HUNTER RESEARCH

FARMER'S DELIGHT
AN 18TH-CENTURY PLANTATION IN SOUTHERN DELAWARE

PHASE III ARCHAEOLOGICAL DATA RECOVERY

THE CEDAR CREEK ROAD SITE 7S-C-100
CEDAR CREEK HUNDRED
SUSSEX COUNTY, DELAWARE

Parent Agreement 1535
Tasks 5 and 10

Prepared for:

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MANAGEMENT SUMMARY

This is the study of an 18th-century rural settlement site in northern Sussex County, Delaware. It is argued that the main portion of the archaeologically excavated site was occupied and worked by enslaved Africans and/or African-Americans. No trace of these people has been found in the documentary record, but observed patterning in the archaeological data is considered to be a direct reflection of their dominant presence and cultural practices here. Since this is the first archaeological site in Delaware at which such an archaeologically based identification has been attempted, the hypothesis needs to be rigorously reviewed, and also tested at other locations.

Federally supported planned improvements to the intersection of State Routes 1 and 30 in Cedar Creek Hundred, Sussex County by the Delaware Department of Transportation were preceded by historical and archaeological studies in accordance with Section 106 of the National Historic Preservation Act of 1966 (as amended). These resulted in the identification of two archaeological sites, one solely prehistoric and the second (the subject of this report) a multi-component historic site, also with a prehistoric component. This complex, the Cedar Creek Road Site [7S-C-100] includes a basemented structure of late 17th- or early 18th-century date, and three mid-18th-century loci. These loci are a brick production area, an isolated building probably of log or frame construction, and a compact grouping of at least three post-in-ground structures, the remains of an iron bloomery furnace, and a range of features, including subfloor pits, relating to domestic and industrial activities. This third locus lies adjacent to Cedar Creek Road (State Route 30), an early 18th-century road that connected the site with an important mill seat and associated settlement at Cedar Creek to the south.

Phase II studies had concluded that the Cedar Creek Road Site was eligible for the National Register of Historic Places. The late 17th-/early 18th-century locus is being treated through permanent covenanted preservation on land retained by the Department of Transportation for that purpose. No further investigations were therefore undertaken here. The remaining loci lay within the Limits of Construction of the new connector road between State Routes 1 and 30, and a program of archaeological and historical research was therefore undertaken as the agreed treatment of these historic properties.

The historical research comprised detailed analysis of primary and secondary sources, archaeological excavation comprising controlled machine stripping of plowzone soils, limited trenching, and the hand excavation of numerous features identified in the exposed sediments below the plowzone. Specialists were included in the team to perform analysis of soil chemistry, archaeobotanical remains, a possible human bone fragment, and on slag and other materials from the bloomery. Oyster and other shell materials were analyzed in detail by a participant in Hunter Research's internship program as a special project. XRF instrumentation was used to test postulated relationships between local clay, the bricks produced in clamps at the site, and the bricks found in other archaeological contexts.

MANAGEMENT SUMMARY (CONTINUED)

Historical research proved somewhat frustrating and complex because of the spotty survival of 18th-century documents in Sussex County. There are gaps in the ownership sequence, but the general history of property ownership and subdivision is now understood. From 500 acres in 1694, the property on which the site lies was reduced to 250 acres in 1704. It is surmised that substantial improvements were not made at least until the 1730s when first Alexander Draper and then Alexander Thompson owned the land, although the Cedar Creek Road was already in place by 1734. By this time the plantation had been given the lyrical name of Farmer's Delight, which is used throughout this report to refer to the mid-18th-century archaeological complex. The Drapers were a prolific and influential local family. Thompson was a ship's captain. The ownership of Thomas Fisher in *circa* 1747-49, though brief, is nevertheless of potential importance for the history of the site because he is known to have been a blacksmith. Subdivision of the property on Fisher's death resulted in the site falling in the southeast corner of a 100-acre tract. Samuel Davis, the owner of this tract, had the property until about the Revolutionary War. It was then acquired once again by the Draper family.

The archaeological evidence, chiefly the occurrences of dateable ceramic types but also including data from tobacco pipestem diameters, suggests that the site was probably abandoned shortly after the Revolutionary War. Setting aside the late 17th-/early 18th-century house site in the eastern part of the site (which may be a separate episode), the evidence suggests that the intensive use of the site started in the 1740s (although some materials could be of earlier date). This judgment is influenced by the historical record, especially the evidence of the division of the larger property just before 1750, with the site now falling in a 100-acre tract. It is postulated that this smaller area reflected the general abandonment of tobacco cultivation in Delaware at this time, and its replacement by a more diverse, primarily grain-based economy.

Area A, alongside Cedar Creek Road, was the most complex portion of the site, and the one at which the case for this being a slave site is most strongly made. There is evidence of varying quality for four post-in-ground buildings. Three of these (Structures 1, 2 and 4) had small subfloor pits of the type recognized as typical of slave sites in the Virginia Tidewater. Structure 3 had a much larger cellar pit that had been filled with a mass of oyster and other shell. No direct evidence was recovered that these buildings were heated, but the presence of daub and charcoal in the backfill of the possible "hearthfront" pit in Structure 4 is suggestive.

Structures 1, 2 and 3 and associated fencelines may have defined a courtyard or work area open to the road. On the western side of this area was a pit containing large amounts of slag, charcoal, iron blooms and bloom fragments, as well as finished metal tools and iron bar stock. At first interpreted as a trash pit, evidence accumulated that this was the remains of a bloomery furnace built in a pit. It had been infilled with bloomery and forge debris after it had gone out of use and been largely dismantled. These conclusions were drawn by Dr. Carl Blair of Michigan Technological University after examination and testing of samples from the pit and reviewing the excavation data. He also identified pieces of the furnace wall lacking the distinctive lining of "lute" (an insulating mixture of charcoal and clay) that is normally used on European bloomeries, but is absent on those in

the West African tradition. His conclusion is that this bloomery operation, while in most respects typical of what would be expected on a site in the English colonies, appears to show the deliberate incorporation of African cultural technology into the structure of the furnace.

A possible grave feature was also identified in Area A. Small fragments of bone from this feature proved to be unidentifiable. Analysis of the soil chemistry from the feature showed elevated levels of phosphorus in the main fill and elevated levels of potassium in a context at the side and end of the feature fill. Phosphorus is a principal constituent of animal tissue, and the potassium could potentially be from the degraded wood of a coffin. However, this evidence is not conclusive and the feature remains as a possible grave only.

A review of the at-times contentious field of the archaeology of American slavery led to an approach to the patterning data at the site that is derived from the research and thinking of Patricia Samford of the Jefferson Patterson Museum in Maryland. In two influential studies (1996 and 2007) Samford identifies two organizing principles that can assist in the archaeological identification of slavery. The first is Pattern Recognition: the assumption that patterns in the archaeological meaningfully reflect cultural values and behaviors of people in the past. The second, more specific principle is that African Cultural Retention – the continued use of African cultural assumptions and behaviors – may be recognizable within that pattern.

A number of archaeologically identified features and artifacts from the site were examined in the light of these principles. These were: post-in-ground construction, interpretation of the large Structure 1 as a “non-kin coresidential building” (probably bunkhouse-like accommodation for single males), fence construction techniques, subfloor pits, inferred heating and chimney arrangements, the bloomery signature, a Spanish pillar dollar button or sleeve link, a gaming piece or charm, Colono-ware gaming pieces, ceramic vessel forms and wares, and a possible linen-smoother. These are identified as indicators of the presence of enslaved Africans and/or African-Americans with varying degrees of probability. The argument, essentially, is that the presence of this many potential markers of slave occupation in a relatively small area gives weight to the interpretation.

A possible grave was also identified in Area A. This was located in the southeast corner of the courtyard or work area, and was aligned on roughly the same axis as the buildings. Fragments of bone submitted to Dr. Karen Rosenburg of the University of Delaware proved to be unidentifiable, although chemical signatures in the soils from the feature may reflect the former presence of a burial.

In Area B, attempts to establish the configuration of a building predicted from an artifact concentration were unsuccessful. It is possible that this apparently isolated building was of sill-beam and frame or log construction (the latter being the more likely). No pits were found within the area examined, although these could have been missed since the area was not completely stripped. A prehistoric pit of the type widespread on Delaware sites was also indentified here. In Chapter 7 it is placed within the overall evidence for prehistoric use of the site.

MANAGEMENT SUMMARY (CONTINUED)

Area C revealed clear evidence of a small brickmaking operation, with the footprints of three small clamps being identified, together with signs of an area used for pugging the clay and sand. Postholes suggest the use of a windbreak to control the firing. About 100 feet to the south, a sub-circular depression within the currently wooded area may have been the quarry source for both the clay and for the bog-iron/limonite used in the bloomery.

Based on the archaeological evidence and contextual research, two graphic reconstructions of the site were produced. The first, an interpretive plan, presented the site in metrically accurate map form. From this, a more impressionistic oblique aerial view of the site in its envisaged landscape was created.

It is argued in the final chapter that the current historic context structure for Delaware does not readily address the issue of plantation slavery. It is suggested that consideration be given either to reviving the 1990s initiative to develop a context for minorities in Delaware, or to the creation of a more specific context for slavery.

This chapter also contains a historic context discussion on bloomery iron furnaces in 18th-century Delaware, which is intended to assist both in the interpretation of both future sites and in the re-examination of materials found in earlier projects, for example the Laban Rogers Site [7S-K-118] in Baltimore Hundred, Sussex County. The features interpreted as slag-pit features at this site could possibly retain evidence for actual bloomeries similar to that at Farmer’s Delight.

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ACKNOWLEDGMENTS

Thanks are extended to David Clarke and Kevin Cunningham of the Delaware Department of Transportation for oversight, support throughout the project and use of their XRF equipment. Gwen Davis of the Delaware State Historic Preservation Office also provided valuable advice on goals and methodology for the project. We are also grateful to Alice Guerrant and Craig Lukezic of the Historic Preservation Office for input on the work. The work greatly benefitted from specialized analysis by: Carl Blair, on iron slag and bloomery materials; Karen R. Rosenberg, on osteological materials; Andrew P. Wilkins for soil chemistry; Justine McKnight for floral analysis; and Tim Pearce, former curator at the Delaware Museum of Natural History, for his comments on land snails. Special thanks are extended to Michael Gall who provided reference and comparative materials.

The work also benefitted from the active participation of the Archaeological Society of Delaware, whose members volunteered their time and efforts on weekends to help remove and record important features. We are also grateful to backhoe operator Matt Miller whose skillful use of his backhoe fitted with a beveled collar enhanced our ability to quickly identify features as he removed the plowzone.

Within Hunter Research, Inc., Ian Burrow served as Project Manager for these investigations. William Liebeknecht, Principal Investigator, directed the field investigations and laboratory analysis. The archaeological field team comprised Susan Ferenbach (Senior Archaeologist), Joelle Browning, Dawn Cheshaek, John Ferenbach, Timothy Hitchens, Glen Mellin, Andrew Martin and James Martin (Field Assistants). Artifact analysis was carried out by Joelle Browning, Timothy Hitchens, Glen Keeton, Andrew Martin, Glen Mellin and Dawn Cheshaek under the supervision of Susan Ferenbach. Historical research was performed by Alison K. Haley with guidance from Patrick Harshbarger. Oyster shell analysis was performed by Kaitlin East (intern), Report graphics were prepared by Lindsay Lee, Katie Rettinger, Elizabeth Cottrell and Matthew Pihokker and report formatting was undertaken by Elizabeth Cottrell, both under the direction of James Lee and Ian Burrow. Report management, final editing, and production were overseen by James Lee. This report was authored by William Liebeknecht, Ian Burrow, Alison K. Haley and Patrick Harshbarger.

William B. Liebeknecht, MA, RPA
Principal Investigator

Chapter 1

INTRODUCTION

A. PROJECT BACKGROUND

This is a report on the results of an archaeological data recovery and related research undertaken at the Cedar Creek Road Site [7S-C-100], Cedar Creek Hundred, Sussex County, Delaware (Figure 1.1). The site was part of the 18th-century plantation called "Farmer's Delight". The fieldwork was carried out in December 2011 and January 2012.

This investigation and report is the final portion of sequential Phase I, II and III studies undertaken on behalf of the Delaware Department of Transportation to comply with its obligations (reflecting its status as an agent of the Federal Highway Administration) under Section 106 of the National Historic Preservation Act of 1966 (as amended). The construction of new ramps connecting Delaware State Routes 1 and 30 south of Milford, Sussex County, Delaware, will adversely affect three loci on the site, which were identified in two Phase I surveys (Edward Otter, Inc. 2009; Hunter Research, Inc. 2010) and evaluated as eligible in the Phase II investigation (Hunter Research, Inc. 2011). Site 7S-C-100 is an extensive historic complex with four main loci (one of which is outside the Limits of Construction [LOC] and was not investigated beyond the Phase II level), and a small prehistoric component dating to the Woodland I period (about 3,000 B.C. to A.D. 1000) that included subsurface features.

The four loci comprised a house site, consisting of a well-preserved rectangular cellar hole apparently in use from the late 17th through the early 18th century (not investigated as it lies beyond the LOC); a probable house and associated yard and other farmstead features dating to the mid-18th century (referred to as Area A in the archaeological data recovery investigations); a mid-18th-century artifact concentration that probably reflects the location of a domestic building (referred to as Area B); and the remains of a series of brick clamps (referred to as Area C). These components, and the prehistoric material, were evaluated as eligible for listing in the National Register of Historic Places under Criterion D. As a result of the analysis and research performed for the data recovery, this site is now hypothesized to be a mid-18th-century slave quarter, probably in use from the 1740s through the mid-1780s. This potentially controversial assertion is based purely on the archaeological data from the site, as it can be related to current approaches to the recognition of 18th-century slavery patterns in the Chesapeake Tidewater and other parts of the southern colonies (See Samford 2007 and references therein cited).

B. WORK SCOPES AND RESEARCH ORIENTATION

The current investigation and report is treatment of the direct Adverse Effects, undertaken for the Delaware Department of Transportation under Agreement 1535, Tasks 5 and 10. Task 5 comprises the field investigation and research with four main tasks:

1. Supplementary background research to build on the site-specific research conducted for the earlier Phase I and Phase II surveys. Work was to include a limited amount of primary archival research into the Haynes (1704-1731), Draper-Thompson-Fullerton (1732-1747) and Fisher (1747-?) ownership periods. Archival research was to build on the existing data from the chain of title to determine if any Sussex County colonial

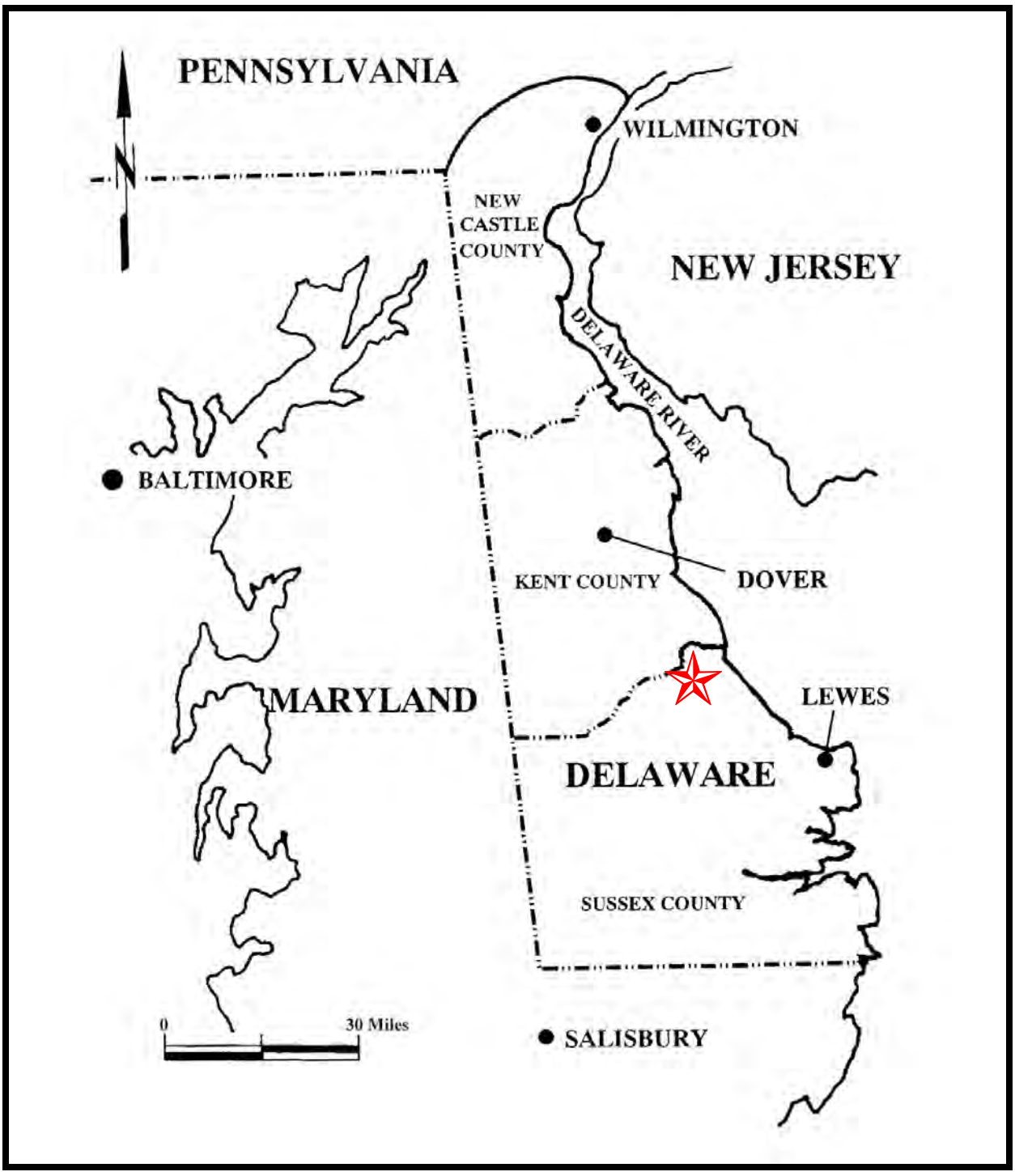


Figure 1.1. General Location of Project Site (starred).

records not previously identified at the Delaware Public Archives are related to the site and can shed light on the occupants who are believed to have been tenants.

2. Field investigations to fully explicate the ground plan and functions of those parts of the three National Register-eligible resources partly or wholly within the LOC: the brick clamp, the mid-18th-century locus, and the early/mid-18th-century house/farmstead site adjacent to State Route 30. The research design was primarily focused on the production of a plan of the site's layout that can be compared with previously examined sites as a contribution to the developing picture of 18th-century rural sites in Delaware.

3. Public Outreach. Members of the Archaeological Society of Delaware and interested members of the public were to be supervised in the screening of plowzone materials and recovering artifacts. In addition, two school visits were planned.

4. Preliminary Artifact Analysis. The stratigraphic information was to be examined in tandem with the vertical and horizontal artifact distributions in order to determine the sequence, chronology and integrity of both the prehistoric and historic components.

Parent Agreement 1535, Task 10 was for the completion of all analyses and reporting of the project.

Chapter 2

HISTORICAL RESEARCH

A. METHODOLOGY

Phase III supplementary research methodology was directed toward support of the archaeological investigations of the early to mid-18th century study areas: the house/farmstead site immediately east of State Route 30/Cedar Creek Road (Area A), the mid-18th-century locus (Area B), and the brick clamp (Area C). The methodology was designed to build on previous research efforts conducted by Edward Otter during Phase I and Phase II investigations (Edward Otter, Inc. 2009; Hunter Research, Inc. 2011c). It addressed several outstanding research questions and avenues for further investigation that were identified by Hunter Research for the Phase III Data Recovery End of Field Work Summary (Hunter Research, Inc. 2012). During the Phase III additional research phase, primary and secondary sources were consulted to provide further information about the occupants of the project site during the 18th century. Particular attention was paid to transitions in land ownership and patterns of land use. An effort was made to fill a gap in the deed trace during the mid- to late 18th century. A focus on mid-18th-century land surveys helped to place the historic property boundaries within the modern landscape. Among the historical collections consulted were court and land records at the Delaware Public Archives in Dover and genealogy and manuscript files at the Delaware Historical Society in Wilmington.

Primary documents for Sussex County government during the colonial period are sparse as many were lost or destroyed over time, to the frustration of Delaware historians. The few surviving records, such as tax ratables and a smattering of court records, were not found to often reference the site or its owners. The historical record is unlikely to provide significantly more data that will be useful in characterizing the occupants of the project site.

B. LAND-USE HISTORY

The Cedar Creek Road Site is located within a large tract of land patented by Henry Bowman (*circa* 1650-1694) in the late 17th century. Later, this tract would be referenced as "Farmer's Delight." Bowman was born in England and was a prominent early landowner and planter in Sussex County (Baker and New n.d.). Upon his death in 1694, Henry Bowman's son, Henry Bowman, Jr., inherited a 500-acre parcel that included the Cedar Creek Road Site (Scharff 1888: 1249). In 1704, 250 acres of Bowman's 500 acres were sold to Charles Haynes, identified as a physician living in Lewes (Sussex County Deed 1/208). Neither the Bowmans nor Haynes, it is believed, actually lived on the tract, treating it like so many other landholders as an investment to be sold for future profit or occupied and worked by tenants or, possibly, slaves, as was common practice on the Delmarva Peninsula at that time.

In 1731, Haynes or perhaps his son Charles Haynes, Jr. sold the property to Alexander Draper (1680-1734) (GAI Consultants, Inc. 2003:23; Hunter Research, Inc. 2011c:4-3; Scharf 1888:1249). Draper was born in Delaware and was the founder of a prominent landowning family in the area, perhaps best known as the owner and operator of "Draper's Mill." This early colonial gristmill, established between 1717 and 1727, was located at Cedar Creek Village at the head of the main branch of Cedar Creek, approximately one mile south of the project site (GAI Consultants,

Inc. 2003:23-24). Draper's will, probated in 1734, referenced his mills and plantation on the "county road at the head of Cedar Creek." This same road roughly followed the course of modern State Route 30/Cedar Creek Road, which currently passes immediately west of the Cedar Creek Road Site (Sussex County Probate Files 1734; Scharf 1888:1253). Sussex County Road Returns were reviewed in an effort to date the establishment of this early roadway alignment, since it might be important to establishing the existence of a farmstead oriented to the road, but the earliest county road returns surviving at the Delaware Public Archives date to 1754, twenty years after Draper's will mentioned the road. In addition to Sussex County Road Returns, the *Laws of the State of Delaware, Volumes I and II* (1700-1797) were consulted in the hopes of finding an act authorizing the construction of the county road, but no such act was found. All that can be confirmed at this time is that the road existed prior to the early 1730s.

During Phase III investigations, archaeologists hypothesized that the Cedar Creek Road Site's 18th-century context was not limited to the east side of State Route 30/Cedar Creek Road where subsurface investigation took place, but may have extended immediately across the road to the west. This hypothesis was confirmed by research that located a survey of Alexander Draper's lands conducted in 1732. Draper requested that Robert Shankland survey and divide a 500-acre tract, known then as Farmer's Delight, into two equal tracts of 250 acres, with the southern tract going to Alexander Thompson (Figure 2.1). Draper's 500 acres included the 250 acres he acquired from Charles Haynes in 1731. Shankland's survey and an analysis of modern aerial imagery enables an informed placement of Farmer's Delight within the present-day landscape (Figure 2.2). This placement shows that State Route 30/Cedar Creek Road crossed the southeast corner of Thompson's 250-acre southern half of Farmer's Delight. Alexander Thompson sailed as a ship's captain from Philadelphia on multiple occasions (Pennsylvania Gazette [PG] 15 October 1741, 5 November 1741, 26 November 1741).

Three years after acquiring the land from Draper in 1732, Thompson transferred his 250 acres to Andrew Fullerton. In 1747, Fullerton sold the property to James Fisher, who was the seventh son of Thomas Fisher, Secretary to the Governor of the then Lower Counties, now the State of Delaware, in the time of William Penn (Smith 1839:244). The deed from Fullerton to Fisher identifies Fisher as a blacksmith. Fisher died shortly after acquiring the property giving him little time to develop the land. Records provide contradictory dates for Fisher's death, but it is apparent that he died between 1747 and 1749 (Sussex County Probate Records 1747 and Sussex County Deed B2/211).

About the time of Fisher's death, the 250-acre tract was divided with an approximate 100-acre tract going to Samuel Davis (*circa* 1705-1776) in 1747 (Lofland-Lloyd/Dear-Campbell Family Tree n.d.; Washell n.d.) (Figure 2.2). The remaining 150-acre tract was inherited by Fisher's daughter Esther, who eventually married Daniel Dingee (*circa* 1738-1786), a mariner based out of Philadelphia (Brewer 2001; Hunter Research, Inc. 2011c:4-3). The Davis tract straddled the modern-day alignment of Cedar Creek Road and the Cedar Creek Road Site lay almost entirely within the southeast corner of the Davis tract. Samuel Davis's brother, Nehemiah, was a known slave master in Cedar Creek Hundred (Williams 1996:53).

The Davis tract eventually passed to John Draper, but the exact date is unknown due to a gap in the records. A 31.75-acre tract immediately to the east of the Davis tract was acquired by Draper, described as a carpenter, in 1768 (Sussex County Deed 1768:B2/211) (Figure 2.2). Although conjectural because the name John Draper was not uncommon during this period of Sussex County's history, a prominent John Draper in

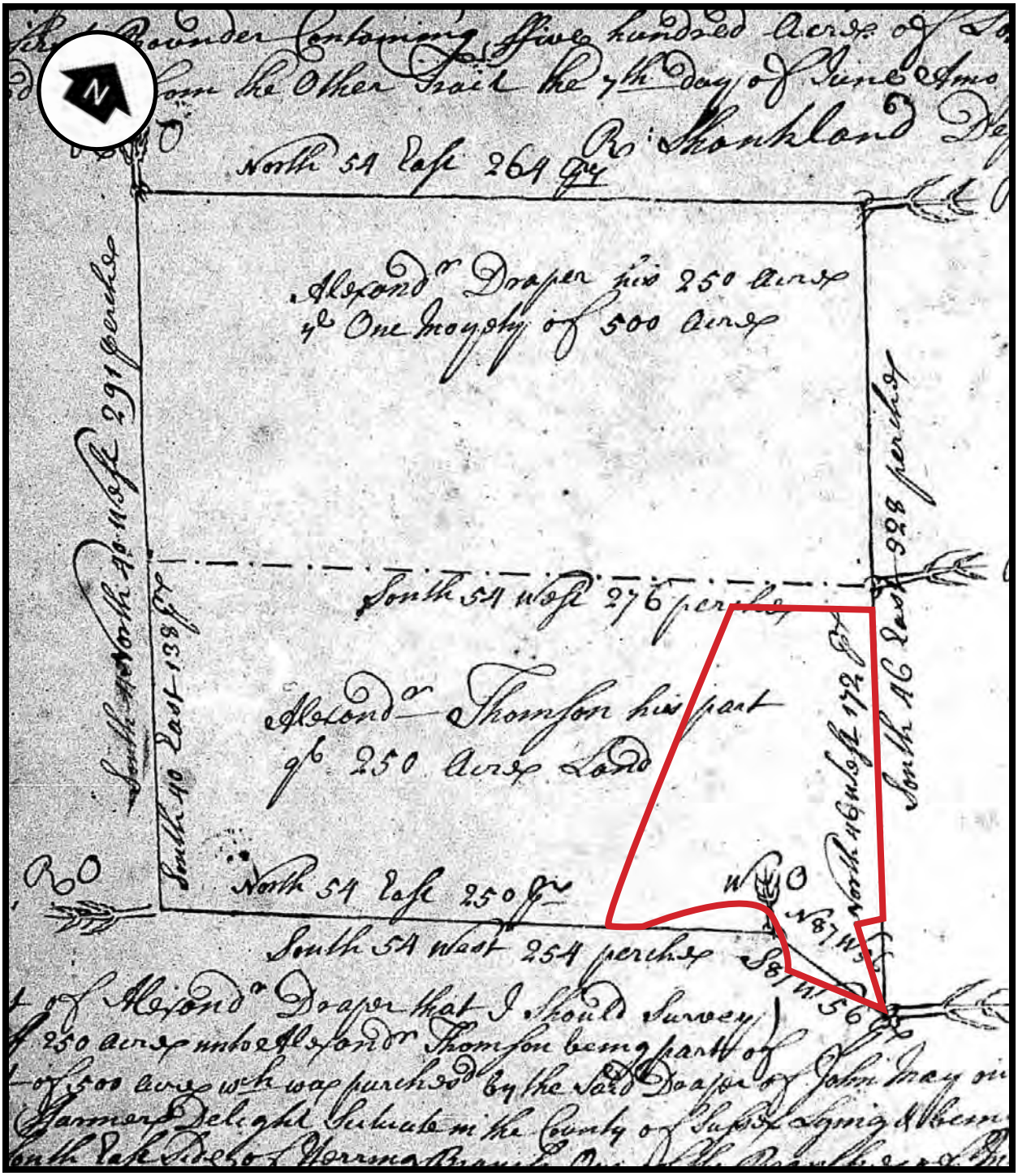


Figure 2.1. Shankland, Robert. Survey of Alexander Draper's Lands (Shankland Survey #93). 1732. Scale: 1 inch = 750 feet (approximately). Approximate project site indicated.

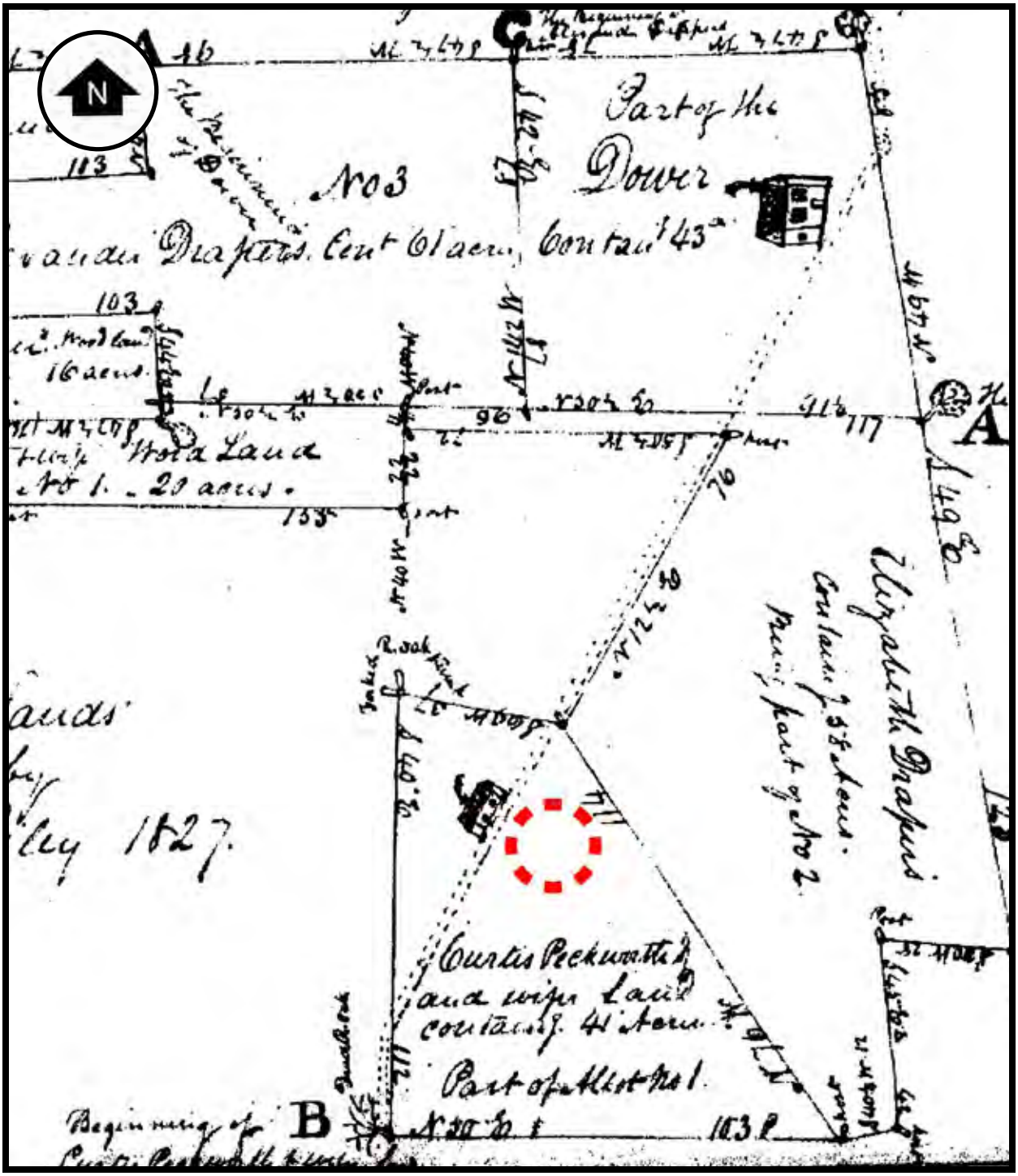


Figure 2.2. 18th -Century property boundaries on a modern aerial (Source: Google Maps). This figure displays key 18th-century property boundaries as they would appear within the modern landscape. Although the 18th-century boundaries are a bit off-kilter in the modern landscape, degrees of accuracy were not as precise in for 18th-century surveys as they are today. It is likely that the east and west boundaries of the 1732 Survey of Alexander Draper's Lands align with today's Delaware SR 1 and Elks Lodge Road, respectively. Approximate project site indicated.

Cedar Creek Hundred was the cousin of Alexander Draper, the mill owner. This John Draper followed in his cousin's trade and built a mill at Cedar Creek Village in 1769. He had two sons, William and John, who inherited his mill and property when he died intestate in 1784. Interestingly, the elder John Draper's inventory prepared at the time of his death mentions he owned 13 slaves. Eventually, the younger John sold his interest in the mill to his older brother William. It is possible he settled on land that his father had acquired from Samuel Davis, who died in 1776. In 1800, the younger John Draper (*circa* 1774-1827) was living in Cedar Creek Hundred with his wife, a young daughter, and a single slave (Federal Bureau of Census 1800; GAI Consultants, Inc. 2003:24-25, 28).

Upon John Draper's death *circa* 1827, his land was divided into three parts with a 41-acre lot inclusive of the Cedar Creek Road Site inherited by Curtis Beckworth, the husband of Draper's daughter Eleanor. Beckworth's inheritance is identified on the Orphans Court plat of John Draper's estate as the parcel labeled "Part of Allot No. 1" (Figure 2.3). There is a one-story, 2-bay, side-gabled house with center chimney depicted on this plat on the west side of State Route 30/Cedar Creek Road, immediately across from the Phase III project site and part of the same parcel (Sussex County Orphan Court Records O/150).

In 1831, Curtis Beckworth sold the property to Lemuel Shockley, who three years later in 1834 sold the land to William Shockley, Sr., who immediately sold the parcel to his son William Shockley, Jr. (Hunter Research, Inc. 2011c:4-4). The elder Shockley, a resident of Cedar Creek Hundred since the late 18th century, owned several farms and mills in the area (Reamy and Reamy 2007:247). William Shockley, Jr. owned the property from 1834 until 1874, and it is during this period that the first cartographic evidence arises for a house on the east side of State Route 30/ Cedar Creek Road. The house, believed to have been built by Shockley and located north of the current Phase III study areas, is shown on the Beers Map of 1868 (Figure 2.4), and later, at about the same location, on the United States Geological Survey Map of 1918 (Figure 2.5).

In 1874 Jacob Stell, a resident of New Jersey, purchased the Shockley farm and then later that year sold off 100 acres, including the project site, to William Shotwell. The farm later transferred to Sophia Ricker, then John R. Prettyman. By 1909 Larry and Linda Prettyman were the property owners; they apparently either replaced or remodeled the earlier house on the east side of State Route 30/Cedar Creek Road north of the project site. During the remainder of the 20th century, the property passed through a number of owners including Elmer Wilkins (1923-1927), Lester Lovett (1927-1951), Diamond State Nurseries (1952-1959), Thawley Enterprises (1959-1975), Sue Paquette (1975-1979), Francis and Mary Lou Webb (1979-2002), and W. Nelson Hall (2002-present) (Hunter Research, Inc. 2011c:4-4, 4-10).

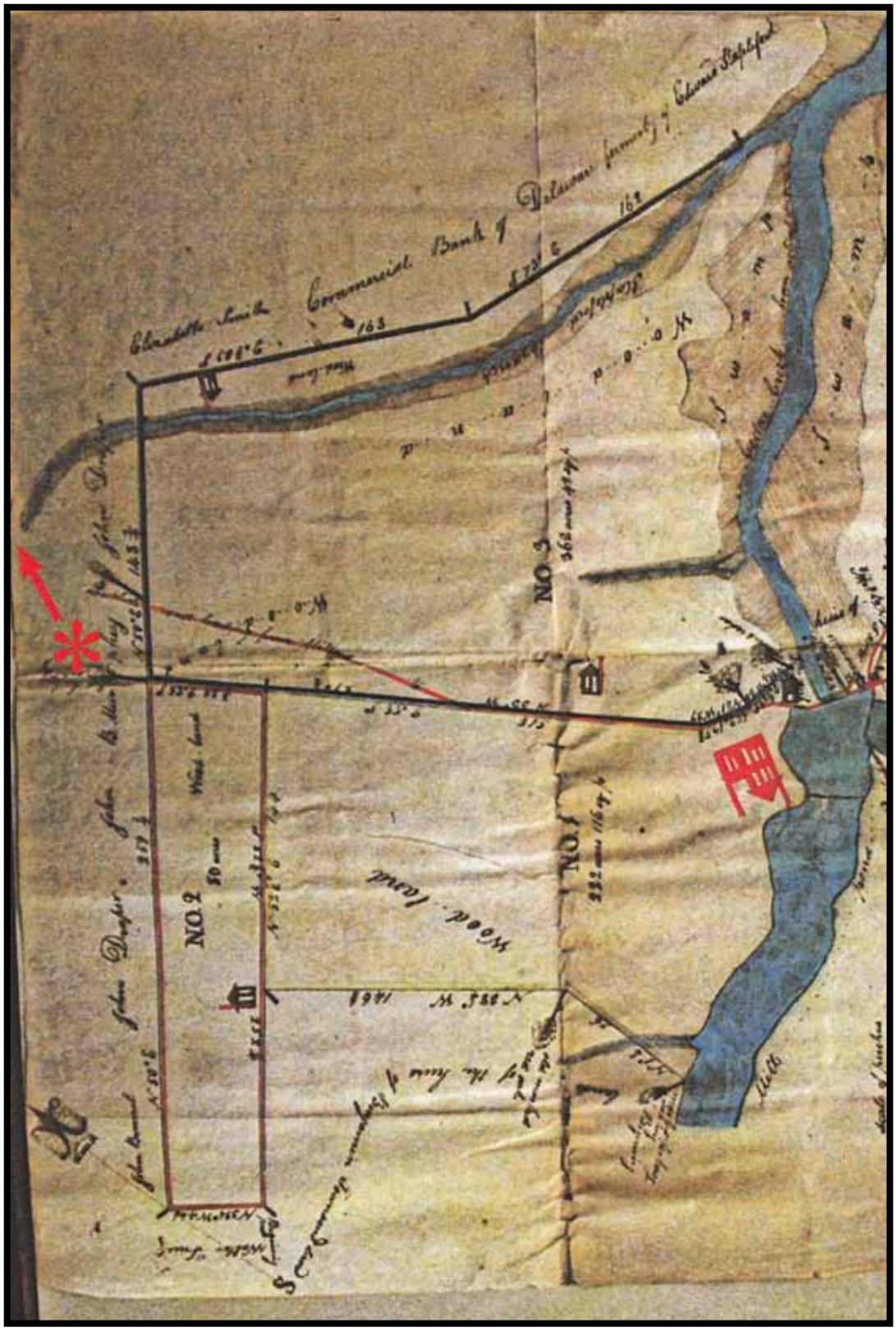


Figure 2.3. Riley, Lawrence. *John Draper's Lands*. 1827. Source: Sussex County Orphans Court Records. Approximate project site indicated.

