sand, and crushed oyster shell. The orange colored inclusions are well represented in the paste. The color of the inclusion is distinctive from the color of the rest of the paste. The inclusion's color ranges from 10YR 7/6 yellow to 5YR 6/8 yellowish red. Occasionally quartz temper is present within the larger inclusions suggest the inclusions might be crushed pottery. Quartz sand temper is present in moderated amount in the paste. A limited number of large quartz grains up to 4 mm are in the paste. A small amount of crushed shell is present in the paste. Some sherds have little to no shell in the paste.

Texture: Paste is friable. Sherds tend to crumble along edges. Sand temper is well mixed with the paste. However, the orange colored inclusions and shell are not well mixed (i.e. unevenly distributed) throughout paste. Stress cracks are present around the orange colored inclusions suggesting that they have a different heating coefficient than the surrounding clay (Dr. Myers, personal communication 3/10/2001). The orange colored inclusions have the same hardness as the surrounding paste, which also suggests that the inclusions might be grog. However, thin section analysis of the sherds would be necessary to confirm these initial observations about the use of grog temper. A small amount of crushed shell is used as temper. The shell is completely leached from the paste. The voids from the leached crushed shell range from fine to 4 mm. All the sherds are from the shoreline assemblage. Breaks are predominately even. Coil breaks are present. One possible coil fragment is 13 mm in diameter.

Color:

Exterior: Ranges from 10YR 7/4 very pale brown to 10YR 6/4 light yellowish brown.

Interior: Ranges from 10YR 6/4 light yellowish brown to 10YR 4/1 dark gray.

Core: Grades from exterior to interior.

Surface treatment:

Exterior: The exterior surface is smooth. The surface is pitted because of shell leaching and contains stress cracks. In general surface is even.

Interior: The interior surface is also smooth and pitted from shell leaching. Wiping of surface is evident with faint striations. There is uneven thickness due to possible finger impressions from forming the vessel.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: No data on vessel shape. Range of body thickness is 8 to 11 mm.

Base: No data.

Comments:

Grossly similar to clay tempered ware (i.e. Wilgus, Coulbourn, and Nassawango ceramics) from the Delmarva Peninsula. The friable paste may have eroded any surface treatment. The uncalibrated date range for clay-tempered wares is 2750-1750 B.P. (Custer 1989: 173; Custer 1990: Figure 1). Grog-like inclusions in the paste are similar to descriptions of inclusions in the paste for Croaker Landing Ware (Egloff, et al. 1988: 17). Analysis of these inclusions in Croaker Landing Ware suggests that they could be natural inclusions. Coastal Plain clay that is poorly mixed and not thoroughly ground could produce these grog-like inclusions (Egloff, et al. 1988: 17). The light color of the Type VIIA paste suggests the ceramic might be fired in an oxidizing environment. Griffith and Artusy (1977: 15) remark that Coulbourn ware from the Wolfe Neck Site is possible fired in oxidizing atmosphere. Recent excavations of a ceramic cache at the Hickory Bluff Site suggest the Wilgus (clay and shell tempered) and Coulbourn (clay tempered) historic types can be combined (Liebeknecht 1999). Cross mending of sherds tempered with shell and clay with only clay tempered sherds highlights the variability in temper across portions of vessels from the Hickory Bluff ceramic cache.

*Type VIIB*

Temper, texture, and color same as Type VIIA.

Surface treatment:

Exterior: The exterior surface is impressed with a cord wrapped paddle. The width of the cord is 2 mm. The cords are spaced 3-4 mm apart. The cordage is loosely wrapped around the paddle. The cord impressions may be oriented in several directions. The cord impressions are faint. Erosion of sherd surface may have obscured impressions oriented One rim sherd has the impressions oriented horizontal to the rim.

Interior: The interior surface is smoothed and possible scrapped. The surface is distinctively uneven.

Decoration: None

Form:

Lip: The lip form is rounded and smoothed.

Rim: Straight and tapered toward lip. Rim diameter ranges from 17 to 20 cm. No data on rim diameter. The rim sherd is 9 mm

Body: No data on vessel shape. Range of body thickness is 9 to 13 mm.

Base: No data.

Comments:

Same notes as VIIA. Clay tempered ceramics from the Delmarva Peninsula with cord marked surfaces have been reported (Griffith and Artusy 1977; Liebeknecht 1999).

Ware VIII

Paste: Ware group is characterized by coarsely crushed hornblende with minor amounts of other temper. Sherds range from thin to thick.

*Type VIIIA*

Paste:

Temper: The temper consists of crushed black hornblende. The hornblende ranges in size from fine to 10 mm with the average size 2 mm. A limited amount of crushed gneiss is present in the paste. Temper well incorporated into paste. There is high percentage of temper in the paste. A minor amount of orange inclusions and sand is incorporated into the paste.

Texture: Sherds have gritty feel. The paste is dense and hard. Sherds are heavy because of the amount of temper. Breaks are even.

Color:

Exterior: Ranges from 2.5YR 5/6 red to 7.5YR 4/1 dark gray. The majority of exterior surfaces are red in color.

Interior: Ranges from 2.5YR 5/6 red to 7.5YR 2/1 black.

Core: Same as interior.

Surface treatment:

Exterior: Surface treatment consists of cord wrapped paddle impressions. Impressions are generally light. Cordage is 2 mm wide. Spacing between cordage ranges from 2-5 mm. Impressions are generally oriented in one direction. One example contains impression in several directions. Final cordage twist direction on one sherd was S-twist. Cord marking is oriented at oblique angles to the rim and extends up to the lip.

Interior: The interior surfaces are smooth. Protruding temper and clay mounded over temper creates an uneven surface. Stress cracks are present around temper.

Decoration: None

Form:

Lip: Lip form is flat and has an outward bevel.

Rim: The rim is straight. No data on rim diameter. Rim thickness is 6 mm.

Body: No data on vessel shape. Range of body sherd thickness is 6-12 mm.

Base: No data.

Comments:

This type is comparable to Dames Quarter Ware (Wise 1975). Dames Quarter is one of three types of experiment wares found on the Delmarva Peninsula (Custer 1989: 168-169). Cord marked surface of Dame Quarter have been reported (Artusy 1976: 2). Dames Quarter Ware was associated with a broad blade point in platform hearth dated to  $2955 \pm 90$  B.P. (Uncalibrated) at the Clyde Farm Site in New Castle County Delaware (Custer 1989: 169). The traditional date range for Dames Quarter is 2950-2650 B.P. (Artusy 1976: 2). This ceramic type is clearly associated with the Stratum IV at Holland Point. Two radiocarbon dates (Beta-159989, Beta 159992) were taken from

this horizon. The two sigma-calibrated range of 2310-780 B.P. is not felt to be a valid association for Dames Quarter ware.

*Type VIIIB*

Temper, texture, and color same as Type VIIIA.

Surface treatment:

Exterior: The exterior surface is smoothed.

Interior: The interior surfaces are smooth. Protruding temper and clay mounded over temper creates an uneven surface. Stress cracks are present around temper.

Decoration: None

Form:

Lip: Lip form is flat and has an outward bevel.

Rim: The rim is straight. No data on rim diameter. Rim thickness is 6 mm.

Body: No data on vessel shape. Range of body sherd thickness is 6-12 mm.

Base: No data.

Comments:

See comments for Type VIIIA. The historically defined Dames Quarter includes smooth surface varieties (Artusy 1976: 2).

Ware IX

Paste: The ware group is characterized by coarsely crushed quartz and quartzite with limited amounts of rounded quartz pebbles. Sherds are not heavily tempered. Sherds are generally thick and heavy.

*Type IXA*

Paste:

Temper: The temper consists of crushed and round quartz. The angular quartz particles range in size from fine to 5 mm the average being 2 mm. A limited amount of round quartz gravel ranging in size from 3-6 mm is used as temper. The color of the quartz is

clear, milky, and pink. A moderate amount of temper is used in the paste. A minor amount of natural orange inclusions are in the paste.

Texture: The paste is hard and dense. The paste has slightly gritty feel. Most of the breaks occur along coils. Two possible coil fragments are between 13-14 mm wide.

Color:

Exterior: Ranges from 5YR 5/6 yellowish red and 10YR 5/4 yellowish brown to 7.5YR 2.5/1 black.

Interior: Range from 10YR 6/4 light yellowish brown to 7.5YR 2.5/1 black.

Core: Same as interior color.

Surface treatment:

Exterior: Surface treatment consists of cord wrapped paddle impressions. Impressions vary from oriented in one direction to overlapping in a criss-cross pattern. Cord marking is oriented vertically near rim. Cordage is 2-3 mm wide. Individual cord impressions are separate by 2-3 mm. One sherd has cordage impression with a final S-twist. The cordage impressions are not very deep.

Interior: Interior surface is smoothed. The surface is uneven where temper protrudes from the surface or where clay is built up over temper

Decoration:

None on exterior surface. Interior surface along the rim has short vertically oriented incising. The incisions extend around 10 mm down from the lip. The incisions are 4 mm wide. The tool used for the incising had a rounded tip.

Form:

Lip: Lip is rounded.

Rim: Rim is straight and tapers to lip. Rim diameter for Vessel Lot IXA – 1 ranges from 22 to 27 cm. Range of rim thickness is 5-9 mm.

Body: No data on vessel shape. Range of body sherd thickness is 8-13 mm.

Base: Base form is pointed. Range of base sherd thickness is 10-11 mm.

Comments:

This type is identical to Cord-Marked Wolfe Neck ceramics. In other parts of the Middle Region, ceramics comparable to Type IXA are Vinette I, Early Series-Exterior Corded/Interior Smoothed (Kinsey 1972: 453), and Stewart's Type VC (Stewart 1998b: 57-58, 171). The traditional date range for the Wolfe Neck is 2650-2350 B.P. (Custer 1989: 171-173). Wolfe Neck-like ceramics found at the Leipsic Site have a calibrated range of 2149-1949 B.P. (Custer, et al. 1996: 68-69), which may suggest that variants of Wolfe Neck ceramics have a range of 2650-1950 B.P.

### *Type IXB*

#### Paste:

Temper: The temper consists of coarsely crushed quartzite and milk quartz pebbles. The angular quartz particles range in size from fine to 8 mm with the average 4 mm. The round quartz gravel ranges in size from 3-6 mm. A moderate amount of temper is used in the paste.

Texture: The paste has gritty feel. Limited amounts of stress crack are visible on the interior surface and running through the sherds. Interior surface stress cracks create a star-like pattern around temper. These stress cracks could be related to thermal stress. Paste is hard and dense. The paste is thick and heavy. Breaks are irregular.

#### Color:

Exterior: Ranges from 5YR 5/6 yellowish red to 7.5YR 2.5/1 black.

Interior: Same as exterior color.

Core: Same as exterior color.

#### Surface treatment:

Exterior: The exterior surface is net marked. Net impression consists of deeply impressed knots with some connection mesh visible. The knots range in size from 5-6 mm. The connecting mesh is 2 mm in width. The unevenly spaced knots range from 3-5 mm apart. The impressions may be overlapping suggesting the use of a balled up net.

Interior: Wiped smooth with protruding temper creating uneven surface.

#### Decoration:

None apparent.

#### Form:

Lip: No data.

Rim: No data.

Body: No data on vessel shape. Range of body sherd thickness is 12-13 mm

Base: No data.

Comments:

This type is identical to Net Impressed Wolfe Neck ceramics. In other parts of the Middle Region, ceramics comparable to Type IXB are Vinette I, net-impressed Broadhead (Kinsey 1972: 456), and Stewart's Type VIC (Stewart 1998b: 62-63). Net mark surface treatment is found throughout the Middle Atlantic coastal plain after 2550/2350 B.P. (Stewart 1998b: 172). The traditional date range for the Wolfe Neck is 2650-2350 B.P. (Custer 1989: 171-173). Wolfe Neck-like ceramics found at the Leipsic Site have a calibrated range of 2149-1949 B.P. (Custer, et al. 1996: 68-69), which may suggest that variants of Wolfe Neck ceramics have a range of 2650-1950 B.P. At the Abbott Farm similar ceramics have a suggest date range of 2550-1750 B.P. (Stewart 1998b: 62).

*Type IXC*

Paste:

Temper: Same as Type IXA except there is no pink quartz.

Texture: Paste is hard. No coil breaks.

Color:

Exterior: Ranges from 10YR 6/3 pale brown to 5YR 5/6 yellowish red.

Interior: Ranges from 7.5 YR 5/1 gray to 7.5YR 2.5/1 black.

Core: Same as exterior color.

Surface treatment:

Exterior: The exterior surface is smoothed.

Interior: Same as exterior.

Decoration: None



Form:

Lip: No data.

Rim: No data.

Body: No data on vessel shape. Range of body sherd thickness is 6-10 mm.

Base: No data.

Comments:

Comparable to Wolfe Neck ceramics. See Type IXA comments.

*Type IXD*

Paste:

Texture and paste is same as Type IXA.

Color:

Exterior: Ranges from 7.5YR 5/6 strong brown to 7.5YR 4/3 brown.

Interior: The interior color is 10 2/1 YR black.

Core: Grades from exterior color to interior color.

Surface treatment:

Exterior: The exterior surface is impressed with netting. The net consists of open loop-like net. Only one knot is visible consisting of a double loop knot. The net marking is distinctive from the net impression surface of Type IXB.

Interior: The interior surface is smoothed.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: No data on vessel shape. Range of body sherd thickness is 7 mm.

Base: No data.

Comments:

Type IXD is grossly comparable to Net Marked Wolfe Neck. See comments for Type IXB.

Ware X

Paste: Sherds of this ware are tempered with quartz sand, crushed angular quartz, and crushed shell. Only a limited amount of shell is present in the paste. The paste is hard.

*Type XA*

Paste:

Temper: The temper consists of quartz sand, crushed angular quartz, and crushed shell. The quartz particles range in size from fine to 2 mm with the average 2 mm. The quartz ranges in color from clear and milky to pink. The crushed shell ranges from fine to 4 mm. Shell is partially leached creating numerous voids. More quartz than shell is used for temper. Isolated pieces of natural orange inclusions are present in the paste.

Texture: The paste is hard. The temper is poorly mixed with the paste. The temper is not distributed evenly throughout the paste. Some sherd surfaces exfoliate. Sherds feel sandy. Breaks are uneven.

Color:

Exterior: Ranges from 7.5YR 4/1 dark gray to 5YR 5/6 yellowish red.

Interior: Ranges from 7.5 YR 5/3 brown to 7.5 YR 4/2 brown.

Core: Ranges from 7.5YR 5/4 brown to 5YR 6/4 light brown.

Surface treatment:

Exterior: The exterior surface is smoothed. Surfaces are even.

Interior: Same as exterior.

Decoration: Decoration found on the body consists of cord wrapped stick or edge of cord wrapped paddle. Impressions are not deep. Cord impressions on the body sherd appear to parallel to each other. The cord impressions are 5 mm wide and the cord is 2 mm thick.

Form:

Lip: No data.

Rim: No data.

Body: No data on vessel shape. Range of body sherd thickness is 6-9 mm.

Base: No data.

Comments:

The paste characteristics are not comparable to any historic ceramic type. Keith Doms (personal communication 1/3/2002 and 1/7/2002) reports finding sherds with similar paste characteristics and net impressed surfaces from Delaware at 7S-K-13D and 7S-K-13I. Net-impressed pottery with similar paste characteristics was found at the Martins Pond Site on the Western Shore of the Chesapeake Bay (Wright 1978: 20). An estimated uncalibrated date range of 1850 to 1650 B.P. based on stratigraphic analysis is suggested based on Wright's (1978: Table 2) chronology for the Severn River on the Western Shore. The author has not found any references to cord marked varieties of Type X A in the regional archaeological literature. The general paste characteristic suggests this type could also date to the Early Woodland Period.

*Type XB*

Paste:

Temper, texture, and color same as Type XA.

Surface treatment:

Exterior: The exterior surface is impressed with fabric wrapped paddle. The sherd is small making it difficult to characterize the fabric impressions.

Interior: Same as exterior.

Decoration: None

Form:

Lip: No data.

Rim: No data.

Body: No data on vessel shape. Body sherd thickness cannot be determined.

Base: No data.

Comments:

See comments for Type XA.

Ware XI

Sherds of this ware group are tempered with finely crushed quartz. The paste is generally friable.

*Type XIA*

Paste:

Temper: The temper consists of crushed quartz. The crushed quartz varies in color from milky to clear. The angular quartz particles range in size from fine to 4 mm with the average 2 mm. A moderate amount of temper is used in the paste.

Texture: The paste has gritty feel. The paste is hard, but friable. Sherds break into flakes with temper not well held in paste. One sherd has a coil break and the rest of the breaks are uneven.

Color:

Exterior: Ranges from 5YR 5/6 yellowish red to 5YR 5/3 black.

Interior: Interior color is 10YR 2/1 black.

Core: Ranges 2.5Y 4/1 dark gray to 10YR 2/1 black.

Surface treatment:

Exterior: Surface treatment consists of cord wrapped paddle impressions. Impressions vary from oriented in one direction to overlapping in a criss-cross pattern. Cordage is 2-3 mm wide. Individual cord impressions are separate by 4-6 mm. One sherd has cordage impressions with a final S-twist. The cordage impressions are not very deep.

Interior: Wiped smooth without any striations.

Decoration: None

Form:

Lip: No data.

Rim: No data

Body: No data on vessel shape. Approximate range of body sherd thickness is 7-8 mm.

Base: No data.

Comments:

This type is comparable to Hell Island ceramics (Thomas 1966). Two radiocarbon dates from features associated Hell Island ceramics at the Leipsic Site in central Delaware have calibrated ranges of 1836-1172 B.P. and 1374-1276 B.P. (Custer, et al. 1996: 69). These new dates might suggest that the traditional date range of 1350-950 B.P. for Hell Island ceramics (Custer 1989: 176) might need to be revised. Four older uncalibrated dates for Hell Island ceramics are 1310±155 B.P., 1345±400 B.P., 1210±90 B.P., and 1305±55 B.P. (Custer 1989: Appendix 2). Based on the new Leipsic Site radiocarbon dates for Hell Island ceramics, a revised date range of 1850-950 B.P. is suggested. Hell Island ceramics may extend from Middle Woodland to the early Late Woodland.

*Type XIB*

Paste:

Temper and texture same as Type XIA.

Color:

Exterior: The exterior color is 5YR 5/4 reddish brown.

Interior: Interior color is 10YR 2/1 black.

Core: Same as interior color

Surface treatment:

Exterior: The exterior surface is smoothed.

Interior: Wiped smooth without any striations.

Decoration: None

Form:

Lip: No data.

Rim: No data

Body: No data on vessel shape. Body sherd thickness is 10 mm.

Base: No data.

Comments: Same comments for XIA.

Ware XII

Sherds are tempered with crushed quartz and a soapstone-like material. The sherds are not heavily tempered. Sherds have a soapy feel.

*Type XIIA*

Paste:

Temper: The temper consists of crushed quartz. The angular quartz particles range in size from fine to 5 mm the average being 2 mm. The color of the quartz is clear. A very limited amount of temper is used in the paste. A small amount of soapstone like material is used as temper.

Texture: The paste is hard and dense. The paste has a smooth to soapy feel. In cross section, paste has laminated and ropy appearance. The dark ropy portion of the paste has a hardness comparable to soapstone. The soapstone temper is well incorporated into the paste making it hard to identify individual pieces. Breaks on excavated sherds are weathered and uneven. One coil break is present.

Color:

Exterior: Ranges from 7.5YR 6/6 reddish yellow to 7.5YR 6/2 pinkish gray.

Interior: Interior color is 7.5YR 6/2 pinkish gray.

Core: Ranges from 7.5YR 6/2 pinkish gray to 7.5YR 3/1 very dark gray.

Surface treatment:

Exterior: The exterior surface is net marked. Net impression consists of deeply impressed knots. The knots range in size from 4-5 mm. The connecting mesh is not visible because the sherds are small.

Interior: The interior surface is smoothed. Most sherd interior surfaces are eroded and uneven.

Decoration: None.

Form:

Lip: No data.

Rim: No data

Body: No data on vessel shape. Approximate range of body sherd thickness is 9-12 mm.

Base: No data.

Comments:

This type cannot be compared to any historic ceramic types with confidence. The small size of the assemblage makes interpretation of this type difficult. The quartz temper is comparable to Hell Island ceramics. The possible soapstone temper could suggest that this type is similar to Marcy Creek ceramics, which dates to the Early Woodland or Transitional Archaic.

Ware XIII

Paste: Sherds of this ware group are tempered with sand. Paste is hard.

*Type XIII A*

Paste:

Temper: The temper consists of quartz sand. A high percentage of the sand is in the paste. Sand is readily visible without a microscope. Isolated rounded pieces of larger clear and milk quartz are infrequently present in the paste.

Texture: The paste has a sandy feel because of the high amount of sand in the paste. Paste is hard and dense without voids. The sand temper is well mixed with the paste. Breaks are generally even with some coil breaks.

Color:

Exterior: Ranges from 5YR 6/6 reddish yellow to 10YR 5/4 yellow brown.

Interior: Ranges from 5/4 yellow brown to 10YR 5/1 gray.

Core: Grades from exterior to interior.

Surface treatment:

Exterior: Surface treatment consists of cord wrapped paddle impressions. Impressions are oriented in one direction. Cordage is 1-2 mm wide. Individual cord impressions are separate by 2-3 mm. One sherd has cordage impression with a final S-twist. The cordage impressions are deep.

Interior: The interior surface is smooth and wiped. Striations are present from wiping.

Decoration: None

Form:

Lip: No data.

Rim: No data

Body: No data on vessel shape. Range of body sherd thickness is 7-8 mm.

Base: No data

Comments:

Similar to Minguannan ceramics, which is known to have cord marked surfaces (Custer 1989: 305), and Potomac Creek Cord-Marked (Potter 1993: 123). Both Minguannan and Potomac Creek ceramics date to the Late Woodland. Minguannan has an uncalibrated traditional date range of 950 to 350 B.P. (Custer 1989: 305-7). Potomac Creek has an uncalibrated traditional date range of 750 B.P. to 350 B.P. (Egloff and Potter 1982: 112; Potter 1993: 125). A recent assay obtained from AMS dating on residue from a sherd of Potomac Creek pottery from the Accokeek Creek Site suggest Potomac Creek ceramics might be older than the traditional date range (Dent and Jirikowic 2001). However, Potomac Creek not well known on the Delmarva Peninsula. Potomac Creek is traditionally defined as a lower Potomac valley historic ceramic type. Minguannan is more common in the northern portion of the Delmarva and adjacent areas to the north and west (Custer 1989: 308).

*Type XIIB*

Paste:

Texture and paste are same as Type XIA.

Color:

Exterior: Exterior color is 7.5YR 2.5/1 black.

Interior: Same as exterior color.



Core: Same as exterior color.

Surface treatment:

Exterior: Exterior surface is smoothed and eroded.

Interior: Same as exterior surface.

Decoration: None

Form:

Lip: No data.

Rim: No data

Body: No data on vessel shape. The body sherd is 7 mm thick.

Base: No data

Comments: See comments for Type XIIIA.

## APPENDIX B

### PROJECTILE POINT DESCRIPTIONS

#### Type 1: Triangular projectiles

Sample Size: 100

Blade: The triangular shape ranges from equilateral to isosceles forms. Lateral edges are typically straight.

Base: Bases are mostly concave and straight.

Length: 64-16 mm

Width: 39-8 mm

Thickness: 18-2 mm

Material: Chert (49), jasper (34), quartz (12), rhyolite (2), argillite (1), argillite-like (1), and quartzite (1)

Comments: In the Middle Atlantic, triangular points have been found in Middle Archaic, Late Archaic, and late Middle Woodland, Late Woodland contexts (Custer 2001: 84-88; Katz 2000: 28-41; Miller 1998: 115-116; Stewart 1998d; Stewart and Cavallo 1991; Wall, et al. 1996a: 60). Uncalibrated radiocarbon dates for triangles range from 8739±165 B.P. to 350 B.P. (Uncalibrated) (Custer 1989: Appendix 2; Dent 1995: Table 6.10; Katz 2000: 28-41, Table 1.A). The overall abundance of Late Woodland ceramics from Holland Point suggests that most of the triangles probably date to the Late Woodland Period. Recent analysis by Katz (2000) reveals there is no signal morphological trait, which can distinguish individual Archaic Triangles from Woodland Triangles. Basal attributes such as basal curvature, basal depth, and basal grinding do show temporal variation among groups of triangular bifaces (Katz 2000: 80-81). Microscopic use-wear analysis by Katz (2000: 88-89) indicates that both Archaic and Woodland triangles are used for similar functions as projectiles and cutting implements.

#### Type 2: Susquehanna Broadspear

Sample Size: 1

Blade: Triangular in outline with straight edges. Cross section is plano-convex.

Shoulders: One well-defined point and other rounded

Notches: Deep side U-shaped notch.

Base: Asymmetrically concave.

Length: 33 mm

Width: 25 mm

Thickness: 6 mm

Material: Jasper (1)

Comments: This form is smaller than “classic” Susquehanna Broadspire points. According to Custer (2001: 46), Susquehanna Broadspires have an uncalibrated date range from 3950 B.P. to 3450 B.P. Dent’s (1995: Table 5.4) compilation of uncalibrated radiometric assays for Susquehanna Broadspires suggests a date range of 3810 B.P. to 3100 B.P.

Type 3: Jack’s Reef Corner Notched

Sample Size: 4

Blade: Triangular in shape with excurvate edges. One resharpened example has incurvate edges. Cross sections are flat.

Notches: Well defined U-shaped corner notches

Base: Concave base

Length: 26 mm

Width: 28-18 mm

Thickness: 5-4 mm

Material: Jasper (3) and quartz (1)

Comments: Two specimens from Holland Point have transverse medial fractures. Jack’s Reef Corner Notched in the Middle Atlantic region has an uncalibrated date from 1350 B.P. to 1050 B.P. (Custer 2001: 34). In New York and Upper Delaware Valley, this type has an uncalibrated date range from 1640 B.P. to 995 B.P. (Kinsey 1972: 438; Ritchie 1971:26).

Type 4: Basal-Notched

Sample Size: 1

Blade: Outline cannot be determined because the blade is broken. The cross section is flat.

Notches: Deep U-shaped basal notches

Base: Morphology cannot be because base is broken.