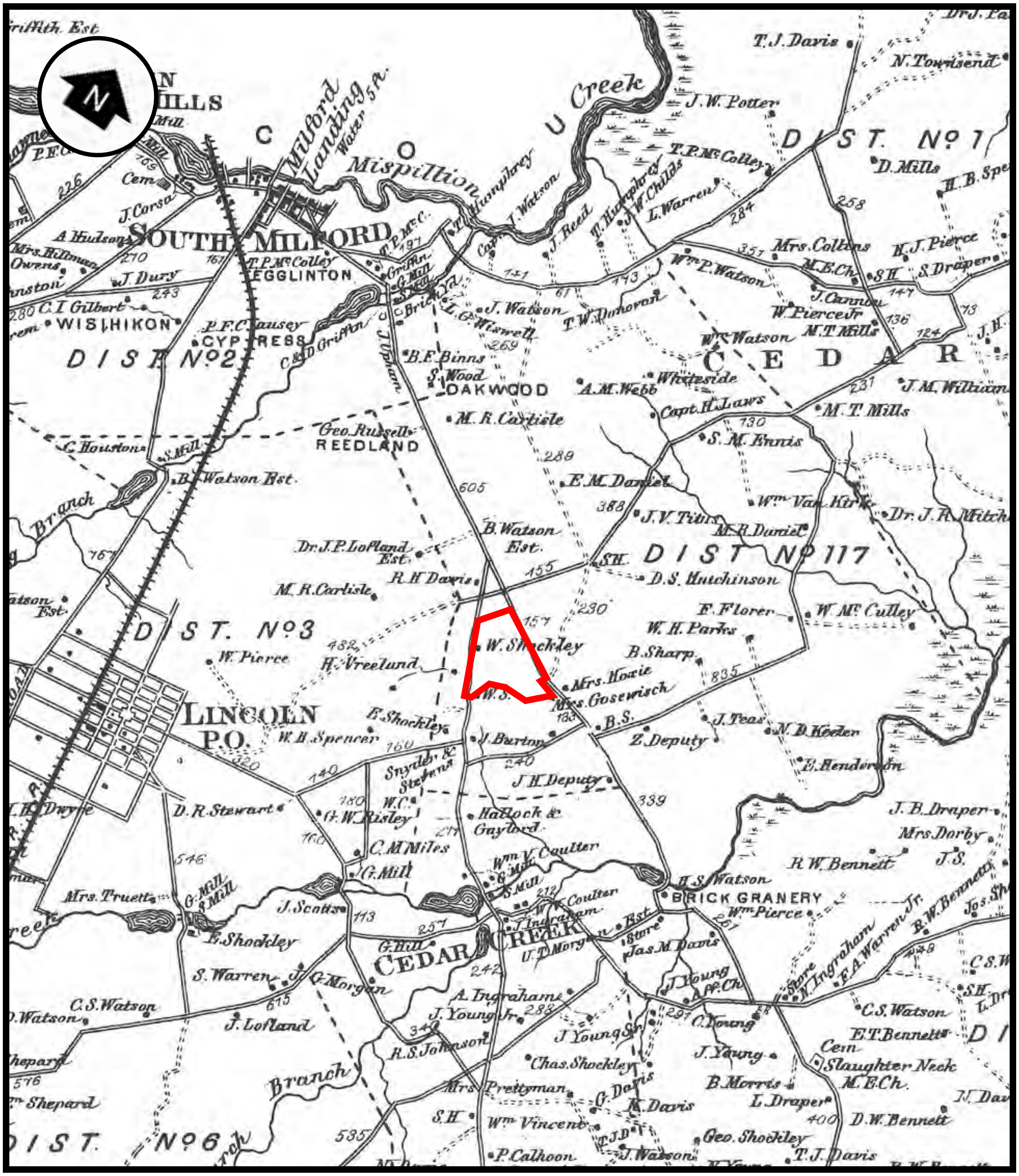


Figure 2.4. Beers, D.G. *Atlas of the State of Delaware*. 1868. Scale 1 inch = 3,000 feet (approximately). Approximate project site indicated.

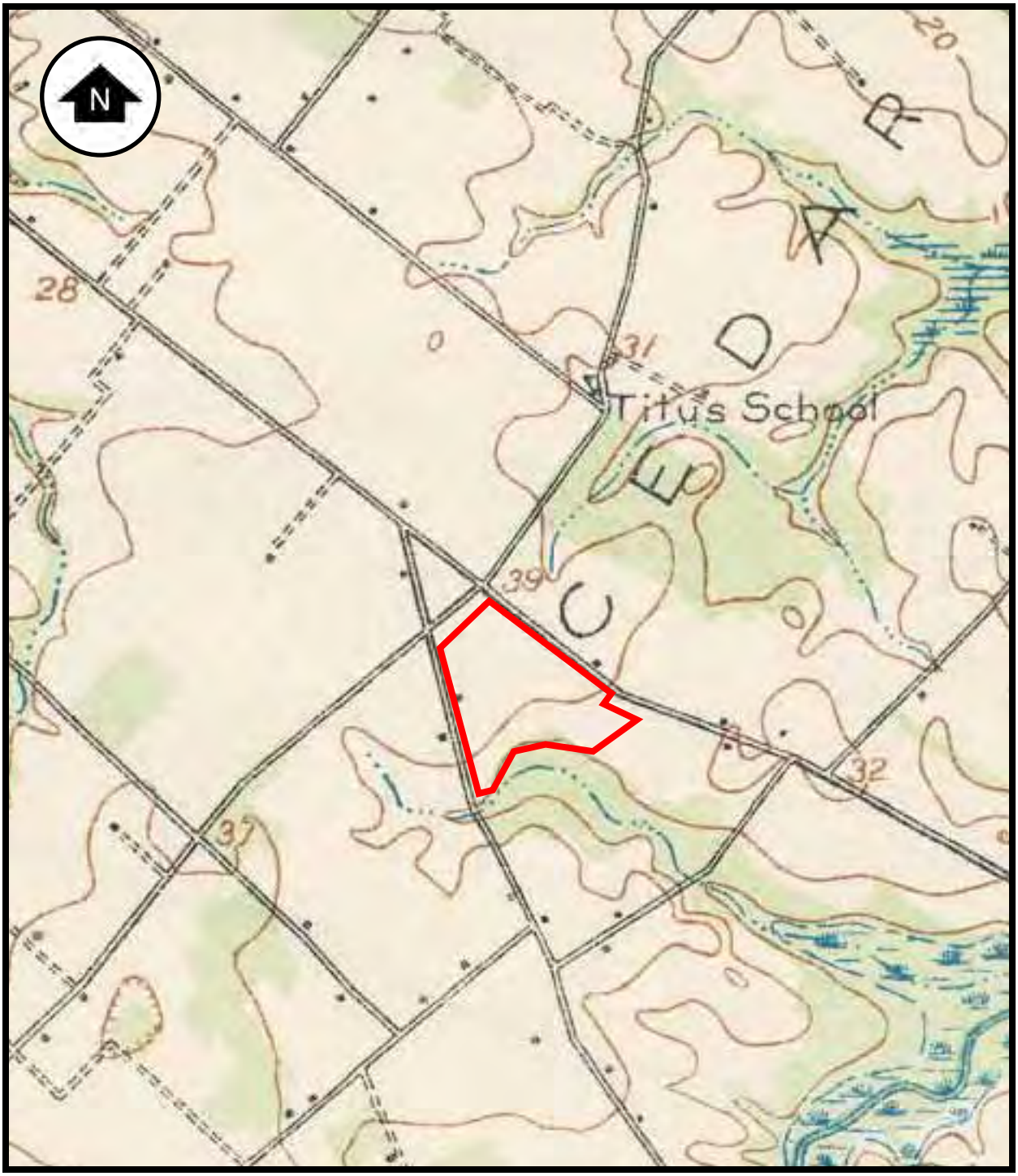


Figure 2.5. United States Geological Survey. Cedar Creek, Delaware Quadrangle. 1918. Scale 1 inch = 1,600 feet (approximately). Approximate project site indicated.

Chapter 3

ARCHAEOLOGICAL INVESTIGATIONS

A. SUMMARY OF PREVIOUS PHASE I AND II FIELDWORK

1. Hunter Research, Inc. - Phase I Archaeological Survey

The Phase I archaeological field survey carried out by Hunter Research in July of 2009 focused on three areas: Area 1, the intersection of State Route 30/Cedar Creek Road and State Route 206/Wilkins Road; Area 2, a new connector road (Ramps A and B) between State Route 30/Cedar Creek Road and State Route 1; and Area 3, the proposed overpass and Ramps C and D connecting State Route 1 and State Route 206/ Cedar Neck Road (Figure 3.1) (Hunter Research, Inc. 2010). Areas 1 and 3 were examined through a series of 93 regularly spaced shovel tests aimed at providing an overall coverage of roughly 17 tests per acre. Area 2 was examined through a combination of controlled surface collection, metal detector survey and judgmental and regular-spaced shovel tests. Archaeological Sites 7S-C-100 and 7S-C-102, the subject of the investigations described in this report, are located within Area 2. The following summary is thus confined to the earlier work conducted in Area 2.

Area 2 was initially subjected to a controlled surface collection supplemented by selective metal detector survey in locations where clusters of artifacts were noted. The bulk of the artifacts recovered from the ground surface were from the western end of Area 2, especially along the State Route 30/Cedar Creek Road frontage. A series of 28 shovel tests were then excavated in locations where artifacts of particular interest were found. One of these tests (Shovel Test 37) revealed a dark soil anomaly that extended to a depth of at least 3 feet below grade. A soil auger was used to delimit this anomaly, which was ultimately defined as covering an area roughly 9.5 feet east-west by 15 feet north-south and reaching to a depth of between 3.5 and 4.0 feet. This feature was tentatively interpreted as a cellar hole for a domestic structure. An additional 50 shovel tests were then excavated at 50-foot intervals along two transects spaced 40 feet apart across the zone where the majority of artifacts were recovered from the surface. This work recovered additional artifacts and encountered a shallow disturbance extending to a depth of 2 feet below the plowzone in Shovel Test 57. Elsewhere, the stratigraphy typically consisted of a sandy silt loam plowzone, roughly one foot thick, over a sandy silt loam subsoil.

A total of ten prehistoric lithic artifacts were gathered during the Phase I survey of Area 2, most of this material being found at the western end of the proposed alignment of Ramps A and B. This assemblage consists of a portion of a small, narrow-bladed, black chert projectile point, a quartzite biface/knife, two pieces of lithic debitage and six fragments of thermally altered rock. These materials were considered to represent evidence of a short-term stay of a single-family unit, probably during the Woodland I or Archaic period.

The historic artifact assemblage recovered from the Phase I survey of Area 2 comprises some 201 artifacts, of which 106 were ceramic vessel sherds and 70 were pieces of building material. The remaining 25 items comprise glass fragments, tobacco pipe fragments, cast iron kettle fragments, a brass knob or finial, and other objects. Based largely on the ceramic types present (e.g., delftware, white-salt-glazed stoneware, creamware, redware, yellowware, whiteware,

ironstone china and the tobacco pipes), the site was dating from the mid-18th century through the later 19th century.

Based on the Phase I fieldwork an area of predominantly historical archaeological interest was defined extending east from State Route 30/Cedar Creek Road for a distance of approximately 600 feet. This was assigned the Delaware State Museum site identification number 7S-C-100 and the Delaware State Historic Preservation identifier CRS # S10315. A scatter of prehistoric artifacts was also contained within this area. Phase II-level study was recommended for site 7S-C-100 to address both its prehistoric and historical archaeological potential.

2. Edward Otter, Inc. - Phase I Archaeological Survey

A second Phase I archaeological field survey was carried out by Edward Otter, Inc. in November of 2009 that examined a proposed alternate alignment for the new connector road (Ramps A and B) between State Route 30/Cedar Creek Road and State Route 1, and the area of a proposed storm water retention pond (Edward Otter, Inc. 2009). The alternate alignment ran parallel to and roughly 250 feet south of the proposed alignment studied by Hunter Research a few months earlier.

An initial cursory surface collection was undertaken during which 16 artifacts were recovered. The proposed connector road alignment and storm water pond were then plowed and disked, and a more thorough surface collection of artifacts was carried out during which an additional 329 artifacts were recovered, mostly from the western end of the study area. A series of 25 shovel tests was then excavated, five of which produced a single historic artifact from the plowzone stratum. The stratigraphy throughout comprised a sandy silt loam plowzone, typically a foot or more in thickness, overlying a sandy silt loam subsoil.

The Edward Otter Phase I survey ultimately recognized two areas of archaeological interest. Area 1, located roughly midway along the proposed connector road alignment between State Route 30/Cedar Creek Road and State Route 1, extended for roughly 450 feet east-west and across the full north-south width of the proposed new roadway. Surface collection in Area 1 yielded six prehistoric artifacts and a few widely scattered historic materials. The prehistoric items comprised a black chert side-notched projectile point of Brewerton type, a small fragment of net-roughened Mockley-type pottery, a jasper biface, a jasper flake and two fragments of thermally altered rock. Area 1, which received the Delaware State Museum site designation of 7S-C-102 and the Delaware State Historic Preservation Office cultural resource identifier CRS # S12257, was judged to have been sporadically visited during the Woodland I period.

Area 2 effectively corresponded to the site identified by Hunter Research and designated as 7S-C-100 (CRS # S10315). Surface collection in this area extended some 600 feet to the east of State Route 30/Cedar Creek Road and included part of the open field lying to the south of the proposed connector road alignment at the western end of the project corridor along the State Route 30/Cedar Creek Road frontage. Both prehistoric and historic artifacts were gathered during the surface collection operations in this area. Five of the 15 shovel tests excavated along the proposed road alignment within Area 2 also produced historic materials, all recovered from the plowzone.

The prehistoric assemblage from Area 2 comprised 20 artifacts: three projectile points (one quartz Madison type, one triangular Levanna type and one quartz Piscataway or Guilford type); a fragment of Hell Island-type cord-marked and sand-tempered pottery;

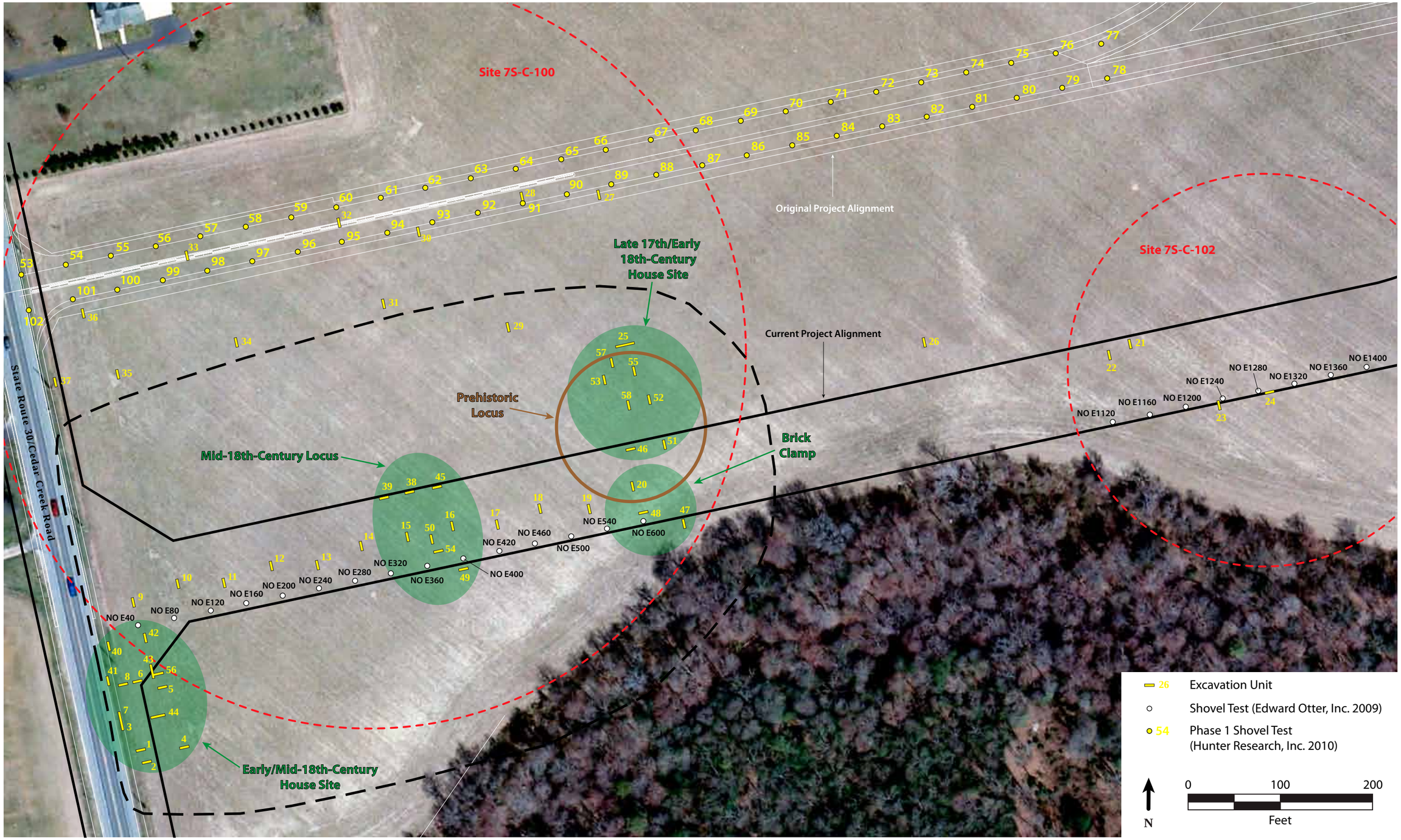


Figure 3.1. Cedar Creek Road Site [7S-C-100]: Aerial Map Showing Phase I and II Subsurface Testing Locations and Proposed Limits of Archaeological Sites 7S-C-100 and 7S-C-102.

seven pieces of lithic waste; and nine fragments of thermally altered rock. As with Area 1, Area 2 was judged to have been sporadically visited during the Woodland I period. Together, Areas 1 and 2, based on the few diagnostic items found, were interpreted as showing evidence of multiple Native American short-term reoccupations over a period of at least 2,000 years.

Area 2 yielded the vast majority of the 326 historic artifacts that were found throughout the length of the project corridor. Generally confirming the results of the Hunter Research Phase I survey the historic artifact assemblage from the Edward Otter Phase I survey was dominated by building materials (186 brick fragments [55% of the total]) and red-bodied earthenware ceramics (76 sherds [23%]). Most of the red-bodied earthenware was lead-glazed; one sherd had slip decoration. Among the other ceramic sherds were 18th-century specimens of white salt-glazed stoneware (2 fragments), Rhenish stoneware (2), delftware (1), creamware (6) and pearlware (3); 19th-century ceramic types included whiteware (5) and porcelain (2), but not ironstone china. Eleven fragments of bottle glass (including two dark olive-colored pieces), seven pieces of window glass, three iron fragments (including one piece from an iron pot or kettle) and seven pipe stem fragments were also recovered, all consistent with domestic occupation.

The Edward Otter Phase I survey, building on the earlier Hunter Research Phase I survey, postulated several different episodes of historic occupation along the project corridor. A possible late 18th-/early 19th-century domestic site was suggested near the eastern end of the alignment, while at the western end, both a late 19th-century domestic locus (extending to the north, possibly corresponding to the Shockley house location as shown on the Beers map of 1868 and at least one 18th-century/pre-Civil War domestic site) were recognized. Phase II-level study was recommended by Edward Otter, Inc. for both Area 1 (concentrating on its prehistoric potential) and for Area 2 (addressing both prehistoric and historical archaeological potential).

3. Hunter Research, Inc. - Phase II Investigations

Phase II archaeological fieldwork was carried out at archaeological sites 7S-C-100 and 7S-C-102 between September 27 and October 26, 2010. The project area consisted of a single, large open field containing north-south oriented ridges and furrows of recently harvested lima bean. Ground surface visibility was excellent (Photograph 3.1). The main focus of the Phase II archaeological fieldwork was to better characterize, delimit and evaluate archaeological sites 7S-C-100 and 7S-C-102. In all, 58 excavation units were dug towards this end. Fifty-three of these addressed archaeological site 7S-C-100; the remaining five examined archaeological site 7S-C-102. The vast majority of the excavation units measured 2.5 by 10 feet in plan, but several of them varied from these dimensions in order to supplemented earlier excavations and to allow for the expanded exploration of buried features. The initial episode of unit excavation involved placement of eight 2.5-by-10-foot trenches (Excavation Units 1-8) perpendicular and parallel to State Route 30/Cedar Creek Road to the south of the proposed new road alignment in the area of what was believed to be an 18th-century house site. This was followed by excavation of a series of 12 north-south oriented trenches (Excavation Units 9-20) dug at 50-foot intervals along the proposed new road alignment, extending for a distance of 600 feet to the east of State Route 30/Cedar Creek Road. These initial 20 units were all located within the limits of site 7S-C-100. Excavation Units 21-24 and 26 were dug next to examine the prehistoric locus designated as site 7S-C-102. The remaining units (Excavation Units 25

Photograph 3.1. Cedar Creek Road Site [7S-C-100]: General view of surface conditions within the project area looking southwest towards State Route 30 (Photographer: Joelle Browning, October 2010) [HRI Neg. #10058/D1-078].

Cedar Creek Site [7S-C-100] Area A
Early/Mid-18th-Century House Site

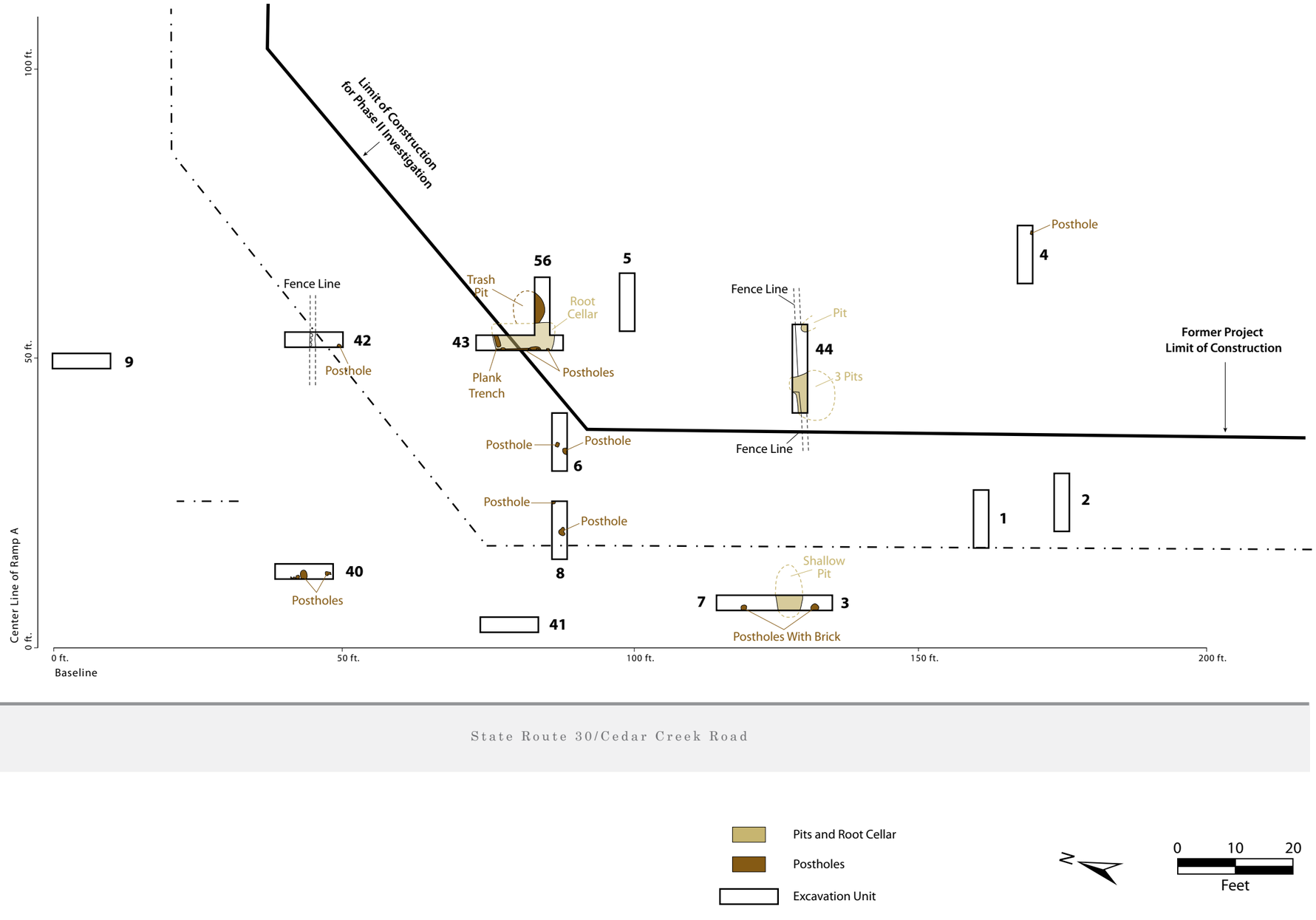


Figure 3.2. Cedar Creek Road Site [7S-C-100]: Phase II Plan of Area A Showing Locations of Excavation Units and Archaeological Features.

Photograph 3.2. Cedar Creek Road Site [7S-C-100]: General view looking south showing metal detector survey in progress in the eastern half of the site (Photographer: Joelle Browning, October 2010) [HRI Neg. #10058/D1-266].

and 27-58) were deployed in the exploration of specific features or concentrations of artifacts within site 7S-C-100 (Figure 3.1).

Within the limits of site 7S-C-100, four main loci of activity were recognized: an area along the State Route 30/Cedar Creek Road frontage thought to contain a mid- to late 18th-century house site (Figure 3.2) (identified as Area A during the data recovery excavations); a concentration of early to mid-18th-century artifacts straddling the alignment of the proposed new connector road, roughly 350 feet east of State Route 30/Cedar Creek Road, possibly the site of an outbuilding or secondary dwelling (identified as Area B during the data recovery excavations); an area roughly 600 to 650 feet east of State Route 30/Cedar Creek Road, just north of the proposed new road alignment, apparently the site of a late 17th-/early 18th-century house (now protected by an archaeological covenant); and a concentration of brick, interpreted as evidence of a brick clamp (identified as Area C during the data recovery excavations), also around 650 feet east of State Route 30/Cedar Creek Road but just to the south of the proposed new road. The discoveries at each of these loci are discussed in more detail below. All four loci occupy a roughly 750-foot-square area bordering the east side of State Route 30/Cedar Creek Road.

Three hundred and seventy artifacts were recovered through the surface collection and metal detecting operations, representing 7.7% of the total number of 4,787 items recovered from the
site as a whole (Photograph 3.2). The remaining 4,417 artifacts (92.3%) were recovered from the 53 excavation units. A total of 3,817 were recovered from within the areas (Areas A, B and C) slated for future data recovery excavations.

The materials recovered from the surface collection and metal detecting helped in the definition of the main activity loci within the site and provided a useful guide for the placement of excavation units. A few items of specific interest were collected, including sherds of distinctive mid-18th-century ceramic types, such as Batavia porcelain and white salt-glazed stoneware, and pieces of wrought iron hardware, a wrought iron kettle/cauldron hook and a cast iron cauldron fragment.

Three potentially National Register-eligible resources were found to lie partly or wholly within the limit of construction: a mid-18th-century house/farmstead site adjacent to State Route 30 (Area A), a mid-18th-century locus (Area B), and a brick clamp (Area C). The artifacts and historical documents have indicated site periods of significance within the 1630-1730 (Exploration and Frontier Settlement), 1730-1770+ (Intensified and Durable Occupation), and 1770-1830 (Transformation from Colony to State) time periods in the Lower Peninsula (Ames et al. 1989; De Cunzo and Catts 1990). The Domestic Economy and Landscape domains were thought likely to provide the thematic framework for evaluation.

B. DATA RECOVERY FIELD METHODS

It was understood that site investigations of the National Register-eligible properties would not take place beyond the formal Area of Direct Adverse Effect, which is coincident with the Limits of Construction (LOC). Eligible resources defined in the Phase II study that lie beyond the LOC were to be preserved in place. Prior to the commencement of fieldwork, a survey team from the Delaware Department of Transportation (DelDOT) surveyed and staked the LOC from State Route 30 for a distance of 750 feet eastwards. The exact shape of the LOC following the survey differed slightly from the data recovery proposal plan resulting in a reduction of site disturbance. The difference was confirmed by DelDOT on-site with revised project maps.

Table 3.1. Cedar Creek Road Site [7S-C-100]
Extent of Excavation within the Limits of Construction: Proposed and Completed

Site Component	Area	Square Feet within LOC	Proposed Square Feet to be Stripped	Actual Area Excavated
Mid-18th-House and Farmstead	A	6,600 Sq Ft	4,862 Sq Ft	7,010 Sq Ft
Probable Mid-18th-Century Quarter	B	9,000 Sq Ft	3,350 Sq Ft	1,382.25 Sq Ft
Brick Clamp	C	4,800 Sq Ft	900 Sq Ft	660 Sq Ft
Totals:		**20,400 Sq Ft**	**9,112 Sq Ft**	**9,052.25 Sq Ft**

Following the research design for these sites from the Phase II report (Hunter Research, Inc. 2011:Chapter 6), the field investigations fully explicated the ground plan and functions of those parts of the three National Register-eligible resources within the LOC: the mid-18th-century house/farmstead site adjacent to State Route 30 (Area A), the mid-18th-century locus (Area B), and the brick clamp (Area C).

Table 3.1 and Figure 3.1 provide the locations and extent of proposed and actual field investigations. Adjustments to specific locations were made as appropriate when site conditions were assessed and as the excavations progressed. The plowzone was in all cases removed by machine under archaeological supervision using a bucket equipped with a beveled collar. Plowzone soils were stockpiled and randomly sampled by screening as part of the public outreach component of the data recovery (see Chapter 5). Exposed sub-plowzone sediments were shovel-scraped and cleaned with a trowel in order to identify cultural features, which were then either fully excavated, bisected, or sampled depending on the feature type. Typically, runs of postholes that are functionally connected (e.g. fence lines) within a shallow trench were excavated as a whole not as individual posts. All other features were fully excavated in order to retrieve structural and/or artifactual data. Soil samples were taken from selected features and subjected to chemical analysis and flotation to collect data that would have been otherwise lost. Samples were also taken from undisturbed areas of the site for control purposes.

1. Early to Mid-18th-Century House and Farmstead Site (Area A)

The full extent of this site was roughly calculated to be 12,500 square feet, of which about 6,600 square feet, or a little over 50%, lay within the LOC and was to be excavated (Figure 3.3; Photograph 3.3). The approach taken here was to expose almost 75% of the area within the LOC to obtain a ground plan of roughly half the site. The area was originally divided into four unequal areas with balks between them, partly to provide access around the site and partly to leave standing reference profiles, but the fragile nature of the sandy soils was not conducive to this approach and the balks were eliminated. The original area was expanded to approximately 7,010 square feet as it became apparent that features important to the interpretation of the site were situated close to State Route 30 (Figure 3.4). In addition, one feature [contexts 156,157, 270, 324 and 325] thought to be a possible grave, which extended outside of the right-of-way, was pursued as instructed by DelDOT and the Delaware State Historic Preservation Office (DSHPO). Contract archaeologists are required to deal with such remains placed within the overall context of the site (Jamieson 1995:39). In an effort to gather maximum data from a potential grave shaft identified during fieldwork in Area A, 1/8th-inch mesh hardware cloth was used to screen soils from this feature and soil samples were retained. Use of the smaller mesh was also employed to examine the western half of a probable bloomery pit (see Figure 3.3) on the advice of Tim Mancl, an expert in early iron production who was invited to visit the site to examine the feature. Stockpiled plowzone from Locus A was set aside to be screened by school groups under the supervision of the crew (see Chapter 5). Artifacts recovered from the stockpiled materials were assigned a general provenience and placed in a single bag with special finds explained to the groups.

2. Possible Mid-18th-Century Quarter or Outbuilding (Area B)

Because this locus was largely within the LOC it was proposed to use the opportunity presented by the mitigation to make a renewed effort to establish if structural remains were present at this location. Sites of this type with ephemeral surface representation present a

Figure 3.3. Cedar Creek Road Site [7S-C-100]: Aerial Map Showing Overall Limits of Construction and Areas of Excavation.

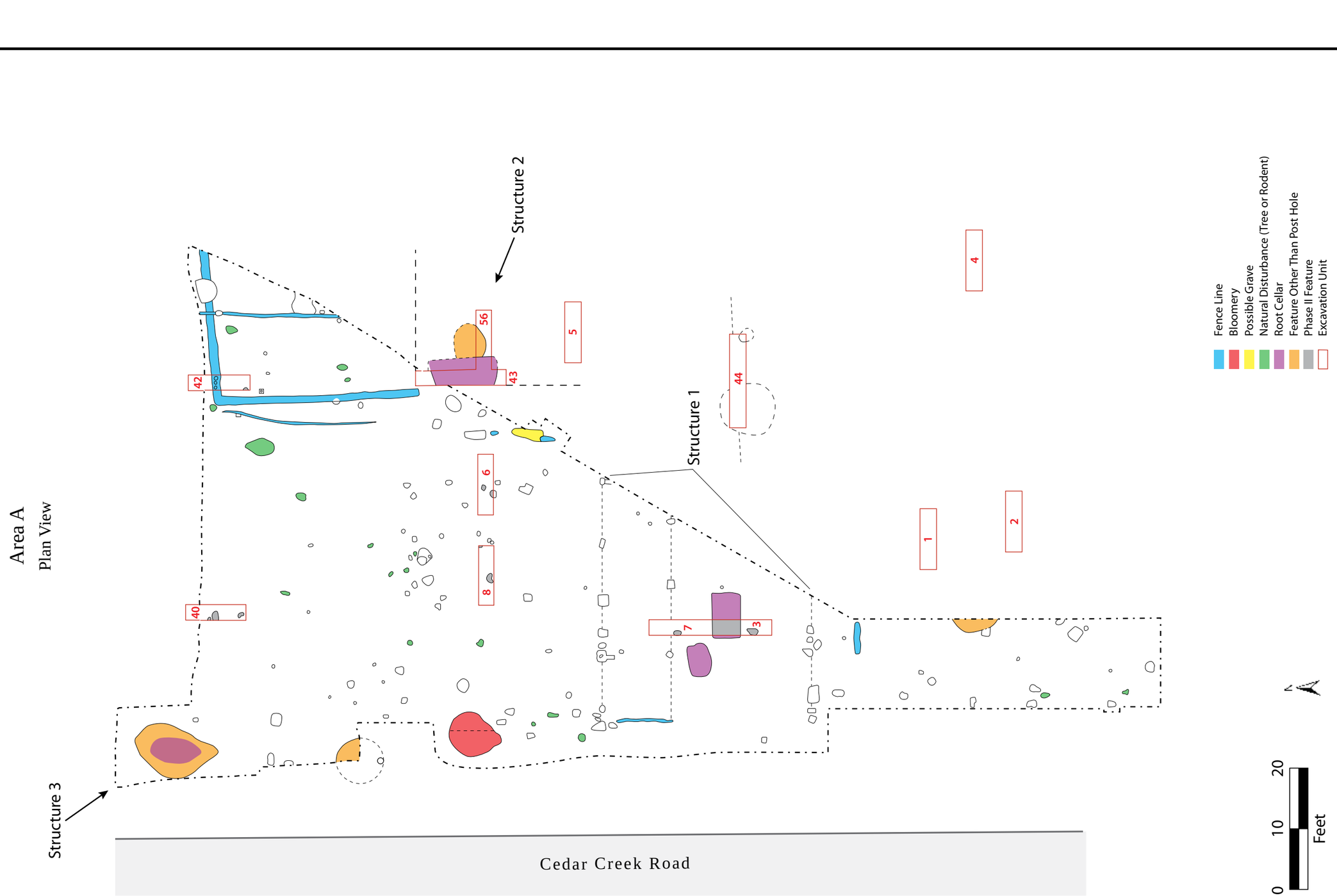


Figure 3.4. Cedar Creek Road Site [7S-C-100] Area A: Plan Showing Limits of Plowzone Stripping and Numerous Features Exposed at the Top of the B Horizon During the Data Recovery and the Location of Relevant Phase II Excavation Units.

Photograph 3.3. Cedar Creek Road Site [7S-C-100] Area A: General view of the exposed area (Photographer: DelDOT, December 2011) [DelDOT Neg.#5354_051].