Length: No Data

Width: 29 mm

Thickness: 5 mm

Material: Jasper (1)

Comments: The type is similar to Eshback and Erb Basal-Notched that have a broad time range. This type is commonly found in Middle Woodland contexts that have an uncalibrated date range from 1950 B.P. to 950 B.P. (Custer 2001: 26). A basal notched point was found in feature associated with Killen and Townsend ceramic at the Leipsic site in Kent County Delaware indicating a date range of 1050 B.P. to Contact (Custer, et al. 1996: 68). This form has been found with European trade goods in northern Delaware suggesting a date as late as 200 B.P. (Custer 2001: 26). In the Middle and Upper Delaware Valley, this form is found in Late Archaic contexts (Stewart 1987a: 80).

Type 5: Perkiomen-like

Sample Size: 1

Blade: Outline cannot be determined because blade is broken. Cross-section is biconvex.

Shoulders: Shoulders are well defined.

Notches: Deep narrow U-shaped notches

Base: Straight base and half as wide as blade; abruptly thinned

Length: No Data

Width: 23 mm

Thickness: 6 mm

Material: Chert (1)

Comments: Perkiomen broadspears in the Middle Atlantic region have an uncalibrated date range of 3950 B.P. to 3450 B.P. (Custer 2001: 41; Dent 1995: Table 5.4).

Type 6: Unnamed stem/notched type

Sample Size: 1

Blade: Triangular in outline with incurvate edges. Cross-section is bi-plano.

Shoulders: Shoulders are well defined.

Notches: Deep wide U-shaped notches give the basal portion of the point an expanding stemmed appearance. The orientation of the notches is not clear. The point could either be considered a corner or side notched point.

Base: Straight base and half as wide as blade; gradually thinned

Length: 27 mm

Width: 22 mm

Thickness: 5 mm

Material: Jasper (1)

Comments: The point has been resharpened. This type is not directly comparable to any historically defined types in the Middle Atlantic. The age of this projectile point style cannot be estimated.

Type 7: Fishtail

Sample Size: 1

Blade: Long narrow isosceles outline with straight edges. Cross-section is biconvex.

Shoulders: Shoulders are weakly defined and rounded, grading into stem.

Notches: Wide symmetrical shaped side notches.

Base: Straight base, which is as wide as the widest part of the blade; abruptly thinned

Length: 43 mm

Width: 17 mm

Thickness: 7 mm

Material: Purple Rhyolite (1)

Comments: This type is comparable to Dry Brook and Orient Fishtail types that have an uncalibrated date range from 3150 B.P. to 2750 B.P. in the Middle Atlantic region (Custer 2001: 30). In The Maryland Coastal Plain the estimated uncalibrated date range for the type is 4150 B.P.-1850 B.P. (Wall, et al. 1996a: 67; Wanser 1982). Dent's (1995: Table 5.4) compilation of uncalibrated radiometric dates for Fishtails suggests a date range of 3350 B.P. to 2493 B.P.

Type 8A: Poplar Island/Rossville/Piscataway variant

Sample Size: 10

Blade: Equilateral triangle outline with straight symmetrical edges. Cross-section ranges from biconvex to plano-convex.

Shoulders: Shoulders are predominately well defined with some asymmetrical example having one rounded shoulder. The shoulders are the widest point of the artifact.

Stems: Pronounced contracting from the shoulders. Stem length is equal to blade length in some examples.

Base: Round to pointed, Most abruptly thinned with one not thinned; Cortex is present on three bases.

Length: 26-6 mm

Width: 20-13 mm

Thickness: 14-4 mm

Material: Chert (8), Argillite (1), and Quartz (1)

Comments: The type is comparable to Poplar Island, Rossville, and Piscataway points (Custer 2001: 43). Some examples fit within the small end of the size range for Polar Island "Major Type" as defined by Custer (2001: 43). The small size could be a reflection of constraints inherent in utilizing small cobble sources (Lowery 1999: 53). Lowery (1999: 53) argues that projectile point size not a valid indicator of chronological periods given the size constraints of local cobble resources. Cobble cortex is present on the base of the several specimens. Custer's (1996: 139-145; 2001: 92-108) analysis of projectile points from stratified contexts at the Piney Island Site in Pennsylvania combined with analyzes of projectile points from other dated contexts in the Middle Atlantic suggest that the Poplar Island "Major Type" and related "Minor Types" (Rossville and Piscataway) have a broader time range then traditionally assigned to these historic types. The Poplar Island "Major Type" has an uncalibrated date range from 6950 B.P. to 950 B.P. (Custer 2001: 43). The early end of the date range for Poplar Island points, which extends back into the late Middle Archaic, is not considered to be an accurate reflection of the age for this type at Holland Point. There is an overall absence of Middle Archaic diagnostics in the Holland Point projectile point assemblage. Other more widely recognized Middle Archaic bifaces, such as bifurcated points, that are more "diagnostic" of the Middle Archaic (Custer 1996:133-145) have not been found at Holland Point. The overall lack of more "traditional" Middle Archaic diagnostics suggests that Type 8A might not date to the Middle Archaic. Based on the co-occurrence of other diagnostic projectile points and ceramic types at Holland Point, Type 8A more like dates from the Late Archaic to the end of Middle Woodland Period. The analysis by Custer (1996: 139-145; 2001: 92-108) highlights that stemmed points

(i.e. Poplar Island, Piney Island, and Bare Island) are not projectile point styles which is temporally diagnostic to one particular chronological/cultural time period. The recovery of stemmed and notched points from Late Archaic and Early Woodland stratified contexts at 36SN220 on the main stem of the Susquehanna River (Miller 1998) support Custer's conclusion that stemmed points have a longer period of use than generally assigned to the certain historic point types.

Type 8B: Small Poplar Island/Rossville/Piscataway variant

Sample Size: 4

Blade: Small isosceles triangle outline with straight symmetrical edges, cross section biconvex

Shoulders: Shoulders are rounding and poorly defined obscuring the boundary between the blade and the stem. The shoulders are the widest points of the artifact.

Stems: Pronounced contracting form the shoulders.

Base: Round to pointed, gradually thinned with one not thinned; Cortex is present on one base.

Length: 27-25 mm

Width: 15-14 mm

Thickness: 8-5 mm

Material: Chert (2) and jasper (2)

Comments: Similar to Type 8A except for the absence of pronounced shoulders. See comments for Type 8A concerning possible relationship of Type 8B to historically defined types associated temporal ranges. This type is grossly comparable to Piscataway points. Dent's (1995: 180) remarks that Piscataway points have been found in Late Archaic through Late Woodland contexts in Middle Atlantic Region. Small size could be related to utilizing small cobble sources. Cobble cortex is present on one base.

Type 9: Small unnamed side notched

Sample Size: 1

Blade: Equilateral triangle with straight asymmetrical edges, cross-section biconvex

Shoulders: Shoulders are rounded and poorly defined.

Notches: Shallow asymmetrical circular notches

Base: Straight, abruptly thinned, not ground, widest part of artifact

Length: 18 mm

Width: 16 mm

Thickness: 7 mm

Material: Chert (1)

Comments: This type is not comparable to any historically defined projectile point types.

Type 10: Teardrop

Sample Size: 5

Blade: Isosceles triangle with straight to excurvate asymmetrical edges, cross-section biconvex and plano-convex

Base: Wide rounded base. The widest part is at the base and blade juncture

Length: 38-30 mm

Width: 22-17 mm

Thickness: 10-6 mm

Material: Chert (2) and Quartz (3)

Comments: This type is similar to Teardrops that have an uncalibrated date range of 3430 B.P. to 2170 B.P. on the New Jersey Coastal Plain (Mounier and Martin 1994: 132). This type is similar to variants of Piscataway points with weak shoulders that were found in association with Late Woodland Potomac Creek pottery at the Accokeek Creek Site (Stephenson and Ferguson 1963: 147, 196, Plate XXVI). One plano-convex example was manufactured from a flake. The ventral flake surface and bulb of percussion is still discernable. Stratigraphic data from the Abbot Farm suggest this type could date to the late Middle Woodland through the Late Woodland (Wall, et al. 1996a: 74-75).

Type 11: Poplar Island/Rossville-like

Sample Size: 6

Blade: Isosceles triangle with straight to excurvate asymmetrical edges, all cross-sections biconvex except for one plano-convex

Shoulders: Well defined shoulders with some asymmetrical shoulders distinguish, widest portion of the artifact.



Stem: Gentle to abruptly contracting stem

Base: Ranging from convex to pointed

Length: 42-29 mm

Width: 20-15 mm

Thickness: 8-7 mm

Material: Chert (3), Argillite (2), and Schist (1)

Comments: This type fits within the smaller size range for Poplar Island (Custer 2001: 43). The presence of shoulders is a morphological trait that is traditionally used to define the Rossville type (Ritchie 1971: 46). Custer's (2001: 59) suggest that Rossville points should be viewed as a variant of Poplar Island. See comments for Type 8A concerning possible relationship of Type 11 to historically defined types and associated temporal ranges for this type.

Type 12: Poplar Island/Piscataway-like

Sample Size: 6

Blade: Isosceles triangle with straight to excurvate symmetrical edges, cross-section biconvex

Shoulders: Very weakly defined shoulders that grade into the stem which are the wide portions of the artifact.

Stem: Contracting stem with straight edges

Base: Ranging from convex to pointed, Cortex is present on one base.

Length: 35-28 mm

Width: 18-14 mm

Thickness: 8-6 mm

Material: Chert (3), Jasper (2), and Quartz (1)

Comments: Type 12 is grossly comparable to the Piscataway type as historical defined by Robert L. Stephenson and Alice L. Ferguson (1963) because the morphological outline of Type 12 lacks the presence of shoulders. Using Custer's (2001) approach of organizing projectile points into "Major" and "Minor" types, Type 12 could be grouped within the Poplar Island "Major Type". See comments for Type 8A for information concerning Piscataway points and Poplar Island and associated temporal ranges.

### Type 13: Vosburg-like

Sample Size: 4

Blade: Broad isosceles to equilateral triangle outline with straight to excurve asymmetrical edges, cross section ranges from biconvex to plano-convex

Shoulders: Well defined asymmetrical shoulders, wide portion of the artifact.

Notches: Shallow wide U-shaped corner notches creating an expanding stem appearance, corner notched not as deep as Type 3

Base: Straight and gradually thinned, almost as wide as the shoulder

Length: 40-29 mm

Width: 21-19 mm

Thickness: 10-4 mm

Material: Chert (2), Quartz (1), and Jasper (1)

Comments: The type is comparable to Vosburg type. In New York, Vosburgs have an uncalibrated date range from 5400 B.P. to 4600 B.P. (Funk 1976: 169). In the Upper Delaware Valley, the earliest uncalibrated date for Vosburg is 5620 B.P. (Kinsey 1972: 398; Wall, et al. 1996a: 91). Vosburgs are traditionally considered a late Middle Archaic projectile point type (Custer 1996: 156-157, Figure 38). This projectile point has not been found in locally dated context. Until dates are obtained from the Chesapeake Bay region the dates referenced above should be considered as very tentative for this type. Other more widely recognized Middle Archaic bifaces, such as bifurcated points, that are more “diagnostic” of the Middle Archaic have not been found at Holland Point. The lack of Middle Archaic diagnostics suggests that Type 13 might not date to the Middle Archaic.

### Type 14: Fox Creek-like

Sample Size: 3

Blade: Moderately large, wide, thick blade, blade width 2 to 3 times greater than length, cross section is biconvex

Base: Straight, concave, and convex example represented, base as wide as blade; One example has cortex on the basal corner

Length: 49-40 mm

Width: 26-23 mm

Thickness: 8-7 mm

Material: Chert (1), Jasper (1), and Argillite (1)

Comments: The Type 14 points are grossly comparable to lanceolate varieties of Fox Creek points. The traditional uncalibrated date range for Fox Creek is 1550-1050 B.P. (Custer 2001: 32; Dent 1995: Table 6.7). Fox Creek are commonly made out of argillite and rhyolite (Custer 2001: 32).

Type 15A: Bare Island

Sample Size: 6

Blade: Elongate, thick isosceles triangle blade, cross-section biconvex

Shoulders: Well defined to poorly defined shoulders that grade into the stem; shoulders are commonly widest portions of the artifact.

Stem: Straight to slightly contracting stem

Base: Straight to slightly convex, gradual thinned

Length: 80-36 mm

Width: 25-19 mm

Thickness: 14-8 mm

Material: Quartz (3), Chert (1), Argillite (1), and Quartzite (1)

Comments: Type 15A is comparable to the traditional definition of Bare Island points (Custer 2001: 25). One Example probably manufactured from a flake because the flake curvature is visible in the biface's cross-section. Custer (2001: 25) remarks that Bare Island points have a broad uncalibrated temporal range from 6950 B.P. to 950 B.P. Custer's (1996: 139-145; 2001: 92-108) analysis of Bare Island points from the Piney Island site and other date contexts in Middle Atlantic reveal that the Bare Island "Major Point Type" along with Poplar Island, Pequea, Piney Island "Major Point Types" date from the late Middle Archaic (ca. 7500 B.P.) to the end of the Middle Woodland (ca. 1000 B.P.). The recovery of stemmed and notched points from Late Archaic and Early Woodland stratified contexts at 36SN220 on the main stem of the Susquehanna River (Miller 1998) support Custer's conclusion that stemmed points have longer period of use than generally assigned to the certain historic point types. Bare Island are also morphological similar to Lackawaxen Straight Stemmed style projectile points (Custer 2001: 8-9). Lackawaxen is the historic type name used in the north portion of the Middle Atlantic region for straight-stemmed point types (Custer 2001: 8-9, 62). The Bare Island points (Type 15A) from Holland Point are not believed to date to the late Middle Archaic. The same comments presented for why Poplar Island points (Type 8A) at Holland Point are not believed to date to the Middle Archaic are applicable for Type

15A. See the comments for Type 8A for the specific reasons why stemmed points (i.e. Bare Island, Poplar Island and Piney Island) are not thought to be Middle Woodland in age at Holland Point.