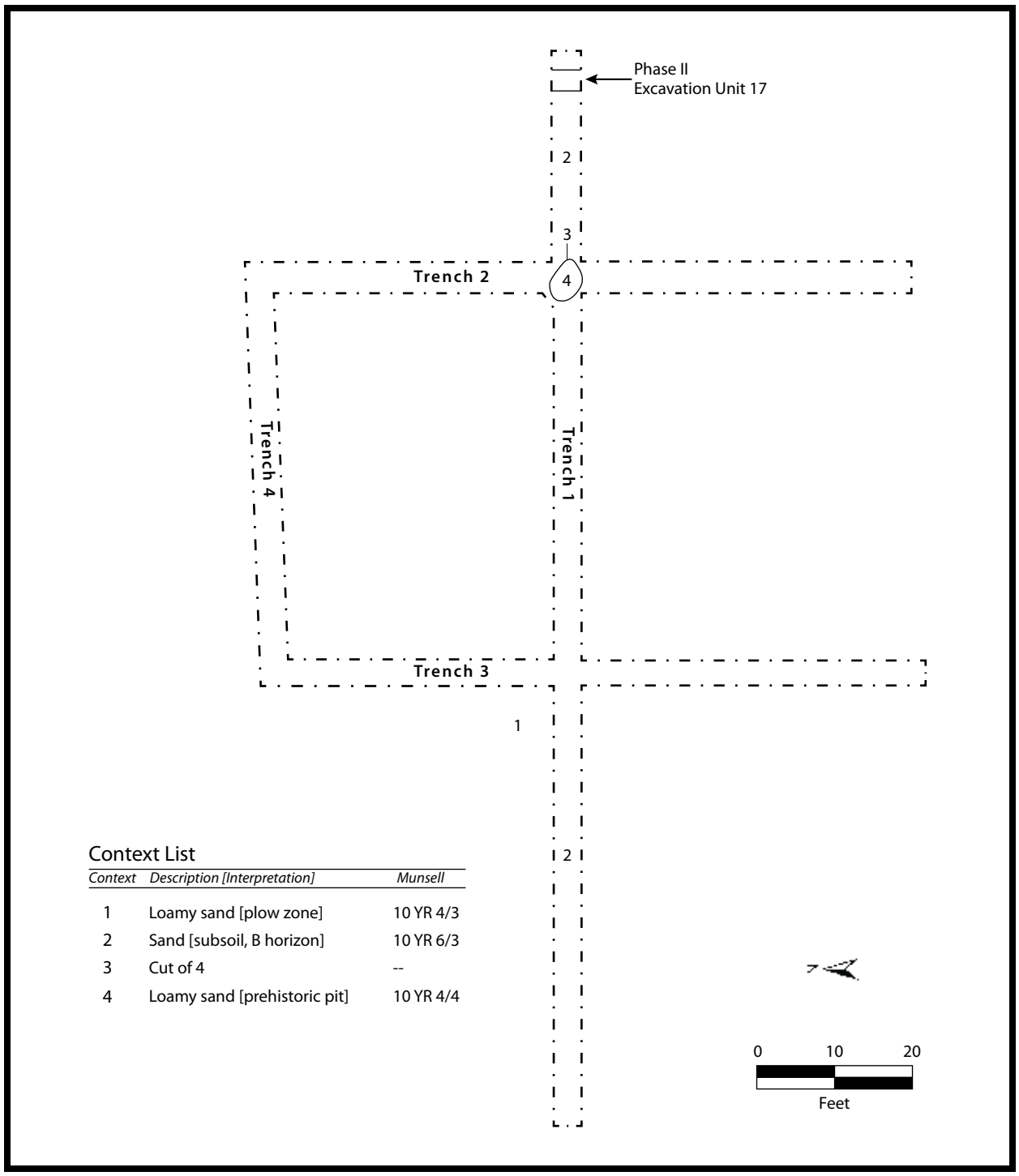
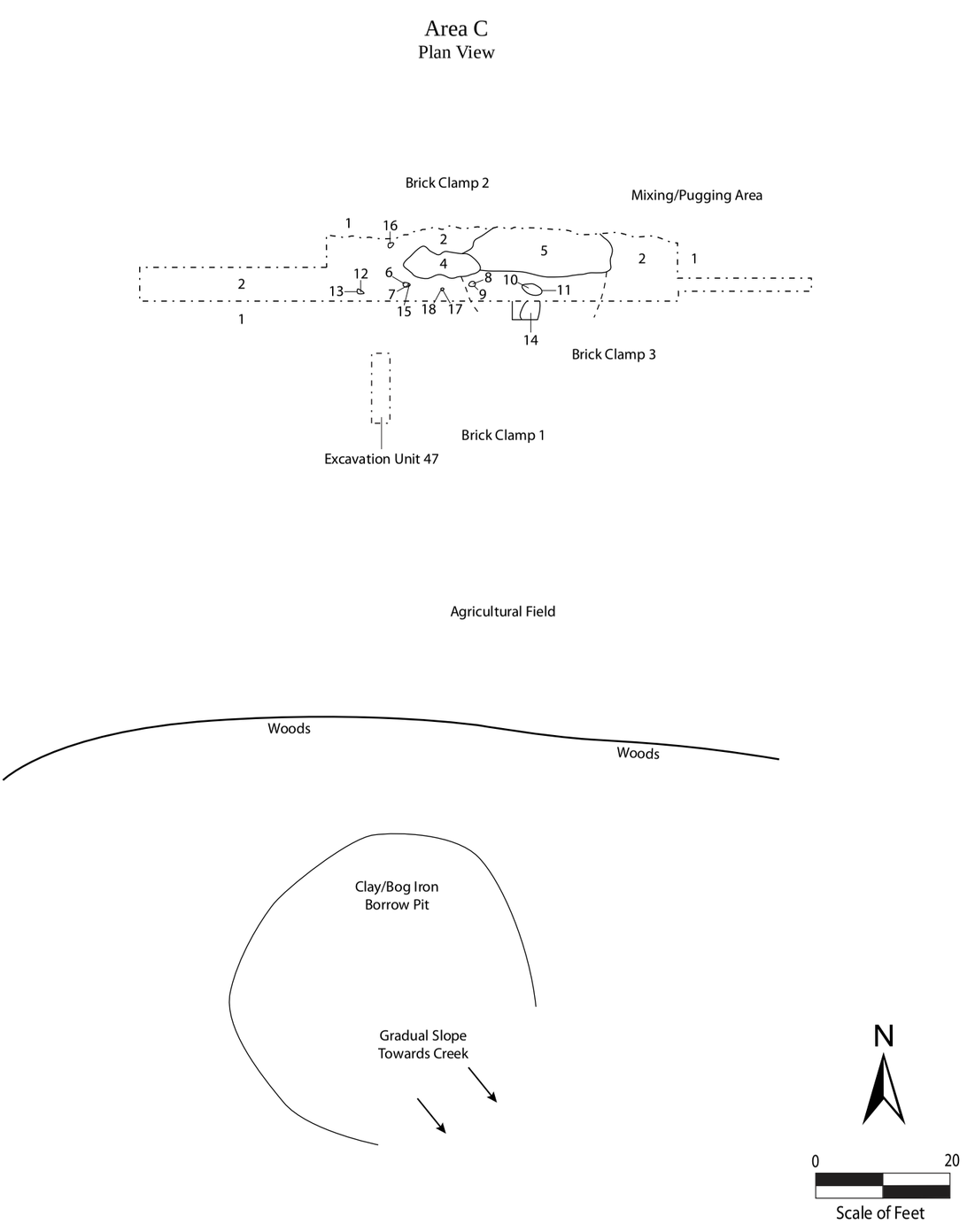


Figure 3.5. Cedar Creek Road Site [7S-C-100] Area B: Plan Showing Layout of Backhoe Trenches and a Prehistoric Pit Feature Exposed at the Top of the B Horizon During the Data Recovery and the Location of a Phase II Excavation Unit.

Figure 3.6. Cedar Creek Road Site [7S-C-100] Area C: Plan Showing the Limits of Plowzone Stripping Revealing a Heat Signature, Pugging Area, and a Partial Clamp Feature at the Top of the B Horizon During the Data Recovery. Also shown is a nearby clay borrow pit south of the limit of construction.



Context List

Context	*Description [Interpretation]*	*Munsell*
1	Loamy sand [plow zone]	10 YR 4/4
2	Sand [subsoil]	10 YR 6/4
3	Cut of 4	--
4	Mottled sand with clay and carbon, brick clamp [clamp #2]	10 YR 3/3, 5 YR 5/6, 10 YR 5/4
5	Mottled silty sand [activity area]	10 YR 4/3, 10 YR 5/4
6	Mottled silty sand with clay [post hole]	10 YR 4/3, 10 YR 6/4
7	Cut of 6 and 15	--
8	Mottled silty sand with clay [post hole]	10 YR 4/4, 10 YR 5/6
9	Cut of 8	--
10	Mottled silty sand with carbon [historic pit]	10 YR 4/3, 10 YR 4/4, 10 YR 5/4
11	Cut of 10	--
12	Mottled silty sand	10 YR 3/2, 10 YR 4/3, 10 YR 5/4
13	Cut of 12	--
14	Clay and brick, remnant brick clamp [clamp #3]	2.5 YR 4/8
15	Silty sand [post mold]	10 YR 4/3
16	Mottled silty sand	10 YR 3/4, 10 YR 4/4, 10 YR 5/4
17	Cut of 18	--
18	Silty sand [possible post]	10 YR 4/3
19	Silty sand [buried plow zone]	10 YR 4/3

interpretive dilemma for archaeologist. Do they represent structures that sat on the surface leaving behind little to no archaeological signature or do they merely represent "field scatter"? The original data recovery plan was to excavate two north-south trenches measuring 100 feet in length crossing the limits of construction. The reduction in scope shortened these trenches to 84 feet long (the width of the right-of-way). The two trenches were to be crossed with two additional trenches running east-west measuring 150 feet in length. These trenches were reduced to 137 feet and 47.5 feet. If any structural remains were found this was to be followed by a 40-foot-square open area excavation. The initial layout of four perpendicular trenches was excavated and supplemented with an additional trench in an attempt to locate and expose any archaeological evidence (Figure 3.5). Following on-site consultation with representatives from DelDOT and the DSHPO, the 40-foot-square open area excavation was eliminated, and effort were shifted to more productive areas of the site.

3. Brick Clamp (Area C)

Originally, three trenches were proposed to have the best chance of locating structural remains of the brick clamp, which was situated immediately outside of the LOC. As fieldwork preceded the excavation was restricted to within the right-of-way and a single trench was positioned along the south side of the LOC (Figure 3.6). It was the goal of this trench to gather any information that might remain within the right-of-way indicating the dates of operation. A non-invasive pedestrian exploration south of the LOC and into the woodland revealed the presence of a nearby borrow pit, presumably used to mine clay for the production of bricks (see Figure 3.3). This area was mapped showing the relationship to the clamps in the right-of-way. Samples were taken of the brickbats, burnt earth, clay and an undisturbed area as a control.

C. DESCRIPTION AND RESULTS

1. Early/Mid-18th-Century House and Farmstead Site (Area A)

Overview

Phase II investigations had revealed a host of historic features related to what was initially thought to be the core of an early 18th-century farmstead (Figure 3.4). In general, the depths of these features were shallow due to years of erosion accelerated by continual plowing. The projected loss of soil is between 1.5 and 2 feet. Deflation at this scale can be devastating to an archaeological site. In this case the bases of several features had survived. Although truncated, these features included a root cellar thought to have been under a post-in-ground dwelling, paling fence lines, refuse pits and several postholes. Data recovery efforts sought to make sense of these features by exposing as much of the core area as possible, thus exposing additional features to better understand the site. Removal of the plowzone revealed a plethora of features suggesting the core area had multiple post-in-ground dwellings, sub-floor pits, a possible grave, a bloomery pit, a shell heap, fence lines, garden areas and a host of postholes. The exposed area likely represents a third of the core of the site with the remainder of the site extending east outside of the LOC into the agricultural field, west outside of the LOC under and across State Route 30, and possibly north and south within the LOC beyond the extent of the excavation.

Feature Commentary

A summary of the main features in Area A is presented in Table 3.2. The following is a commentary highlighting these features with descriptions, associations with ancillary features and interpretations (Figure

Table 3.2. Cedar Creek Road Site [7S-C-100] Area A: Main Features.

Feature	Intepretation	Context Numbers	Key Artifacts
East/West Line of Posts	Post-in-Ground Structure 1, South Wall	45,-50, 93-98, 147, 148	tin-enameled earthenware, redware, wrought nail
East/West Line of Posts	Post-in-Ground Structure 1, North Wall	24, 99,100, 117-120	redware, pipe stem, olive green bottle glass, wrought nail
East/West Line of Posts	Post-in-Ground Structure 1, Porch Wall with Replacement Posts	23, 39, 40, 51-54, 105, 123-132, 135, 136, 144, 145, 224, 234, 236-239, 243-245, 286, 287, 320, 321	redware, pipe stem, olive green bottle glass, wrought nails animal bone, shell
Shallow Pit	Structure 1, Root-Cellar	87 & 88	tin-enameled earthenware, white salt-glazed stoneware, tobacco pipe fragments, animal bone, a wrought nail and small red brick crumbs
Shallow Pit	Structure 1, Root-Cellar	85 & 86	tin-enameled earthenware, white salt-glazed stoneware, animal bone, wrought nails small red brick fragments, daub
Linear Trench	Paling Fence, Structure 1	89 & 90	tin-enameled earthenware, shell, brick crumbs
Pit	Root Cellar or Refuse Pit	21, 22, 116	bits of red brick, daub, window glass & olive green bottle glass
North/South Linear Trench	Paling Fence, Structure 2	261 & 262	1744 Sleeve Link
East/West Linear Trench	Paling Fence, Structure 2	263 & 264	slip-trailed redware, creamware, wrought nail
North/South Linear Trench	Paling Fence, Structure 2	299 & 300	gunflint frament, redware, wrought nails, brick and animal bones
Linear Trench	Possible Grave	156, 157, 270, 324 & 325	small pieces of bone, two wrought nails
Large Pit	Iron Bloomery	65-68, 106-112, & 317	iron slag, wrought iron wedges, wrought iron nails, horseshoe, bit, cast iron caudron ear, brass buckle fragments, clock parts? iron scale, buff-bodied staffordshire ware and green-glazed whieldon ware
Large Pit	Indeterminate	332, 333, 349-354	whieldon ware, olive green bottle glass, wrought nails and two large pieces of bloomery slag
Shell Midden	Fill of a slumped Root-Cellar	322 & 323	oyster shells, brass buckle, creamware, pearlware
Large Pit	Structure 3, Root-Cellar	323 & 336	tin-enameled earthenware, white salt-glazed stoneware, a brass furniture tack
Shallow disturbance	Animal wallow/Gate?	340	no cultural materials
Shallow disturbance	Animal wallow/Gate?	338	redware
Shallow disturbance	Animal wallow	301 & 302	tin-enameled earthenware, wrought nails

3.3). Most features have cut and fill context numbers with the cut represented by the odd number and the fill represented by the even number.

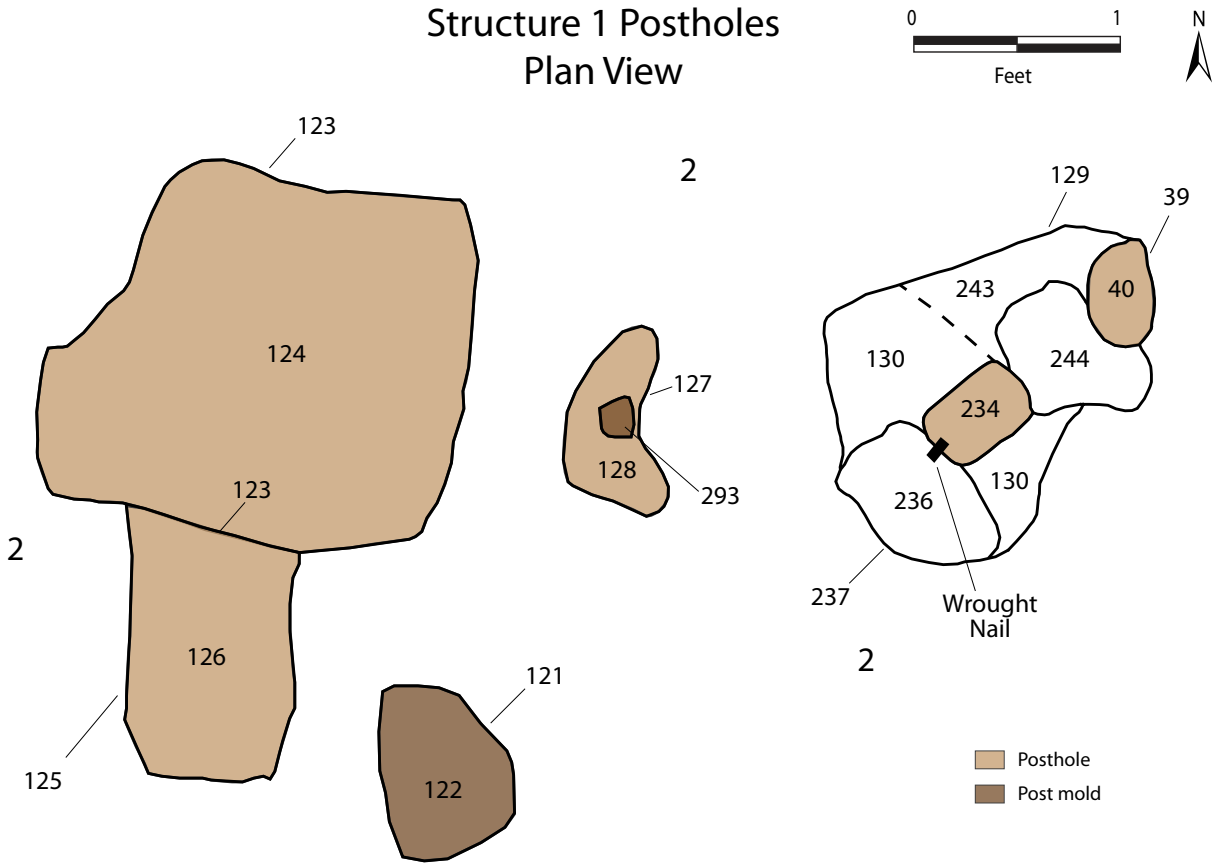
Structure 1

Located at the southern end of the proposed ramp's apron were a series of postholes, two root cellars and a partial fence line that made up Structure 1. This structure was likely a post-in-ground dwelling with a probable porch on the north side. The projected dimensions of this structure are roughly 36 feet east-west by 24 feet north-south with a 12-foot addition or porch on the north side and possibly 6 feet on the east side, increasing the overall dimensions of the structure to 36 feet north-south by 42 feet east-west. This would have been a large structure for the 18th century and could have served as quarters for more than one family.

The main outline of the structure was defined by a two parallel lines of medium-sized postholes aligned east-west. The northern line consisted of contexts 99/100, 117/118, 119/120 and 24. Another post [17-20] identified in Excavation Unit 7 during the Phase II investigations also appears to have been part of this alignment. The southern line consisted of contexts 45-50, 93-98, 147/148. The western boundary was based on a single posthole [276/277], the position of the addition corner and a shallow paling trench [318/319]. The eastern boundary was loosely based on the last posthole on the northern boundary [99/100]. The postholes were all medium sized. The use of smaller posts may suggest that the structural framing of a building was erected quickly and cheaply. Another line of medium-sized postholes situated 12 feet north of the main outline of the structure [23, 39/40, 51-54, 105, 123-132, 135/136, 144/145, 224, 234, 236/237, 238/239, 243/244, 245, 286/287, 320/321] exhibited multiple replacement posts suggesting the structure stood for an extended period of time, with posts being replaced as they would rot in place (Figure 3.7; Photograph 3.4).

A group of closely spaced posts [39/40, 121-130, 234, 236/237, 243/244] in the center of this line suggests a possible support for steps leading up to the structure. Another group of postholes formed what appears to be the corner of the probable porch [51-54, 144/145, 286/287 and 320/321]. The remnants of a short paling fence [318/319] was identified extending south from the probable corner of the porch leading to and stopping at the projected north wall of the main structure.

Roughly in the center of Structure 1 were the shallow remains of two cellar holes [85/86 and 87/88] (Photographs 3.5-3.8). The latter root cellar [87/88], flanked by two postholes [11/12 and 17/18], was first noted during the Phase II investigations (Excavations Units 3 and 7 [contexts 3, 4 and 11-20]) (Figures 3.8 and 3.9). During the Phase II investigation this group of features was interpreted as the possible remains of a building oriented to State Route 30. Ceramics recovered from Excavation Unit 3 within the feature suggested a date prior to 1760, judging by the absence of creamware. This rectangular feature exhibited a surface area of 34.65 square feet and measured 7.7 feet long (east-west) by 4.5 feet wide (north-south) extending 0.35 feet below the top of the B horizon. Excavation of the remainder of the root cellar [87/88] revealed traces of plank floorboards at the base of the cellar pit. A similar sized rectangular pit measuring 7 feet by 4.5 feet was excavated at Utopia Quarter (Samford 2007:146). Based on analysis of subfloor pits throughout Tidewater Virginia, Samford believes pits with planks on the bottom could represent the base of a wooden box used to store personal items (Samford 2007:146-147). The planks could also represent an attempt to keep ground moisture away from stored food items in the cellar. Chemical analysis of the soils from context 88 "showed only moderately elevated levels of phosphorus, potassium, boron,



Context List

Context	*Description [Interpretation]*	*Munsell*
2	Sand [B horizon]	10 YR 6/4
39	Cut for context 40	--
40	Loamy sand with charcoal fill of context 39 [posthole]	10 YR 4/3
121	Cut for context 122	--
122	Loamy sand with charcoal, [post mold]	10 YR 4/3
123	Cut for context 124	--
124	Mottled loamy sand [post hole]	10 YR 4/3, 10YR 5/6
125	Cut for context 126	--
126	Mottled loamy sand [post hole]	10 YR 4/3, 10YR 5/6
127	Cut for contexts 128 and 293	--
128	Loamy sand with charcoal, [post hole]	10 YR 4/3, 10 YR 4/3
129	Cut for contexts 130, 243; cuts context 2, 237; cut by context 243, 244	--

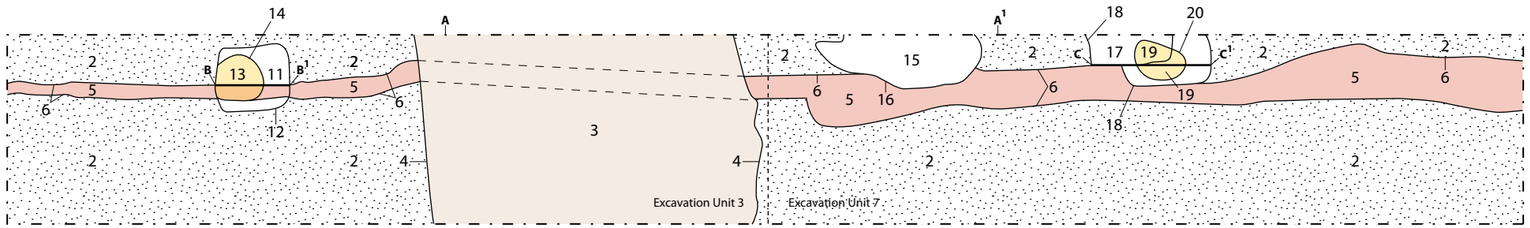
Context List

Context	*Description [Interpretation]*	*Munsell*
130	Fills context 129; cut by context 243, 39	10 YR 4/3
234	Loamy sand for contexts 129 and 130 [post mold]	10 YR 4/3
236	Loamy sand with charcoal fill of context 237; cut by context 129	10 YR 4/3
237	Cut for post hole; filled by context 236 cuts context 2; cut by context 129	--
243	Cut for post hole; filled by context 244 cuts context 2, 139, 140; cut by context 39	--
244	Fill of context 243; cut by context 39	10 YR 4/3
293	Loamy sand [post mold]	10 YR 4/3

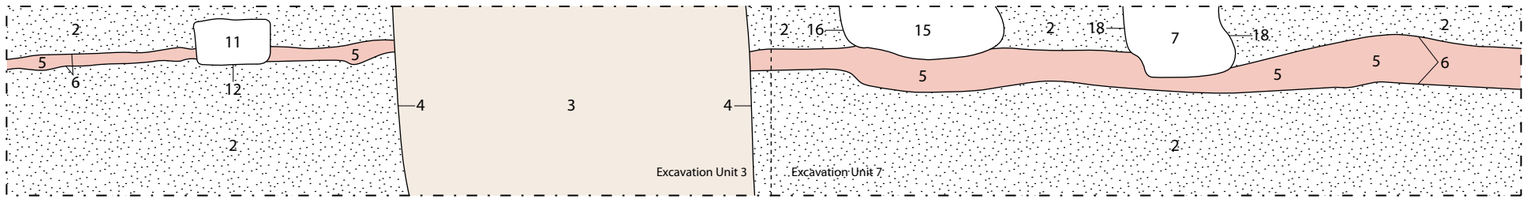
Figure 3.7. Cedar Creek Road Site [7S-C-100] Area A: Post Holes Associated with Structure 1.

Archaeological Site 7S-C-100
Early/Mid-18th-Century House Site

Excavation Units 3 and 7
Plan View After Removal of Plowzone



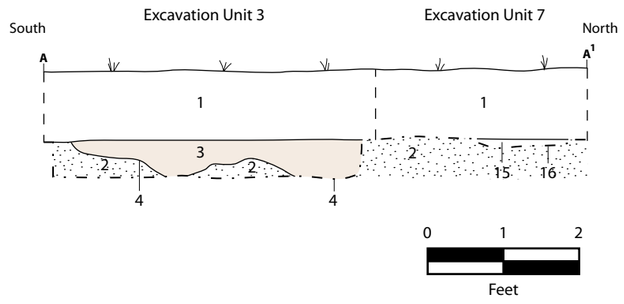
Excavation Units 3 and 7
Plan View at Completion of Excavation



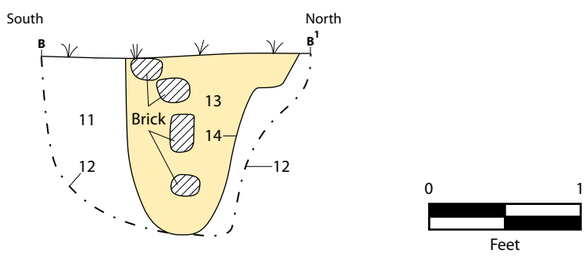
Context List - Excavation Units 3 and 7

Context	*Description [Interpretation]*	*Munsell*
1	Loamy sand [Plowzone]	10 YR 4/3
2	Loamy sand [E/B horizon]	10 YR 6/4
3	Compact mottled loamy sand [historic sub-floor pit fill]	10 YR 4/3, 10 YR 6/4, 10 YR 5/6
4	Cut [historic pit]	--
5	Mottled loamy sand [historic trench fill, paling fence]	10 YR 6/4
6	Cut [historic trench, paling fence]	--
11	Mottled loamy sand [historic posthole fill]	10 YR 6/4, 10 YR 5/4, 10 YR 5/6
12	Cut [historic posthole]	--
13	Mottled loamy sand with brick [historic post mold fill]	10 YR 3/2, 10 YR 6/4
14	Outline [historic post mold]	--
15	Mottled loamy sand [historic pit fill]	10 YR 4/3, 10 YR 5/4, 10 YR 6/4
16	Cut [historic pit]	--
17	Mottled loamy sand [historic posthole fill]	10 YR 3/2, 10 YR 4/3, 10 YR 6/4
18	Cut [historic posthole]	--
19	Loamy sand with brick [historic post mold fill]	10 YR 3/2
20	Outline [historic post mold]	--

Excavation Units 3 and 7
West Profile



Excavation Unit 3
Cross Section of Posthole



Excavation Unit 7
Cross Section of Posthole

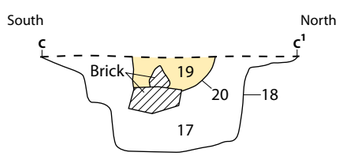


Figure 3.8. Cedar Creek Road Site [7S-C-100] Area A: Phase II Excavation Units 3 and 7, Plan Views, West Profile and Cross-Sections of Postholes.

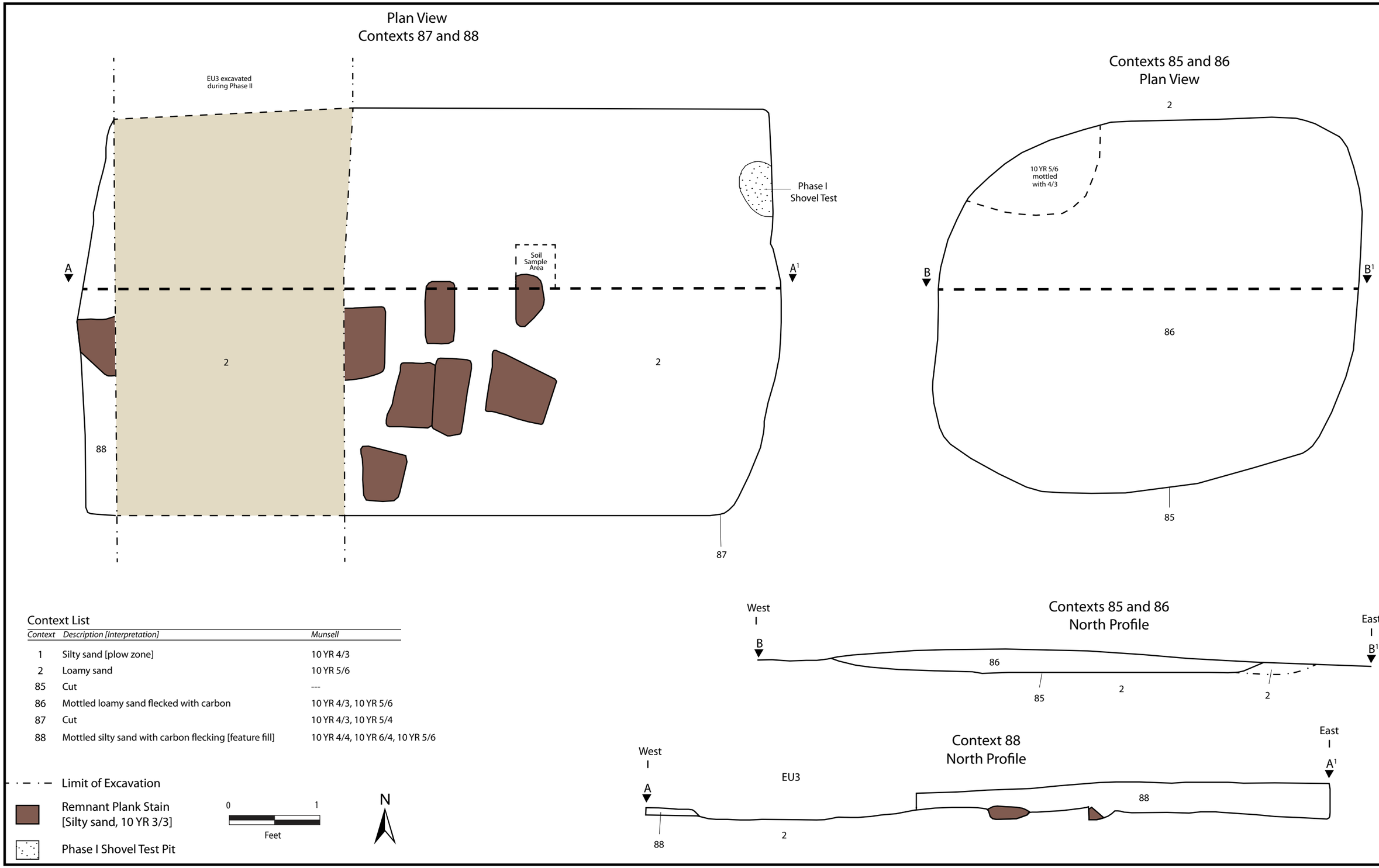


Figure 3.9. Cedar Creek Road Site [7S-C-100] Area A: Sub-floor Pits Associated with Structure 1.

Photograph 3.4. Cedar Creek Road Site [7S-C-100] Area A: Selected postholes. *Left side, top to bottom*: single posts small round, square and large round. *Right side, top to bottom*: a double post, with the second post possibly added for support to the original rotted post, a triple post where one was pulled (likely rotted) and replacement posts were inserted to maintain support, and a double post replacing the first post. Multiple posts suggest a impertinent structure once stood at this location for an a-typical extended period (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 Left side D3- 046, 325 and 415, Right side D3- 081,162 &183].

Photograph 3.5. Cedar Creek Road Site [7S-C-100] Area A: Phase II Excavation Units 3 and 7, plan view looking north showing pits [Contexts 3, 4, 15 and 16] and postholes [Contexts 7-14 and 17-23] below the plowzone. Context 3 was excavated as Context 88 during the Data Recovery excavations; scales in feet and inches (Photographer: Joelle Browning, October 2010) [HRI Neg. #10058/D1-036].

Photograph 3.6. Cedar Creek Road Site [7S-C-100] Area A: Two Subfloor pits/root cellars, Contexts 85 and 86 in the left foreground and Context 87 and 88 in the center background (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D1-043].

Photograph 3.7. Cedar Creek Road Site [7S-C-100] Area A: Subfloor pit/root cellar, Contexts, 87 and 88 looking east. The darker soils in the foreground were previously excavated during the Phase II excavations (Excavation Unit 3, Contexts 3 and 4) (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D1-046].

Photograph 3.8. Cedar Creek Road Site [7S-C-100] Area A: Truncated subfloor pit/root cellar, Contexts 87 and 88, with the Phase II excavation units removed showing plank scars at the base looking north (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D3-034].

and aluminum" (Wilkins 2014:15-16). Although this would be considered consistent with a pit intended for storage of nonfood items such as personal goods, floral analysis of flotation samples revealed the presence of carbonized Zea mays (maize- corn), which would be expected as part of the average 18th-century diet (McKnight 2014).

Located just two feet northwest of the first root cellar [87/88] was a second sub-rectangular root cellar [85/86] with a surface area of 18.4 square feet; measuring 4.65 feet long (east-west) by 4 feet wide (north-south) and extending only 0.2 feet into the B horizon. Artifacts recovered from this root cellar consist of ceramics (redware, tin-enameled earthenware, and white salt-glazed stoneware), tobacco pipe fragments, animal bones, shell, wrought nails, small red brick fragments and bits of daub. Chemical soil analysis of context 86 revealed "significant chemical enrichment in phosphorus and heavy metal including manganese, zinc, copper, iron, boran and aluminum" (Wilkins 2014:15). Wilkins suggests the phosphorus content can be attributed to decomposing organic material consistent with a domestic occupation. Floral analysis of flotation samples revealed the presence of white oak, hickory and pine suggesting that although there were no visible signs of a wood liner, one may have existed (McKnight 2014).

Outside of Structure 1, 8 feet to the south was a shallow (0.5 feet below the plowzone), short paling fence line [89/90]. A flotation sample taken from context 90 revealed the presence of white oak (McKnight 2014). This suggests the paling fence was made using white oak. Positioned parallel to the structure, this fence line likely represented the remnants of a boundary or division between the structure and another part of the yard. This line likely extended east outside of the LOC and to the west, where it was erased by continued erosion and deflation.

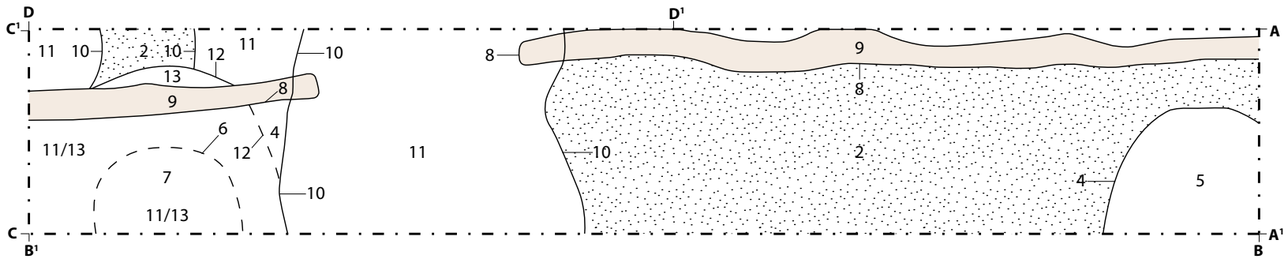
Immediately east of the Structure 1, in Phase II Excavation Unit 44, a series of shallow pits and a fence line were excavated that runs perpendicular to the structure (Figure 3.10). This area was not investigated during the data recovery as it lies outside of the final LOC. The function of this paling fence is unclear, however this trench was cut into by a broader north-south depression that extended across the full width of the unit and itself cut into a series of shallow pits or depressions lying to the west. Discrimination of these various pit-like anomalies proved difficult during the course of excavation, although a mottled, greasy silty loam and a mottled sandy loam, both containing carbon [10, 11 and 13] were recognizable throughout much of the western end of the excavation unit. Within this area, to the south of the paling fence, a small, shallow pit filled with sandy clay [6 and 7] was noted extending south beyond the limit of excavation. This pit contained a large number of clam and oyster shell fragments, numerous pieces of rendered, un-butchered mammal bone (including 35 fragments and a tooth from a pig), 21 pieces of brick, a clench wrought nail and an iron ring, three sherds each of redware and buff-bodied Staffordshire, five pipe stem fragments and a piece of olive green bottle glass.

The western end of Excavation Unit 44 showed signs of domestic occupation and may have been on or close to the site of an outbuilding in the backyard of Structure 1, possibly a smokehouse (on the basis of the bone fragments and the greasy silty loam containing carbon). Probing with a split-spoon auger beyond the limits of the excavation unit indicated an area roughly 8 feet in diameter containing soils similar in depth and character to those encountered below the plowzone within the western end of Excavation Unit 44. It is possible that these soils/features represented evidence of a smokehouse or other outbuilding that may have undergone several episodes of rebuilding or repair on the same general site. Smokehouses were generally

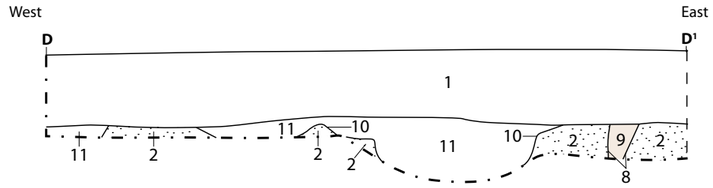
Archaeological Site 7S-C-100
Early/Mid-18th-Century House Site
Excavation Unit 44

N

Plan View



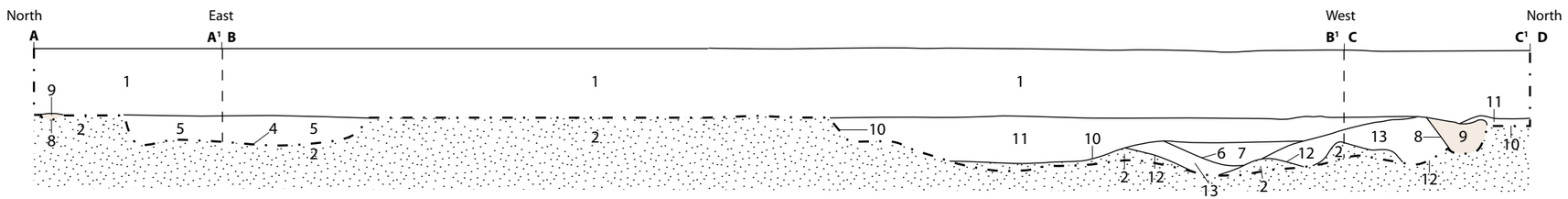
North Profile



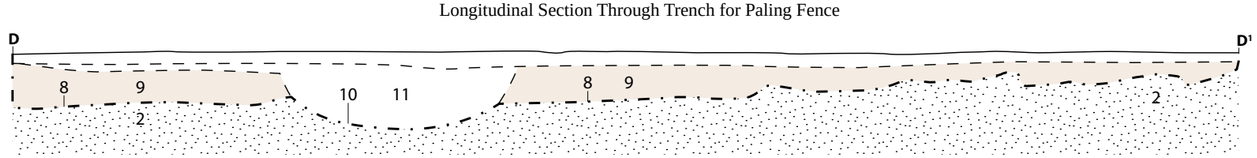
East Profile

South Profile

West Profile



Longitudinal Section Through Trench for Paling Fence



Context List-Excavation Unit 44

Context	*Description [Interpretation]*	*Munsell*
1	Loamy sand [plowzone]	10 YR 4/3
2	Silty sand [B horizon]	10 YR 5/6
4	Cut [historic pit]	--
5	Sand loam [historic pit fill]	10 YR 4/4
6	Cut [historic pit]	--
7	Sandy clay with clay pocket [historic pit fill]	10 YR 6/3
8	Cut [historic trench, paling fence]	--
9	Loamy sand [historic trench fill, paling fence]	10 YR 3/2, 10 YR 4/3
10	Cut [historic pit]	--
11	Mottled greasy silty loam with charcoal [historic pit fill]	10 YR 4/3, 10 YR 6/4
12	Cut [historic pit]	--
13	Mottled sandy loam with charcoal [historic pit fill]	10 YR 5/3, 10 YR 6/4

N

0 1 2

Feet

Limit of Excavation

Figure 3.10. Cedar Creek Road Site [7S-C-100] Area A: Plan and Profiles Through Features in Phase II Excavation Unit 44.

square or rectangular and were typically located in the backyard facing the rear of the dwelling providing easy access to stored food (Robbins 2006:49).

At the opposite, eastern end of Excavation Unit 44, a more readily discernible shallow pit was defined extending east and south beyond the excavation limits [contexts 4 and 5]. Almost a half of this pit was exposed and excavated, but very few artifacts were recovered from its fill (two pieces of brick, a nail fragment, two mammal bone fragments and a clam shell).

Structure 2

Another post-in-ground building, Structure 2, was first identified in Excavation Units 43 and 56 during the Phase II investigations. This structure was projected to be between 15 and 18 feet northeast of Structure 1 and lies almost entirely outside of the right-of-way. The full dimensions of this structure therefore could not be determined with any certainty (Figure 3.11; Photograph 3.9). This structure was characterized by a sub-rectangular root cellar [3/4], which was partially excavated revealing wood-lined north and west walls, possibly suggesting it was situated in the northwest corner of the structure. If this is correct, Structure 2 was situated almost completely outside of the LOC. The Phase II investigations also demonstrated that the root cellar was placed over an older refuse pit [5/6] filled with oyster shells. This suggests there was an earlier occupation at the site in this general location or that one of the structures/dwellings slightly predates Structure 2. The refuse pit was situated about 30 feet northeast of Structure 1, which would have been far enough away for odorous refuse disposal, suggesting an association with an earlier nearby structure, likely situated outside of the limits of construction.

A series of connecting shallow narrow trenches with evidence of cut boards or pales wedged into the bottom was observed immediately north of Structure 2 (Photographs 3.10-3.12) These narrow trenches are interpreted as the result of paling fences. Paling fences during the 18th century were designed to let air and light through while keeping large animals out of garden areas. Individual pales were placed upright in a ditch deep enough to stand firm when backfilled, extending about three feet below the surface and spaced (based on this trench) between two and four inches apart (Figure 3.12). Normally the fence would be anchored with more substantial posts at regular intervals and the pales would be secured using horizontal members woven in and out of the pales. But in this case it should be noted that no larger anchoring posts were observed to fully support this interpretation. A paling fence buried deep enough however may not have needed such supports. Although more likely a fence, an alternate interpretation is that these closely spaced posts/pales were woven together to make a wattle and daub or plank structure covered by bark, split planks or thatching in the West African tradition as thought to have been observed on some southern plantations (Ferguson 1992:63-73).

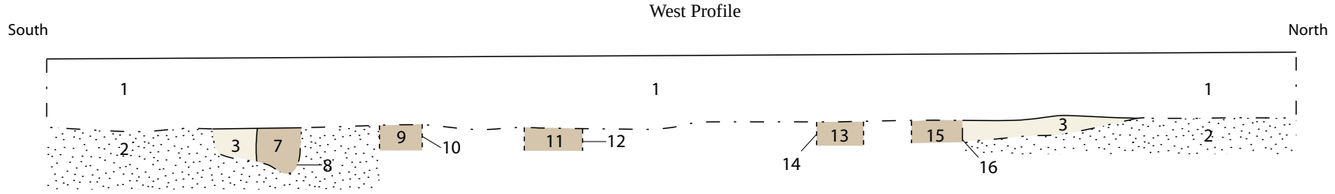
This narrow trench, representing the truncated base of a larger trench, only measured between 0.4 to 0.5 feet wide and extended 0.5 feet below the plowzone with individual pales extending between 0.5 and 0.7 feet below the base of the trench. Originally the trench would likely have been much wider and deeper as stated above. Starting at the northwest corner of the root cellar, the trench [contexts 261/262] ran north-south for a distance of 33 feet (Photograph 3.6). Disturbed areas [337, 338 and 340] situated adjacent to the trench line suggests possible animal wallows and or a possible entryway [338 and 340] worn down by human traffic.

At the northern terminus of contexts 261/262 the trench line turned east 90 degrees forming a corner at which time it was assigned new numbers for the cut and fill [263/264] (Figure 3.13; Photograph 3.10). The width and depth of the trench and posthole within

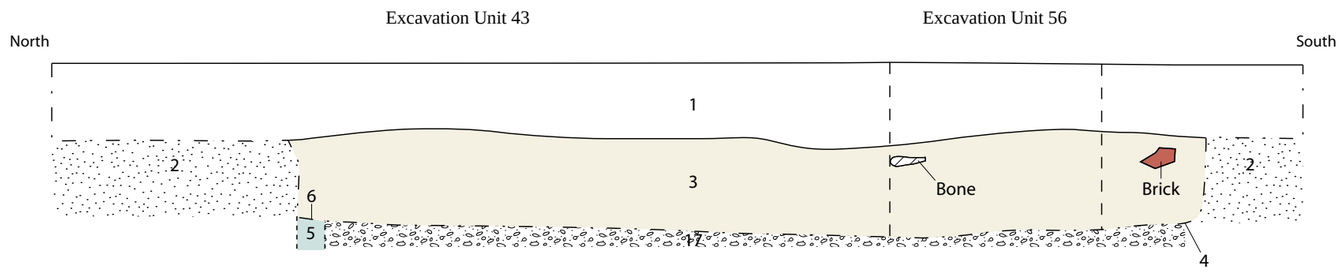
Photograph 3.9. Cedar Creek Road Site [7S-C-100] Area A: Excavation Unit 43, plan view looking north showing root cellar [Contexts 3 and 4]; scales in feet and inches (Photographer: Joelle Browning, October 2010) [HRI Neg. #10058/D1-284].

Cedar Creek Site [7S-C-100] Area A
Early/Mid-18th-Century House Site
Excavation Units 43 and 56

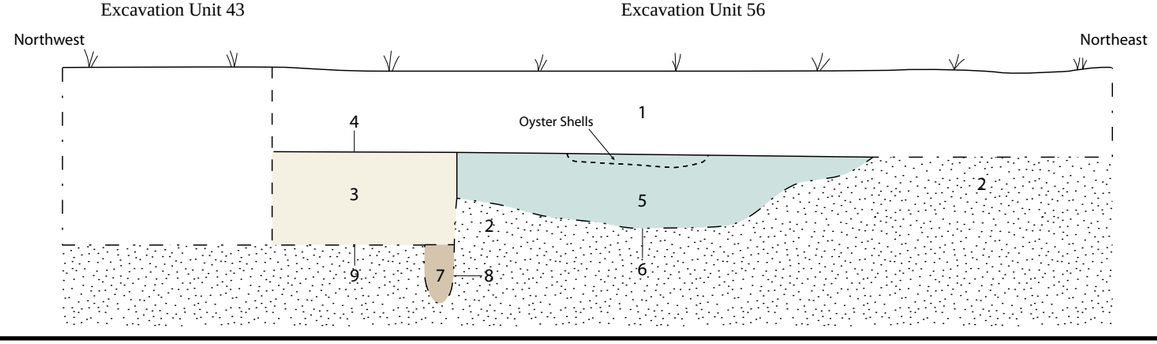
Excavation Unit 43
West Profile

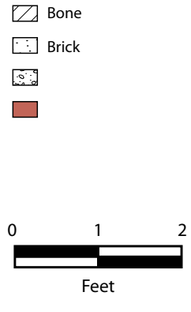


Excavation Unit 43
East Profile



Excavation Unit 56
North Profile





Context List-Excavation Unit 43

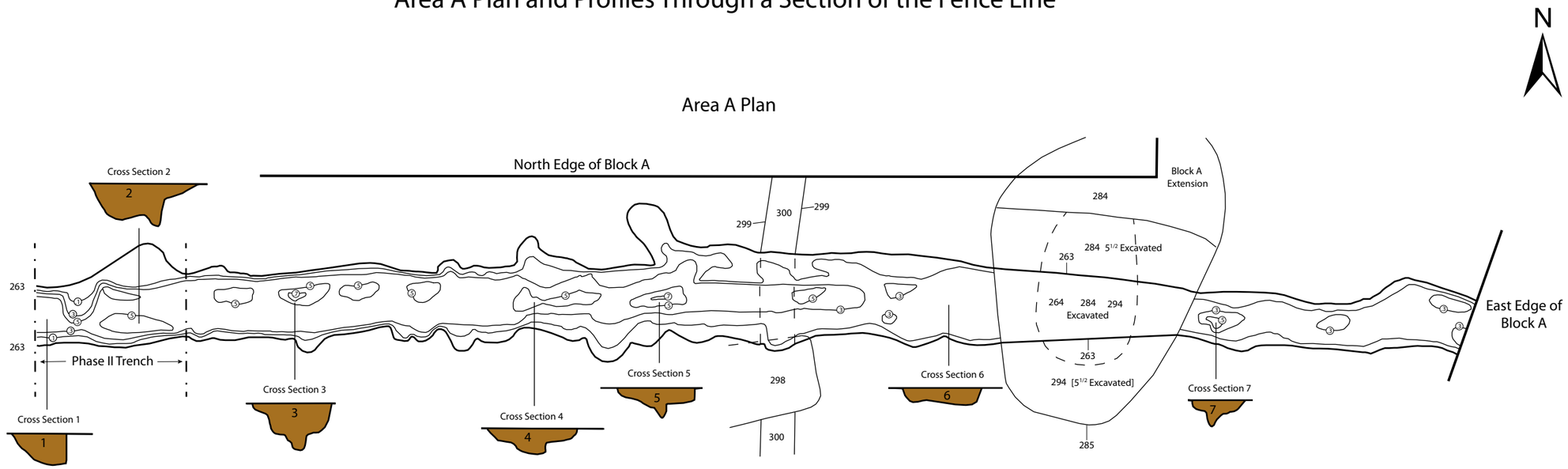
Context	*Description [Interpretation]*	*Munsell*
1	Loamy sand [plowzone]	10 YR 4/3
2	Silty sand [E/B horizon]	10 YR 6/4
3	Mottled silty sand with burnt soil and clay pockets [historic root cellar fill]	10 YR 4/2, 10 YR 6/4
4	Cut [historic root cellar]	--
5	Fine, mottled silty sand [historic plank trench fill]	10 YR 5/4, 10 YR 6/4, 7.5 YR 5/6
6	Cut [historic plank trench]	--
7	Mottled silty sand [historic posthole fill]	10 YR 5/3, 10 YR 6/4
8	Cut [historic posthole]	--
9	Mottled silty sand [historic posthole fill]	10 YR 5/3, 10 YR 6/4
10	Cut [historic posthole]	--
11	Mottled silty sand with clay pockets [historic posthole fill]	10 YR 5/3, 10 YR 6/4
12	Cut [historic posthole]	--
13	Mottled silty sand [historic posthole fill]	10 YR 5/3, 10 YR 6/4
14	Cut [historic posthole]	--
15	Mottled silty sand [historic posthole fill]	10 YR 5/3, 10 YR 6/4
16	Cut [historic posthole]	--
17	Medium clayey sand with pebbles [B/C horizon}	7.5 YR 5/6

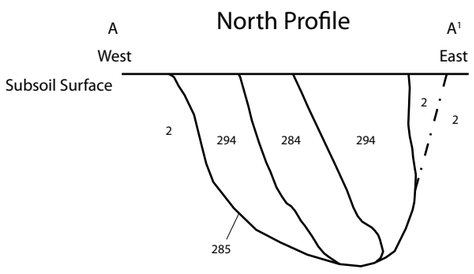
Context List-Excavation Unit 56

Context	*Description [Interpretation]*	*Munsell*
1	Loamy sand [plowzone]	10 YR 4/3
2	Silty sand [E/B horizon]	10 YR 6/4
3	Silty sand [historic root cellar fill]	10 YR 4/2
4	Cut [historic root cellar]	--
5	Loamy sand with oyster shell [historic pit]	10 YR 6/4
6	Silty sand [historic root cellar fill]	10 YR 4/2

Figure 3.11. Cedar Creek Road Site [7S-C-100] Area A: Profiles Through Structure 2 in Phase II Excavation Units 43 and 56.

Area A Plan and Profiles Through a Section of the Fence Line





Context List

Context	*Description [Interpretation]*	*Munsell*
2	Loamy sand with mottled lamallae	10 YR 5/6, 10 YR 5/8
263	Cut [paling fence]	---
264	Mottled loamy sand	10 YR 5/4, 10YR 5/6
284	Loamy sand	10 YR 5/4
285	Cut [prehistoric pit]	---
294	Loamy sand with no lamallae or mottle	10 YR 5/6
299	Cut [paling fence]	---
300	Fill of 299	---

Limit of Excavation

.5 Depths in Tenths of Feet

0 2

Feet

Figure 3.13. Cedar Creek Road Site [7S-C-100] Area A: Plan and Profiles Through a Section of the Fence Line.

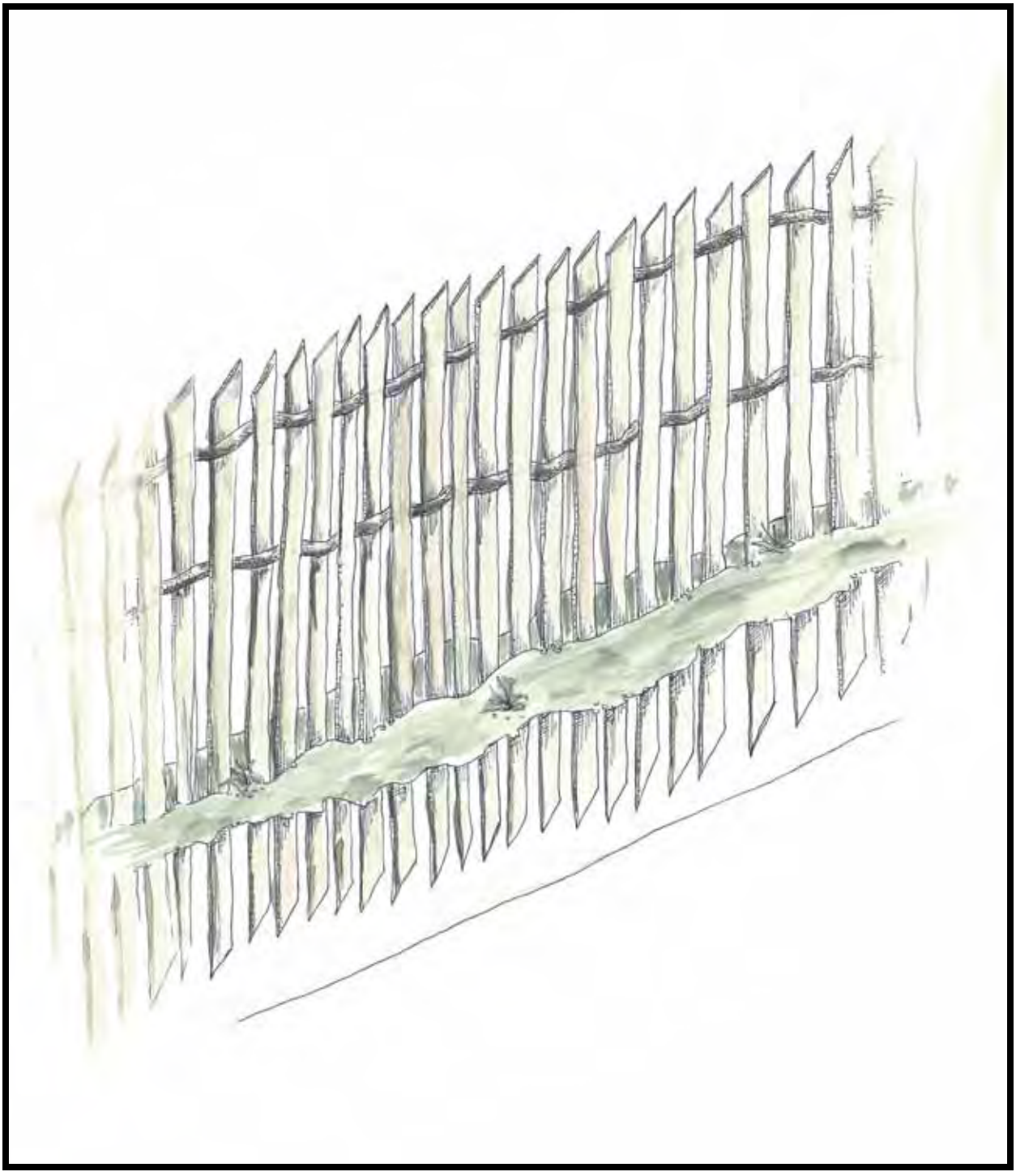


Figure 3.12. Cedar Creek Road Site [7S-C-100] Area A: Artist's Conception of a Paling Fence.

Photograph 3.10. Cedar Creek Road Site [7S-C-100] Area A: Two roughly parallel shallow paling fences Contexts 261, 262, 334 and 335 looking south (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D3-511].

Photograph 3.11. Cedar Creek Road Site [7S-C-100] Area A: A shallow paling fence Contexts 263 and 264 running east/west. The fence line cuts across a prehistoric pit, Contexts 284, 285 and 294 looking west (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D3-235].

Photograph 3.12. Cedar Creek Road Site [7S-C-100] Area A: A shallow paling fence Contexts 299 and 300 running north/south looking north. The center of the fence line was left unexcavated at the time of the photograph so that the profile could be recorded (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D3-345].

the trench remained consistent with the first section of the trench. This trench line extended east beyond the LOC. Thirteen feet east of the corner the trench line [263/264] was cut by a later smaller trench line running north-south (Contexts 299/300) (Photograph 3.11). This trench may have reflected an internal division of the larger trenches separating rooms or a garden from animal enclosures or divisions within a garden. A disturbed area [301/302] situated adjacent to the east side of the fence lines suggested a possible animal wallow. Chemical soil analysis indicates "no recognizable anthropogenic chemical input", which would be expected from this type of feature (Wilkins 2014:8-9).

Sixteen feet east of the corner, the trench line [263/264] cuts through a medium-sized prehistoric pit [284/285 and 294] that extended beyond the excavated boundaries of Area A to the north (Photograph 3.12). Carbon flecking was noted from the fill [284 and 294] but no cultural materials were recovered. The feature may have served as a storage pit that was emptied when the occupants moved on, as suggested by the lack of other remains. Pits such as this in Delaware have also been associated with semi-subterranean dwellings known as pit houses, although some believe these pits are a natural reflection of decayed tree falls.

Possible Burial near Structure 2

An elongated feature thought at first to be a section of a paling fence was reinterpreted in the field as a possible shaft for a human grave [156/157 and 270] (Figure 3.14; Photograph 3.13). This feature measured seven feet in length and two feet wide at the southern end and one foot wide at the northern end while only extending 0.5 feet below the plowzone. The outer fill [270] consisted of yellowish brown and brown mottled loamy sand surrounded a dark brown loamy sand soil [156]. This fill was reported to be sticky and greasy and contained a few small bone fragments that could only be identified as large mammal (see Appendix H). Two nails were also recovered from this pit but may have been deposited later in the 18th century when a fence was erected over the possible grave shaft. Other artifacts recovered from the fill [156] consist of two redware sherds, one gray-bodied salt-glazed stoneware sherd, a fragment of olive green vessel glass, a fragment of flat window glass, a few bits of red brick and oyster shells. This feature extended south of the LOC onto privately owned property. DelDOT and the DHPO were notified and following consultation it was decided to treat the feature as a burial, and to ask the landowner for permission and remove the remainder of the feature using 1/8-inch mesh hardware cloth. Excavation of the remaining feature soils produced a few more small fragments of unidentifiable bone (see Appendix H).

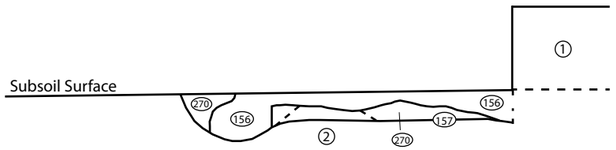
The southern limits of the feature were hard to identify because of apparent disturbance by linear contrasting soil lines [324/325], possibly relating to a fenceline. Figure 3.14 reflects the consensus interpretation of the stratigraphy.

Structure 3

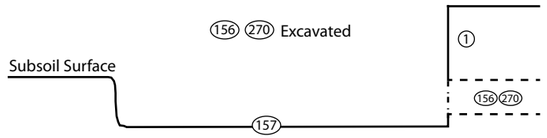
Another root cellar discovered near the end of fieldwork strongly suggests there was a third post-in-ground structure located within the core of the site, designated Structure 3 (Figure 3.15; Photographs 3.14, 3.15 and 3.16). This feature was discovered under a large shell deposit (discussed below). The fill [336] of this root cellar is a dark brown loam more consistent with topsoil used to fill the empty root cellar following the demise of the structure. Artifacts from this context consist of ceramics (redware, tin-enameled earthenware and white salt-glazed stoneware), a gunflint fragment, a brass furniture tack, wrought nails, brickbats and animal bones and teeth. This deposit appears to date to *circa* 1740 to 1760.

Photograph 3.13. Cedar Creek Road Site [7S-C-100] Area A: Short linear tapering trench, Contexts 156 and 157 thought to be a possible truncated grave shaft, looking east ((Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D3-412].

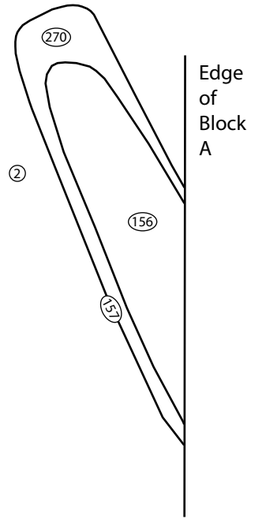
East Profile
Partially Excavated



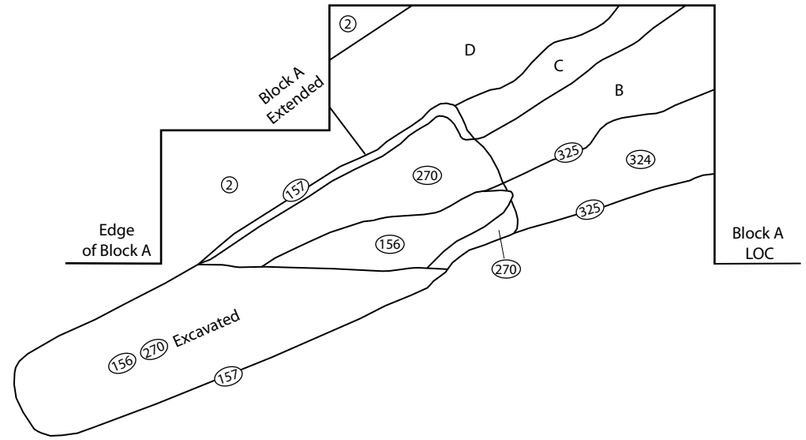
East Profile
Fully Excavated

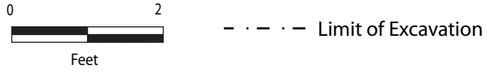


Area A Plan



Block A Plan

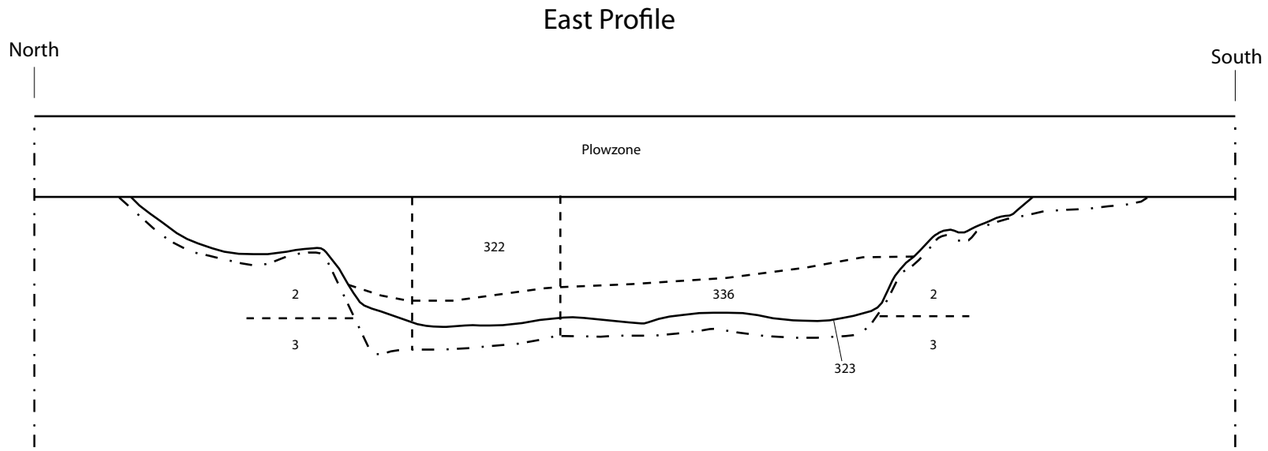


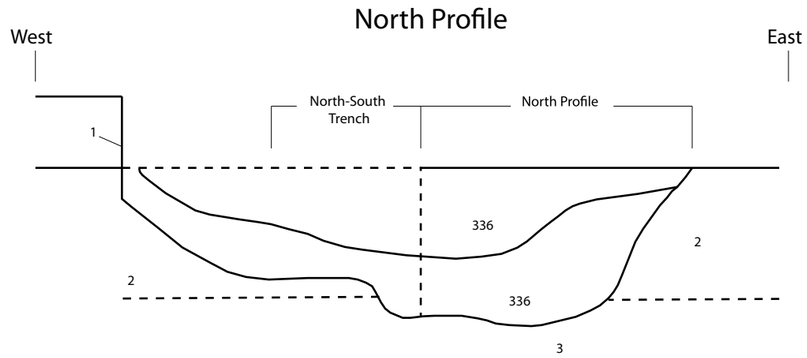


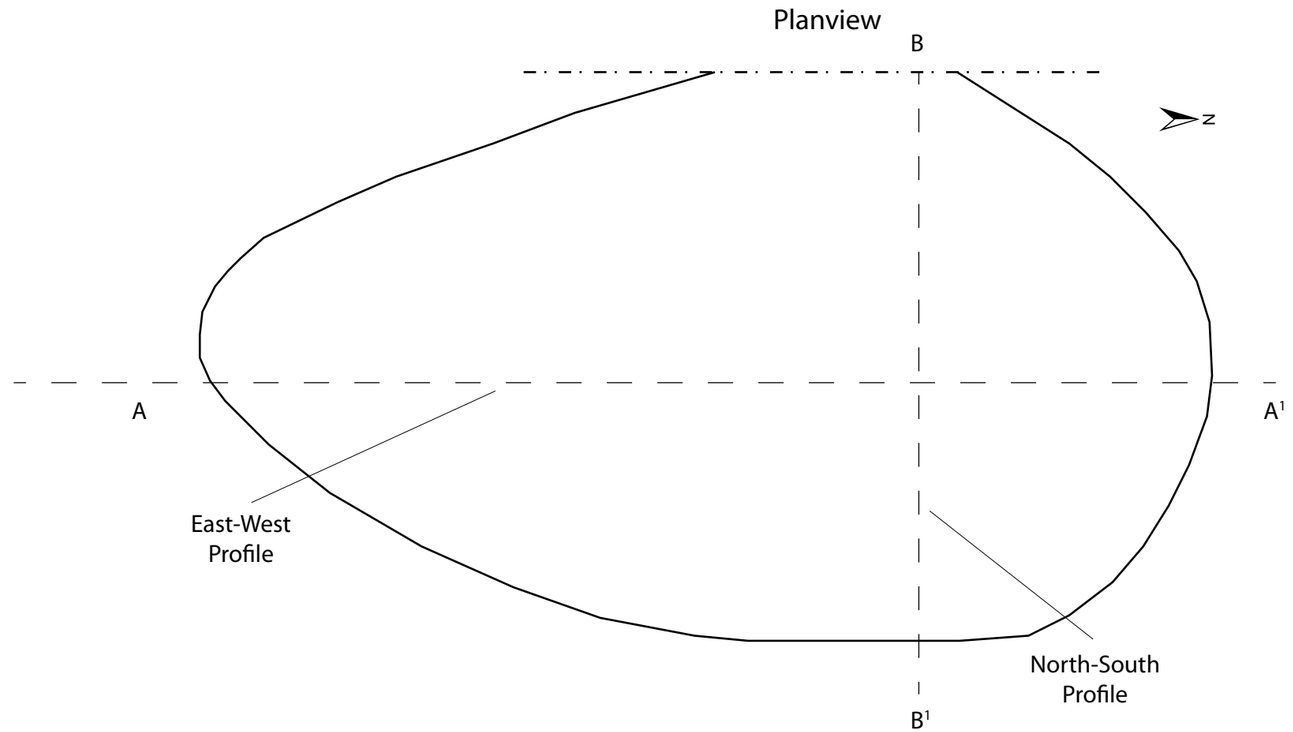
Context List

Context	*Description [Interpretation]*	*Munsell*
1	Silty sand [plow zone]	10 YR 4/3
2	Loamy sand [B Horizon]	10 YR 5/6
156	Loamy sand mottled with flecked [grave fill]	10 YR 6/3, 10YR 5/8
157	Cut of grave shaft	---
270	Loamy sand [grave shaft fill]	10 YR 5/6, 10 YR 4/3
324	Mottled loamy sand	10 YR 4/4, 10 YR 5/6
B Horizon	Dirty Subsoil	10 YR 4/4, 10 YR 5/6
C Horizon	Orange dirty subsoil	10 YR 4/4, 10 YR 5/6
D Horizon	Mixed loamy sand	10 YR 4/3, 10 YR 5/6

Figure 3.14. Cedar Creek Road Site [7S-C-100] Area A: Plan and Profile Through a Possible Grave.

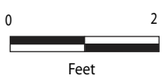






Context List

Context	*Description [Interpretation]*	*Munsell*
1	Silty sand [plowzone]	10 YR 4/3
2	Silty sand subsoil [B horizon]	10 YR 5/6
3	Mottled coarse sand with gravel and lamallae [C horizon]	10 YR 6/3, 10 YR 5/8
322	Loamy sand [shell layer]	10 YR 3/3
323	Cut filled by 322 and 336	---
336	Loamy sand [cellar fill]	10 YR 4/3



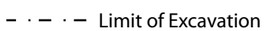
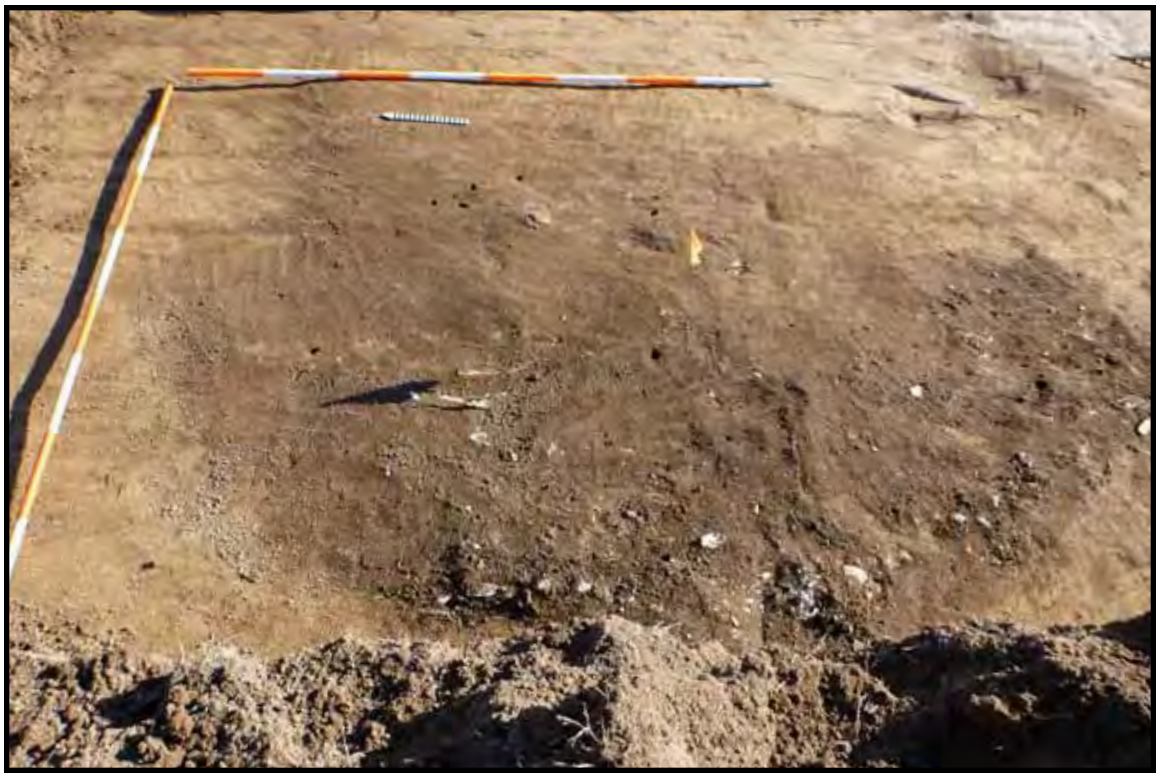
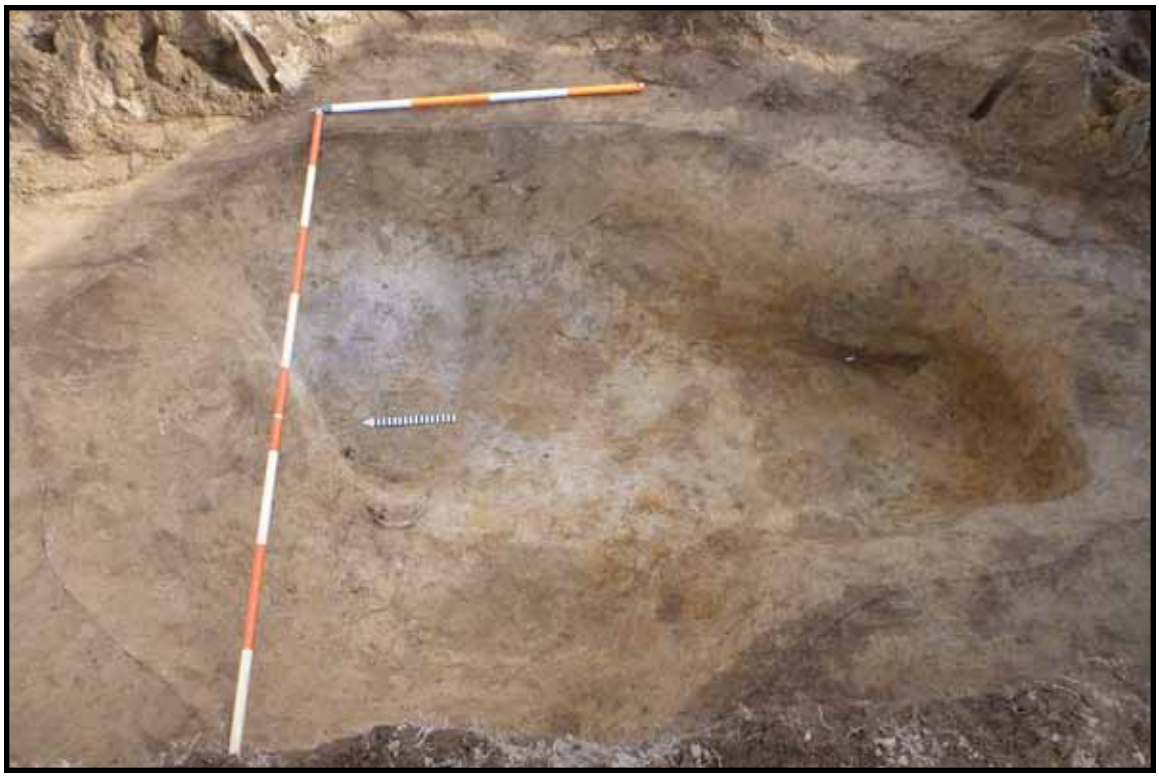


Figure 3.15. Cedar Creek Road Site [7S-C-100] Area A: Plan and Profiles of a Shell-filled Root Cellar, Structure 3.



Photograph 3.14. Cedar Creek Road Site [7S-C-100] Area A: Structure 3 Root Cellar – Shell midden Contexts 322, 323 and 336 following the removal of the plowzone looking east (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D3-423].

Photograph 3.15. Cedar Creek Road Site [7S-C-100] Area A: Cross-sections through the root cellar–shell midden, Contexts 322, 323 and 336 looking south (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D3-487].



Photograph 3.16. Cedar Creek Road Site [7S-C-100] Area A: Root cellar – shell midden fully excavated looking east (1 Photographer: Joelle Browning, December 2011) [HRI Neg.#1062 D3-534].

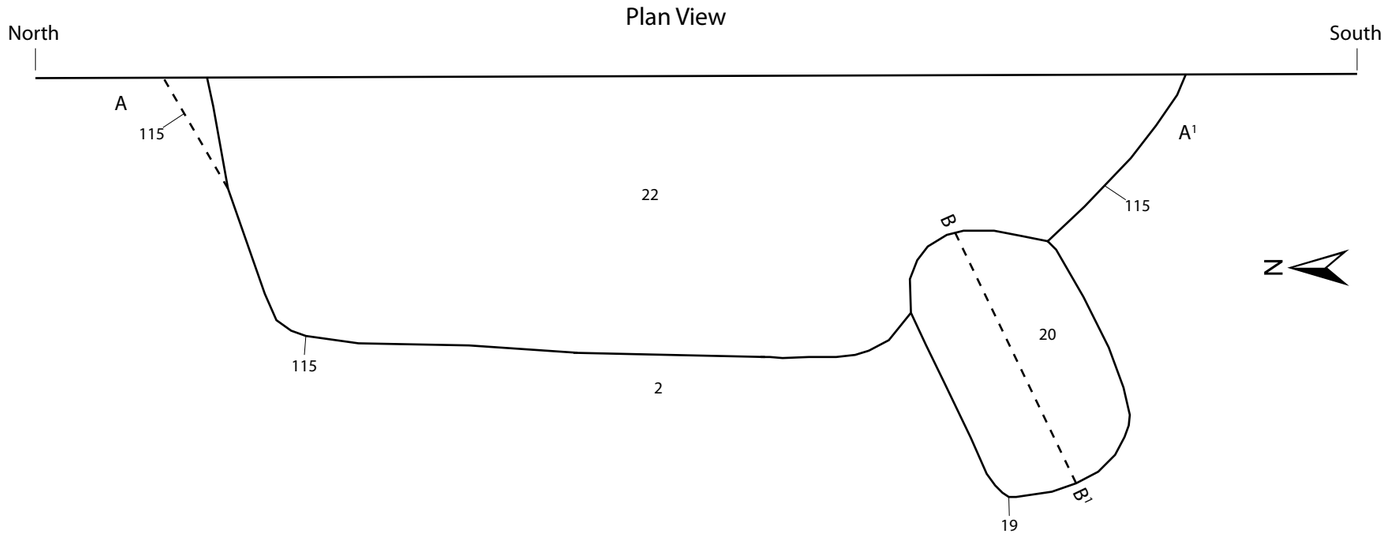
The designation of this feature as Structure 3 has no sequential meaning but was assigned to demonstrate the presence of a third structure.