Type 15B: Bare Island/Piney Island variant

Sample Size: 4

Blade: Small isosceles triangle blade, cross section biconvex and plano-convex

Shoulders: Well defined to poorly defined asymmetrical shoulders that grade into the stem, Shoulders are commonly widest portions of the artifact.

Stem: Straight to slightly contracting stem

Base: Straight to slightly convex, gradual thinned, one example has cortex

Length: 38-33 mm

Width: 17-12 mm

Thickness: 8-6 mm

Material: Argillite (2), Chert (1), and Schist (1)

Comments: Overall smaller size of Type 15B distinguishes it from Type 15A. Type 15B is similar to both Piney Island and Bare Island point types (Custer 2001: 42, 25). It is also similar to the Lackawaxen "Minor Type". The slightly contracting stem is more characteristic attribute for the Piney Island projectile point type. Type 15B is believed to date from the Late Archaic to the end of the Middle Woodland. See comment for Type 15A and 8A concern temporal affiliation.

Type 16: Bare Island-variant

Sample Size: 3

Blade: Thick, isosceles triangle blade, cross section biconvex and plano-convex

Shoulders: Well defined rounded to pointed symmetrical shoulders, Shoulders are widest portions of the artifact.

Stem: Straight to slightly contracting stem

Base: Distinctively rounded/convex, abrupt to gradual thinned

Length: 44-36 mm

Width: 21-19 mm

Thickness: 10-7 mm

Material: Chert (1), Ironstone (1), and Jasper (1)

Comments: The rounded base of Type 16 morphologically distinguishes it from Type 15A and 15B. This type is grossly similar the Bare Island “Major Type” and Lackawaxen “Minor Type” as defined by Custer (2001). Type 16 is similar to projectile points found in the Early Woodland component at the Carey Farm Site (Custer 2001: 99, Figure 21). The use of ironstone material suggests that this example of Type 16 probably dates from the Late Archaic and Early Woodland Period (Ward 1988; Ward and Doms 1984). Ironstone was traded and commonly used on the Delmarva Peninsula during the Late Archaic and Early Woodland Periods (Ward 1988; Ward and Doms 1984). Type 16 is believed to date from the Late Archaic to the end of the Middle Woodland. The comments for Type 15A and 8A concerning Bare Island points and its temporal affiliation are applicable for Type 16.

Type 17: Bare Island-variant

Sample Size: 1

Blade: Thick, isosceles triangle blade with distinctly rounded tip, cross section biconvex, blade is moderately wide

Shoulders: Well defined pointed with asymmetrical shoulders. Shoulders are widest portions of the artifact.

Stem: Slightly contracting stem

Base: Distinctively concave, gradually thinned

Length: 35 mm

Width: 22 mm

Thickness: 10 mm

Material: Chert (1)

Comments: The concave base of Type 17 morphologically distinguishes this type from Type 15A, 15B and 16. Cortex on both dorsal and ventral surface indicates this projectile point was made from a cobble. This type is grossly similar the Bare Island “Major Type” (Custer 2001: 25). Type 17 is believed to date from the Late Archaic to the end of the Middle Woodland. The comments for Type 15A and 8A concerning Bare Island points and its temporal affiliation are applicable for Type 17.

Type 18: Savannah River-like

Sample Size: 1

Blade: Thick, long, wide ovate blade, cross-section biconvex, middle point of blade is widest portion of the artifact

Shoulders: One pointed shoulder the other side does not have a shoulder

Stem: Straight stem

Base: Distinctively concave, abrupt thinned

Length: 58 mm

Width: 26 mm

Thickness: 12 mm

Material: Argillite-like material (1)

Comments: The broad blade morphology is grossly comparable to the Savannah River projectile point type. Savannah River points are traditionally thought to date to the Late Archaic. The traditional (uncalibrated) date range for this historic type in the Middle Atlantic is 4450 B.P. to 3650 B.P. (Custer 2001: 44). Lowery (1999: 53) remarks that projectile points similar to Savannah River have been found Woodland Period contexts on the Delmarva Peninsula suggesting that this type might date to as late as c. 2000 B.P.

Type 19: Bare Island variant

Sample Size: 1

Blade: Thick, long, ovate blade, cross-section biconvex, middle point of blade is widest portion of the artifact

Shoulders: poorly defined grading into stem

Stem: Straight stem and thin

Base: Straight

Length: 60 mm

Width: 20 mm

Thickness: 9 mm

Material: Argillite (1)

Comments: This type is similar the Bare Island “Major Type” (Custer 2001: 25). Type 19 is believed to date from the Late Archaic to the end of the Middle Woodland. The

comments for Type 15A and 8A concerning Bare Island points and its temporal affiliation are applicable for Type 19.

Type 20: Piney Island/Poplar Island variant

Sample Size: 2

Blade: Short isosceles triangle outline, cross section biconvex and biplano

Shoulders: Well defined pointed and rounded asymmetrical shoulders, Shoulders are widest portions of the artifact.

Stem: Slightly contracting stem

Base: Slightly concave, gradually thinned

Length: 31-25 mm

Width: 18-17 mm

Thickness: 9-6 mm

Material: Jasper (1) and Quartz (1)

Comments: The contracting stem of Type 20 is a characteristic of both Poplar Island points and Piney Island points (Custer 2001: 42-43). The slightly concave base is not characteristic of either Poplar Island points or Piney Island points. Both Poplar Island and Piney Island points have similar time ranges. At Holland Point these points are thought to date from the Late Archaic to the end of the Middle Woodland (see comments for Type 8A).

Type 21: Unnamed Broadspear

Sample Size: 1

Blade: Long, wide, thin blade with transverse medial fracture outline, cross section biplano

Shoulders: Well defined rounded symmetrical shoulders; shoulders are widest portion of the artifact.

Stem: Slightly contracting stem

Base: Straight, gradually thinned

Length: No data

Width: 33

Thickness: 8

Material: Argillite (1)

Comments: General morphology characteristics of Type 21 are comparable “Broadspears”. The blade is broken making comparisons to historically defined types of broadspears difficult. The morphology of Type 21 is grossly comparable to Genesee points (Ritchie 1971: 24-25), Lehigh/Koens-Crispin points (Kinsey 1972: 423-426), and Savannah River points (Coe 1964: 42-45). These historic broadspear types in the Middle Atlantic date to the Late Archaic. They have an uncalibrated date range of 4450 B.P. to 3450 B.P. (Custer 2001: 37, 44).

Type 22: Side Notched/Selby Bay-like

Sample Size: 7

Blade: Elongated, isosceles triangle outline, cross section biconvex and biplano, middle point of blade is widest portion of artifact

Shoulders: Poorly defined rounded asymmetrical shoulders

Notches: Shallow broad U-shaped side notches

Base: Straight to slightly concave, gradually thinned, almost as wide as widest portion of blade

Length: 48-31 mm

Width: 22-8 mm

Thickness: 18-5 mm

Material: Rhyolite (3), Chert (1), Quartz (1), Jasper (1), and Argillite (1)

Comments: The broad shallow side notches are the distinguishing morphological attribute for Type 22. The three rhyolite projectile points are comparable to points associated with the historically defined Selby Bay Phase. Selby Bay Phase points are typically weakly side notched usually made out of rhyolite (Wright 1978: 21). These points are commonly found in association with Mockley ceramics in the Chesapeake Bay region (Potter 1993: 66). This association suggests that the projectile points have an uncalibrated date range from 1950/1750 B.P. to 950 B.P. (Custer 1990; Stewart 1992). Analysis of broad based rhyolite exchange networks indicates that rhyolite was trading into the Delmarva Peninsula region from 1750-950 B.P. (Custer 1990). The use of the name Selby Bay generally refers to weakly side notched or stemmed rhyolite points that exhibit little secondary flaking (see Potter 1993: 66). The name Selby Bay and Fox Creek are some time used interchangeable in the regional archaeological literature (see Dent 1995: Table 6.7). Both Selby Bay and Fox Creek style projectile points date to the



Middle Woodland Period in the Middle Atlantic region (Dent 1995: 236-239). The other four non-rhyolite points are not comparable to the Selby Bay type. Assigning a temporal range to these non-rhyolite points is problematic. They could also date to the Middle Woodland. Or they could date to other time periods given what is known about temporal range for generalized side-notched points. Side-notched points in the Middle Atlantic Region have a broad time range from the late Middle Archaic (c. 6000 B.P.) to the end of the Middle Woodland (c. 1000 B.P.) (Custer 1996: 143-44; Custer 2001: 66, 90, Figure 30, Figure 33). Thus four non-rhyolite Type 22 points are not “diagnostic” of a particular cultural/temporal period.

Type 23: Unnamed side-notched

Sample Size: 5

Blade: Short isosceles triangle outline, straight to slightly excurve sides, cross section biconvex and plano-convex,

Shoulders: Well defined rounded asymmetrical shoulders, widest portion of artifact

Notches: Deep broad U-shaped side notches

Base: Straight to slightly convex, gradually and abruptly thinned examples, base as wide as shoulders, one base not completely thinned, and several examples ground bases

Length: 33-24 mm

Width: 22-16 mm

Thickness: 8-5 mm

Material: Chert (5)

Comments: Distinguishing morphological attribute of Type 23 is well-defined side notches. Type 23 is similar to Brewerton Side-Notched, Vernon, and Halifax (Dent 1995: 178-179). It is also grossly similar to the Pequea type (Custer 2001: 40). Side-notched points in the Middle Atlantic region have a broad time range from the late Middle Archaic (c. 6000 B.P.) to the end of the Middle Woodland (c. 1000 B.P.) (Custer 1996: 143-44; Custer 2001: 66, 90, Figure 30, Figure 33). Analysis by Custer (2001: 66, 91-107) clearly confirms that generalized side-notched points are not diagnostic to a particular temporal/cultural period.

Type 24: Selby Bay-like

Sample Size: 3

Blade: Long isosceles triangle outline, slightly excurve asymmetrical sides, cross section biconvex and plano-convex

Shoulders: Well defined rounded and pointed symmetrical shoulders, widest portion of artifact

Notches: Broad U-shaped side notches

Base: Straight to slightly convex, gradually and abruptly thinned examples, base as wide as shoulders

Length: 57-42 mm

Width: 28-21 mm

Thickness: 10-8 mm

Material: Rhyolite (3)

Comments: Distinguishing attribute of Type 24 is the side notches and large size of the blade. Type 24 is comparable to larger side notched variants of Middle Woodland Selby points. The use of rhyolite is also characteristic of Selby style points (Wright 1978: 21). See comment for Type 22 for more information on Selby style projectile points.

Type 25: Side-Notched variant

Sample Size: 2

Blade: Short thick isosceles excurve-side triangle, plano-convex and biconvex cross section

Shoulders: Weakly defined pointed asymmetrical shoulders

Notches: Shallow broad U-shaped side notches, which give an earned-notched appearance to the hafting element

Base: convex, abruptly thinned, widest portion of artifact

Length: 29-28 mm

Width: 21-20 mm

Thickness: 10-9 mm

Material: Rhyolite (1) and Chert (1)

Comments: The distinguishing morphological attribute of Type 25 is the ear-like notches. Type 25 is grossly comparable to Brewerton Eared (Custer 2001: 28). The outline of Type 25 could also be interpreted as being weakly side-notched. Conservatively, Type 25 is considered as a generalized side-notched point. Side-

notched points in the Middle Atlantic Region have a broad time range from the late Middle Archaic to the end of the Middle Woodland (see comments for Type 23).

Type 26: Unnamed side-notched/expanding stemmed type

Sample Size: 4

Blade: Short isosceles to equilateral straight-side triangle, plano-convex cross section

Shoulders: Well defined rounded and point asymmetrical shoulders, widest portion of artifact

Notches: Deep broad U-shaped side notches which give an expanding stem appearance to the hafting element

Base: Straight to slightly convex, gradually thinned, base two-thirds as wide as shoulders created an expanding stem appearance

Length: 39-30 mm

Width: 27-21 mm

Thickness: 10-7 mm

Material: Quartz (2), Rhyolite (1), and Chert (1)

Comments: Distinguishing morphological attribute is basal portion of the point type. The type could either be considered a side-notched point or an expanding stem point. Type 26 is morphologically similar to Brewerton Side-Notched and Pequea as well as grossly comparable to the Halifax and Vernon types (Dent 1995: 174-175). Both generalized side notched points and Pequea (expanding stem) points have similar time ranges. Custer's (2001: 90-107) analysis of stemmed and notched point indicates that Type 26 could date from the late Middle Archaic to the end of the Middle Woodland. See comments for Type 23 concerning generalized side notched points.

Type 27: Hellgramite-like

Sample Size: 1

Blade: Equilateral straight-side triangle, biconvex cross section

Shoulders: Well defined point symmetrical shoulders which stick out

Notches: Shallow broad U-shaped side notches

Base: Straight, abruptly thinned, base widest part of artifact

Length: 30 mm  
Width: 23 mm  
Thickness: 9 mm

Material: Quartz (1)

Comments: Distinguishing morphological attribute for Type 29 is the side-notches with the wide base. The morphology of this type is grossly similar Hellgramites. Hellgramites have an uncalibrated date range of 3,250 to 2750 B.P. based on their recovery from the Williamson site in the Middle Delaware Valley (Custer 2001: Table 2; Hummer 1991).

Type 28: Unnamed stemmed type

Sample Size: 3

Blade: Isosceles excavate-side triangle, biplano cross section

Shoulders: Well defined round symmetrical shoulders; the shoulders are the widest portion of the artifact

Stem: Slightly expanding

Base: Convex appearance produced by notching the base, similar to bifurcated base, abruptly and gradually thinned, base two-third as wide as the shoulder

Length: 30-28 mm  
Width: 18-14 mm  
Thickness: 6-4 mm

Material: Argillite (2) and Chert (1)

Comments: The notched-like basal morphology is the distinguishing attribute of Type 28. The type is grossly comparable the Pequea "Major Type" as defined by Custer (2001: 40). Pequea is one of the four "Major Types" defined by Custer that have a broad time range from the late Middle Archaic to the end of the Late Woodland (see comments for Type 15A).

Type 29: Jack's Reef Pentagonal

Sample Size: 2

Blade: Equilateral straight-side triangle, biplano and biconvex cross section

Shoulders: Round shoulders grading into the stem that are the widest portion of the artifact

Stem: Wide with parallel or slightly contracting stem

Base: Straight and convex

Length: 33-25 mm

Width: 19-17 mm

Thickness: 5-3 mm

Material: Jasper (1) and Chert (1)

Comments: This form can be grossly compared to Jack's Reef Pentagonal, which dates from 1400 B.P. to 1100 B.P. (Custer 2001: 34). This type may date to the Middle Woodland Period in the Delaware Valley based on findings from Abbot Farm (Wall, et al. 1996a: 62). One of the examples from Holland Point is made from a flake blank. The dorsal and ventral surfaces of the flake are clearly visible.

Type 30: Poplar Island-like

Sample Size: 1

Blade: Isosceles straight-side triangle, biconvex cross section

Shoulders: Round shoulders grading into stem. The shoulders are the widest portions of the artifact.

Stem: Short and sharply contracting

Base: Straight, half as wide as blade

Length: 42 mm

Width: 25 mm

Thickness: 8 mm

Material: Unidentified sedimentary (1)

Comments: This form is grossly comparable to Poplar Island, which dates from the late Middle Archaic to the end of the Late Woodland (see comments for Type 8A).

Type 31: Unnamed expanding stem

Sample Size: 1

Blade: Thick, equilateral straight-side triangle, biconvex cross section

Shoulders: Only one pointed shoulder. The shoulder region is the widest portion of the artifact.

Stem: Expanding

Base: Straight, abruptly thinned

Length: 29 mm

Width: 20 mm

Thickness: 9 mm

Material: Chert (1)

Comments: This type is not comparable to any historically recognized projectile point types in the Middle Atlantic. An assessment of the age of this point cannot be made.

Type 32: Unnamed ear-notched type

Sample Size: 1

Blade: Thin lanceolate blade with excurvate sides, biconvex cross section

Shoulders: Weakly defined grading into the notches

Notches: Weakly defined, very shallow

Base: Concave, gradually thinned, distinctive protruding ears. The base is the widest portion of the artifact.

Length: 25 mm

Width: 19 mm

Thickness: 4 mm

Material: Jasper (1)

Comments: This type is not comparable to any historically recognized projectile point types in the Middle Atlantic. An assessment of the age of this point cannot be made.

Type 33: Chesapeake Diamond/Poplar Island variant

Sample Size: 1

Blade: Broad triangular shaped blade with straight sides, biplano cross section

Shoulders: Large well defined shoulder, widest portion of the artifact

Stem: Contracting

Base: Pointed

Length: 45 mm

Width: 28 mm

Thickness: 9 mm

Material: Quartzite (1)

Comments: The overall all shape is comparable to the Chesapeake Diamond or the Poplar Island "Major Type". Chesapeake Diamonds are believed to date to the Archaic (Hranicky 1994: 35; Hranicky and Painter 1989: 48). However the chronological information for the Chesapeake Diamond type is base on surface finds in Virginia (Custer 2001: 52) and should be considered tentative. Poplar Island points have a broad time range from late Middle Archaic to the end of the Middle Woodland (Custer 2001: 43, 90-112). See the comments for Type 8A for more detailed information on the temporal range of Poplar Island style projectile points.

## APPENDIX C

### RADIOCARBON DATING REPORT FROM BETA ANALYTIC INC.



APPENDIX C  
RADIOCARBON DATING REPORT FROM BETA ANALYTIC INC.

November 5, 2001

Dr. R. Michael Stewart  
Temple University  
Department of Anthropology  
Gladfelter Hall  
1115 West Berks Mall  
Philadelphia, PA 19122  
USA

RE: Radiocarbon Dating Results For Samples 1233538, 2243846, 3254649, 4264952, 5275258, 6285869, 7144652, 8155262, 9166274, 11418220 and 18220101

Dear Dr. Stewart:

Enclosed are the radiocarbon dating results for eleven samples recently sent to us. **Error! Not a valid filename.**  
**Error! Not a valid filename.**

Dr. R. Michael Stewart

Report Date

Temple University

Material Received

| Sample Data<br>Conventional<br><br>Radiocarbon Age(*)                                                                                                                                                                                                               | Measured<br><br>Radiocarbon Age | 13C/12C<br><br>Ratio |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------|
| Beta - 159984<br>810 +/- 40 BP<br>SAMPLE : 1233538<br>ANALYSIS : AMS-Standard delivery<br>MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid<br>2 SIGMA CALIBRATION : Cal AD 1170 to 1280 (Cal BP 780 to 670)                                             | 830 +/- 40 BP                   | -26.3 o/oo           |
| Beta - 159985<br>770 +/- 40 BP<br>SAMPLE : 2243846<br>ANALYSIS : AMS-Standard delivery<br>MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid<br>2 SIGMA CALIBRATION : Cal AD 1200 to 1290 (Cal BP 750 to 660)                                             | 740 +/- 40 BP                   | -23.1 o/oo           |
| Beta - 159986<br>2010 +/- 40 BP<br>SAMPLE : 3254649<br>ANALYSIS : AMS-Standard delivery<br>MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid<br>2 SIGMA CALIBRATION : Cal BC 100 to Cal AD 70 (Cal BP 2050 to 1880)                                      | 2030 +/- 40 BP                  | -26.0 o/oo           |
| Beta - 159987<br>2120 +/- 40 BP<br>SAMPLE : 4264952<br>ANALYSIS : AMS-Standard delivery<br>MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid<br>2 SIGMA CALIBRATION : Cal BC 350 to 310 (Cal BP 2300 to 2260) AND Cal BC 210 to 40 (Cal BP 2160 to 1990) | 2130 +/- 40 BP                  | -25.4 o/oo           |
| Beta - 159988<br>760 +/- 40 BP<br>SAMPLE : 5275258<br>ANALYSIS : AMS-Standard delivery<br>MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid                                                                                                              | 770 +/- 40 BP                   | -25.5 o/oo           |

2 SIGMA CALIBRATION : Cal AD 1210 to 1290 (Cal BP 740 to 660)

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| Sample Data<br>Conventional<br>Radiocarbon Age(*)                                                                                                                                                                                                                   | Measured<br>Radiocarbon Age | 13C/12C<br>Ratio |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------|
| Beta - 159989<br>2140 +/- 40 BP<br>SAMPLE : 6285869<br>ANALYSIS : AMS-Standard delivery<br>MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid<br>2 SIGMA CALIBRATION : Cal BC 360 to 290 (Cal BP 2310 to 2240) AND Cal BC 230 to 50 (Cal BP 2180 to 2000) | 2140 +/- 40 BP              | -25.3 o/oo       |
| Beta - 159990<br>1210 +/- 40 BP<br>SAMPLE : 7144652<br>ANALYSIS : AMS-Standard delivery<br>MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid<br>2 SIGMA CALIBRATION : Cal AD 700 to 900 (Cal BP 1250 to 1050)                                            | 1230 +/- 40 BP              | -26.3 o/oo       |
| Beta - 159991<br>1020 +/- 40 BP<br>SAMPLE : 8155262<br>ANALYSIS : AMS-Standard delivery<br>MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid<br>2 SIGMA CALIBRATION : Cal AD 970 to 1040 (Cal BP 980 to 910)                                             | 1020 +/- 40 BP              | -25.0 o/oo       |
| Beta - 159992<br>970 +/- 40 BP<br>SAMPLE : 9166274<br>ANALYSIS : AMS-Standard delivery<br>MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid<br>2 SIGMA CALIBRATION : Cal AD 1000 to 1170 (Cal BP 950 to 780)                                             | 990 +/- 40 BP               | -26.2 o/oo       |
| Beta - 159993<br>1200 +/- 40 BP<br>SAMPLE : 11418220<br>ANALYSIS : AMS-Standard delivery<br>MATERIAL/PRETREATMENT : (pottery): acid washes                                                                                                                          | 1190 +/- 40 BP              | -24.2 o/oo       |

2 SIGMA CALIBRATION : Cal AD 710 to 910 (Cal BP 1240 to 1040) AND Cal AD 920 to 960  
(Cal BP 1030 to 1000)

---

Dr. R. Michael Stewart

Report Date:

Temple University

Material Received:

---

| Sample Data<br>Conventional<br>Radiocarbon Age(*)                                                                                                                                                                         | Measured<br>Radiocarbon Age | 13C/12C<br>Ratio |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------|
| Beta - 160461<br>1740 +/- 40 BP<br>SAMPLE : 18220101<br>ANALYSIS : AMS-Standard delivery<br>MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid<br>2 SIGMA CALIBRATION : Cal AD 220 to 400 (Cal BP 1730 to 1550) | 1760 +/- 40 BP              | -26.0 o/oo       |

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# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEAR

(Variables: C13/C12=-26;lab. mult=1)

Laboratory number: **Beta-160461**

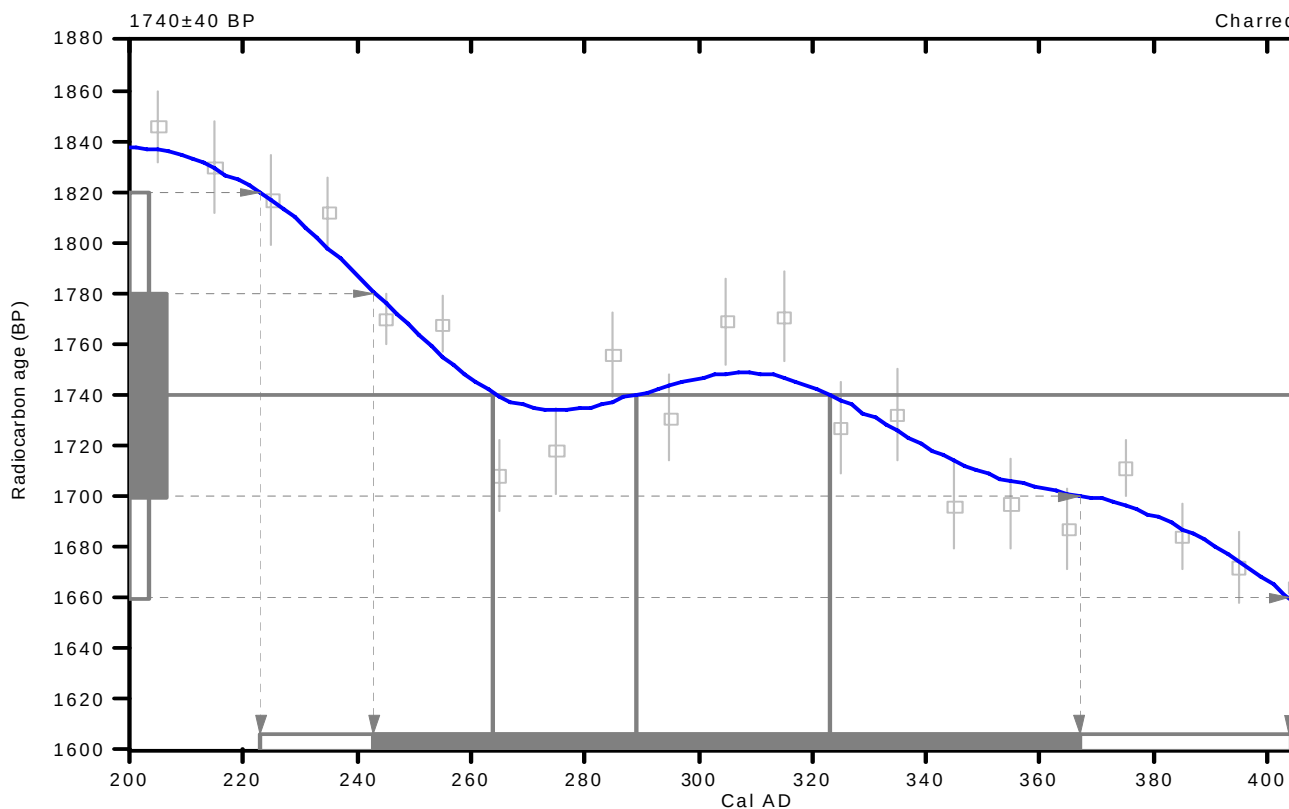
Conventional radiocarbon age: **1740±40 BP**