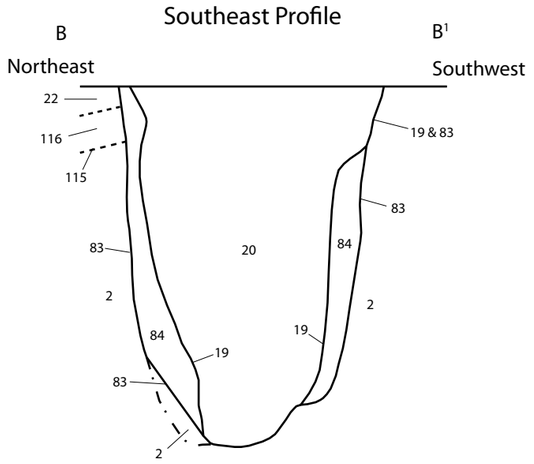
The dimensions of the cellar hole associated with Structure 3 were 13.5 feet north-south by a projected 8 feet east-west. As this feature was encountered near the end of the next to the last day it was cross-sectioned with two trenches. The upper fill [322] was shell deposit in a matrix of loamy sand that also contained a linen smoother, brick daub and ceramics (tin-enameled earthenware, buff-bodied Stafforshire ware, redware, creamware and pearlware). The lower fill [336] of this root cellar was a dark brown loam more consistent with topsoil used to fill the empty root cellar following the demise of the structure. Artifacts from context 336 consist of ceramics (redware, tin-enameled earthenware and white salt-glazed stoneware), a gunflint fragment, a brass furniture tack, wrought nails, brickbats, animal bones and animal teeth. Judging from the lack of creamware, this deposit appears to date to *circa* 1740 to 1760. Cross-mends between the two contexts suggests that non-shell artifacts found in the upper fill came from immediately around the pit.

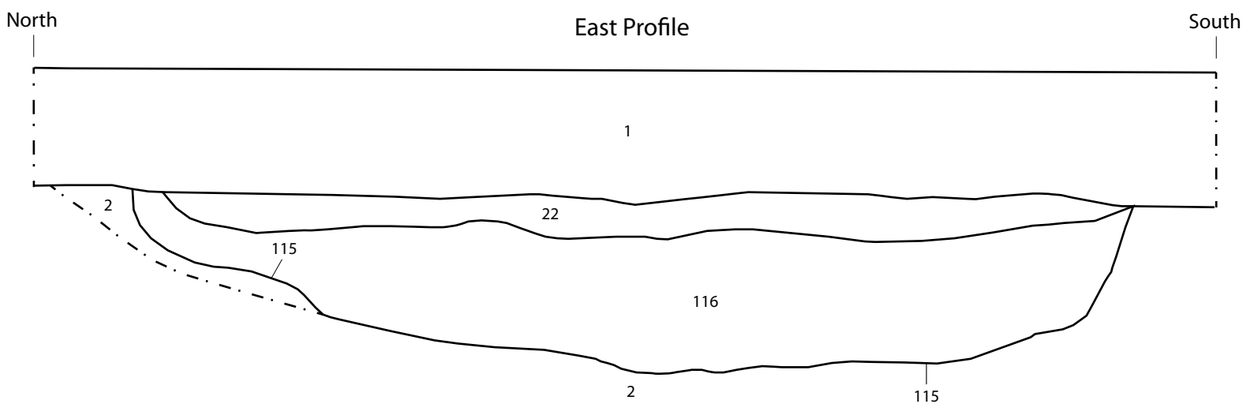
Structure 4

Another shallow pit [21/22 and 116] was identified 15 feet south of the paling fence [89/90] and 23 feet east of the projected limits of Structure 1 (Figure 3.16; Photograph 3.17). Only a small portion of this circular feature [21/22 and 116], which extended down 1.05 feet below the plowzone, was located along the eastern boundary of the LOC. At the edge of the LOC the feature measured 7.5 feet across and it is likely that the majority of this pit feature remains intact to the east. The fill of this pit consisted of yellowish brown loamy sand [116] that was overlain by mottled pale brown and yellowish brown sandy loam [22] mixed with decayed red bricks, charcoal and bits of burnt and un-burnt daub. Artifacts recovered from this feature consist mainly of building materials such as small bits of burnt red brick, burnt/charred daub and window glass. Single pieces of redware and olive green bottle glass were also recovered. As the form of these ceramic and glass vessels cannot be determined, only a broad date range spanning the 18th century can be assigned to this feature. Flotation samples taken from context 116 revealed the presence of white oak, suggesting a possible wooden liner. Flotation also revealed the presence of carbonized Zea mays (maize-corn), which, as stated above, would be expected in the average 18th-century diet (McKnight 2014).

This feature was likely a subfloor pit associated with another domestic structure located immediately east of the LOC. Chemical soil analysis from this feature reveals “a very unique chemical signature, with a significantly elevated level of sulpher (S) and more moderately elevated levels of aluminum (Al), potassium (K), and magnesium (Mg)” that are “potentially associated with ash and architectural material such as mortar and daub” (Wilkins 2014:11). Wilkins further suggests that the lack of significant concentrations of phosphorus, calcium and organic matter suggest the pit was not used for food stores. If this feature was under a dwelling, it was likely a hearth-front pit based on the amount of burnt brick recovered. Similar pits from two structures at the Utopia Quarter site in Virginia containing charcoal and daub were thought to be located at or near the gable ends of the structures; with the charcoal and daub viewed as a reflection of the demolition of the former stick and mud chimney (Samford 2007:61). Eight and 11 feet east of the partially excavated shallow pit feature, Phase II Excavation Units 1 and 2 recovered 181 and 123 artifacts, respectively, dating to first half of the18th century. One hundred and nine of these artifacts were red brickbats further suggesting a domestic structure may have indeed stood at the unexcavated location east of the LOC.







Limit of Excavation

0 2

Feet

Context List

Context	*Description [Interpretation]*	*Munsell*
1	Loamy sand [P2]	10 YR 4/3
2	Silty sand [subsoil]	10 YR 5/6
19	Cut [posthole]	---
20	Loamy sand with carbon [fill]	10 YR 4/3
22	Loamy sand (60%); Loamy sand (20%) decayed brick and mortar, burnt earth (20%) [pit fill]	10 YR 5/4, 10 YR 6/3
83	Cut [posthole]	10 YR 4/4, 10 YR 5/6
84	Mottled loamy sand [Mix of subsoil with traces of A horizon]	10 YR 5/6, 7.5YR 5/6, 10 YR 4
115	Cut of 116 and 22	---
116	Mottled loamy sand	10 YR 5/6, 10 YR 5/4

Figure 3.16. Cedar Creek Road Site [7S-C-100] Area A: Plan and Profiles of a Sub-floor Pit Associated with Structure 4.

Photograph 3.17. Cedar Creek Road Site [7S-C-100] Area A: East wall profile of a probable subfloor pit under Structure 4, Context 21 and 22 with a post hole Contexts 19 and 20 against the southwest rim of the pit looking east (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D1-050].

A total of 13 postholes [3/4, 5-20, 25/26, 29-34, 37/38, 60, 114, and 139/140] were identified in this area but due to the limited exposure of the subsoil within this part of Area A, no real discernible pattern was observed. Attempts at connecting the postholes would be pure speculation. Posthole features in this area suggests the site continues east, west and south outside of the LOC.

Bloomery Pit

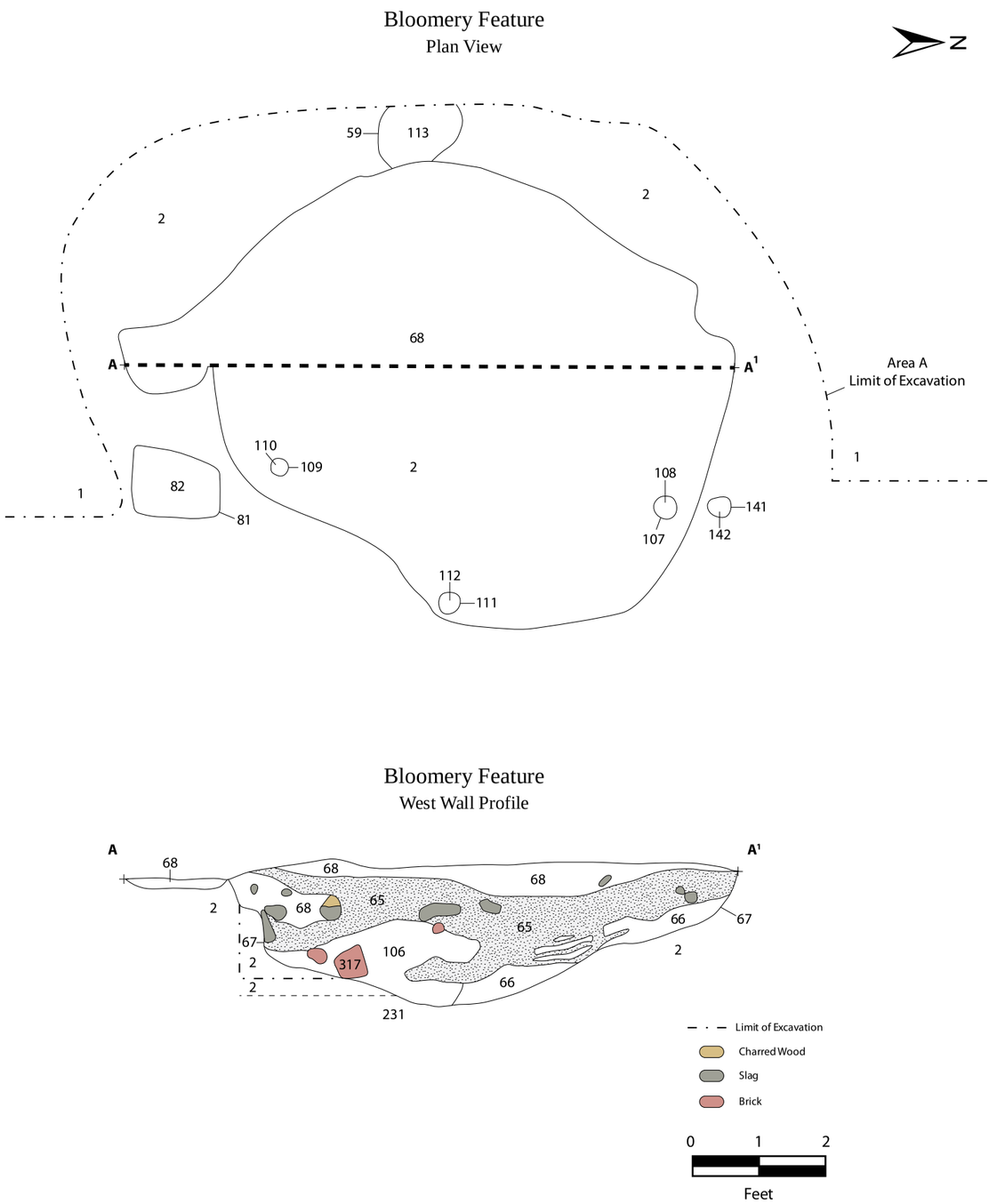
One of the most interesting and likely the most important feature in Area A was a bloomery pit (Figure 3.17; Photographs 3.18, 3.19 and 3.20). The bloomery process is a relatively primitive iron ore smelting process in which the ore is reduced to iron within a solid state. In other words it never achieves high enough temperature to turn the ore completely into a liquid state as is the case in a blast furnace. In a bloomery, iron ore (in this case roasted and crushed bog iron, also known as limonite) is heated using charcoal and forced air from bellows (to achieve high temperatures) until the impurities are semi-molten. These impurities are then removed from the still impure lump of iron, which is then hammered on an anvil until most of the impurities have been forced out, leaving behind small quantities of wrought iron that can then be worked (Ford 1978:4 [1971]).

The bowl-shaped cut [67] of the pit measured 7.3 feet east-west by 8.5 feet north-south and extended 2.2 feet below the top of the B horizon in its center. The fill of the pit consisted of four layers [65, 66, 68 and 106] of charcoal and iron slag with pockets of mottled sand, which were likely introduced into the pit following its last use. The feature was bisected and the eastern half removed using ¼-inch mesh hardware cloth, saving everything that didn't pass through the screen and taking multiple soil samples. The western half was then bisected again, this time sifting soils through 1/8-inch mesh in an attempt to capture as much data as possible from this unique feature. Once the soils were removed a cluster of red brickbats [317] were observed resting on the bottom of the bowl-shaped pit. The brickbats appeared to be the base for a stack/chimney used to introduce the ingredients into a concentrated location in the pit.

Seven, 5-gallon buckets of iron slag were recovered from the pit for further analysis. Typologies for bloomery slag vary and are often confusing and contradictory. In 2003 Mancl expanded a typology developed at the Carp River Forge in Michigan to six types of slag to account for types observed but not discussed in the archaeometallurgical literature (Mancl 2003). An initial look at the slag material from the bloomery pit at site 7S-C-100 reveals many curved fragments that likely indicate their formation at the bottom of the bowl-shaped pit. These fragments are dense and somewhat glassy on the top side and exhibit a rough spongy surface on the bottom side known as "slag prills". Some of these pieces of slag are slightly magnetic. Small flake-like fragments of "slag shells", which look similar to iron scale, were also present (Crew 1995).

Visual inspection of the soils [65, 66, 68 and 106] filling the pit in the field, revealed the presence of crushed and burnt oyster and clam shells mixed in with the slag confirming the use of marine shells for flux, which lowers the melting temperature of the minerals and promotes coagulation of the ore's nonmetallic constituents (Robbins1973:3). Generous soil samples were taken from the bloomery pit and submitted to the University of Delaware for chemical analysis. Results were then submitted to Andrew Wilkins at the University of Tennessee, Knoxville for a more detailed examination of the data. Results from the feature exhibit "elevated concentrations of calcium(Ca), magnesium (Mg), copper (Cu), iron (Fe), organic natter (Om) and an elevated pH level near to neutral acidity" consistent with forge activities (see Appendix A) (Wilkins 2014:9).

Figure 3.17. Cedar Creek Road Site [7S-C-100] Area A: Plan and Profile of Bloomery Pit Showing Layered Activity Throughout the Fill of the Pit.



Context List

Context	*Description [Interpretation]*	*Munsell*
1	Loamy sand [plow zone]	10 YR 4/3
2	Silty sand [subsoil]	10 YR 5/6
65	Charcoal and sand [fill]	10 YR 3/2, 10 YR 5/8
66	Mottled loamy sand [fill]	10 YR 2/1
67	Cut of bloomery feature	--
68	Loamy sand [bloomery fill]	10 YR 4/2, 10 YR 2/1
81	Cut of 82	--
82	Post hole	--
106	Mottled loamy sand [fill]	10 YR 3/2, 10 YR 6/4
107	Cut of 108	--
108	Loamy sand [possible post hole]	10 YR 4/3
109	Cut of 110	--
110	Loamy sand [possible post hole]	10 YR 4/3
111	Cut of 112	--
112	Silty sand [possible post hole]	5 YR 5/6
141	Cut of 142	--
142	Loamy sand [possible post hole]	10 YR 4/3
231	Coarse sand with gravel [C horizon]	10 YR 6/3

Photograph 3.18. Cedar Creek Road Site [7S-C-100] Area A: A bloomery pit Contexts 67/68 following removal of the plowzone looking east (Photographer: Tim Hitchens, December 2011) [HRI Neg.#11062 D1-026].

Photograph 3.19. Cedar Creek Road Site [7S-C-100] Area A: The bloomery pit following removal of the east half of the pit looking south (Photographer: Tim Hitchens, December 2011) [HRI Neg.#11062 D1-178].

Photograph 3.20. Cedar Creek Road Site [7S-C-100] Area A: A bloomery pit following removal of the western half soils showing brick bats and scrap iron at the base of the pit looking west (Photographer: Tim Hitchens, December 2011) [HRI Neg.#11062 D3-391].

Shell Midden (Shell analysis)

Towards the end of the fieldwork a large shell midden was encountered in the northwestern corner of the open area excavation. The excavations were expanded to both the west and north so that the limits of the feature could be defined. The dimensions of this feature at the top of the B horizon were 14 feet north-south by 9 feet east-west. This feature consisted of two overlying contexts [322 and 336]. The upper context [322] consisted almost entirely of shell (mainly oyster with minor amounts of clam, whelk and mussel) weighing approximately 200 pounds. Cultural materials recovered from context 322 consists of ceramics (redware, creamware and a few pieces of pearlware), glass (clear tumbler fragments and olive spirits bottles), pipe stems, a two tyne fork, a brass shoe buckle fragment, brickbats, wrought nails and animal bone (mammal and fish). The shell deposit appears to have been stored in a large root cellar hole dated to *circa* 1760 to 1780. The shell matrix contained topsoil and refuse originating from around the structure. The shells were likely left over flux material from the bloomery, but may have also been used in place of lime in making mortar for the construction of hearths on the site. The makeup of the shell species and the size of many of the shells does not suggest it was the result of a large "clam bake". The lower fill [336] is a dark brown loam more consistent with topsoil used to fill an empty root cellar following the demise of the structure (see above Structure 3). Artifacts from this context consist of ceramics (redware, tin-enameled earthenware and white salt-glazed stoneware), a gunflint fragment, a brass furniture tack, wrought nails, brickbats and animal bones and teeth. Probably the most interesting artifacts recovered from the lower portion of the pit were three pieces of iron slag, which suggest a link to the bloomery pit. This deposit dates to *circa* 1740 to 1760.

The low number of marine shells (639 grams or 1.41 pounds) from the lower context (336) and minimal cross mends between contexts 322 and 336 suggest only slight mixing of these deposits occurred at the interface between the two contexts (see Appendix B).

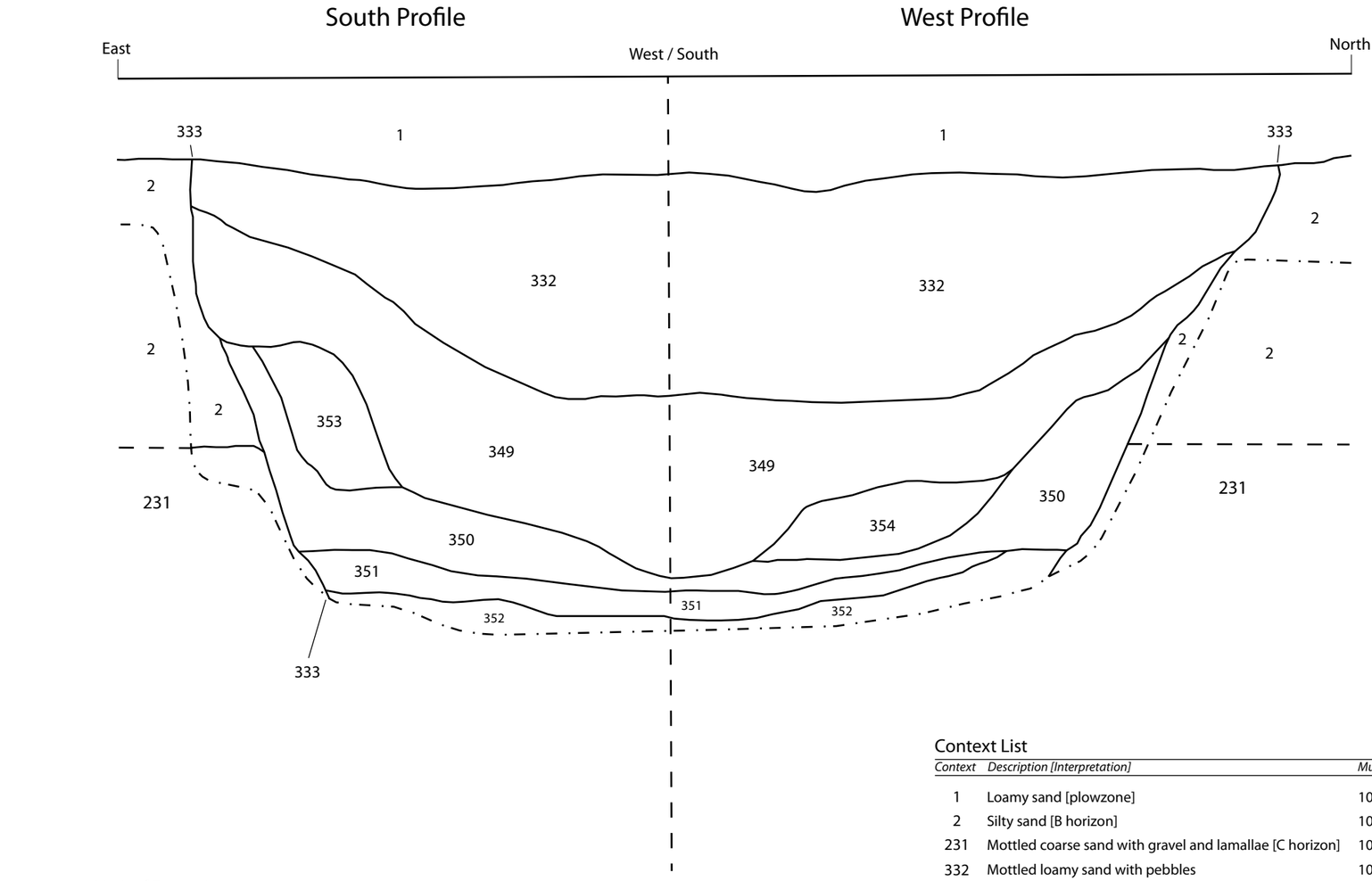
Possible Shaft Feature

A large circular feature was encountered at the end of the fieldwork. This feature was located immediately north of utility pole number "ACE/DP 52968 1223", approximately 11 feet north of the bloomery pit (Figure 3:18; Photograph 3.21). An estimated one quarter of the feature was examined with the remainder left in place as it extended west under the back dirt pile and south close to the utility pole. The southern portion of this feature was undoubtedly impacted by the installation of the pole. The western portion of the pit was also likely impacted to some degree by the construction of State Route 30 and a shallow drainage ditch running along the road. This feature was projected to measure 8 feet across and extended 3.3 feet below the plowzone through the B horizon and into the C horizon. Only the uppermost context [332] contained artifacts including ceramics (redware and clouded Whieldon ware), olive green bottle glass, brickbats (some glazed), wrought nails and two large bloomery slag fragments. The current interpretation is that this represents a possible privy but the fill suggests some other indeterminate function.

Postholes

Excavation of the area between Structures 1, 2 and 4 and the bloomery pit exposed 50 postholes [55-58, 61-64, 69-74, 79-84, 133/134, 137/138, 150-155, 158-161, 164-185, 186-195, 198-207, 233, 235, 248/249, 254-258, 267/268, 283/284, 290-292, 303-305, 309, 310, 313-316, and 328-331] scattered across the area, some likely formed fence lines and enclosures, some

South and West Wall Profiles



Context List

Context	*Description [Interpretation]*	*Munsell*
1	Loamy sand [plowzone]	10 YR 4/3
2	Silty sand [B horizon]	10 YR 5/6
231	Mottled coarse sand with gravel and lamallae [C horizon]	10 YR 6/3, 10YR 5/8
332	Mottled loamy sand with pebbles	10 YR 5/4, 10 YR 5/6
333	Cut for shaft feature; cuts 2; filled by 332, 349, 353, 354, 350, 351, 352 [C horizon]	---
349	Coarse loamy sand	10 YR 6/4
350	Mottled sand with gravel	10 YR 5/6, 10 YR 6/2
351	Fine moist sand	10 YR 6/3
352	Compact mottled clayey sand	10 YR 5/6, 10 YR 7/1
353	Loamy sand	10 YR 5/3
354	Silty greasy sand	10 YR 4/3

Figure 3.18. Cedar Creek Road Site [7S-C-100] Area A: South and West Profiles of Indeterminate Shaft Feature.

Photograph 3.21. Cedar Creek Road Site [7S-C-100] Area A: Quarter-sections through a large indeterminate pit, Contexts 332 and 333 looking west (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D3-526].

suggestive of structures while other appeared random. The occupation of the site over a few generations would normally have created overlapping patterns that may never be fully or correctly understood. Some of the postholes may have been for a shelter for the bloomery and enclosures to store the fuel, flux (shell) and the ore.

West side of State Route 30

Artifacts observed but not collected on the surface of the field located on the West side of State Route 30 beyond the limits of construction exhibit an identical date range (*circa* 1740 to 1780) and the presence of iron slag suggest this area was also part of site 7S-C-100.

2. Possible Mid-18th-Century Quarter or Outbuilding (Area B)

Overview

Phase II investigations recovered a number of artifacts in this area dating to the mid-18th century suggesting there may have been a building in or close by the LOC. No subsurface features associated with the 18th-century materials were observed during the limited Phase II investigations. Trenches excavated for the data recovery also failed to recover historic cultural features beneath the plowzone. However, one large prehistoric pit feature was located and fully excavated (Figure 3.19; Photograph 3.22).

Feature Commentary

A stated above, the only feature observed in this locus during the data recovery was a large prehistoric pit [3] filled by a dark yellowish brown loamy sand [4] (Figure 3.19). This pit measured 8.2 feet long by 4.5 feet wide and extended 2.3 feet below the plowzone. A single quartzite thermally altered rock fragment, and small fragments of mica and charcoal were recovered from the fill of the pit. This pit may have had multiple functions such as heating a structure or cooking as evidenced by the thermally fractured rock and charcoal followed by possible use as a storage pit that was emptied when the occupants moved on, as suggested by the lack of other remains. This pit is similar to the pit [284/285 and 294] encountered in Area A. Pits such as this in Delaware have also been associated with semi-subterranean dwellings known as pit houses.

3. Brick Clamp (Area C)

Overview

Phase II investigations identified a dense concentration of red, pale orange and orange brickbats/brick wasters scattered across the surface (Photograph 3.23). The roughly 125-foot diameter concentration was mapped and sampled. Few other artifact classes were observed. The probable remains of a brick clamp (kiln) were identified in Excavation Unit 47 located approximately 10 feet south of the LOC and extending southward towards the woodlot. None of the brickbats survived in a state where full dimensions were able to be determined. British colonial laws were generated as early as 1683 standardizing the size (9½ by 4½ by 2¾ inches) and method of manufacture of common bricks (Ewan 1938:1-3) and these could have fit within that range. The size of common bricks has changed very little since that time.

Other than brickbats no other artifact classes were observed on the surface within the cluster's perimeter. Non-brick artifacts recovered from the three Phase II test units (Excavation Units 20, 47 and 48) consist of a few small sherds of redware a couple of nail fragments, a clam shell and bits of bone, and were

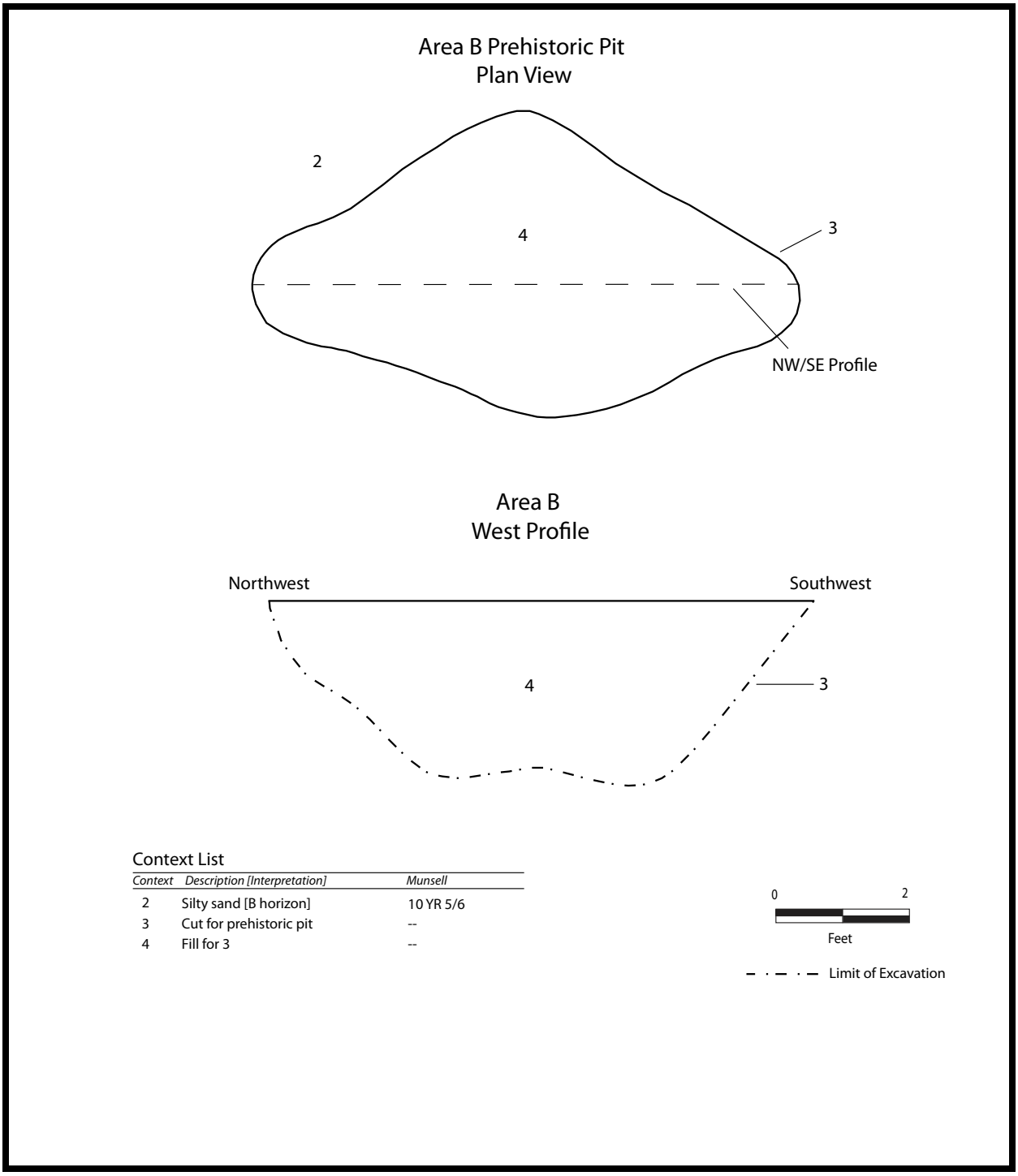


Figure 3.19. Cedar Creek Road Site [7S-C-100] Area B: Plan and Profile of a Prehistoric Pit.

Photograph 3.22. Cedar Creek Road Site [7S-C-100] Area B: View of a large prehistoric pit following excavation looking west (Photographer: Glen Keeton, December 2011) [HRI Neg.#11062/D3:216].

Photograph 3.23. Cedar Creek Road Site [7S-C-100] Area C: General view looking east showing extent of brick scatter associated with brick clamp (Photographer: Joelle Browning, October 2010) [HRI Neg. #10058/D1-077].

Photograph 3.24. Cedar Creek Road Site [7S-C-100] Area C: Excavation Unit 47, plan view looking east showing remnants of Brick Clamp #1, [Contexts 3 and 4]; scales in feet and inches (Photographer: Joelle Browning, October 2010) [HRI Neg. #10058/D1-309].

non-diagnostic and therefore unhelpful in dating the site (Photograph 3.24). The rudimentary nature of the clamp complex suggests it dates to the 18th century. The few artifacts collected may be from a later 19th-century site nearby to the northwest observed during the Phase I Survey (Hunter Research, Inc. 2010).

The original plan to investigate and define the parameters of the clamp area had to be changed in order to stay strictly within the LOC. A single trench placed along the southern boundary of the LOC was excavated in hopes of locating secondary features associated with the clamp, which was located ten feet to the south, outside of the right-of-way. Although expectations were low within the LOC, the excavations revealed a trove of information about the early production of brick in this region. Excavations identified at least one additional clamp and possibly a third clamp, postholes forming a probable wind break or shelter, and an area used to pug (mix) raw clay with B horizon sands to create the proper mixture for making bricks. This data, together with an identification of a borrow pit nearby used to mine clay, provides a fairly complete picture of early brick manufacturing.

Feature Commentary

Mechanical removal of the plowzone [1] revealed an area of scorched earth quickly identified as a heat signature for a brick clamp (Figure 3.6; Photographs 3.25 and 3.26). The color of the scorched area ranged from bright reddish-orange to black and exhibited no signs of being excavated and is thus a burned B horizon. The scorched area [4] measured 12 feet east-west by five feet north-south and extended 1.3 feet below the plowzone into the B horizon. This represented a second clamp (Clamp 2) in the vicinity of the first clamp (Clamp 1). The amorphous shape of the heat signature suggests what O'Neill refers to as a Type B brick clamp with a heat source that burns for a long time with heat penetrating under the entire clamp (O'Neill 2006). The size of this signature suggests it was a small clamp used to fire a small number of bricks, most likely for a one-story chimney or hearth (Barse and Eichinger 1999:3.19).

Immediately south of the heat signature were four roughly aligned postholes [6/7/15, 8/9, 12/13, and 17/18] forming what appears to have been a wind-break for the clamp. Chunks of clay found within and at the top of the postholes suggest they were covered with clay to prevent them from igniting during the firing process. The posts would have anchored a short temporary wall or break, positioned to block the prevailing southern winds, preventing uncontrolled changes in temperature. Such spikes in temperature would cause uneven firing, resulting in a disproportionate number of over-fired bricks. Immediately east of the heat signature was a heavily disturbed area with ill-defined limits consisting of mottled brown and dark yellowish brown silty sand [5]. This area extended 0.4 feet below the top of the B horizon [2] and exhibited an irregular bottom. This area measured roughly 21 feet long (east-west) by at least 12 feet wide (north-south) extending south outside of the LOC. In the center of the disturbance was a large posthole. The likely interpretation of this feature is a post used to tether a beast of burden (typically an ox or mule) used to pug/mix raw clay with sandy topsoil and B horizon sands (temper) to form the mixture necessary to make sturdy bricks (Feister and Sopko 1996:51). This process also eliminates air pockets in the mixture, which causes bricks to fracture or explode in the kiln.

Observed in the south wall of the trench at the top of the B horizon within the pugging area [5] was what appeared to be another separate area of scorched earth [14]. This area was expanded to the extreme south edge of the LOC revealing burned red earth the color of brick with under-fired brickbats lying flat. Probing with a split spoon auger suggests this represents a third clamp (Clamp 3) (Photograph 3.27). The size

Photograph 3.25. Cedar Creek Road Site [7S-C-100] Area C: Brick Clamp #2, showing the heat signature of the clamp and the clay and sand pugging/mixing area immediately to the east looking east (Photographer: Sue Ferenbach, December 2011) [HRI Neg.#11062 D3-175].

Photograph 3.26. Cedar Creek Road Site [7S-C-100] Area C: North profile through Brick Clamp #2, showing the heat signature of the clamp and clay and sand pugging/mixing area looking north (Photographer: Sue Ferenbach, December 2011) [HRI Neg.#11062 D3-145].

Photograph 3.27. Cedar Creek Road Site [7S-C-100] Area C: Edge of Brick Clamp #3, Context 14 showing under-fired brick bats and burnt soil looking south (Photographer: Sue Ferenbach, December 2011) [HRI Neg.#11062 D3-323].

of this clamp was not determined because it extended beyond the LOC but it appears to have been smaller than typical clamps, similar to Clamp 2.

A clay borrow pit situated south outside the LOC in the nearby woodlot near a tributary of the Cedar Creek was first noted in the Phase II report (Hunter Research, Inc. 2010:5-36 to 5-45). This feature was mapped in relationship to the trench in Area C. This borrow pit/quarry is located 76 feet south of Station 631+74. The pit measures approximately 46 feet across and appears to have had about five feet of soil removed leaving a well-defined basin. Examination of the soils inside the basin revealed a rich clay suitable for firing. Examination of the soils immediately outside of the basin revealed a layer of limonite was formerly stratigraphically positioned above the clay. This material may have been one of the sources of bog iron ore used in the bloomery in Area A.

X-Ray Fluorescence Analysis of Bricks and Clay Borrow Pit Samples

Clay and brick samples were collected for XRF elemental analysis using DelDOT's equipment from around the brick clamps in Area C, and from the probable clay borrow pit to compare with samples from features within Area A. X-ray fluorescence (XRF) is the emission of characteristic "secondary" (or fluorescent) X-rays from a material that has been excited by bombarding with high-energy X-rays or gamma rays. X-ray fluorescence is widely used for elemental analysis and chemical analysis, particularly in the investigation of metals, glass, and ceramics in archaeology.

The following study (conducted by David Clarke, DelDOT) was intended to make use of X-ray fluorescence (XRF) analysis to determine if there was a link between the bricks recovered from Areas A and C, and from the clay borrow pit of the Cedar Creek Site. Brick samples were examined from Area A, the probable slave quarters and bloomery (located along Cedar Creek Road), to compare with samples of scorched earth and brick from Area C, a brick clamp complex located 200 yards east of Area A. A sample was also collected from a potential borrow pit for the clay used in the manufacture of the bricks (located 100 feet south of the brick clamps within a wooded area). The XRF analysis is viewed as a supplementary method to test suspicions that all of the bricks at the Cedar Creek Site came from a single on-site source. This analysis is viewed as a pilot study in the use of XRF for DelDOT who now possess the equipment and have the ability to conduct XRF analysis in-house, within the State of Delaware.

XRF analysis was completed on 15 samples from the Cedar Creek Site. All samples of brick and soil were pulverized to provide a more homogenous sample of the internal structure of the parent material. Each sample was run one time with the portable XRF equipment for 120 seconds. The portable XRF equipment utilized was a Tracer III-SD in a laboratory setting with the following parameters. The high voltage kV value was 35, Annode Current uA was 10, a yellow filter was used and no vacuum pump was attached. A vacuum pump is used to look at lighter elements on the periodic table and since the samples were either soil or brick, no vacuum pump was employed. Thus the settings were designed to excite elements ranging from bismuth (Bi) to titanium (Ti), with little sensitivity to elements below calcium (Ca) on the periodic table of elements. Table 3.3 lists the sample location, context, type of sample, the associated feature, and the archaeological phase of investigation from which each sample was obtained. Sample 7 was clay collected from the potential borrow pit. Samples 2, 3, 4 and 15 consist of scorched earth in the immediate vicinity of the clamps, and the remaining samples were brick fragments. Samples 8 and 10 were taken from the "glaze" on the exterior of two brick fragments.