2 Sigma calibrated result: **Cal AD 220 to 400 (Cal BP 1730 to 1550)**  
(95% probability)

Intercept data

Intercepts of radiocarbon age  
with calibration curve: Cal AD 260 (Cal BP 1690) and  
Cal AD 290 (Cal BP 1660) and  
Cal AD 320 (Cal BP 1630)

1 Sigma calibrated result: Cal AD 240 to 370 (Cal BP 1710 to 1580)  
(68% probability)



## References:

### Database used

### Calibration Database

### Editorial Comment

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), pxi-xiii

### INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, *Radiocarbon* 40(3), p1041-1083

### Mathematics

### A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322

572

**Beta Analytic Inc.**

4985 SW 74 Court, Miami, Florida 33155 USA • Tel: (305) 667 5167 • Fax: (305) 663 0964 • E-Mail: [beta@radiocarbon.com](mailto:beta@radiocarbon.com)



# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEAR

(Variables: C13/C12=-26.3;lab. mult=1)

**Laboratory number: Beta-159984**

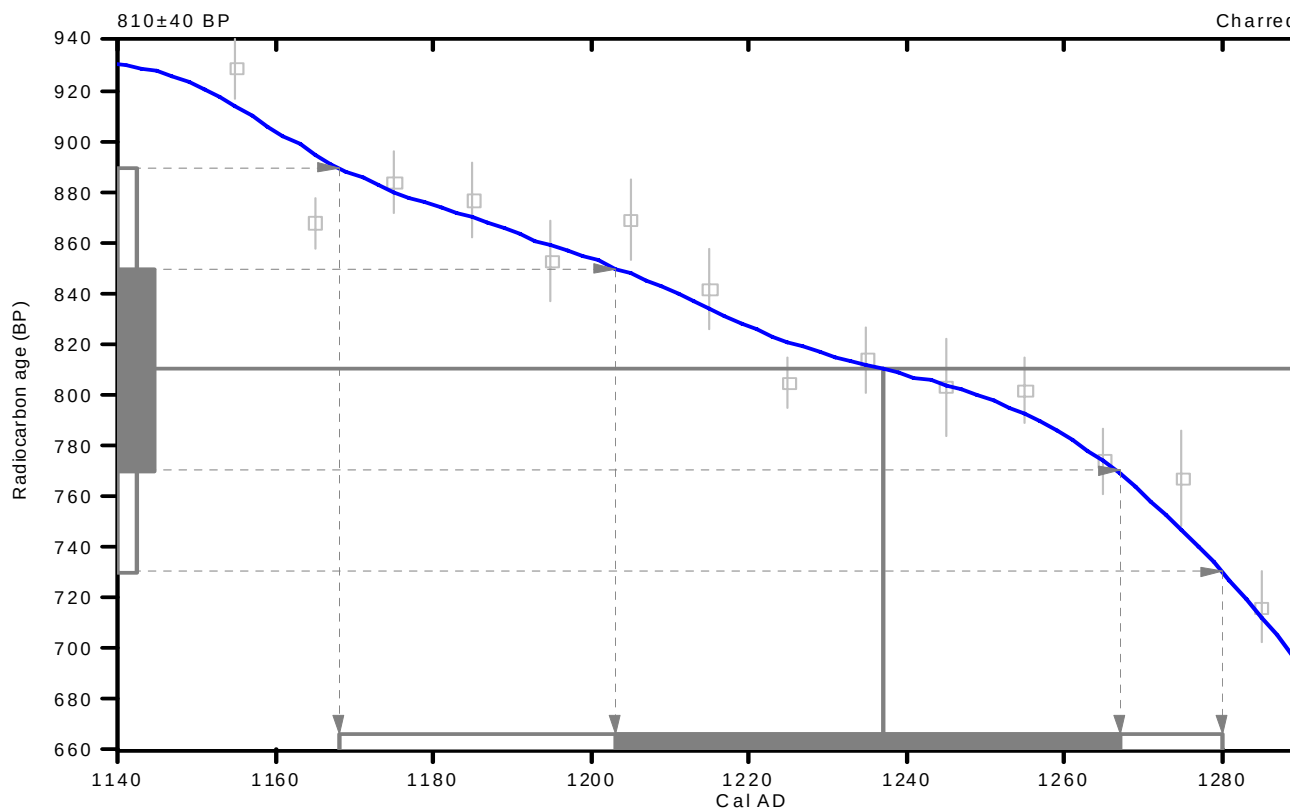
**Conventional radiocarbon age: 810±40 BP**

**2 Sigma calibrated result: Cal AD 1170 to 1280 (Cal BP 780 to 670)  
(95% probability)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1240 (Cal BP 710)

**1 Sigma calibrated result: Cal AD 1200 to 1270 (Cal BP 750 to 680)  
(68% probability)**



## References:

### Database used

### Calibration Database

### Editorial Comment

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), pxii-xiii

### INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, *Radiocarbon* 40(3), p1041-1083

### Mathematics

### A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322

574

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# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEAR

(Variables: C13/C12=-23.1;lab. mult=1)

Laboratory number: Beta-159985

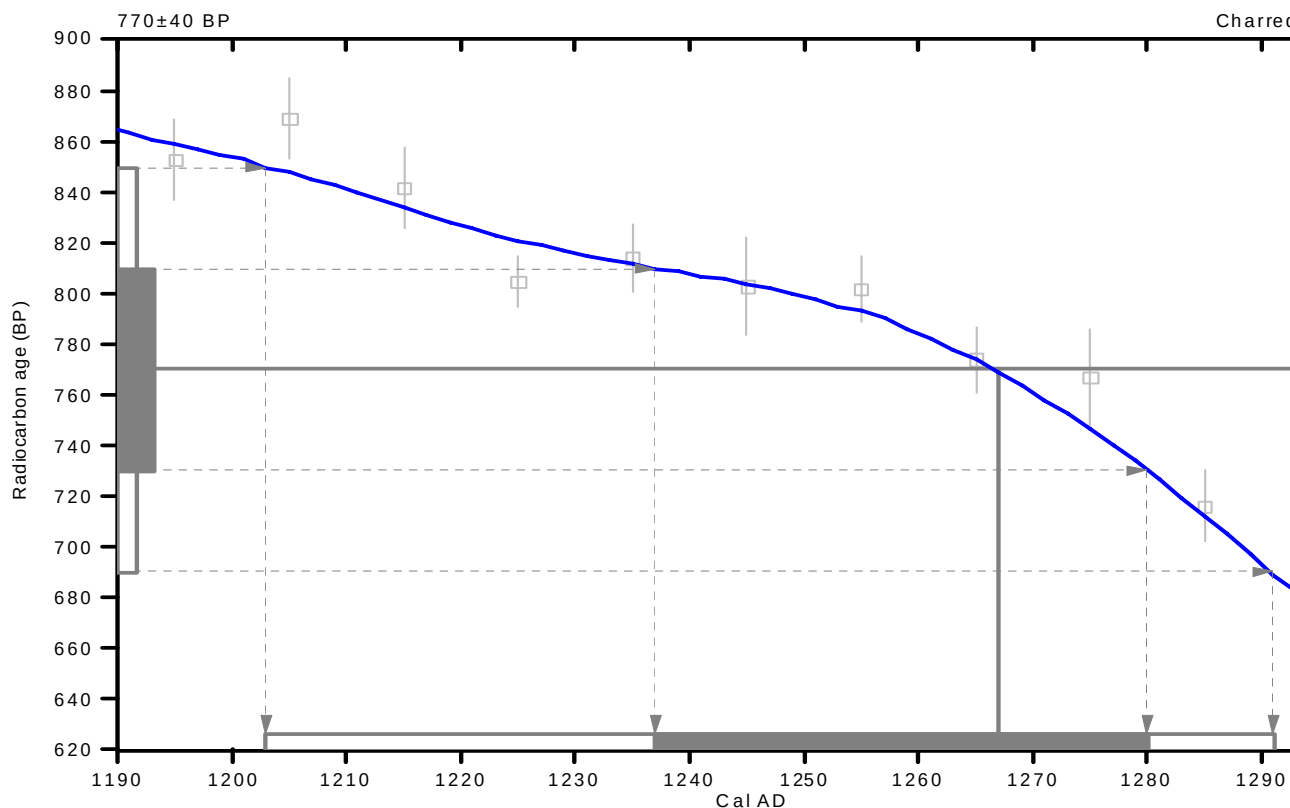
Conventional radiocarbon age: 770±40 BP

2 Sigma calibrated result: Cal AD 1200 to 1290 (Cal BP 750 to 660)  
(95% probability)

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1270 (Cal BP 680)

1 Sigma calibrated result: Cal AD 1240 to 1280 (Cal BP 710 to 670)  
(68% probability)



## References:

### Database used

### Calibration Database

### Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

### INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

### Mathematics

### A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

575

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# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEAR

(Variables: C 13/C 12=-26;lab. mult=1)

**Laboratory number: Beta-159986**

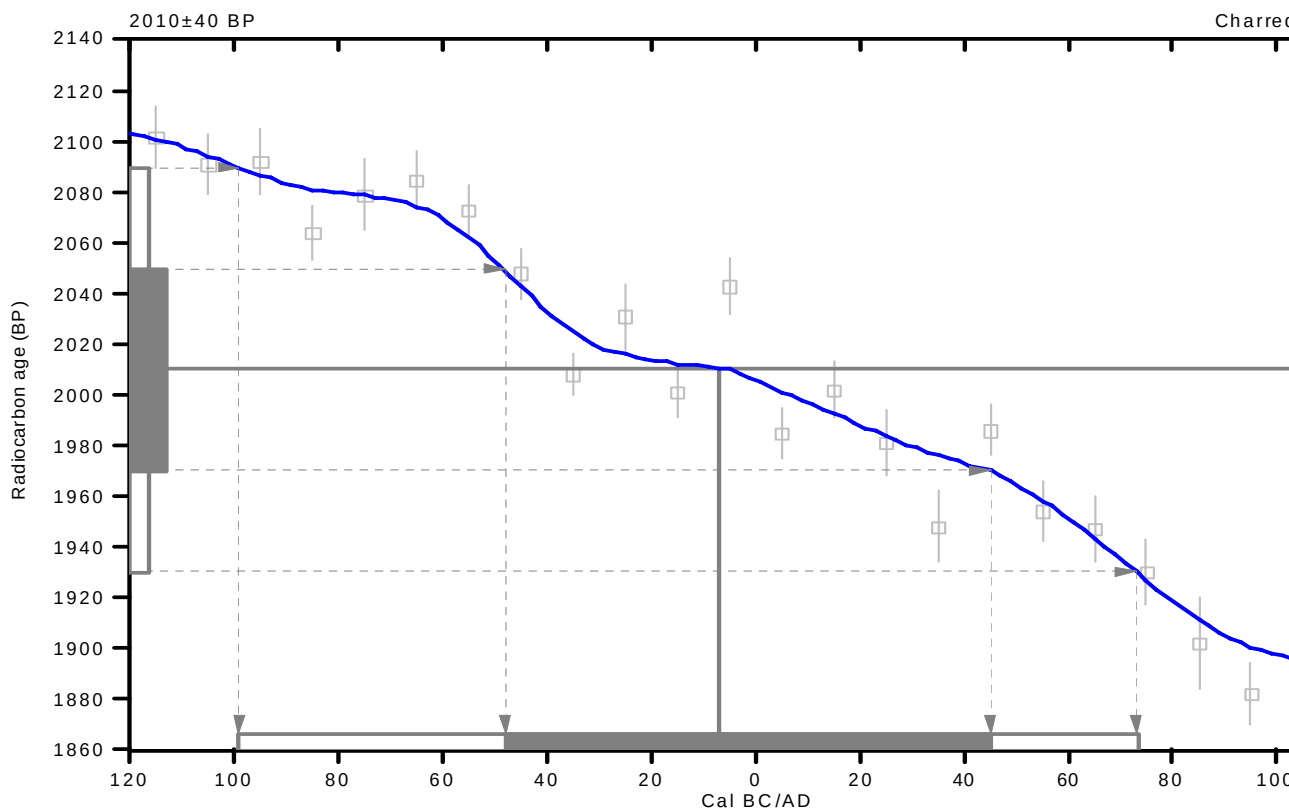
**Conventional radiocarbon age: 2010±40 BP**

**2 Sigma calibrated result: Cal BC 100 to Cal AD 70 (Cal BP 2050 to 1860)  
(95% probability)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal BC 10 (Cal BP 1960)

**1 Sigma calibrated result: Cal BC 50 to Cal AD 40 (Cal BP 2000 to 1900)  
(68% probability)**



## References:

### Database used

### Calibration Database

### Editorial Comment

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), pxii-xiii

### INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, *Radiocarbon* 40(3), p1041-1083

### Mathematics

### A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322

576

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# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEAR

(Variables: C 13/C 12=-25.4;lab. mult=1)