Table 3.3. Samples Used in XRF Analysis.

Sample	Area	Context	Sample Type	Feature	Investigative Phase
1	Area C	CX 4	Brick	Brick Clamp	Data Recovery
2	Area C	CX 14	Scorched Earth	Brick Clamp	Data Recovery
3	Area C	CX 8	Scorched Earth	Brick Clamp	Data Recovery
4	Area C	CX 6	Scorched Earth	Brick Clamp	Data Recovery
5	Area A	EU 47, CX 3	Brick	Brick Clamp	Phase II Investigations
6	Area C	Surface	Brick	Brick Clamp	Data Recovery
7	Area C	General Provenience	Clay	Borrow Pit	Data Recovery
8	Area A	Cx 65	"glazed" Brick	Bloomery Pit	Data Recovery
9	Area A	CX 65	Brick	Bloomery Pit	Data Recovery
10	Area A	CX 68	"glazed" Brick	Bloomery Pit	Data Recovery
11	Area A	CX 68	Brick	Bloomery Pit	Data Recovery
12	Area A	CX 317	Brick	Bloomery Pit	Data Recovery
13	Area A	CX 106	Brick	Bloomery Pit	Data Recovery
14	Area A	EU 47, CX 3	Brick	Root Cellar	Phase II Investigations
15	Area C	CX 4	Scorched Earth	Brick Clamp	Data Recovery

Table 3.4 is an example of a data table measuring the relative amount of each element present in the XRF analysis. Figure 3.20 is a graph of the spectrum of elements generated from this data, in this case from Sample 1. Each element present in the XRF analysis is depicted via a numerical value or count on the table.

During the 120-second scan time, the equipment recorded the number of times each element was encountered by the XRF. These counts are referred to as Chan-Counts Values. The four highlighted elements are those which stand out: iron (Fe) comprises 39% of the Sample 1 Chan-Counts, zirconium (Zr) is approximately 19%, while rhodium (Rh) is 11%, and palladium (Pd) is 10%. The raw data is expressed by the graph in Figure 3.20. The large quantity of iron (Fe) present in the sample is not surprising since the sample of fired brick from the clamp was formed from nearby iron–rich sandy clay loam soils.

Data tables and spectrum images were derived from the XRF analysis of the 15 samples. Each sample spectrum was then run through a Bayesian process to account for potential elemental error of the sum and escape peaks. Next, the spectrum images from all 15 samples were overlain and examined for differences. This data was then examined to determine the quantity of difference, thus producing reliable statistical data for the assemblage as a whole. Figure 3.21 depicts all 15 sample spectra overlaid on top of one another after having gone through the Bayesian process to account for elemental error.

Each of the 15 samples is represented by its own line in Figure 3.21. Using this image, certain elements can be examined closely to tease out subtle similarities and differences between the samples. Sample 7 (black line), which is the potential clay source for the bricks, exhibits higher levels of the heavier elements from strontium (Sr) to palladium (Pd) in the periodic table. This is consistent with the interpretation that the soil from the potential clay source has not been thermally/chemically altered by fire versus the remaining samples which were exposed to the intense heat of a brick clamp.

By examining the different elemental peaks using a higher resolution, minute similarities or differences between the samples can be determined. Three elements were examined, silicon (Si) (Figure 3.22), iron (Fe) (Figure 3.23), and nickel (Ni) (Figure 3.24). Each one of these three elemental peaks exhibit similar trends in terms of the quantity of "counts" within the elemental spectra data.

The y-axis provides a sense of scale in three graphs (Figures 3.22-3.24), which are shown at different scales. When this data is depicted using similar scales as in Figure 3.21 (which depicts all 15 samples over the entire spectrum) no differences are visible between the individual elemental peaks. When the y-axis scale is increased for silicon, iron, and nickel, consistently similar peak quantities were observed. Although not represented here, the sum of Chan-Counts for each element relative to the whole for the peaks can be mathematically calculated for each of the elements shown below. An observation that stands out is that all of the samples were consistently comprised of approximately 39% iron (Fe), which is not surprising due to the fact that all but one of the samples were presumably iron-rich locally fired clay soil or bricks.
In Figures 3.25 and 3.26, Sample 8 (orange line) and Sample 10 (blue line) were taken from the thick "glazed" exterior portions of two bricks. Glazing occurs on the end of brick as a result of placement in the clamp and exposure to intense heat along the flues, which essentially melts the silica sand grains and minerals creating a glaze-like surface. When looking at the elements potassium (K), copper (Cu), and zinc (Zn), there is a distinct observable difference between these elements and the rest of the samples. This reflects the chemical changes that took place within the clamp along the flue channels where the hottest temperatures alter and fuse the elements of the

Table 3.4. Elemental Readings on Sample 1 (Area C, CX 4, Brick Clamp, Data Recovery).

Elements	Energy 1	Energy 2	Chan-Start	Chan-End	Chan-Counts	ROI
K Ka1	3.2286	3.3990	161.1855	169.6935	1922.34	0.0107378
TiKa1	4.4190	4.6027	220.6147	229.7873	3692.68	0.0206267
FeKa1	6.3023	6.5053	314.6404	324.7754	70251.37	0.3924127
CuKa1	7.9386	8.1570	396.3296	407.2317	1012.86	0.0056576
ZnKa1	8.5270	8.7507	425.7075	436.8725	1143.50	0.0063874
AsKa1	10.4238	10.6636	520.4024	532.3756	1493.50	0.0083424
RbKa1	13.2642	13.5264	662.2075	675.2975	8899.61	0.0497117
SrKa1	14.0310	14.2990	700.4915	713.867	9375.50	0.0523700
Y Ka1	14.8216	15.0952	739.9575	753.6211	9247.92	0.0516573
ZrKa1	15.6354	15.9148	780.5857	794.5395	34393.47	0.1921163
RhKa1	20.0615	20.3707	1001.5583	1016.9954	20560.04	0.1148450
PdKa1	21.0195	21.3347	1049.3844	1065.1241	17031.38	0.0951345
CMPT	1.1300	1.8600	56.4146	92.8594	52.21	

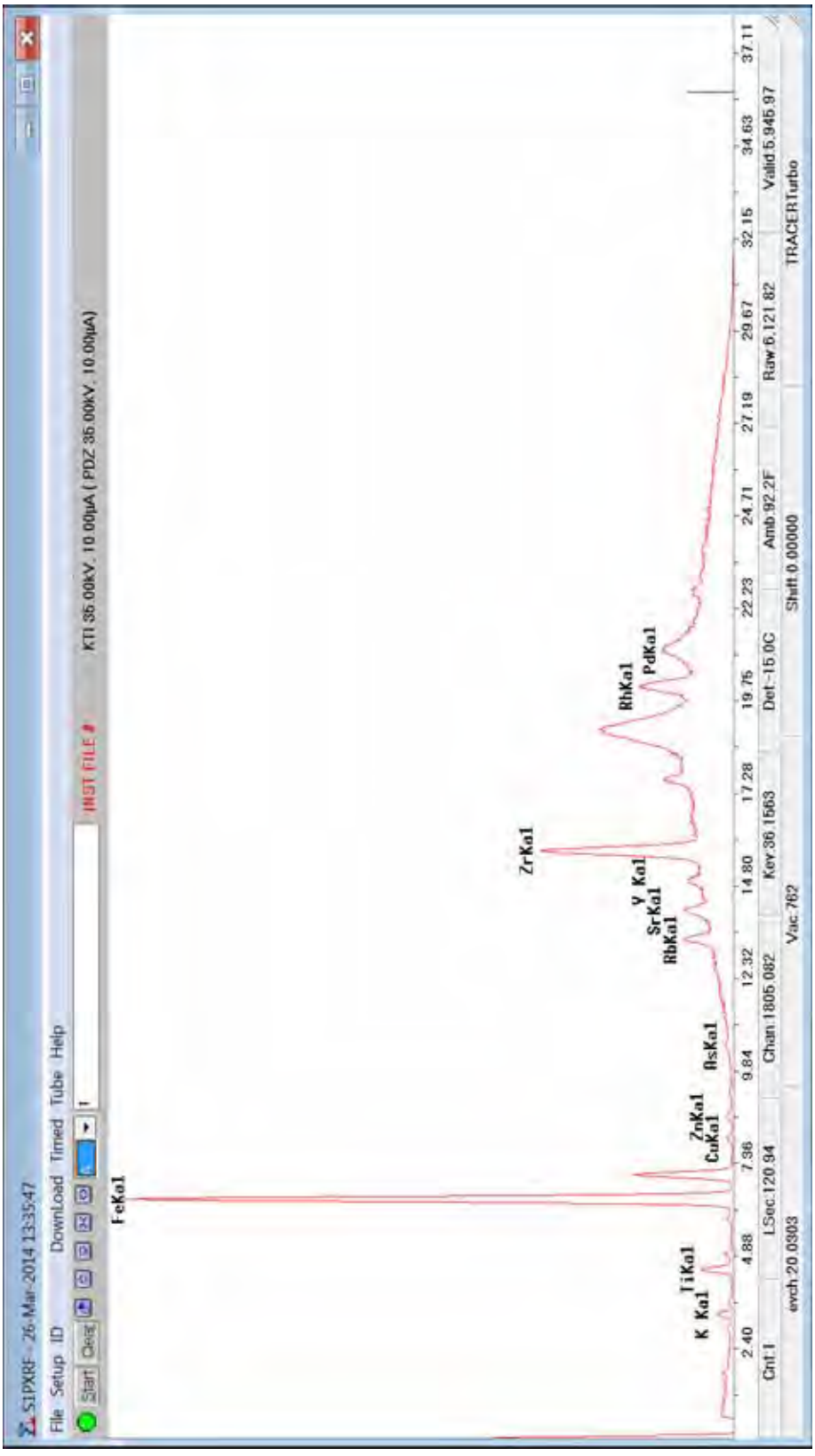


Figure 3.20. Spectrum Image of Elements Present in Sample 1 (see also Table 3.4).

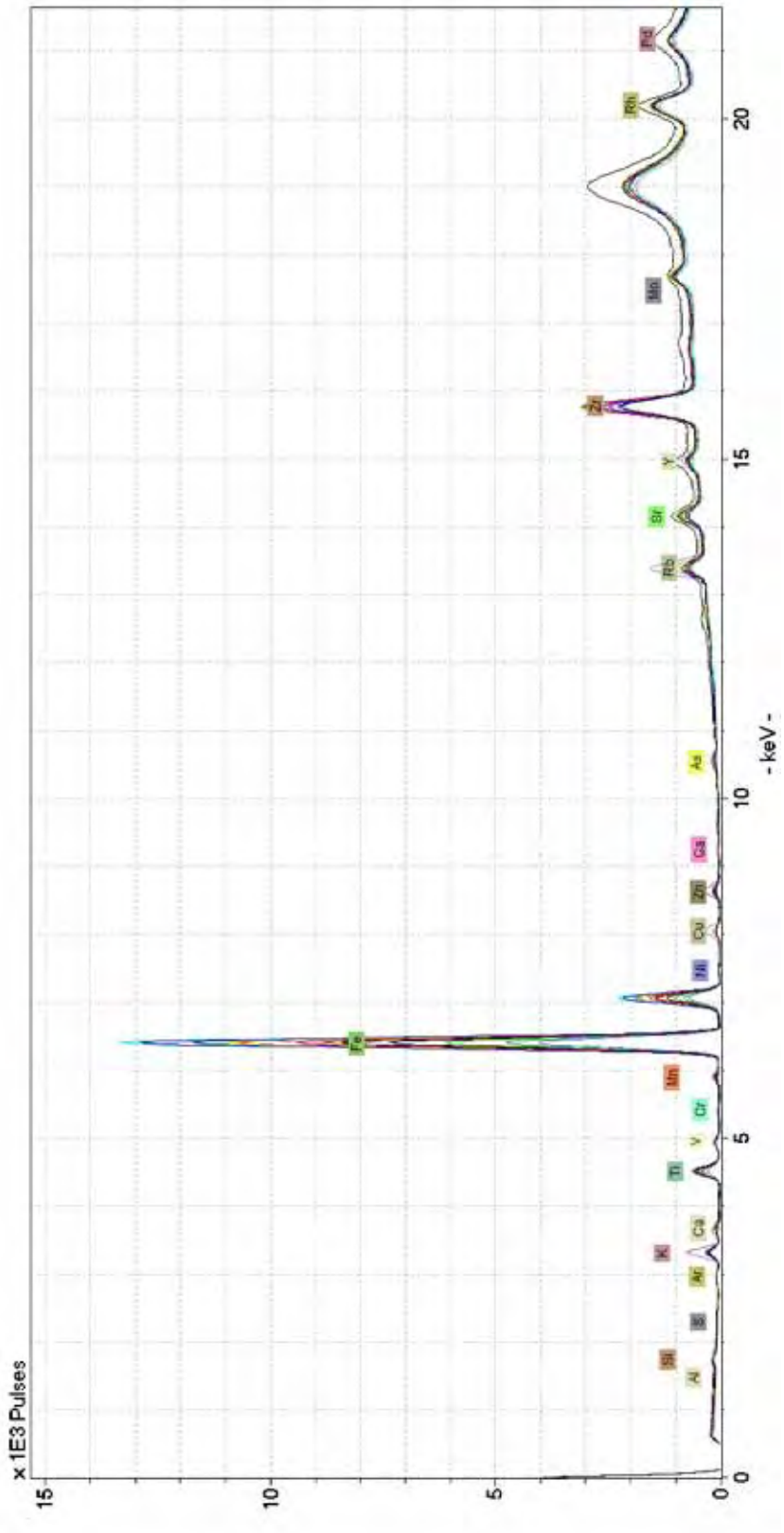


Figure 3.21. Elemental Peaks for All 15 Samples.

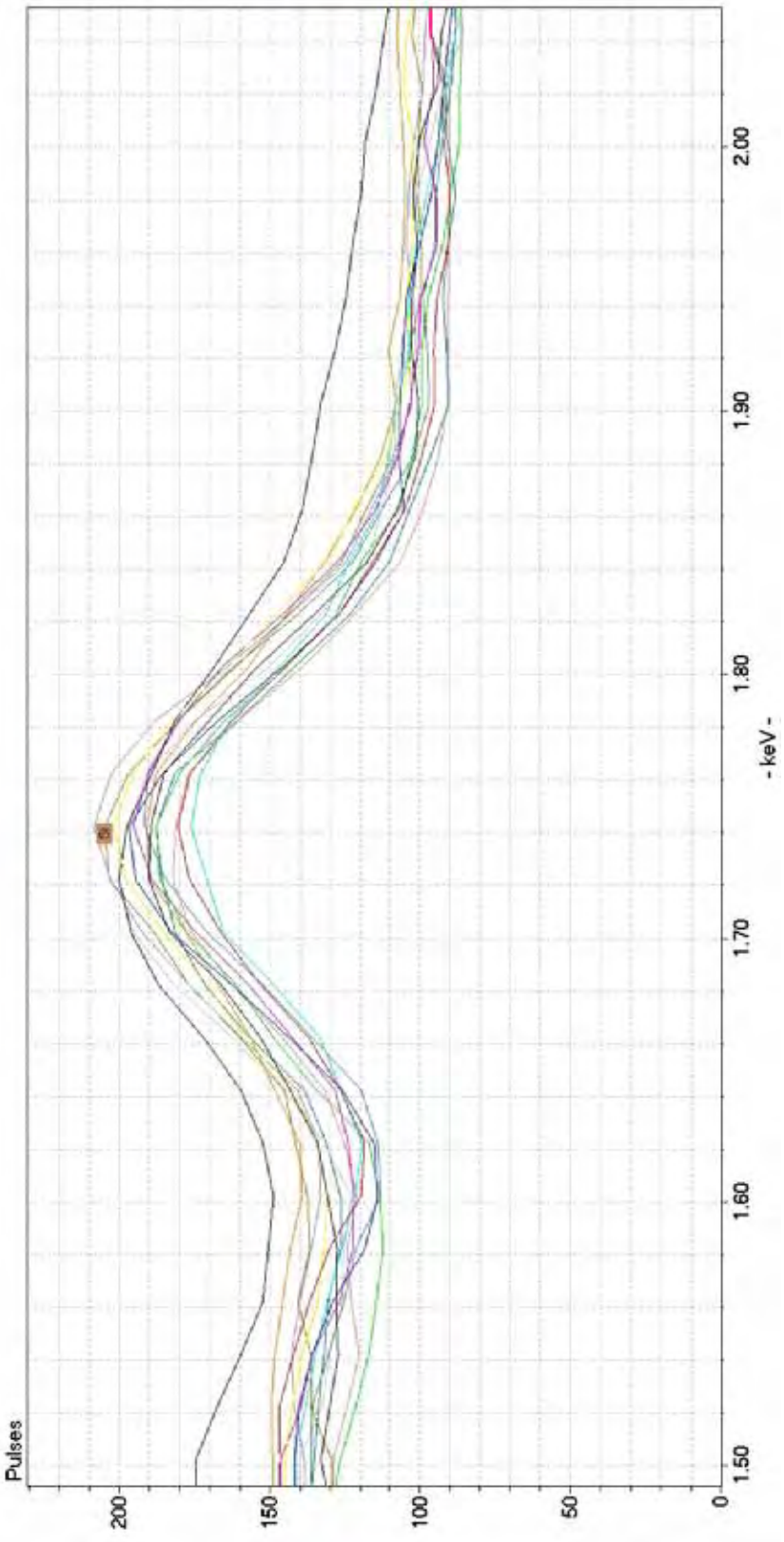


Figure 3.22. Elemental Peaks for Silicon (Si) in the 15 Samples.

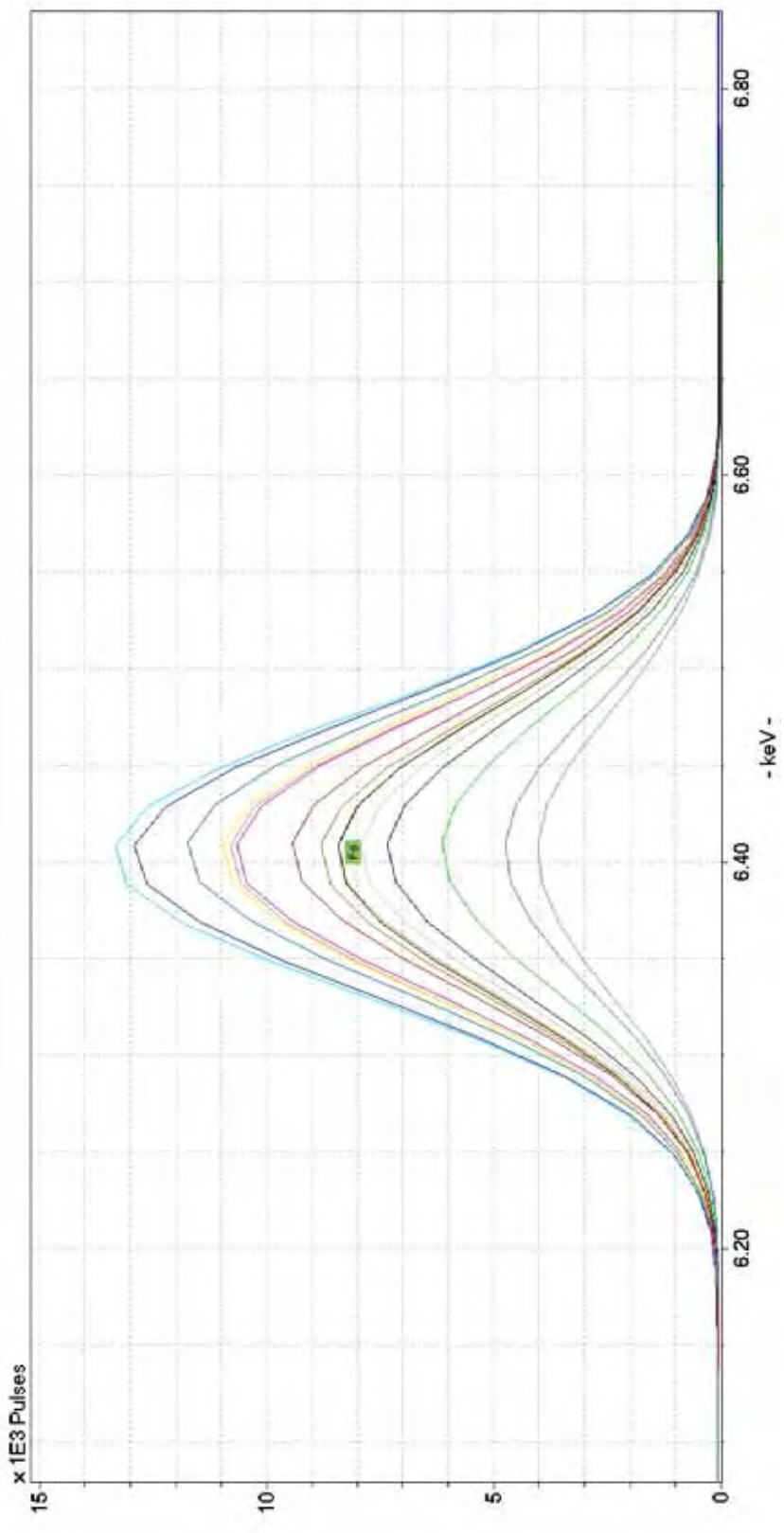


Figure 3.23. Elemental Peaks for Iron (Fe) in the 15 Samples.

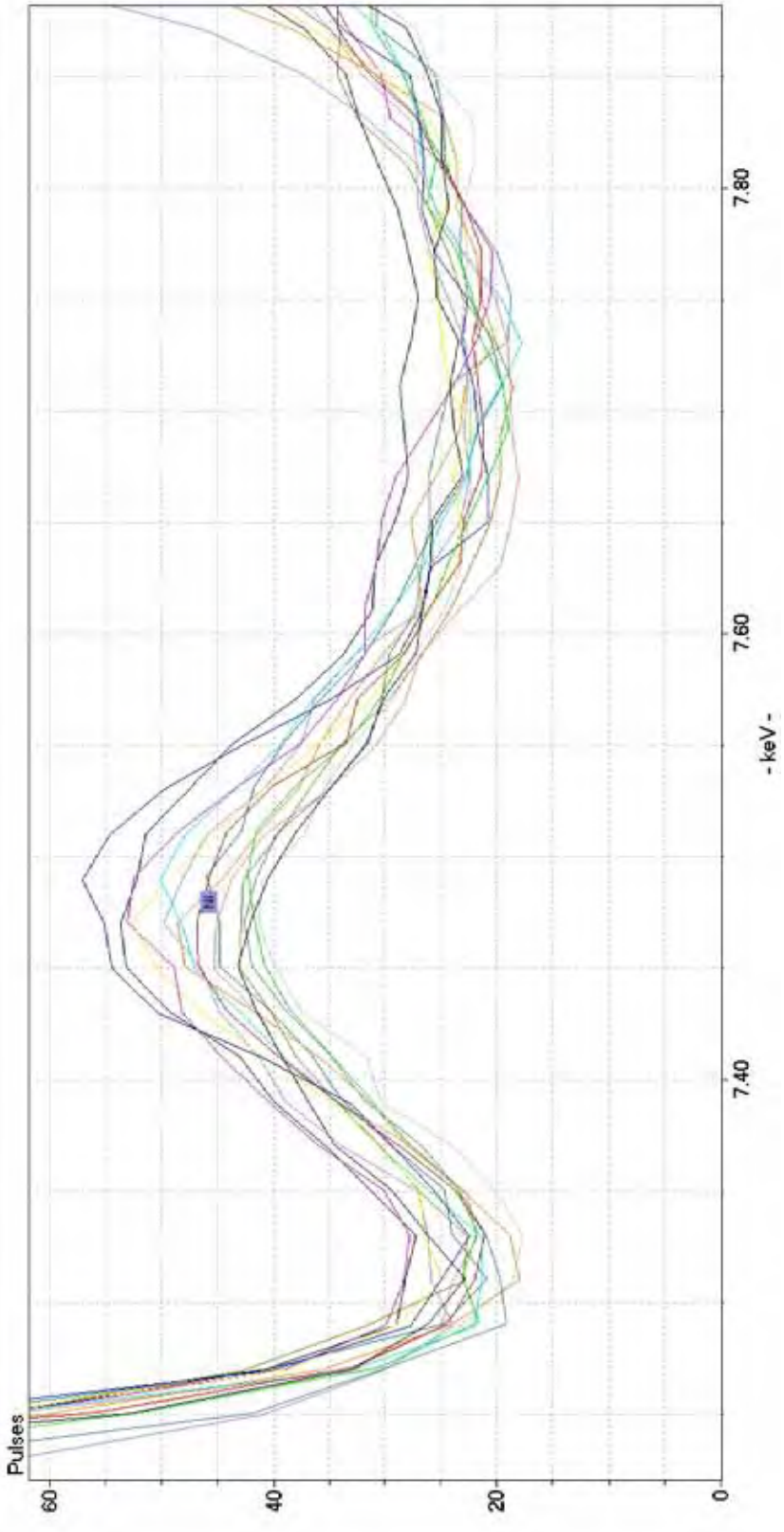


Figure 3.24. Elemental Peaks for Nickel (Ni) in the 15 Samples.

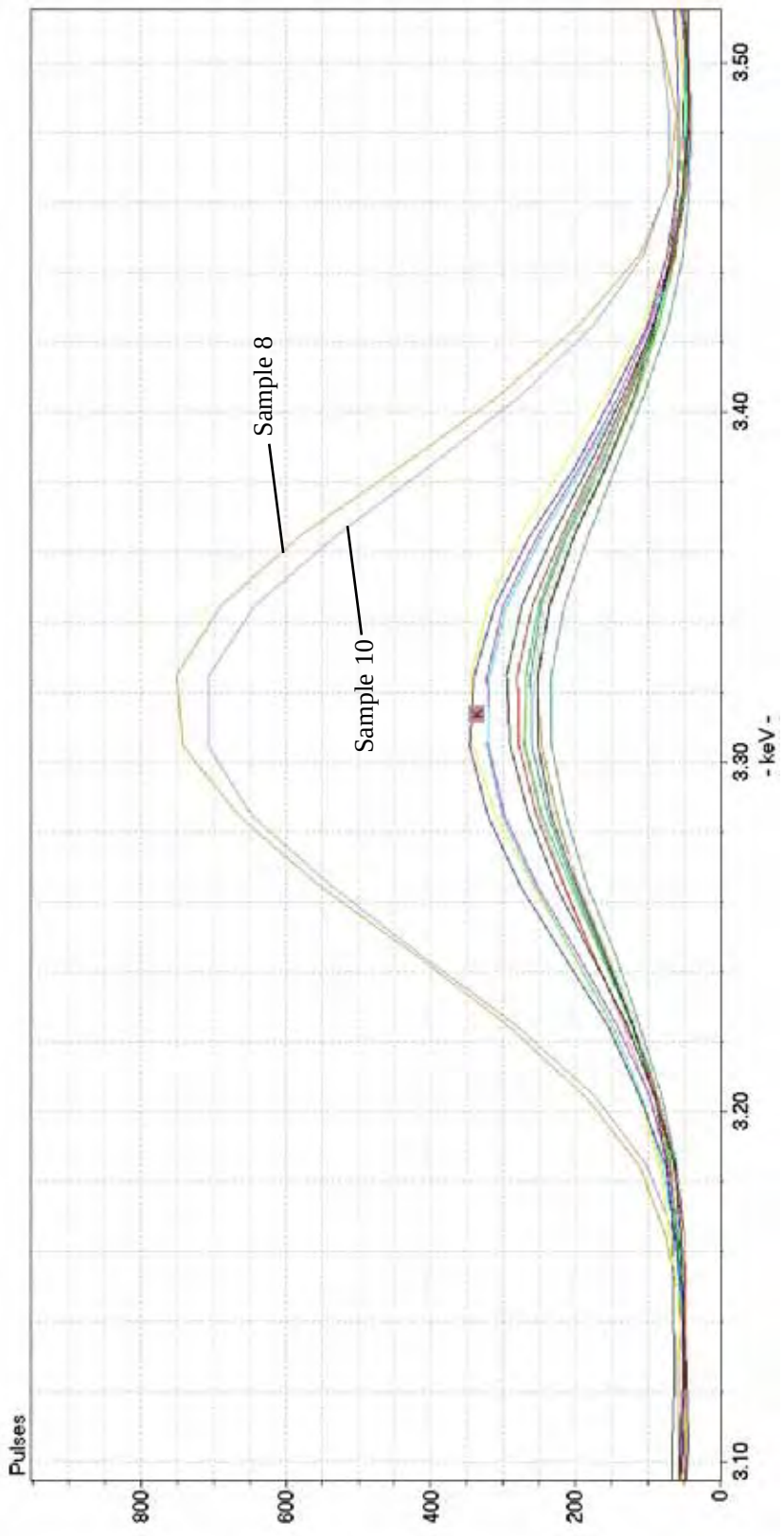


Figure 3.25. Elemental Peaks for Potassium (K), Showing Higher Readings from Brick "Glaze" in Samples 8 and 10.

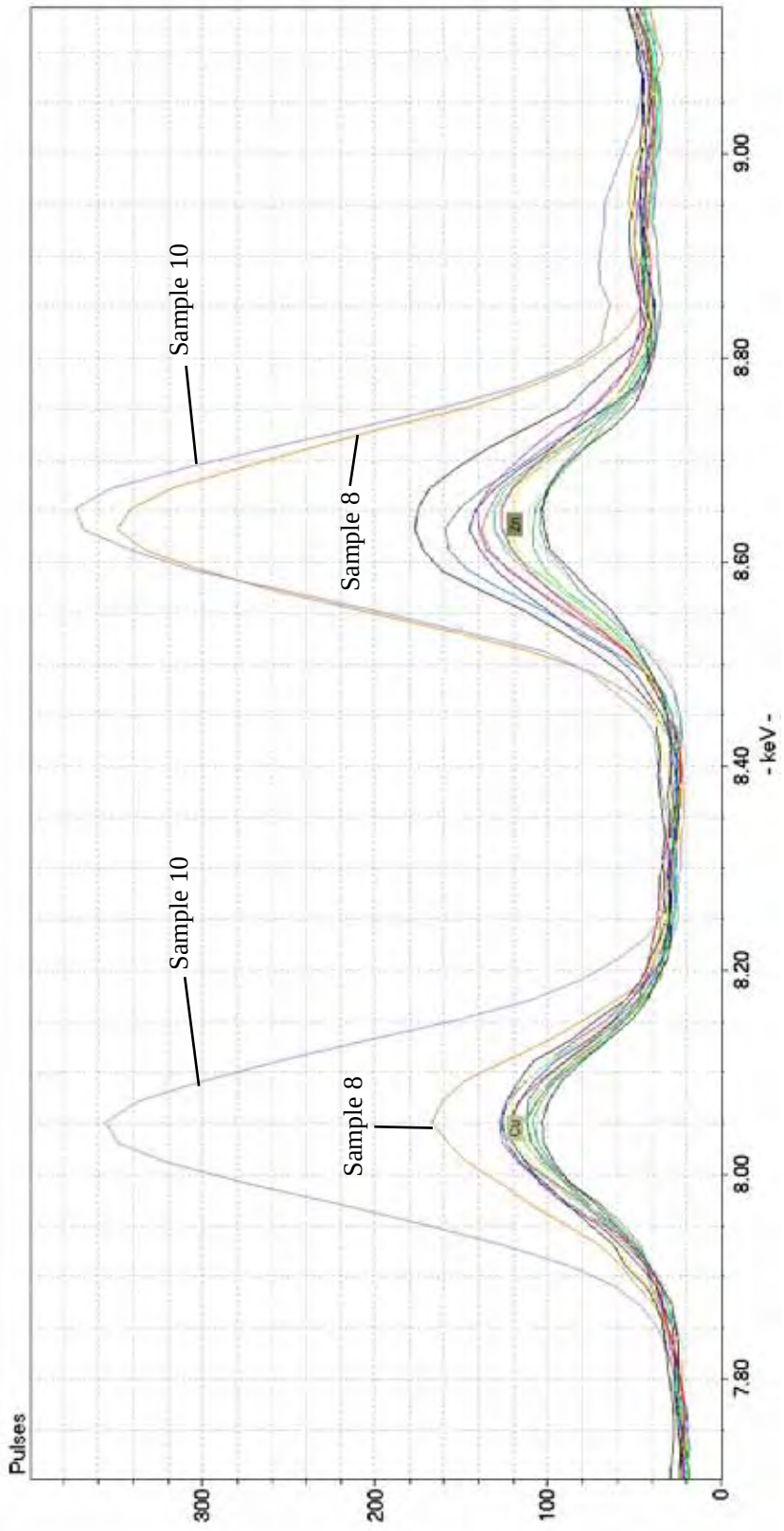


Figure 3.26. Elemental Peaks for Copper (Cu) and Zinc (Zn), Showing Higher Readings from Brick "Glaze."

exposed end and sides of the bricks together. This is a new method, demonstrating a quantitative difference at the elemental level, and can aid in determining which temperatures were achieved within the clamp in order for these changes to have occurred.

Figures 3.27 and 3.28 depict the differences in elemental peaks in Sample 7, the probable clay source (black line) versus the other 14 samples. The graphs represent the elemental peaks for arsenic (As) (Figure 3.27), Rhodium (Rh) (Figure 3.28), and Palladium (Pd) (Figure 3.28), which show a definite difference between Sample 7 and the other 14 samples. These differences indicate that Sample 7 from the clay source had not been mixed with the other ingredients, such as sand and organic matter, and had not been fired into finished bricks or scorched by the heat of the clamp, thus these elemental peaks have not been chemically altered.

In conclusion, the intent of this pilot study program was to initiate the use of X-ray fluorescence (XRF) on archaeological materials, now that the State of Delaware has the in-house capabilities to effectively implement this form of analysis. Future DelDOT archaeological projects should be encouraged to make use of this valuable resource. Future studies should also include a standard for comparison and delve deeper into the mathematical calculations to support their findings. Although this study did not include a known brick from off-site for comparison, the results remain striking. The preliminary results on the Cedar Creek brick and clay samples are exciting and demonstrate the potential value of XRF analysis and the implications for its future use on archeological sites in Delaware. The brick samples are statistically closely similar, sustaining the hypothesis that the bricks sampled in Area A were produced at the clamp in Area C. The borrow pit is a probable source for the clay.

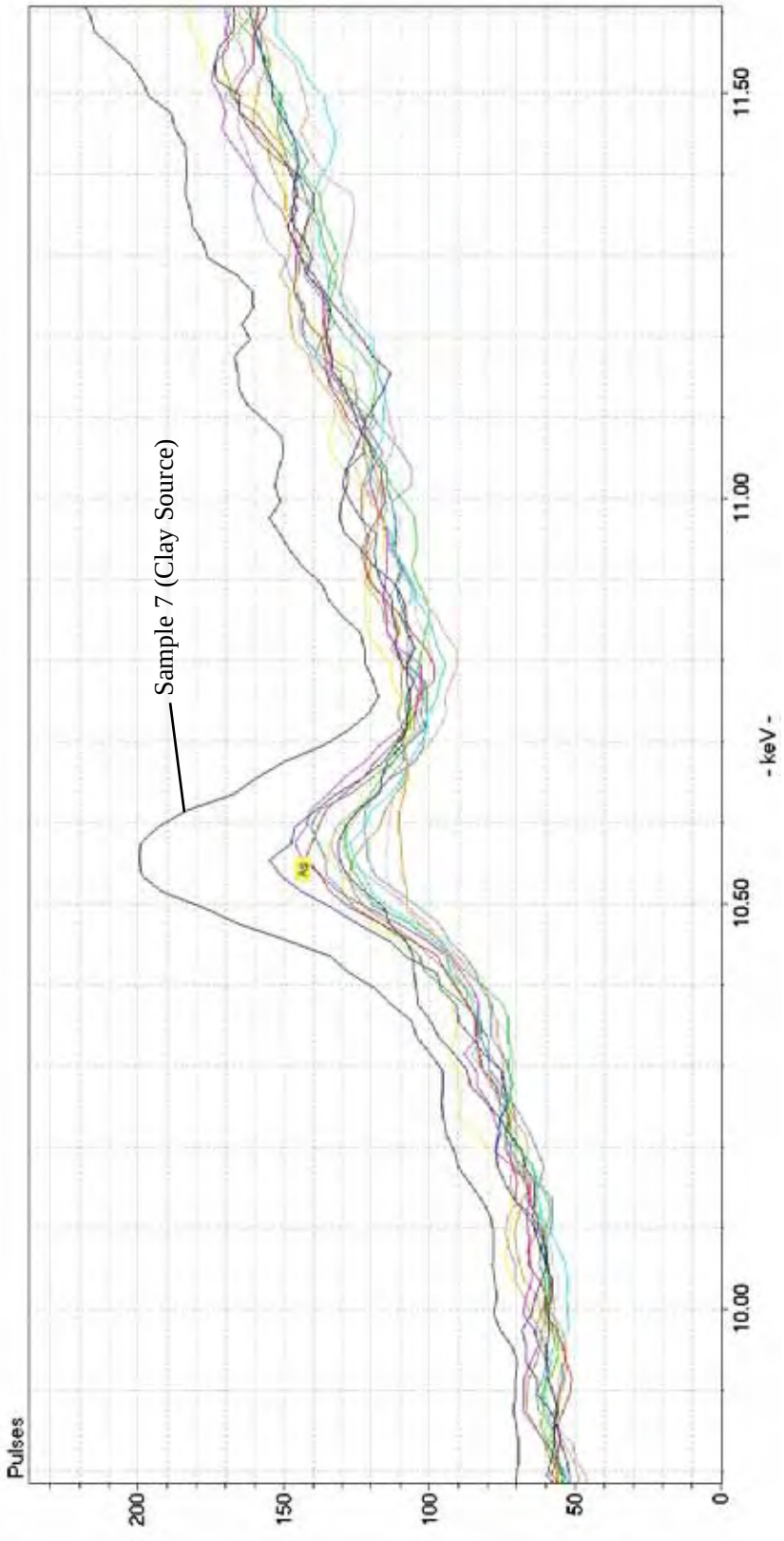


Figure 3.27. Elemental Peaks for Arsenic (As), Showing Higher Reading in Sample 7, the Probably Clay Source.