**Laboratory number: Beta-159987**

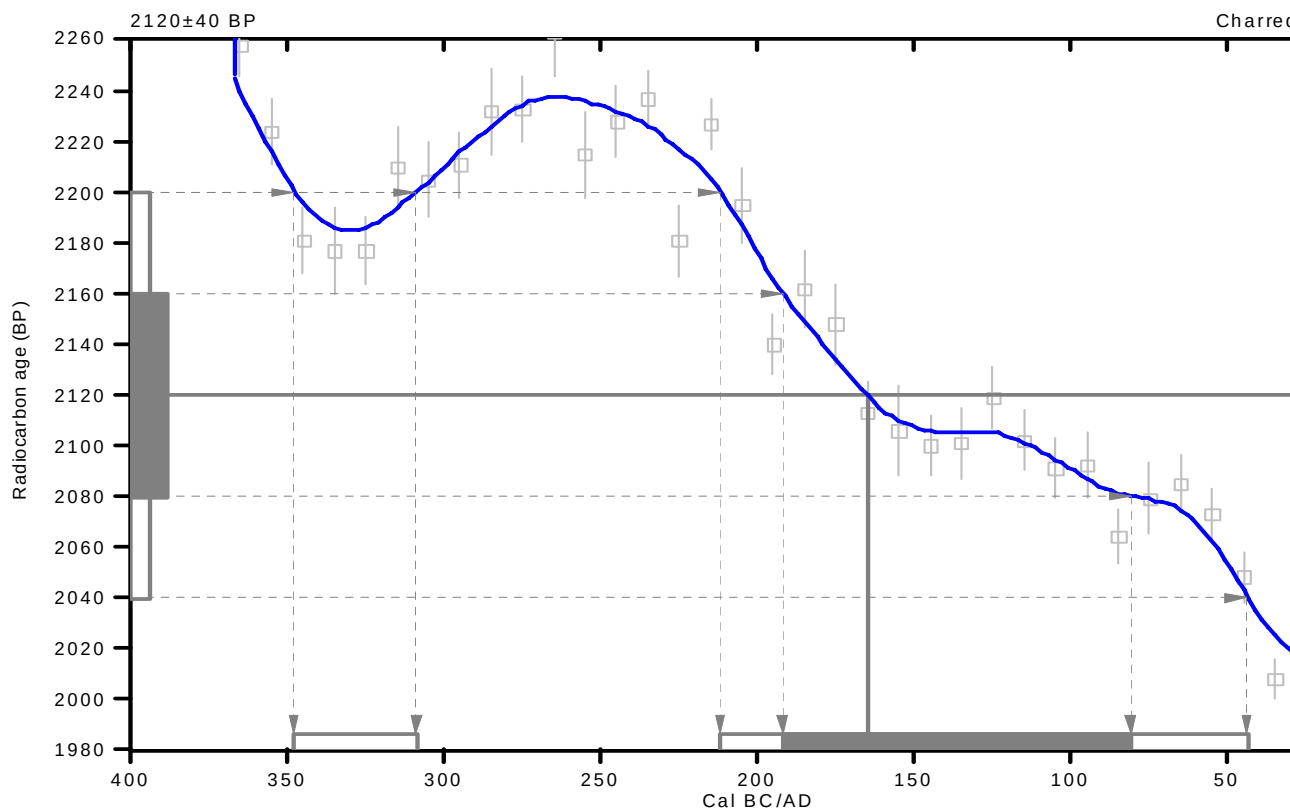
**Conventional radiocarbon age: 2120±40 BP**

**2 Sigma calibrated results: Cal BC 350 to 310 (Cal BP 2300 to 2260) and  
(95% probability) Cal BC 210 to 40 (Cal BP 2160 to 1990)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal BC 160 (Cal BP 2120)

1 Sigma calibrated result: Cal BC 190 to 80 (Cal BP 2140 to 2030)  
(68% probability)



## References:

### Database used

### Calibration Database

### Editorial Comment

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), pxii-xiii

### INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, *Radiocarbon* 40(3), p1041-1083

### Mathematics

### A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322



# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEAR

(Variables: C 13/C 12=-25.3;lab. mult=1)

**Laboratory number: Beta-159989**

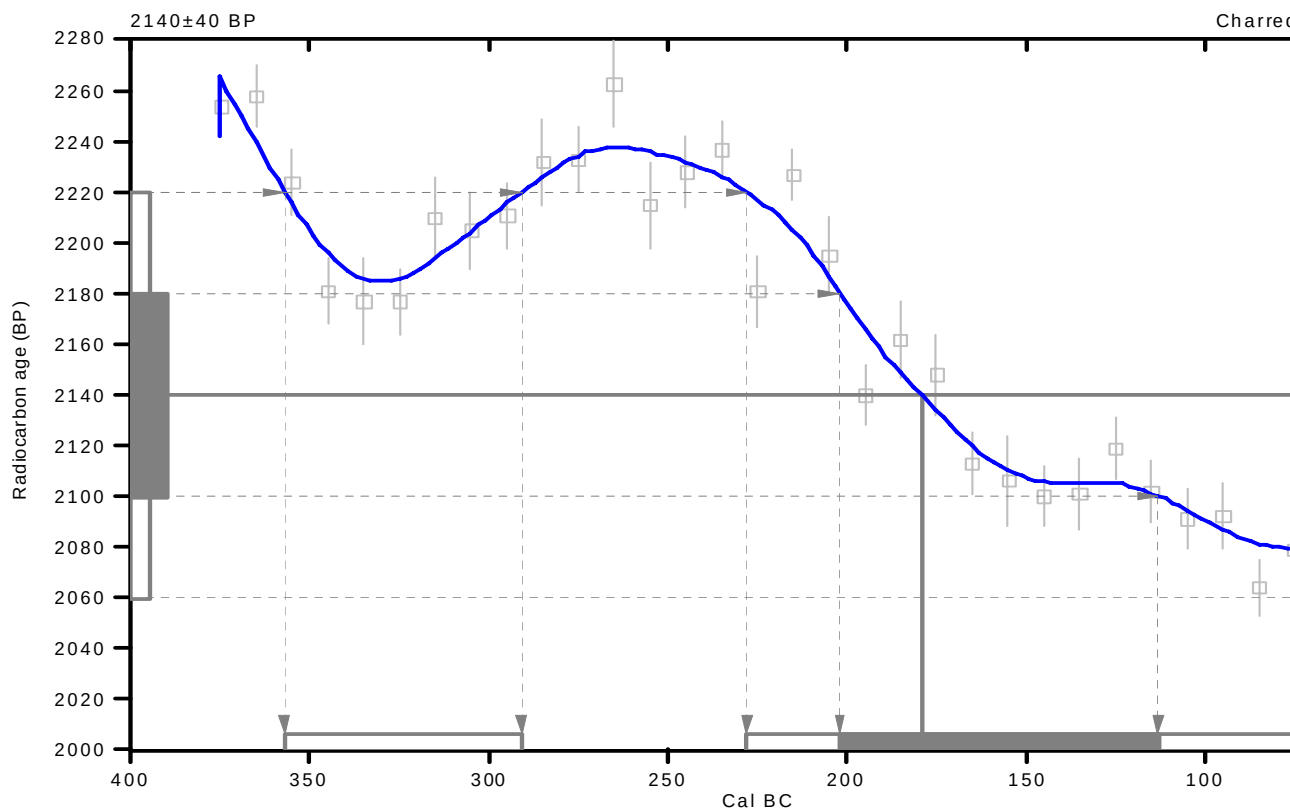
**Conventional radiocarbon age: 2140±40 BP**

**2 Sigma calibrated results: Cal BC 360 to 290 (Cal BP 2310 to 2240) and  
(95% probability) Cal BC 230 to 50 (Cal BP 2180 to 2000)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal BC 180 (Cal BP 2130)

1 Sigma calibrated result: Cal BC 200 to 110 (Cal BP 2150 to 2060)  
(68% probability)



## References:

### *Database used*

### *Calibration Database*

### *Editorial Comment*

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), pxii-xiii

### *INTCAL98 Radiocarbon Age Calibration*

Stuiver, M., et. al., 1998, *Radiocarbon* 40(3), p1041-1083

### *Mathematics*

### *A Simplified Approach to Calibrating C14 Dates*

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322

579

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# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEAR

(Variables: C 13/C 12=-26.3;lab. mult=1)

**Laboratory number: Beta-159990**

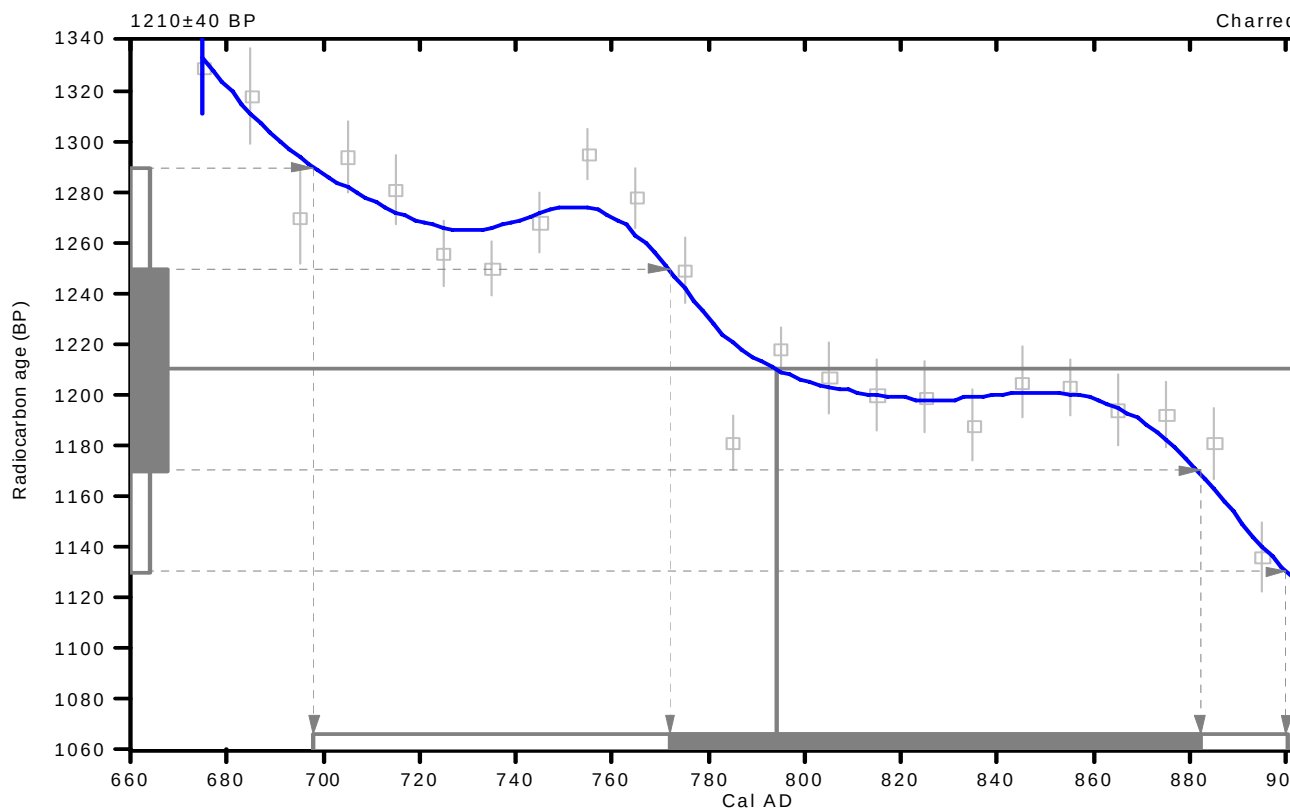
**Conventional radiocarbon age: 1210±40 BP**

**2 Sigma calibrated result: Cal AD 700 to 900 (Cal BP 1250 to 1050)  
(95% probability)**

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 790 (Cal BP 1160)

**1 Sigma calibrated result: Cal AD 770 to 880 (Cal BP 1180 to 1070)  
(68% probability)**



## References:

### *Database used*

### *Calibration Database*

### *Editorial Comment*

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), pxii-xiii

### *INTCAL98 Radiocarbon Age Calibration*

Stuiver, M., et. al., 1998, *Radiocarbon* 40(3), p1041-1083

### *Mathematics*

### *A Simplified Approach to Calibrating C14 Dates*

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322

580

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# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEAR

(Variables: C13/C12=-25;lab. mult=1)