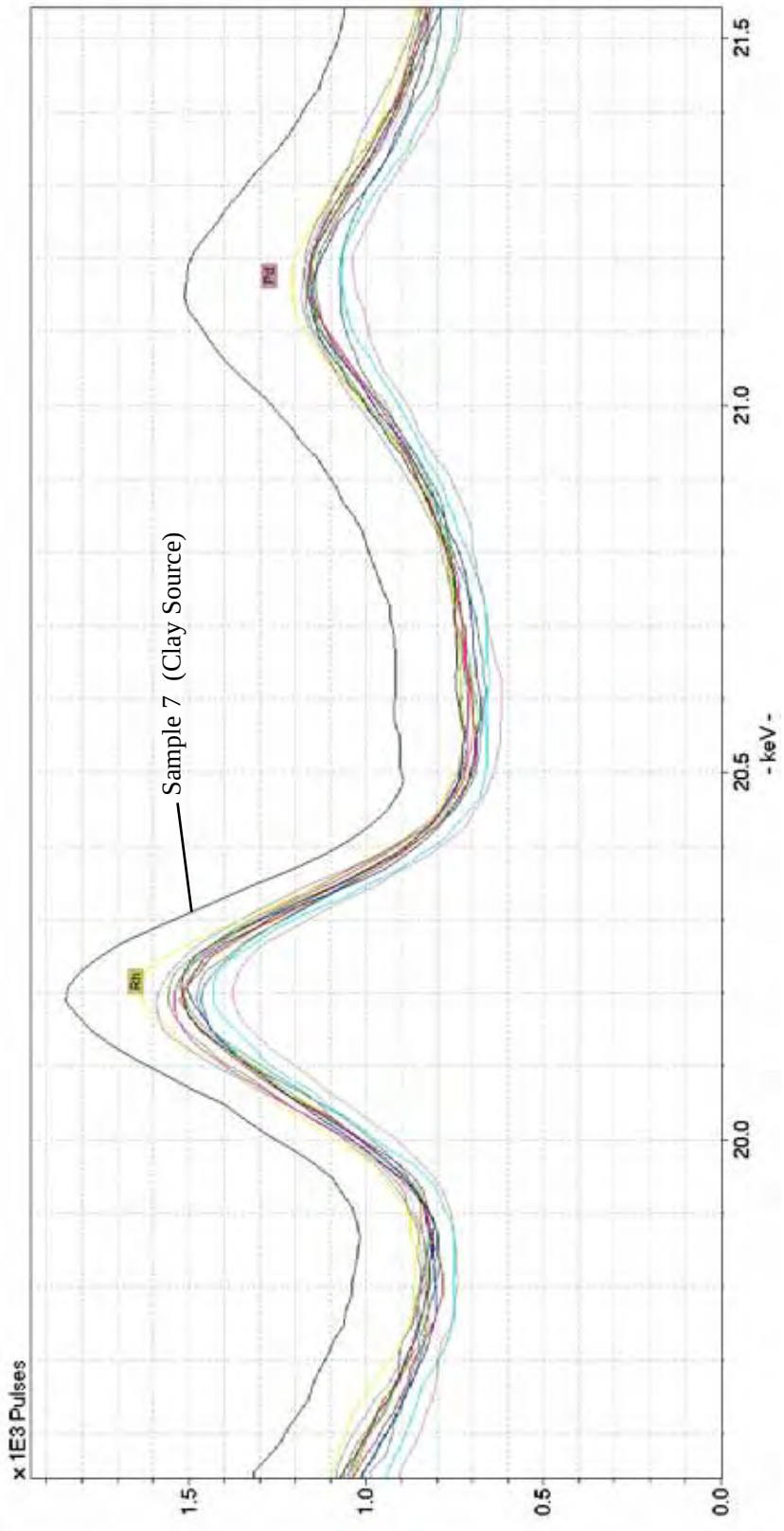


Figure 3.28. Elemental Peaks for Rhodium (Rh) and Palladium (Pd), Showing Higher Readings in Sample 7, the Probable Clay Source.

Chapter 4

ARTIFACT ANALYSIS

A total of 10,355 artifacts were recovered during the archaeological data recovery at the Cedar Creek site in all three areas (A, B and C) with the majority of artifacts recovered from Area A. A total of 3,817 artifacts were recovered from the Phase II archaeological survey of the same areas making the total number of artifacts from the site 14,172.

A. MID-18TH-CENTURY HOUSE AND FARMSTEAD SITE (AREA A)

1. Phase II Artifacts

A total of 3,339 historic artifacts were recovered from Area A during the Phase II archaeological survey of the site. These materials presented the initial impression of a rural, predominantly mid-18th-century domestic occupation. For example, a sherd from an English-made brown stoneware tankard, typical of the mid-18th century, was found in the plowzone in Excavation Unit 6. Other distinctive and diagnostic items dating to this period were recovered from this uppermost soil stratum and a series of partially excavated features. These artifacts are summarized at the end of Table 4.1.

2. Phase III Archaeological Data Recovery Artifacts

A total of 9,636 historic artifacts and 14 prehistoric artifacts were recovered from Area A during the Phase III archaeological data recovery fieldwork. Of the total of 9,636 historic artifacts 647, or 7%, of the historic artifacts were collected from the stockpiled plowzone that was stripped from the area of investigation using a backhoe. This material was broadly cataloged under Context 1, which is considered a general provenience for the area (Table 4.2). Another 993 small artifacts were recovered from the flotation (light and heavy fraction) of features conducted as part of the laboratory analysis.

The majority of the historic artifacts derived from two features, a bloomery pit (2,632 artifacts) and a shell deposit (5,718 artifacts). Excluding these two features from the total count along with the artifacts recovered from the general provenience leaves only 637 artifacts recovered during the archaeological data recovery investigations from the remaining subsurface features. Seventy five percent of the artifacts were recovered from the plowzone, leaving 846 artifacts from subsurface features within Area A. Between the Phase II and III investigations (minus the bloomery and shell midden) a total of 1,483 historic artifacts were recovered from subsurface features in Area A. The relatively low number of artifacts may hint at the limited economic means of those who occupied the site.

When considering all contexts, including the plowzone, from Area A, it is helpful to know the proportions of the different artifact classes. Faunal remains are represented by 5,360 artifacts or 41% of the assemblage (largely from the shell deposit), followed by building materials represented by 4,621 artifacts (35.6%), ceramics with 1,615 sherds (12.4%), manufacturing-related items with 624 artifacts (4.8%), vessel glass with 367 fragments (2.8%) and tobacco pipes with 205 fragments (1.6%) (Table 4.1). Other classes of artifacts such as agriculture, clothing related, floral, furnishings, kitchen, personal items, and tools/hardware are each represented by less than one percent.

Table 4.1. Cedar Creek Road Site [7S-C-100] Area A: Phase II Survey and Data Recovery Investigations Artifact Totals by Context.

CONTEXT	CURRENT/ PHASE III TOTALS	PHASE II TOTALS	OVERALL TOTALS
AGRICULTURE/EQUESTRIAN	**9**		**9**
ARMS AND ARMOR	**5**		**5**
BUILDING MATERIALS	**3204**	**1417**	**4621**
CERAMIC VESSEL SHERDS	785	824	1609
COARSE EARTHENWARE	507	629	1136
EARTHENWARE	124	145	269
PORCELAIN	5	5	10
REFINED EARTHENWARE	106	15	121
STONEWARE	43	30	73
INDETERMINATE	**3**	**3**	**6**
CLOTHING RELATED	**11**	**7**	**18**
FAUNA	**4632**	**727**	**5359**
FLORA	**45**	**15**	**60**
FURNISHINGS	**5**	**3**	**8**
GLASS VESSEL FRAGMENTS	**214**	**153**	**367**
KITCHEN	**3**		**3**
MANUFACTURING	**591**	**33**	**624**
PERSONAL ITEMS	**6**	**4**	**10**
RECREATION/ACTIVITIES	**84**	**122**	**206**
TOOLS/HARDWARE	**18**	**3**	**21**
UNIDENTIFIED	**21**	**24**	**45**
GRAND TOTAL	**9636**	**3338**	**12974**

Table 4.2. Cedar Creek Road Site [7S-C-100] Area A: Data Recovery Artifact Totals From Context 1/General Provenience.

ARTIFACT CLASS	QUANTITY
ARMS AND ARMOR	**3**
GUNFLINT	3
BUILDING MATERIALS	**93**
NAIL	60
WINDOW GLASS	33
CERAMIC VESSEL SHERDS	**403**
COARSE EARTHENWARE	**301**
RED-BODIED SLIPWARE	14
REDWARE	287
EARTHENWARE	**64**
BUCKLEY-TYPE	8
STAFFORDSHIRE WITH BUFF BODY	17
TIN-ENAMELED, BUFF BODY	37
TIN ENAMELED, PINK BODY	2
PORCELAIN	**4**
CHINESE EXPORT	4
REFINED EARTHENWARE	**12**
CREAMWARE	7
PEARLWARE	5
STONEWARE	**22**
ENGLISH BROWN MOTTLED-TYPE	1
GRAY BODY	7
WESTERWALD-TYPE	1
WHITE SALT-GLAZED	13
RECREATION/ACTIVITIES	**47**
PIPE STEM AND BOWL FRAGMENTS	47
TOOLS/HARDWARE	**2**
HAND TOOL	2
UNIDENTIFIED	**2**
FERROUS METAL	1
LEAD	1
GRAND TOTAL	**647**

The number of artifacts within the manufacturing-related class is artificially low as this only represents a sample of this class of artifacts. The total number of "artifacts" was not viewed in terms of numbers but in what they represented, a quantity of manufacturing waste. Similarly, the majority of the faunal remains consisted of marine shells that were not likely used for consumption but as flux associated with the bloomery operation (see Appendix A).

The 14 prehistoric artifacts are all considered non-diagnostic, consisting of a quartz biface, a quartz core, eight thermally fractured rock fragments and four pieces of lithic debitage, one each of chert, chalcedony, jasper and argillite. The low number of prehistoric artifacts suggests the prehistoric occupation was likely transitory, related to seasonal movement across the lower Delmarva Peninsula between the Delaware and Chesapeake Bays.

Faunal Remains

Faunal remains dominate the assemblage with 5,360 pieces. As stated above 75% of this material was marine shells; 4,049 examples were recovered from a cellar hole (see discussion below). A smaller pit partially excavated during the Phase II survey yielded 82 oyster shells. Oyster shells recovered from this pit are considered small by today's standards. Oysters were considered a food staple that was readily available in the shallow brackish estuary where the Cedar Creek empties into the Delaware Bay less than five miles from the Cedar Creek site.

The remaining faunal collection of 1,311 pieces was considered too small for a detailed analysis by a sub-consultant to be informative, and was therefore analyzed on a gross level. This material contained the bones of birds, fish, deer, pig, turtle and a variety of small to large mammals. No cut marks or butchering marks were observed. Most of the bones appear to have been crushed, possibly to gain access the nutrition-rich marrow or to enrich soups, pottage and stews. Soups and stews were standard amongst the lower classes. Some of the bone fragments recovered from the cellar hole of Structure 3 exhibited signs of intense heat possibly brought on by boiling, smoking or roasting.

Building Materials

Building materials consist mainly of locally produced red brickbats, daub, wrought iron nails and hardware, and window glass **(**Photograph 4.1). A total of 3,289 brick fragments represent 71.2% of the identified building materials. The three small brick clamps identified in Area C were located just over 500 feet northeast of Area A are the likely source of these brickbats. No mortar was observed adhering to the surface of the brick fragments, suggesting that if mortar was used it was high in sand and shell, which breaks down over time when exposed to the elements through plowing. During the colonial period in the absence of locally available limestone, oyster shells were crushed and used in its place (Noel Hume 2005:151-156). Some of the shell found in the cellar hole of Structure 3 could have been used as an ingredient to make the mortar to build hearths. Fragments of daub (645 pieces) - mud mixed with hydrated lime/shell - suggest that the post-in-ground structures had stick and mud/clay chimneys or were chinked with mud that either baked in the sun or became hardened over time from heat generated inside of the fireplace (Pulice 2010:50). The presence of 516 wrought nails normally suggests building related activities but in this case it may partially reflect manufacturing associated with a bloomery pit and a presumed smithing operation located within the complex. The presence of 168 small blown-glass window light fragments strongly suggests that at least some of the structures had windows.

Photograph 4.1. Cedar Creek Road Site [7S-C-100] Area A, Context 22 Selected Building Materials. *Top row*: four pieces of heat reddened daub. *Middle row*: four pieces of daub. *Bottom row*: pale aqua glass window pane fragment (Photographer: Elizabeth Cottrell, January 2014) [HRI Neg.#13031 D2-001].

Ceramics

Of the 1,615 ceramic sherds recovered from Area A, red-bodied earthenwares are the most dominant, with lesser amounts of tin-enameled earthenware, buff-bodied Staffordshire slipware, cream-colored and creamware, white salt-glazed stoneware and gray-bodied Westerwald stoneware (Photograph 4.2). Minor amounts of agateware, Buckley ware, Astbury-type ware, Chinese porcelain, Midlands mottled earthenware, buff- and brown-mottled stoneware and pearlware were also recovered. The ceramic wares have a date range from the early 18th century to *circa* 1780. The proposed end date is based on the presence of a few pearlware sherds with hand-painted blue decoration that were first manufactured around 1775 (Miller et al. 2000:10).

A broad distinction is normally made between refined wares, generally the more expensive imported ceramics intended chiefly to reflect the social sophistication of their owners and used in formal dining settings, and utilitarian wares, chiefly locally made and increasingly relegated to food preparation, storage and processing functions. However, studies of 18th- and 19th-century sites regularly show that the presence or refined wares is not of itself a reliable indicator of the social or economic status of the users.

The diminutive size of the ceramic sherds makes the identification of their exact form (bowl, dish plate, storage jar, etc.) nearly impossible. As a precaution to guard against subjective identification of forms, only those positively identified are so named in the inventory. These forms consist of bowls, bowls/dishes, basins, hollowwares, plates, plates/dishes, saucers, tablewares and a teapot. Forms not identified in the catalog but were later observed during the analysis consist of mugs, tankards, porringers and jars. The presence of porringers, which are handheld vessels, may reflect the consumptions of soups and stews or even suggest the absence of tables in the dwellings. When applicable the Potomac Typological System (POTS) was employed for classifying coarse utilitarian wares (Beaudry et al. 1983:18-43). Developed from Maryland and Virginia 17th- and 18th-century inventories and records, the POTS system uses names for identified vessel forms to better understand their intended functions. Even though this system is being used, it is understood that the classification of wares into specific functional forms somewhat precludes the use of those vessel forms in ways for which they were not intended when manufactured or even first purchased. An example would be to use a broken storage jar as a bowl. Refined ceramics recovered from the site represent a limited number of forms and a mix of patterns suggesting they were not used by the occupants as formal complete sets. They were likely acquired second hand.

A detailed discussion of the ceramics from Area A is provided below by ceramic type:

Red-Bodied Earthenware

A total of 1,145 red earthenware (or redware) sherds represents 71% of the total number of ceramics (1,615 sherds) recovered from Area A. Although the percentage of red earthenware appears to be high it is actually within the upper range of other 18th-century sites in Delaware (Bedell 2001:96). The study of the utilitarian redwares themselves is continually developing. It remains difficult to identify specific sources for the glazed vessels of the Delaware Valley red earthenware tradition, and therefore to obtain information about the makers or marketing of these wares is difficult. Utilitarian red earthenware was produced both locally and abroad and was the least expensive ware made during the 18th century. These wares were low-fired, lead-glazed, fragile vessels. Breakage rates of red earthenwares in Area A were high, as would be expected for these fragile wares. Redware sherds were either clear lead-glazed, clear or mixed with

Photograph 4.2. Cedar Creek Road Site [7S-C-100] Area A Selected Ceramic Sherds. *Top row, left to right*: interior and cross-section of a red earthenware sherd with black glaze, an interior view of a Buckley-type earthenware with brown slip under a lead glaze, an interior and cross-section view of a Buckley-type earthenware with brown slip under a lead glaze, two red earthenware bowl body and rim sherds with Philadelphia style interior white slip ground under clear lead glaze. *Middle row*, left to right: two views of a high-fired purple-bodied Jackfield-like earthenware handle sherd with black glaze, two buff-bodied earthenware hollowware sherds with exterior black lead glaze and interior mottled lead glaze, two mending buff-bodied earthenware hollowware sherds with exterior pale blue tin enameled lead glaze, three hollowware body sherds from a buff-bodied earthenware vessel with a polychrome hand-painted floral decoration. *Bottom row, left to right*: a grey-bodied stoneware mug body sherd with browning, Westerwald grey-bodied stoneware with incised decoration and cobalt infilling, a white salt-glazed stoneware teabowl base/footring sherd, a white salt-glazed stoneware teabowl base with scratch blue decoration, three Chinese export porcelain teacup rim and body sherds with blue floral decoration (Photographer: Elizabeth Cottrell, January 2014) [HRI Neg.#13031 D2-002]

brown or black manganese/iron, creating a opaque or mottled appearance. A few clear lead sherds exhibited white slip-trailed decoration. Only 14 sherds (1.2%) out of the 1,136 sherds recovered from the final two phases of excavation were identified as from plates.

Although the number of plate sherds appears to be extremely low, when compared with similar assemblages elsewhere, like the Salem Village Parsonage site in Massachusetts (1681-1784) where only 1.25% of the redware was identified as plates or platters, the numbers seem more typical (Turnbaugh 1983:3-17). The low number of plates may suggest the site's occupants ate from wooden trenchers or wooden plates, redware bowls or porringers (this is discussed in more detail in relation to buff-bodied Staffordshire ware).

Agateware

This distinctive ware was achieved by mixing two different-colored clay bodies to create a marbleized appearance visible through a clear lead glaze. Agateware ware was extensively, although not exclusively, produced by the Staffordshire potters John Astbury, Thomas Whieldon, Josiah Wedgwood and John Dwight during the second quarter of the 18th century (McCarthy and White 1991:17; Noël Hume 1985:132 and 134). This ware was represented in Area A by a single body sherd, possibly from a bowl.

Buckley Ware

Buckley ware exhibits a hard dark red to purple body made up of red and yellow or just red earthenware clays with a thick black glaze (Miller 1983:92). The interior surfaces normally exhibit pronounced ribbing, which is an indication that the vessels were probably large. Such vessels would have been used for storage. Buckley Ware was manufactured *circa* 1720-1775 in Flintshire, North Wales, and is rarely found on archaeological sites in the Lower Delaware Valley (Noël Hume 1985:132-135). Nine sherds of this ceramic were recovered from the plowzone.

Astbury-Type Ware

Astbury-type wares are thinly potted, hard, dull red-bodied earthenwares with a red or light- chocolate brown lead glaze. The interior is sometimes coated with a thin layer of white ball clay slip. These ware are thought to have been made by several English potters but credit is typically given to John Astbury and his son Thomas who produced this ware from about 1725 to 1750 (Hume 1985:122-123). This ware type was represented by an extruded handle sherd from an indeterminate hollowware form.

Buff-Bodied Staffordshire Ware

Buff-bodied Staffordshire ware, also known as "Dotware", has been attributed to the Staffordshire district of England, but production took place elsewhere in England (Grigsby 1993). This ware type was represented by 85 sherds. Buff-bodied Staffordshire ware exhibits a coarse buff to yellow earthenware body decorated with brown iron oxide dots and/or combed lines through white slip. Wares of this type commonly appear in the period *circa* 1670-1775 and typically include plates, platters and porringers (Barker 1993; Draper 1984:12-14; Grigsby 1993; Noël Hume 1985:107). Records from Alexander Hamilton when he was working as a merchantile clerk in Maryland shows that buff-bodied earthenware, identified as coarse yellow earthenware was the least expensive ceramic type available (Blaszczyk 1984:14). Although it should be cautioned that red earthenwares, which were also very inexpensive, were likely sold directly to customers from local potters and thus not sold in mercantile stores.

The absence of identifiable plate sherds may indicate that the majority of Staffordshire ware sherds come from porringers/bulbous cups. This may reflect the use of inexpensive vessels at the site, possibly purchased by or for site's occupants, for the consumption of porridges, stews, soups or pottage (Beaudry et al. 1983:18-43). Porringers are a handheld vessel with a single handle on one side, which helped to hold the vessel in the person's hands while eating.

Midlands Mottled Earthenware

Midlands mottled earthenware has a pale or buff body similar to Staffordshire ware. This ware type was represented by only two body sherds, both of which appear to be tankards. This ware is also known as "manganese-mottled earthenware", but the use of manganese has not been substantiated. Both the interior and exterior exhibit a clear lead glaze streaked and or speckled with iron oxide and documented examples are typically ale or cider mugs/tankards (Miller 1983:93). Similar vessels have been found throughout the Delmarva and Delaware Valley from contexts dating from *circa* 1680 to 1780 (Dawson 1979:204-205; Elliott 1998:15).

Tin-Enameled Earthenware

Tin-enameled earthenware also known as "Delftware", "Majolica" or "Faience" is low-fired and exhibits a soft-paste, buff or pink body. The glaze is a mixture of lead and tin producing an opaque white to light blue surface intended to mimic Chinese porcelain. Decorations consist of hand-painted blue and red floral motifs. This ware type was represented by 174 small sherds. Three sherds exhibit similar polocrome floral decorations suggesting they originate from the same vessel. The sherds recovered from Area A are very small but are likely to be from tablewares. Tin-enameled earthenwares were produced in Europe (mainly Holland, England and Spain) and are found on sites throughout colonial America from the contact period through the end of the 18th century, although they are less common on sites in the second half of the 18th century (Hughes 1961:17-28; Noel Hume 1985:105-111; 1977).

Cream-colored and Creamware

Creamware is a refined thin, white-bodied earthenware with a clear lead glaze. This ware type was represented by 104 tea and tableware sherds. It has been broadly dated from *circa* 1762 to 1780 (Campbell 1996; Kybalova 1989;Noël Hume 1985:116). The beginning date for creamware has been questioned since the body type was in use (as "clouded ware" and "green-glazed, cream-colored wares") since *circa* 1740 (Martin1994:169-187). Wares of this type were manufactured in many British pottery manufacturing centers in Yorkshire, Derbyshire, Liverpool, Swansea and Staffordshire (Jennings *et al.* 1981:223-228). These wares were ubiquitous and fashionable with the rich and elite as well as the middling and poor and have been found by archaeologist in a variety of settings dating to their time of manufacture (Blaszczyk 1984:13).

Pearlware

Pearlware, also known as "Pearl White" and "China glaze" by the English Staffordshire potters, was refined, white-bodied earthenware in production from 1775 until the 1830s and shows up on colonial sites as early as 1778 at the Pluckemin site in New Jersey (Miller and Hunter 2001:135; Seidel 1990:82-95). The technology for its manufacture was possible as early as 1772. Pearlware exhibits a cream- to white-colored body with a cobalt-tinted lead glaze ranging from blue green, pale blue and grayish blue when exposed to fire. Production of pearlware has been chronologi-

cally divided by decoration techniques and patterns. This ware type was represented by ten sherds, all tablewares that exhibit hand-painted decorations dating to earliest period of production.

White Salt-Glazed Stoneware

White salt-glazed stoneware was manufactured in England and Scotland starting around 1680 and remained in production until *circa* 1805 (Green 1999:140-142; Skerry and Hood 2009:93-183, South 1978:72). A single mug/tankard rim sherd of the earliest form of white salt-glazed stoneware was recovered during the Phase II archaeological survey. This sherd exhibits a pale gray body that has been dipped in white slip or engobe and topped with an iron-oxide slip around the rim. The latest example of dipped, white salt-glazed stoneware is 1781, which was recovered from a ship that was scuttled during the siege of Yorktown in October of that year (Skerry and Hood 2009:99). It should be cautioned that the presence of dipped white salt-glazed stoneware may indicate an association with late 17th and early century site located near Area C, but could reflect a later use of inexpensive, outdated wares available to the occupants of Area A.

This form of stoneware is thinner and more refined than common utilitarian gray-bodied stoneware and is normally associated with tablewares. Two plate rim sherds from Area A exhibit molded decorations, the barley corn or seed and the dot-diaper-basket pattern that date from roughly 1755 to 1770 (Gusset 1980; Jennings *et al.* 1981:222-223; Kuettner 2009:226-239; Noël Hume 1985:115-116; Skerry and Hood 2009:135-139).

Amongst the 42 sherds recovered from Area A are some examples of tea cups and tea bowls decorated with scratch blue floral designs dating from *circa* 1745 to 1780 (Gusset 1980; Noël Hume 1985:117; Skerry and Hood 2009:105). Scratch blue decoration is achieved by filling incised (scratched) designs with cobalt, which when fired results in a bright blue color (MAAR Associates 1985:IV-5). There was also a single sherd with enameled overglazed polychrome decoration dating between *circa* 1755 to 1770 (Skerry and Hood 2009:123-124).

Gray-bodied Westerwald Stoneware

Gray-bodied Westerwald salt-glazed stoneware was used from the initial settlement of the English colonies in New England and Virginia with the earliest dated sherd (1593) found on the shores of the Kent Island Maryland (Skerry and Hood2009:10). These vessels are generally hollow wares such as storage jars, jugs/bottles, mugs/tankards/gorges and chamber pots. The production of German stoneware continues to this day by folk potters. Vessels recovered from the site consist of undecorated tankards, mugs and storage jars, although a few sherds are ornamented with cordoning and cobalt blue decoration, common throughout the 18th century. This ware type was represented by a total of 21 sherds

Buff and Brown Mottled Stoneware

Buff and brown mottled stoneware sherds are difficult to distinguish between English and Rhenish manufacture and overlap in production dates from the second half of the 17th century throughout the 18th centuries. Sherds from the Cedar Creek site are likely of British manufacture based on combination of buff and brown mottling of the salt glazing. These vessels are generally hollowwares such as storage jars, jugs/bottles, mugs/tankards/gorges or pipkins for cooking (Skerry and Hood 2009:65-81). This ware type was represented by only four hollowware sherds.

Chinese porcelain

All of these sherds are from tablewares made for export from China through English and Dutch traders. As trade with the Orient expanded during the 17th century, porcelain became popular with the general public in Europe and the Americas. The custom of drinking tea, coffee and chocolate became widespread and created a huge market for porcelain cups and saucers. Bedell concluded that the tea ceremony was adopted by even the poorest people in Delaware (Bedell 2001:100). Representative decorative treatments recovered from Area A are Batavia brown engobe, under-glazed hand-painted blue floral and geometric, and over-glazed hand-painted orange flowers with gilt highlights. Many of these pieces are high-style and normally reflect the wealth of their owners, but in this case may reflect chipped or cracked vessels that may have been passed on to the occupants of the site. This ware type was represented by ten sherds representing a minimum of five different vessels.

A porcelain sherd with a brown-slip exterior decoration known as Batavia was recovered during the Phase II survey. Porcelain vessels with brown glazes (ranging from light tan to dark chocolate) originated during the Ming dynasty. By the 18th century they had become common export items (Palmer 1976:18).

Manufacturing

Iron slag recovered from across Area A is a clear indication that iron was manufactured on site. Artifacts associated with on-site manufacturing of iron appear to derive from the processing of local bog iron into wrought iron and ultimately into useful items employed on the plantation. Another indication of the production of wrought iron artifacts on site is fragments or remnants of iron bar stock and flat horse shoe stock which were recovered from the area around the bloomery pit. See the bloomery pit discussed below for additional detail.

Vessel Glass

Vessel glass recovered from Area A mainly consists of olive green spirits bottles (in various shades). Most of these bottles are cylindrical although some appear to be of a bulbous chestnut shape (Photograph 4.3). A few fragments are from square-bodied case bottles and nine mending fragments are from a single vertical ribbed pocket flask (Palmer 1993: 356-358, 361-375).

Personal Items (Photograph 4.4)

Personal items included but were not limited to tobacco pipes, eating utensils, cast iron and brass cooking vessels, sleevelinks and gaming pieces or charms. A total of 205 tobacco pipe fragments fashioned from white ball clay were recovered from across Area A during all three phases of investigation. None of the pipes have makers' marks that could help with dating and sourcing their origins. Bore diameters of 5/64, 6/64 and 7/64 inches were recorded from 54 pipe stems. In general the larger the bore diameter, the older the pipe. Pipe stems with bores of 5/64-inch diameter have been dated to between 1710 and 1750, pipe stems with 6/64-inch diameter have been dated to between 1680 and 1710, and those pipe stems with 7/64-inch diameter have been dated to between 1650 and 1680. These dates represent the most dominant broad temporal ranges for pipe stem bores as recorded by J.C. Harrington's 1954 landmark study for dating English pipe stems (Harrington 1954; Noel Hume 1985:298). Outlying bore diameters may reflect inconsistent diameters from a single pipe and should be viewed with caution (Blakeman and Riordan 1978:260).

Photograph 4.3. Cedar Creek Road Site [7S-C-100] Area A Selected Glass Artifacts. *Tow row, left to right*: pale olive green spirits bottle fragment, two pale olive green curved vessel fragment, pale olive green case bottle fragment. *Bottom*: eight mending fragments from a pale olive green probable pocket flask (Photographer: Elizabeth Cottrell, January 2014) [HRI Neg.#13031 D2-003]].

Photograph 4.4. Cedar Creek Road Site [7S-C-100] Area A Selected Personal Items. *Top row, left to right*: five white ball clay tobacco pipe stem fragments, a thermally altered gunflint fragment, a lead spillage fragment wit rodent gnawing marks. *Middle row*: socketed-type iron table knife. *Bottom row*: two-tine iron folk (Photographer: Elizabeth Cottrell, January 2014) [HRI Neg.#13031 D2-004].

Tobacco smoking using pipes was common among European males and with both sexes among Africans (Statistical Research, Inc. 2009:242). In a 1940s Works Progress Administration former slave narrative interview, a woman expressed that smoking tobacco from a pipe was the only proper way for a woman to consume tobacco and she felt that it was also healthy (Wilkie 2000:217).

Eating utensils recovered during the investigations were composite cutlery pieces, consisting steel working ends with handles (now missing) made from a less expensive material such as bone or wood (Dunning 2000:32). There were two utensils recovered, a common socketed iron knife with a dorsal ridge, of English manufacture and dating to *circa* 1720 to 1770, and a two-tined iron fork with a "midsection bulge" and a flat tang, which would have had two bone or wood scales riveted to either side. Forks of this type have been dated to *circa* 1720 to 1770 (Dunning 2000:34-35). Given the number of domestic structures present at the site the number of utensils is considered extremely low. Absent from the assemblage are spoons that, given the presence of porringers (vessels in which spoons were used to consume liquid based meals), suggests perhaps wood spoons were used by the occupants of the Cedar Creek site. Examination of porringer sherds did not show the typical marks left behind by stirring or scooping with a metal (iron, brass, pewter or silver) spoon (Bedell 2001:96).

Other items used in the preparation of food consist of cast iron cauldron fragments and copper or brass kettle fragments with rivets. Cast iron cauldrons were designed with handles to allow them to be suspended over a fire and with legs so that they could be stood over hot coals. Cauldrons were used for a number of purposes including cooking, making apple-butter, boiling soap, manufacturing potash, and boiling water to clean clothing (Liebeknecht 2007:34) (Figure 4.1).

Although copper or copper-alloy/brass cooking vessels such as kettles or sauce pans are depicted in numerous 18th-century European still-life paintings, they are rare finds on 18th-century sites in the Middle Atlantic region (Figure 4.2). When brass kettles are found they are typically represented by thin, small, fragmentary pieces. Those fragments that are recognized are almost always handles, bails, lugs or feet that were attached to the main body with copper rivets (Bradley and Camp 1994: 175-176; Kenyon 1986:41 and 124). These somewhat fragile vessels were typically made from thin sheets of brass hammered out by hand. Amongst European-Americans brass items such as kettles are often seen in inventories bequeathed to their heirs. Brass kettles were described as "great", "lesser" and "least". As they were made from an important metal, they were sold by the pound (Rumble 2012). They are best known from Native American sites as trade items in the Middle Atlantic, although a nearly intact but crushed example was recovered from Fort Stanwix (1758-1781) (Cadzow 1936; Hanson and Hsu1975:133; Kent 1984: 207-209). Noel Hume recounts Secretary John Pory stating that Indian leaders came aboard ship with a bright brass kettle full of boiled oysters (Noel Hume 2005:153) The best known excavated examples from the 18th century, come from the Tunica Indian Village site (*circa* 1731 to 1764) in Louisiana (Brain 1979:164-182).

A copper alloy sleeve link or sleeve button was recovered from context 262 (the fill of a paling fence line). This artifact is a period replica of a Spanish real (also known as a "pillar dollar") dated 1744 (Photograph 4.5). Actual Spanish reals were minted in silver, never brass or copper. Such buttons or sleeve links have been recovered from sites from New England to Florida. Initial investigation into the meaning of these buttons suggests a possible link to Revolutionary War sites (Calver and Bolton 1950: 228-230). It may also be related to enslaved Africans. A similar button was recovered from Birely Tannery site in Frederick Maryland where slaves were known to have been

Figure 4.1. John S.C. Schaak. Tavern Interior. 1762. Note the cast iron cauldron over the fire.

Figure 4.2. Jean-Siméon Chardin. Vegetables for Soup. 1732. Note the brass kettle/cooking vessel.

Photograph 4.5. Cedar Creek Road Site [7S-C-100] Area A. A copper alloy sleeve link recovered from Context 262. This sleeve link is a periodreplica of a Spanish real (also known as a pillar dollar) dated 1744 (Photographer: Lindsay Lee, January 2012) [HRI Neg.#11062/D4-02].

used as laborers. Sleeve links have also been recovered from slave quarter sites in Maryland (Cofield 2012: 99-116). There are also accounts of slaves piercing coins to use them for personal adornment and to provide them with good luck. Two pierced actual silver Spanish coins (likely reals) were recovered from Mulberry Row, Jefferson's slave quarters at Monticello in Virginia (Kelso 1997:73). A cut silver Spanish real dated 1726 was recovered from the yard of an enslaved African American dwelling near the Heritage mansion (Russel 1997:68). While the example from the Cedar Creek site was not pierced, a sleeve link or button would not have to be since it has an attachment on the back and could be worn as links or as a single button.

A probable rectangular "gaming piece" made of stone was recovered from context 84 (a posthole along the perimeter of a subfloor pit associated within Structure 4). This "gaming piece" is made from a greenish gray sedimentary siltstone and measures 23.5 mm long, 11 mm wide and 2.5 mm thick (Photograph 4.6). The stone exhibits intentionally ground margins approaching a polished appearance. "Gaming pieces" have been found on slave sites, but are common on other non-slavery sites throughout the colonial period as well (Goode 2009:1-23). The exact use of "gaming pieces" is unclear. It has been postulated that they could have been used by African Americans in religious practices or served as medical charms (Klingelhofer 1987:112-119). Charms would have been worn around the neck, waist, ankle or kept in a charm bags with other items; a tradition derived from minkisi wambi, or danger charms, which were used by the Bakongo in West Africa (Wilkie 2000:191-193). Wilkie's research suggests that "any odd or unusual object has potential magical uses" and items with smooth appearances may be equated with polished rock or river rocks, common charms associated with the Bokongo water spirits (Wilkie 2000:193). Charms invested with spiritual and magical powers were sometimes buried for safe keeping in caches specifically placed under the floorboards of slave quarters in areas that suggest a specific role (Goode 2009:18). These pieces are typically made from broken ceramic sherds, but have also been made from wood, glass, ceramic tiles and stone. Some investigators believe they are associated with the African games "Wari,"or "Mankala" although pieces associated with Wari are typically spheroid or rounded (Goode 2009:1-23; Handler 2009:1). These issues are addressed further in Chapter 6.

Two thin triangular ceramic artifacts, also interpreted as "gaming pieces", were recovered from the nearby late 17th-century cellar hole identified during Phase II investigation (Photograph 4.6) (Hunter Research, Inc. 2011). The two pieces were fabricated from local clays and are thought to be colonoware, which has been associated with African slaves and Native Americans elsewhere in the mid-Atlantic. At this site no other artifacts recovered from the Phase II and III excavations suggest historic contact with Native Americans. It could, however, suggest enslaved Africans were present at the site as far back as the late 17th century. Archaeological data recovery excavations did not further address this portion of the site as it was placed in an archaeological protection covenant prior to the start of excavations.

Artifacts Specific to Main Features

Most features did not contain a significant number of artifacts that would warrant individual analysis or lengthy discussion. A discussion of artifacts recovered from individual features or structures in Area A where significant data was present is provided below by feature.

Photograph 4.6. Cedar Creek Road Site [7S-C-100] Area A. *Top row, left right*: A small greenish grey sedimentary siltstone "gaming piece" or charm. *Middle and Bottom row*: two small thin triangular clay pieces of uncertain function from Excavation Unit 25, Context 3, possibly gaming pieces or charms made from colonoware, dorsal and ventral views of four mended pieces and dorsal, ventral and lateral views of two mended pieces (Photographers: Lindsay Lee, June 2011, Elizabeth Cottrell, January 2014) [HRI Neg. #13031 D2-006].

Table 4.3. Cedar Creek Road Site [7S-C-100] Area A: Phase II and Data Recovery Artifact Totals From Subfloor Pits Associated with Structure 1.

ARTIFACT CLASS	CONTEXT 86	CONTEXT 88	PHASE II CONTEXT 3 (SAME AS CONTEXT 88)	TOTAL
BUILDING MATERIALS	**27**	**24**	**35**	**86**
BRICK	22	19	30	71
DAUB		3		3
NAIL	5	2	5	12
CERAMIC VESSEL SHERDS	**17**	**14**	**12**	**43**
COARSE EARTHENWARE	**10**	**12**	**5**	**27**
RED-BODIED SLIPWARE	1	3	1	5
REDWARE	9	9	4	22
EARTHENWARE	**7**	**1**	**5**	**13**
BUFF-BODY			2	2
TIN-ENAMELED, BUFF BODY	7	1	3	11
PORCELAIN			**1**	**1**
CHINESE EXPORT			1	1
STONEWARE		**1**	**1**	**2**
GRAY-BODY			1	1
WHITE SALT-GLAZED		1		1
FAUNA	**13**	**8**	**21**	**42**
CLAM	9		11	20
LARGE MAMMAL	1			1
MAMMAL	3	7	5	15
OYSTER			1	1
PIG		1	4	5
GLASS VESSEL FRAGMENTS		**4**	**3**	**7**
CURVED		2	3	5
FLAT		2	0	2
RECREATION/ACTIVITIES	**7**	**5**	**4**	**16**
SMOKING PIPE	7	5	4	16
GRAND TOTAL	**64**	**55**	**75**	**194**

Structure 1

Two subfloor pits [86 and 88] associated with Structure 1 contained enough data (324 artifacts) to be statistically informative (Table 4.3). Of this total, 42 artifacts were recovered from flotation from context 86, and 88 artifacts from context 88. Structural artifacts consist of red brick, daub, wrought nails and a single small fragment of flat window glass. The remaining artifacts that may be considered to be associated with the inhabitants of the structure consist of ceramics (43 sherds), which was dominated by red-bodied earthenware (27 sherds) with lesser amounts of tin-enameled earthenware (11 sherds), buff-bodied Staffordshire slipware (2) and single sherds of Chinese export porcelain, white salt-glazed stoneware (1720-1805) and gray salt-glazed stoneware. One of the cellar contexts (86) contained six pieces of olive green flat and curved vessel glass (likely from a single case bottle) that exhibited signs of burning. This vessel may have been salvaged from elsewhere as none of the other artifacts exhibit similar signs. Both subfloor pits contained fragments of white clay tobacco pipes; context 86 contained seven fragments while context 88 contained five fragments. Pipe stem bores of 5/64 inches and 6/64 inches suggesting a date range between 1680 to 1750. Although not a tight date range, it is consistent with the range of dateable ceramics based on the limited sample size.