Laboratory number: **Beta-159991**

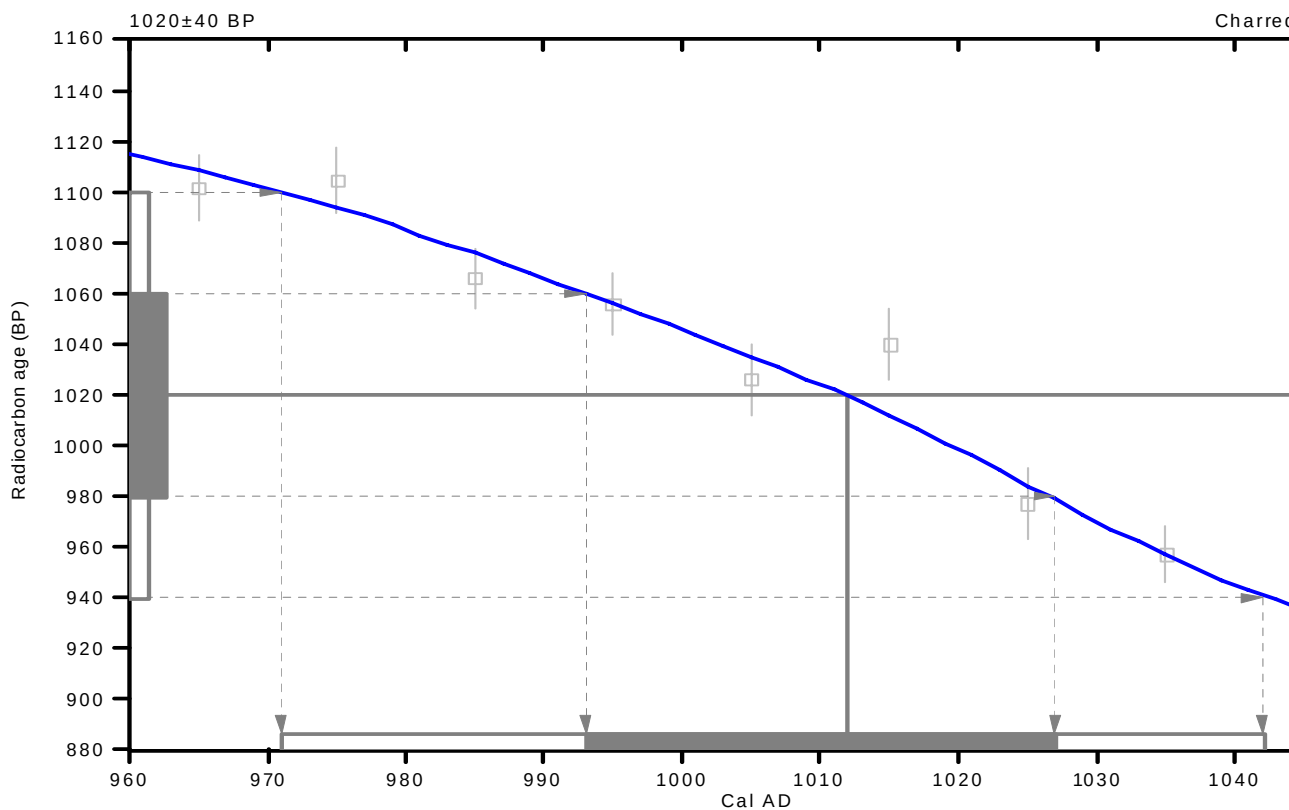
Conventional radiocarbon age: **1020±40 BP**

2 Sigma calibrated result: **Cal AD 970 to 1040 (Cal BP 980 to 910)**  
(95% probability)

Intercept data

Intercept of radiocarbon age  
with calibration curve: **Cal AD 1010 (Cal BP 940)**

1 Sigma calibrated result: **Cal AD 990 to 1030 (Cal BP 960 to 920)**  
(68% probability)



## References:

### Database used

### Calibration Database

### Editorial Comment

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), pxii-xiii

### INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, *Radiocarbon* 40(3), p1041-1083

### Mathematics

### A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEAR

(Variables: C13/C12=-26.2;lab. mult=1)

Laboratory number: Beta-159992

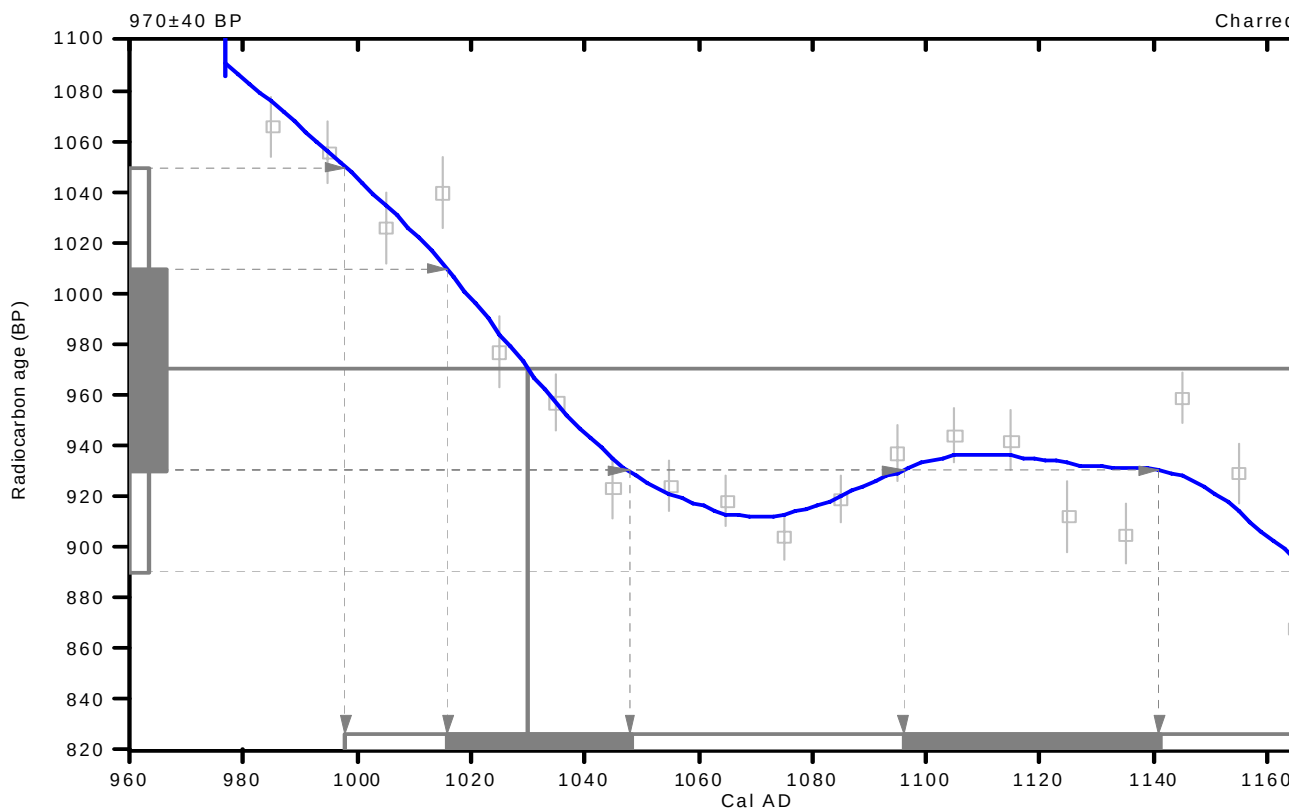
Conventional radiocarbon age: 970±40 BP

2 Sigma calibrated result: Cal AD 1000 to 1170 (Cal BP 950 to 780)  
(95% probability)

Intercept data

Intercept of radiocarbon age  
with calibration curve: Cal AD 1030 (Cal BP 920)

1 Sigma calibrated results: Cal AD 1020 to 1050 (Cal BP 930 to 900) and  
(68% probability) Cal AD 1100 to 1140 (Cal BP 850 to 810)



## References:

### Database used

### Calibration Database

### Editorial Comment

Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii

### INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083

### Mathematics

### A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322





# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEAR

(Variables: C 13/C 12=-24.2:lab. mult=1)

Laboratory number: **Beta-159993**

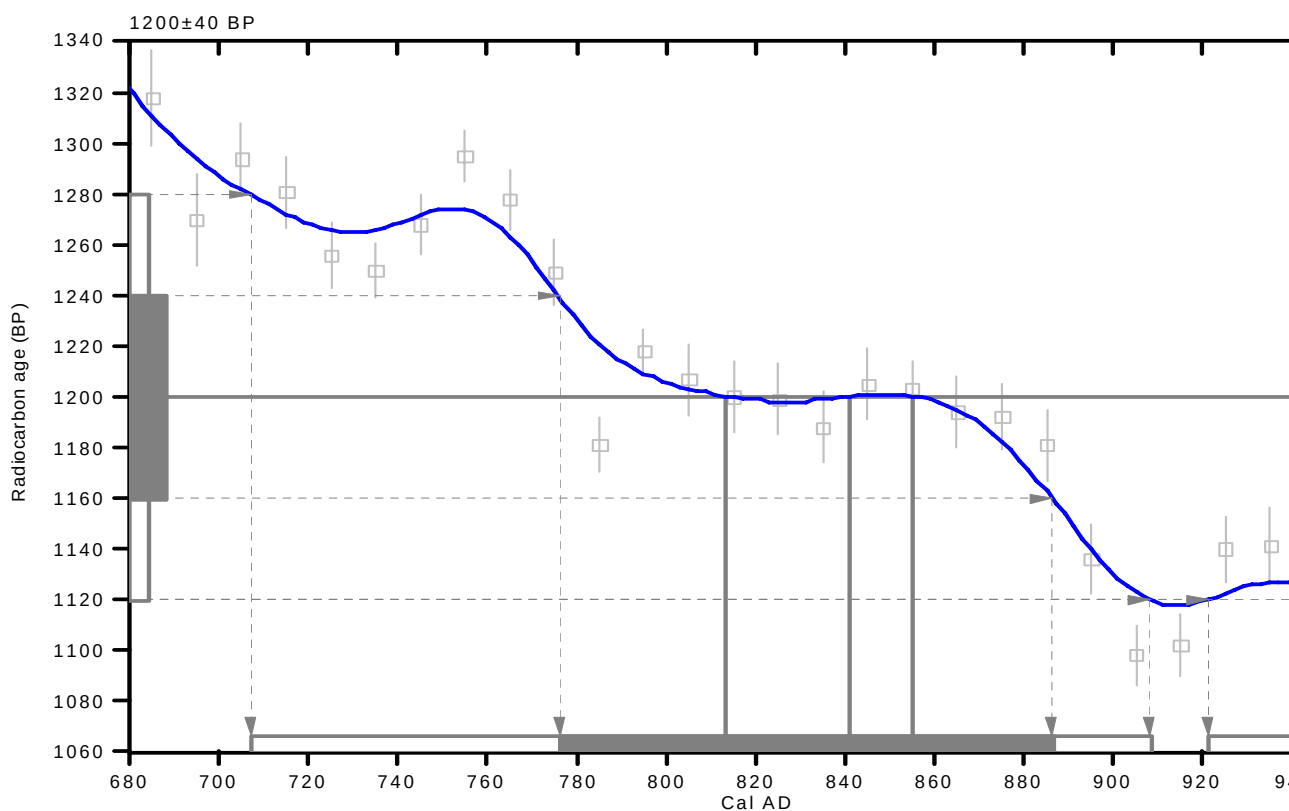
Conventional radiocarbon age: **1200±40 BP**

2 Sigma calibrated results: **Cal AD 710 to 910 (Cal BP 1240 to 1040) and**  
**(95% probability) Cal AD 920 to 960 (Cal BP 1030 to 1000)**

Intercept data

Intercepts of radiocarbon age  
with calibration curve: **Cal AD 810 (Cal BP 1140) and**  
**Cal AD 840 (Cal BP 1110) and**  
**Cal AD 860 (Cal BP 1100)**

1 Sigma calibrated result: **Cal AD 780 to 890 (Cal BP 1170 to 1060)**  
**(68% probability)**



## References:

### Database used

### Calibration Database

### Editorial Comment

Stuiver, M., van der Plicht, H., 1998, *Radiocarbon* 40(3), pxii-xiii

### INTCAL98 Radiocarbon Age Calibration

Stuiver, M., et. al., 1998, *Radiocarbon* 40(3), p1041-1083

### Mathematics

### A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, *Radiocarbon* 35(2), p317-322

APPENDIX D

DESCRIPTIONS OF CHERT TYPES

## APPENDIX D

### DESCRIPTIONS OF CHERT TYPES

#### Chert 1 (Light Gray)

The dominant color is 10YR 5/1 gray with color ranges from 2.5Y 5/3 light olive brown to 5PB 2.5/1 bluish black. The chert is opaque and fine-grained. The luster ranges from waxy to dull. Mottles and swirls of various color around visible in most pieces. Cobble cortex present. This chert type is lighter in color than Chert 2 and also is more variegated than Chert 2.

#### Chert 2 (Dark Gray)

The dominant color is 10B 2.5/1 bluish black with color ranges from 10B 2.5/1 bluish black to 3/N very dark gray. The chert is opaque and fine-grained. The luster ranges from waxy to dull. Cobble cortex present.

#### Chert 3 (White)

The dominant color is 8/N white with color ranges from 10Y/R 6/6 brownish yellow to 2.5YR 4/2 weak red. The chert is opaque and fine-grained. The luster ranges from waxy to dull. Cobble cortex present.

#### Chert 4 (Translucent)

The dominant color is 5G 3/1 dark greenish gray with color ranges from 10Y/R 8/2 very pale brown to 2.5YR 6/6 light red to from 10B 3/1 dark bluish gray. The chert is translucent and fine-grained. Waxy luster. Cobble cortex present. Might be similar to chalcedony.

#### Chert 5 (Chert with patina)

There is no dominant color. The chert colors are 7.5 YR 5/8 strong brown, 10Y 7/1 light greenish gray, 10G 3/1 dark greenish gray, and 2.5YR 4/4 reddish brown. The chert is opaque and fine-grained. Color is highly variegated. Chert has an extremely waxy luster and the patina rind is visible on several of the pieces. The patina could be caused by the nature of the environment in which the artifact is buried.

#### Chert 6 (Greenish)

The dominant color is 10Y 4/1 dark greenish gray with color ranges from 2.5Y 6/8 olive yellow to 2.5Y 3/1 very dark gray. The chert is opaque and fine-grained. Waxy luster. The chert colors are mottled. Cobble cortex present.

#### Chert 7 (Dark Red)

The color ranges from 10R 3/1 dark reddish gray to 10R 4/1 dark reddish gray. Cortex color ranges from 10R 7/6 light red to 10R 8/1 white. Color does not seem to be related to thermal alteration.