Faunal remains including a pig's bones and a tooth suggest the subfloor pits may have been used to store some prepared foods, perhaps salted or smoked meats. Both subfloor pits [86 and 3/88] also contained clam shell fragments. Although it seems unlikely that perishable food stuffs would be stored in subfloor pits, wooden liners may have created a small cool place where smoked or salted foods could be kept for short period of time and perhaps extended during winter months.

Structure 2

A large number of artifacts (367 items in total) were recovered from Structure 2 (Excavation Units 43 and 56, contexts 3 and 4) during the Phase II. Just under half of the assemblage is comprised of building materials, chiefly pieces of brick, but also includes some 55 nails, most of which were identifiable as being hand wrought. Of the 21 ceramic sherds, 11 were red-bodied earthenware, six were buff-bodied Staffordshire slipwares and four were tin-enameled wares. Several animal bones were recovered, including some long bones from either sheep or cow, broken open, but with no sign of cut marks. Other items include clam (27) and oyster (49) shells, 11 clay pipe bowl and stem fragments (with 5/64- and 6/64-inch bore diameters) and three pieces of olive green vessel glass.

Structure 3

The lower fill of Structure 3 [336] contained a total of 375 artifacts, some of these artifacts, specifically marine shells (233) undoubtedly derive from the overlying context [322] (see below). Context 336 appears to be the primary fill of the cellar hole following its abandonment. Artifacts from here consist of ceramics (red-bodied earthenware, tin-enameled earthenware and white salt-glazed stoneware), a gunflint fragment, a brass furniture tack, wrought nails, brickbats and animal bones and teeth. .

An artifact of interest from the upper fill [322] is a thick sub-rectangular, smooth piece of dark green glass exhibiting parallel striations (Photograph 4.7). This artifact is speculated to be a linen-smoother. Linen-smoothers were heated and used as a pressing iron to smooth clothing on a flat wooden board. Hand-held linen-smoothers date back to the Viking era in Europe (Loven 2010). They may have also been used in darning clothing (Palmer 1993:390). Traditional linen-smoothers from this period are round but the

Photograph 4.7. Cedar Creek Road Site [7S-C-100] Area A. Three views of a glass linen smoother from the cellar hole associated with Structure 3 (Photographer: Elizabeth Cottrell, January 2014) [HRI Neg.#13031 D2-007].

parallel striations suggest a light repeated use such as could be expected from the repeated motion employed in ironing. This type of work is also normally associated with women at this period.

Bloomery Pit and Shell Midden

A total of 2,535 artifacts were recovered from the bloomery pit feature [65-68,106-112 and 317] (Photographs 4.8 and 4.9; Table 4.4). This total excludes the materials removed for specialized analysis (denoted by an asterisk in the table). Artifacts identified in this feature related to the processing of bog iron into wrought iron consist of roasted bog iron ore, scrap metal, slag (chunks and beads), bloom fragments (gromps), scale/shell fragments and exhausted bar stock. Wedges, tools sometimes associated with blacksmithing, were also recovered from this feature (Table 4.4). A total of 336 lbs. of iron slag and bloomery waste was collected from the pit. A sample weighing 201 lbs., or about 60% of the total, and a sample of locally obtained bog iron, were shipped to Dr. Carl Blair at Michigan Technological University for analysis (Appendix A). Blair found artifacts in the sample associated with the bloomery process. These artifacts consist of:

Burden: the mix of slag and bloom that is formed as the charge in the furnace is reduced and iron is formed.

Bloom: the desired end product of the smelting process, a spongy mass of metallic iron in a physical association with slags, for a bloom to be used it needs to be further worked into wrought iron, at a blacksmith's forge.

Charge: the mix of fuel, flux and ore that is added to the furnace.

Flux: one of any number of substances that can be added to the burden to promote more efficient smelting, in this case crushed marine shells was employed.

Gromp: a modern term to describe bits of iron bloom that are too small to be forged as such, but which can be re-processed in a furnace to form a bloom (Bielenin 1977). Similar to a bloom, a gromp has value as metal and so is rarely found in any number at a smelting site.

Slag: a catch-all term for any number of waste products from the smelting and smithing processes. Slags that were liquid when they drained from a furnace are referred to as tap slags, those which were removed as solids or semi-solids are known as raked slags.

Skull, Cap or Plano-convex Bottom: three terms all meaning, the mass of slag that forms in a smithing hearth, can form with any smith operations with wrought iron, but are particularly associated with the consolidation forging of a bloom.

Bits of other non- ferrous debris, such as brass, glass and ceramics were identified in this feature and likely represent debris not originating from the pit but nearby on site. Ceramic artifacts identified in the feature comprised cream-colored, green-glazed Whieldon ware, buff-bodied Staffordshire, tin-enameled earthenware and creamware. Use of the bloomery pit likely dates to the period of Area A's occupation as bits of iron slag from the bloomery have been found in association with all of the major features.

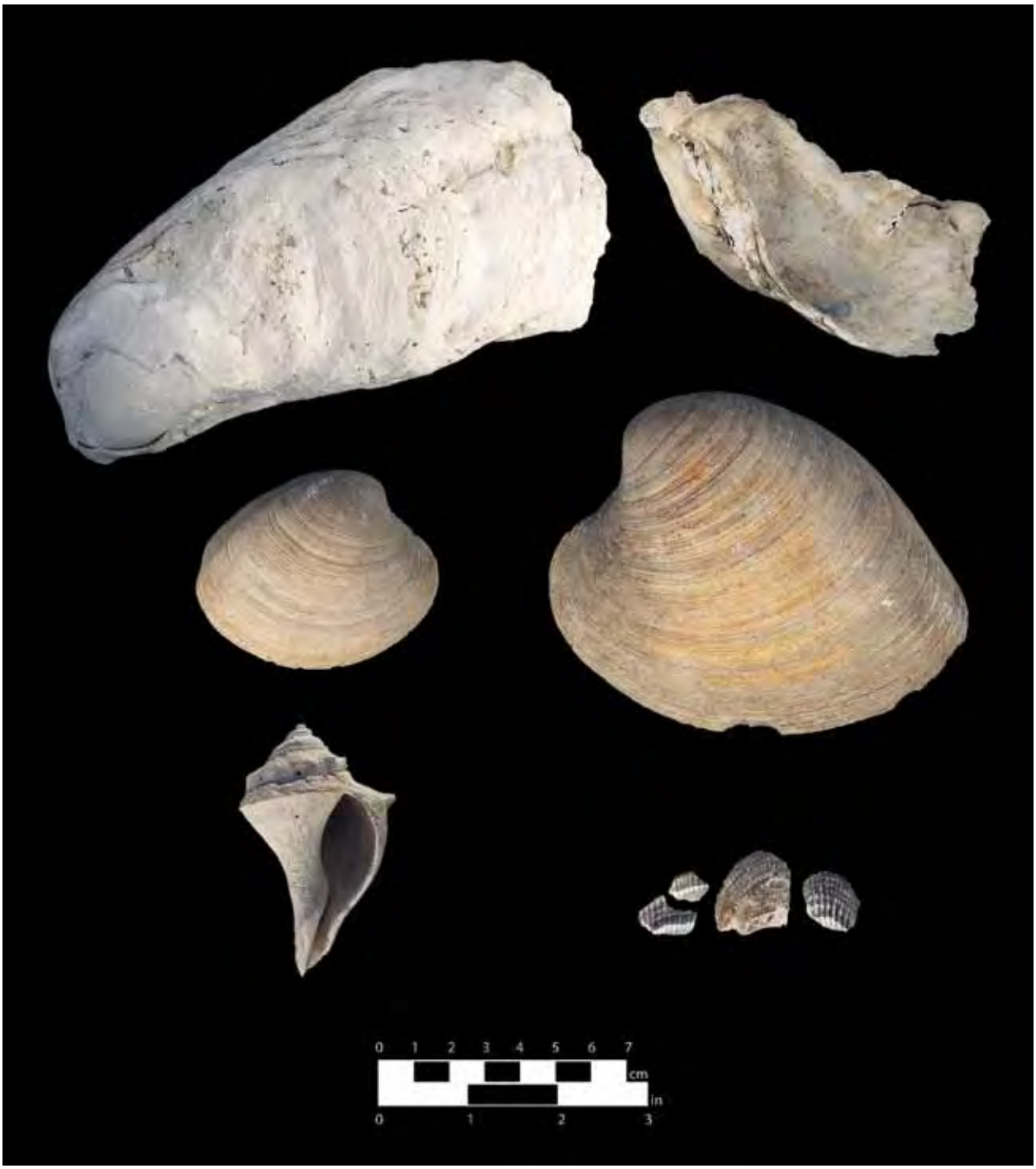
Three iron wedges recovered from the bottom of the bloomery pit would originally have been used with a wooden maul or hitting beetle to split timbers into pales, clapboard siding, or were possibly employed in blacksmithing (Noel Hume

Photograph 4.8. Cedar Creek Road Site [7S-C-100] Area A. Artifacts from the bloomery pit. *Top row, left to right*: iron slag, horse shoe stock, a broken horse shoe. *Middle row, left to right*: three exhausted/broken cast iron wedges, iron bar stock fragment/remnant. *Bottom row, left to right*: an iron bridle fragment, a cast iron cauldron fragment. (Photographer: Lindsay Lee, January 2012) [HRI Neg. #11062/D4-01].

Table 4.4. Cedar Creek Road Site [7S-C-100] Area A: Data Recovery Artifact Totals From Bloomery-Related Contexts [65, 66, 68, 70, 106, 112 and 317].

ARTIFACT CLASS	TOTAL
AGRICULTURE/EQUESTRIAN	**4**
HORSE BRIDLE	1
HORSESHOE	3
BUILDING MATERIALS	**1691**
BRICK	1263
DAUB	350
NAIL	73
WINDOW GLASS	5
CERAMIC VESSEL SHERDS	**57**
COARSE EARTHENWARE	**34**
RED-BODIED SLIPWARE	1
REDWARE	33
EARTHENWARE	**11**
STAFFORDSHIRE WITH BUFF BODY	3
TIN-ENAMELED, BUFF BODY	8
REFINED EARTHENWARE	**5**
CREAMWARE	5
STONEWARE	**7**
BUFF BODY	1
GRAY BODY	2
WESTERWALD-TYPE	2
WHITE SALT-GLAZED	2
CLOTHING RELATED	**5**
BUCKLE	5
FAUNA	**203**
AVIAN	1
CLAM	17
MAMMAL	18
OYSTER	149
PIG	2
UNIDENTIFIED	16
FLORA	**2**
INDETERMINATE WOOD	2
FURNISHINGS	**4**
TACK	3
UNIDENTIFIED	1
GLASS VESSEL FRAGMENTS	**9**
BOTTLE	1
CURVED	6
FLAT	2
KITCHEN	**1**
CAULDRON	1
MANUFACTURING	**522**
BAR STOCK	7
BLOOMERY SLAG	33
BLOOMERY SLAG (BEAD)	118
BLOOMERY SLAG (SCALE/SHELL)	297
CHARCOAL	8
HORSESHOE STOCK	4
INDETERMINATE FERROUS METAL	1
RAW MATERIAL	1
SCRAP	46
SLAG	3
SLAG (LIMONITE)	1
UNIDENTIFIED	3
PERSONAL ITEMS	**3**
WATCH	3
RECREATION/ACTIVITIES	**5**
PIPE STEM AND BOWL FRAGMENTS	5
TOOLS/HARDWARE	**12**
INDETERMINATE TYPE	1
SPIKE	4
UNIDENTIFIED	3
WASHER	1
WEDGE	3
UNIDENTIFIED	**14**
FERROUS METAL	14
GRAND TOTAL	**2632**

Photograph 4.9. Cedar Creek Road Site [7S-C-100] Area A. Additional artifacts from the bloomery pit. *Top row*: iron slag shell fragments. *Second row, left to right*: brass shoe buckle fragments, brass watch part. Third row: wrought iron nail with a rose head. *Bottom row, left to right*: Buff-bodied Staffordshire ware hollowware body sherd, Whieldon ware teapot rim sherd (Photographer: Lindsay Lee, January 2012) [HRI Neg.#11062/D4:03].



Photograph 4.10. Cedar Creek Road Site [7S-C-100] Area A. Selected Marine Shell from shell deposit used to fill the cellar hole associated wit Structure 3. *Top row*: two oyster shells. *Middle row*: two clam shells. *Bottom row, left to right*: whelk shell, four mussel shell fragments (Photographer: Elizabeth Cottrell, January 2014) [HRI Neg.# 13031 D2-010].

Table 4.5. Cedar Creek Road Site [7S-C-100] Area A: Data Recovery Artifact Totals From Structure 3 Cellar Hole - Shell Deposit.

CONTEXT	322	336
AGRICULTURE/EQUESTRIAN	**4**	
LIME	4	
ARMS AND ARMOR		**1**
GUNFLINT		1
BUILDING MATERIALS	**958**	**89**
BRICK	694	61
DAUB	168	16
NAIL	87	11
WINDOW GLASS	9	1
CERAMIC VESSEL SHERDS	**188**	**14**
COARSE EARTHENWARE	**78**	**7**
RED-BODIED SLIPWARE	1	3
REDWARE	77	4
EARTHENWARE	**15**	**5**
STAFFORDSHIRE WITH BUFF BODY	12	
TIN-ENAMELED, BUFF BODY	3	5
REFINED EARTHWARE	**85**	**1**
AGATE WARE		1
CREAMWARE	83	
PEARLWARE	2	
STONEWARE	**10**	**1**
BUFF BODY	1	
GRAY BODY	2	
WHITE SALT-GLAZED	7	1
INDETERMINATE	**3**	
INDETERMINATE/BURNED	3	
CLOTHING RELATED	**4**	
BUCKLE	1	
BUTTON	2	
FASTENER	1	
FAUNA	**3996**	**253**
AMPHIBIAN	4	
AVIAN	44	
BARNACLE	2	
CLAM	729	29
COW	7	1
DEER	2	
FISH BONE	63	
FISH SCALE	29	3
LARGE MAMMAL	71	1
MAMMAL	565	8
MEDIUM MAMMAL	3	
MUSSEL	114	
OYSTER	2243	204
PIG	10	3
RODENT	1	
SCALLOP	1	
SMALL MAMMAL	88	3
SNAIL	6	
TURTLE/TORTOISE PLATE	2	
UNIDENTIFIED	9	1
WHELK	3	
FLORA	**23**	**9**
CARBON SAMPLE	2	9
NUT	7	
SEED	8	
SEED POD	6	
FURNISHINGS	**1**	
TACK	1	
GLASS VESSEL FRAGMENTS	**107**	**4**
BOTTLE	40	
CONTAINER	8	3
CURVED	52	1
LAMP CHIMNEY	7	
KITCHEN	**2**	
FORK	1	
KNIFE	1	
MANUFACTURING	**43**	**1**
INDETERMINATE SLAG		1
SHEET	21	
SLAG	21	
SLAG (LEAD)	1	
PERSONAL ITEMS	**3**	
LINEN SMOOTHER	1	
PAPER	2	
RECREATION/ACTIVITES	**7**	
PIPE STEM AND BOWL FRAGMENTS	7	
TOOLS/HARDWARE	**3**	**1**
SHEET	1	
SPIKE	2	
TACK		1
UNIDENTIFIED	**1**	**3**
FERROUS METAL		3
PEWTER	1	
GRAND TOTAL	**5343**	**375**

and Noel Hume 2001: 487-488; Sloane 1964: 30). Another possibility, which would explain the burred heads, is that they were employed in quarrying the bog iron and splitting the tabular ore (Crossley 1975:63). After the ends of the wedges had become burred or mushroomed and useless they may have been returned to the bloomery to be heated and reformed into new tools. This works with wrought iron to the extent it can be reformed using blacksmithing tools, but the temperatures typically achieved to re-melt cast iron are much higher than a small bloomery could achieve.

Charcoal found throughout the pit was likely derived from nearby stands of timber that were processed into charcoal before being used in the bloomery or a nearby forge. Blair identified one piece of charcoal as a hard wood, probably oak. Marine shells consisting of oysters and clams were noted adhering to several pieces of slag suggesting their likely use as flux. The use of marine shells for flux was common in the tidewater area during the colonial period (Robbins 1973:9). The use of shell as flux may explain the large number of marine shells deposited in a former cellar hole of Structure 3.

The shell deposit in the cellar hole of Structure 3 is considered part of the bloomery operation based on its close proximity to the bloomery pit, the established use of marine shells as a flux material, and the lack of distinguishing marks indicative of consumption. A total of 2,250 oyster shells and 729 clam shells were recovered from the main deposit (Photograph 4.10 Table 4.5). The number of oyster shells is an estimated 10% sample of the entire deposit. The total weight of oyster shell from the midden is 165.7 pounds. The total volume of all marine shell from the midden is estimated between 126 and 252 cubic feet weighing around 180 pounds. The transportation of this amount of shell to the site from its habitat represents a significant investment in time and labor. The deposition of the shell deposit can be dated to between 1760 and 1780 based on ceramics present and the pipe stem bore diameters.

3. Flotation Artifacts (Table 4.6)

A total of 993 small artifacts were collected from soil samples that were subjected to flotation, where the soil was introduced into a water-filled flotation tank and agitated. Artifacts were then collected from the heavy fraction that sank and was collected on a fine mesh barrier and the light fraction that floated to the surface was skimmed from the top. Most, if not all, of the artifacts collected in this manner would otherwise have been lost using conventional quarter-inch mesh dry screening. Artifacts collected from these samples consist of small pieces of building materials (daub, brick and nail fragments), small bits of ceramics and glass, lead shot, faunal remains (bone, shell, egg shell, and fish scales), and floral remains (seeds, nut hulls, pits and charred wood or charcoal).

Small pieces of iron slag (known as "beads" and "scale") collected from the flotation samples were helpful in connecting the bloomery feature [65, 66, 68, and 106] to four other features: two subfloor pits [22 and 88] from Structures 1 and 4; a fence line [89/ 90] between Structures 1 and 4; and a possible grave shaft [156] located near the northeast corner of Structure 1. Small bits of slag were also recovered from the shell deposit [322] within the cellar hole of Structure 3. The presence of iron slag in these features is strong indication that they were contemporaneous.

Other useful information gather from the flotation samples are charred seeds, eggshell and a land snail. Data such as this are helpful in reconstructing the occupants' diets and the former environmental landscape. Eggshell fragments indicate the presence of chickens and provided fresh eggs for meals and poten-

Table 4.6. Cedar Creek Road Site [7S-C-100] Area A: Data Recovery Flotation Heavy Fraction From Selected Contexts.

CONTEXT	22	65	66	68	86	88	90	106	116	156	270	302	TOTAL
AGRICULTURAL/EQUESTRIAN					**1**		**4**	**11**	**1**				**17**
LIME					1		4	11	1				17
ARMS AND ARMOR					**1**								**1**
LEAD SHOT					1								1
BUILDING MATERIALS	**2**	**116**	**3**	**2**	**2**	**6**	**8**	**7**	**20**	**33**	**1**	**39**	**239**
BRICK	1	53	1	1	1		3	6	4	4		2	76
DAUB	1	61	2	1	1	6	5	1	16	29	1	37	161
NAIL		2											2
CERAMIC VESSEL SHERDS		**5**		**2**	**2**			**1**					**10**
REDWARE		3		1	1			1					6
EARTHENWARE													
STAFFORDSHIRE MOTTLED WITH BUFF BODY		1											1
STAFFORDSHIRE WITH BUFF BODY				1	1								2
STONEWARE													
WHITE SALT-GLAZED		1											1
FAUNA	**4**	**24**	**6**	**25**	**11**	**5**	**18**	**45**	**13**	**45**	**10**		**206**
EGGSHELL							1						1
MAMMAL	1	1	1	3				7					13
SNAIL		20		12	3		15	8	12	44			114
INDETERMINATE	3	3	5	10	8	5	2	30	1	1	10		78
FLORA	**54**	**49**	**4**	**32**	**23**	**48**	**5**	**13**	**22**	**39**	**18**	**35**	**342**
CARBON SAMPLE	2				2	2	2		2	2	3	9	24
NUT				1		1							2
SEED	40	33	4	31	21	45	3	13	20	37	15	26	288
SEED/SPORE	12												12
INDETERMINATE		16											16
GLASS VESSEL FRAGMENTS									**1**				**1**
INDETERMINATE									1				1
MANUFACTURING	**8**	**81**	**6**	**10**		**12**	**9**	**6**		**7**			**139**
CHARCOAL		2	2	2				2					8
SLAG	8	79	4	8		12	9	4		7			131
UNIDENTIFIED	**1**	**3**	**2**	**3**	**3**	**17**		**2**	**1**			**6**	**38**
INDETERMINATE BURNED ITEM				1									1
INDETERMINATE					2	17			1			6	26
UNPICKED SAMPLE	1	3	2	2	1			2					11
GRAND TOTAL	**69**	**278**	**21**	**74**	**43**	**88**	**44**	**85**	**58**	**124**	**29**	**80**	**993**

Photograph 4.11. Cedar Creek Road Site [7S-C-100] Area A. Charred corn kernel (Zea mays) (Photographer: Justine McKnight, January 2014) [HRI Neg.#13031 D2-011].

Photograph 4.12. Cedar Creek Road Site [7S-C-100] Area A. A Black Striate land snail, (Striatura ferrea) which prefers an undisturbed moist hardwood forested environment with moderate winter temperatures (Photographer: Elizabeth Cottrell?***, January 2014). [HRI Neg.#13031 D2-012].

tially for sale. The presence of the seeds coupled with other floral and faunal data help us to better understand the dietary habits of the site's occupants. If not for the use of flotation small items, such as nut hulls, seeds, fish scales and eggshell fragments, would have been missed.

Seeds

A large number of seeds were recovered from features across Area A. These consist of carpetweed, copperleaves, pigweed, sheep sorrel, chickweed, jimsonweed, catchfly, violet and poke (see Appendix B for details). The majority of these seeds were not charred and are not considered to be contemporary with the fill of those features. Floral remains that were charred and thus considered contemporary consist of maize, grass, peach pits, hickory, pine and white oak (Photograph 4.11). Uncharred seeds are not likely to survive in these soil conditions and are considered to be modern intrusions by ethnobotanical analysts.

Land snails

A number of specimens were collected as land snails but under microscopic examination most were identified as un-charred *Chenopodium* seeds, which have a very similar appearance to the naked eye. Two specimens, however, are land snails. One specimen was too fragmentary for a positive identification but the other specimen was thought to be Black Striate, (*Striatura ferrea*), a terrestrial snail with a dull gray to translucent shell. It prefers an undisturbed moist hardwood forested environment with moderate winter temperatures providing a glimpse into the past environment at the site (Tim Pearce, personal communication, January 23, 2014) (Photograph 4.12).

B. POSSIBLE MID-18TH-CENTURY QUARTER OR OUTBUILDING (AREA B)

A total of 242 historic artifacts were recovered from the Phase II archaeological survey in Area B. These artifacts were all recovered from the plowzone (Table 4.7). While some earlier 18th-century ceramic types, notably buff-bodied Staffordshire and tin-enameled wares and white salt-glazed stoneware are represented in the artifact assemblage, it also includes sherds of slightly later 18th-century pottery, such as agateware, creamware and pearlware. Overall, a date range of *circa* 1740-80 has been postulated for this area. It likely reflects an outlying domestic occupation related to the complex in Area A to the west and closer to the road.

No artifacts were recovered from the Phase III archaeological data recovery trenches excavated in Area B, which removed the plowzone in hopes of locating elusive subsurface features. No features were detected at the top of the B horizon suggesting that all that remains of the site is left within the unexcavated portions of the site within the plowzone.

C. BRICK CLAMP (AREA C)

1. Phase II Artifacts

While pieces of brick, some blackened and burnt, were found scattered on the ground surface over a circular area roughly 125 feet in diameter, these were not collected in order to maintain the visible surface expression of the site. A total of 236 historic artifacts were recovered from the plowzone of three excavation units (Excavation Units 20, 47 and 48) during the Phase II archaeological survey in Area C. In each case the excavation units produced moderate quantities of brick, but very little else in the way of diagnostic cultural materials (Table 4.8).

Table 4.7. Cedar Creek Road Site [7S-C-100] Area B: Phase II Survey Artifact Totals.

EXCAVATION UNIT	15	16	38	39	45	49	50	54	TOTAL
CONTEXT	1	1	1	1	1	1	1	1	
BUILDING MATERIALS	**10**	**3**	**8**	**12**	**6**	**31**	**37**	**27**	**134**
BRICK	6	1	7	4	5	25	35	24	107
NAIL	3		1	5		4	2	3	18
WINDOW GLASS	1	2		3	1	2			9
CERAMIC VESSEL SHERDS	**15**	**5**	**7**	**8**	**9**	**3**	**13**	**7**	**67**
AGATE WARE				1					1
CREAMWARE	4	1	1	1			3		10
GRAY BODY	1								1
HARD PASTE					1				1
PEARLWARE	1				2		4		7
RED BODIED SLIPWARE				1				1	2
REDWARE	5	4	4	4	4	3	4	3	31
STAFFORDSHIRE WITH BUFF BODY								1	1
TIN ENAMELED, BUFF BODY	2			1	2		2		7
UNIDENTIFIED								2	2
WHITE SALT-GLAZED			2						2
WHITEWARE	2								2
CLOTHING RELATED								**1**	**1**
SHOE								1	1
ENERGY			**1**			**1**			**2**
COAL			1						1
SLAG						1			1
FAUNA	**2**	**1**	**1**	**2**	**1**	**4**	**2**	**5**	**18**
CLAM	1	1	1	2	1	4	2	4	16
MAMMAL								1	1
OYSTER	1								1
GLASS VESSEL FRAGMENTS	**6**		**1**	**2**	**1**	**2**	**5**		**17**
BOTTLE	1			2		1	3		7
BOTTLE/JAR							2		2
CURVED	3		1		1	1			6
LAMP CHIMNEY	2								2
KITCHEN						**1**			**1**
FORK						1			1
MANUFACTURING						**1**			**1**
SCRAP						1			1
TOOLS/HARDWARE				**1**					**1**
RIVET				1					1
GRAND TOTAL	**33**	**9**	**18**	**25**	**17**	**43**	**57**	**40**	**242**

Table 4.8. Cedar Creek Road Site [7S-C-100] Area C: Phase II Survey Artifact Totals.

EXCAVATION UNIT	20	47			48	TOTAL
CONTEXT	1	1	3	4	1	
BUILDING MATERIALS	**20**	**100**	**47**	**16**	**38**	**221**
BRICK	18	95	45	16	33	207
NAIL	2	5	2		4	14
WINDOW GLASS					1	3
CERAMIC VESSEL SHERDS		**3**			**2**	**5**
REDWARE		3			2	5
FAUNA	**3**	**1**			**3**	**7**
CLAM		1			3	4
UNIDENTIFIED	3					3
GLASS VESSEL FRAGMENTS	**1**	**1**				**2**
BOTTLE	1					1
CURVED		1				1
TOOLS/HARDWARE	**1**					**1**
HOOK	1					1
GRAND TOTAL	**25**	**105**	**47**	**16**	**43**	**236**

2. Data Recovery Artifacts

A total of 120 historic artifacts and two prehistoric artifacts were recovered from the Phase III archaeological data recovery in Area C. The prehistoric artifacts consist of a translucent quartz biface fragment and a quartzite thermally altered rock fragment. Both of these items are non-diagnostic, but predate historic contact at the site. They are likely related to site 7S-C-102 located about 350 feet to the east.

Historic artifacts consist of a carbonized wood sample and 119 pieces of brick in various stages of firing and/or decay collected from the surface of the plowzone and contexts 4, 6 and 14. A table was not generated for these new finds as they were all brick. Brick colors ranged from light orange, pale orange, orange, tan to blackened. Three fragments exhibited “glazed” surfaces resulting from their placement in the clamp along the flue or near the heat source that melted the sandy surfaces of the brick. The lighter colored bricks tended to be softer and under-fired while the darker brick fragments reflect harder, perfect or over-fired bricks.

Chapter 5

PUBLIC OUTREACH

Prior to the start of excavations a one-page, double-sided handout was produced for visitors to the site outlining what was happening there, how the site was first discovered, what was being found, how the work was being done what would happen next, how to volunteer and how to get more information (Appendix G). Three Saturdays were reserved for fieldwork to accommodate members of the Archaeological Society of Delaware (ASD) and the general public (Photograph 5.1). One senior archaeologist and two field assistants were on-site to supervise the volunteers. Volunteers with little or no field experience helped screen the artifact-rich, stockpiled, plowzone soils while those with experience helped remove features. Due to winter weather conditions participation in these activities was low but productive. Positive feedback was also related to Delaware Department of Transportation (DelDoT) through the Delaware Historic Preservation Office and directly to DelDOT from members of the ASD. Small home-schooled groups came out to the site during the week and assisted in screening the stockpiled plowzone soils (Photograph 5.2). A larger public school visit by the Milford Middle School was coordinated by DelDOT and was a huge success (Photographs 5.3 and 5.4). The visitation received press coverage from News Radio WGMD 92.7, the Delaware State News, The News Journal, MilfordBeacon.com, and DelDOT's weekly newsletter, TEAM Spirit (Appendix G).

Photograph 5.1. Members of the Archaeological Society of Delaware (ASD) come on a Saturday to help out with the excavation of features. In the foreground Tim Hitchens and Ian Burrow explain feature removal procedures to members of the ASD at the Cedar Creek Road Site [7S-C-100], (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D1-067].

Photograph 5.2. Home-school visitors also made an appearance and chipped in by screening stockpiled plowzone samples at the Cedar Creek Road Site [7S-C-100], (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D1-089].

Photograph 5.3. Ian Burrow explains the iron bloomery feature in Area A at the Cedar Creek Road Site [7S-C-100] to a group of 5th graders from the Milford Middle School (December 2011)[DelDot Image 5354-102].

Photograph 5.4. A select group of fifth graders and teachers from the Milford Middle School eagerly screen soil in hopes of finding artifacts from the 18th century at the Cedar Creek Road Site [7S-C-100] (Photographer: Joelle Browning, December 2011) [HRI Neg.#11062 D3-283].

Chapter 6

A SLAVE QUARTER AT FARMER'S DELIGHT? ARGUING THE CASE FOR THE ARCHAEOLOGICAL IDENTIFICATION OF 18TH-CENTURY SERVITUDE

A. INTRODUCTION

This section of the report is intentionally controversial. It proposes that aspects of the material culture of the investigated portions of the Cedar Creek Site can reasonably be interpreted as reflecting the dominant presence here of enslaved people of African descent and heritage. Despite the considerable amount of work done in the last two decades, no 18th-century slave sites been archaeologically identified or investigated to date in Delaware. It is of course likely that slaves were present on many of these other sites. At the Strickland Site in Kent County, for example, one of the plantation buildings was identified as a kitchen or slave quarter (Catts et al. 1995).

As was shown in Chapter 2, there is no historical documentation for the presence of slaves at the Farmer's Delight plantation, although some owners in the second half of the 18th century had family ties with known slaveholders. The case for Cedar Creek being a "slave site" is therefore made primarily on the basis of observed patterning in the material culture (both artifacts and structural features), without any direct analogies within the state. However, the wider world of the Chesapeake Bay and the southern colonies, especially Virginia, provide much of the comparative and corroborative data.

The claim is also a bold one in the context of historical archaeology, and indeed of archaeology as a whole. The basic question is whether it is truly possible to identify distinctive groups of people in a particular society, purely from the physical remains they left behind and which archaeologists are still able to study. Beyond that, as Orser puts it, can one also "understand how people used their material culture to express their identity" (2004:242)? These ostensibly simple questions are actually the gatekeepers to a mass of debate, controversy, and competing theoretical stances in historical archaeology that will not be addressed in any detail here. Probably the most accessible recent summary and guide to all this is in Charles Orser's *Historical Archaeology*, especially Chapters 9 and 10 (Orser 2004). His observation that "Archaeologists who try to assign people from the past to groups is [sic] sure to encounter pitfalls" (Orser 2004:261) is taken to heart by the authors of this report.

From a methodological and theoretical viewpoint, however, the discussion here is intended to contribute to the topic of group identity in historical archaeology by providing a testable modeling of the data from one site.

The decision to explore this interpretation of the site in depth came fairly late in the project process. It was suspected that small bloomery sites (as opposed to larger blast-furnace operations) were a property type in which ethnic patterning might be observable, a conclusion that was confirmed by a review of secondary literature and prepared a management summary on 18th-century bloomery practices in the region (see Chapter 8). References to African slaves working at such sites in the Chesapeake region were encountered during research, as were instances of African slaves being specifically identified for their skills in ironmaking, blacksmithing and ironworking. Consideration of the other elements of the site during the analysis and report also suggested to him that the presence of enslaved Africans could explain some of the observed patterns. Significantly, these elements were noted independently of the important specialist report on the bloomery materials by Dr. Carl Blair (Appendix A),

which was received late in the process. Following a detailed discussion by the Cedar Creek project team it was determined to overtly frame this chapter around the slave hypothesis in order to encourage debate on the topic. Constructive comments from peers and colleagues on these ideas will be welcomed.

It is considered important at this point to stress once again the limitations of the data from which this case will be made. The excavated area had clearly been affected by deflation since its abandonment in the 18th century, thus removing from study the upper portions of many features and surfaces. It is also clear that the site extends well beyond the Limits of Construction of the road improvement project, and therefore of the area archaeologically investigated as treatment of the adverse effects of that project. Information on these areas is consequently limited, and any future investigation there would undoubtedly modify the conclusions and ideas put forward in this report (although naturally we hope they would be supported).

B. CHRONOLOGICAL AND DEVELOPMENTAL FRAMEWORK OF FARMER'S DELIGHT

As discussed in Chapter 2, the general sequence of ownership and subdivision of the Farmer's Delight property has been elucidated as part of this project. From 500 acres in 1694, the property on which the site lies was reduced to 250 acres in 1704. It is surmised that substantial improvements were not made at least until the 1730s when first Alexander Draper and then Alexander Thompson owned the land, although the Cedar Creek Road was already in place by 1734. The Drapers were a prolific and influential local family. Thompson was a ship's captain who may have delegated any improvements to the property to others. The ownership of Thomas Fisher in *circa* 1747-49, though brief, is nevertheless of potential importance for the history of the site because he is known to have been a blacksmith. Subdivision of the property on Fisher's death resulted in the site falling in the southeast corner of a 100-acre tract. Samuel Davis, the owner of this tract, had the property until about the Revolutionary War. It was then acquired once again by the Draper family. Other members of both the Davis and Draper families are documented slaveholders.

How does this story compare with the archaeological evidence? The diagnostic and more closely dateable ceramics from the site suggest the ending of occupation at the site soon after the end of the War of Independence. The very small amount of early pearlware is the key marker here. Pearlware is extremely common on sites occupied in the period from 1780 to 1840, where it is often accompanied by whitewares from the early 1800s onward. The near absence of pearlware and the absence of whiteware suggest that the site was abandoned by perhaps 1785.

A beginning date for the use of the site is more difficult to establish. The late 17th- through early 18th-century building examined in the Phase II study was associated with ceramics with wide time ranges. After redware, the most prolific ceramic in Area A is creamware (83 pieces from the shell midden). Conventionally, creamware is assigned a beginning date in the early 1760s, but some wares could date to as early as the 1740s (see above, Chapter 4), and would therefore accompany the small amounts of Buckley and Astbury ware in suggesting some activity before mid-century. Overall, the ceramic assemblage from Area A points to continuous activity beginning no earlier than 1740, with the majority of the material reflecting occupation *circa* 1750-1780. To the extent that the ceramic and documentary data sets are comparable, this suggests that the most intensive use of the site falls during the ownership of Samuel Davies.

A historic context for such a site history can be suggested. By 1750 tobacco, the staple and highly labor-intensive cash-crop of southern Delaware's previous

decades, was being replaced by wheat and corn. These were more profitable, and, especially in the case of wheat and other grain crops, required much less labor except during planting and harvesting. It may be significant that the long-standing 250-acre Farmer's Delight plantation, which appears to have remained the same size for almost 50 years, was divided in 1750 with the Cedar Creek site lying on a 100-acre tract carved out of the larger acreage. While no certainty is possible in the absence of detailed documentary evidence, it may be that this 1750 subdivision is a local reflection of wider trends towards the abandonment of tobacco, and a diversification towards other crops and economic activities. It may also signal the increasing pressure on land as population increased and larger properties were split up. This argument is succinctly laid out in Williams' study of Delaware slavery (Williams 1996:11-13).

The working hypothesis for the establishment of the Cedar Creek Road Site is therefore that it reflects intensification of land-use and the abandonment of tobacco cultivation in this part of Sussex County around 1750, the land being purchased at that time by a member of a local Cedar Creek Hundred family. The occupation identified through the archaeological record probably continued until just after the War of Independence, after which point it was abandoned for reasons that will be explored below.

There is clearly some sequencing in the occupation, suggesting more than a very short-term use. The large pit [322/323/336] has two distinct fills, the lower of loam and upper mostly of shell. The subfloor pit in Structure 2 cut an earlier pit infilled with shell. There are overlapping pits in the possible smokehouse area east of Structure 1. Finally, some of the postholes show signs of repair or replacement of the posts.

C. THE ARCHAEOLOGY OF AMERICAN SLAVERY: A BRIEF OVERVIEW

The archaeological study of slavery and of slave plantations has become something of a sub-discipline within American historical archaeology (e.g. Epperson 1990; Orser 1989; Samford 1996, 2007; Singleton 1985) and material culture studies (Vlach 1991, 1993). In its engagement with the difficult and contested topic of race-based slavery and with its strong interest in method, theory and ethics, the topic is one rife with intense (and sometimes politicized and even *ad hominem)* debate and disagreement over aims, objectives and audiences (e.g. Adams and Boling 1989; Farnsworth 1993; Potter 1991). The published and "gray" literature is now very substantial (see, for example the bibliography in the Digital Archaeological Archive of Comparative Slavery maintained by the Thomas Jefferson Foundation (2014), and the indexes of *Historical Archaeology*). The issue is therefore approached here with some trepidation (and, it is hoped, humility) since the authors have not previously had any detailed engagement with the subject.

It is apparent that, with the notable exceptions of Virginia and Maryland, much of the archaeological research on slavery in the Southern states has focused on larger and more formal plantations of the first half of the 19th century. In Virginia, work at the high profile 18th-century sites of Mount Vernon, Monticello, Poplar Forest and Montpelier, as well as major projects such as Kingsmill Plantations (Kelso 1984) makes it the key area for comparative research on 18th-century slavery sites.

By contrast, work north of the Mason-Dixon Line has not been extensive, perhaps because of a long-established tendency to downplay slavery's importance in the Mid-Atlantic and New England colonies (Harper 2003; Malakoff 2004). This situation is changing, important studies having been completed on Long

Island (Rava and Matthews 2013), at the Beverwyck site in New Jersey (Silber and Catts 2004), and elsewhere.

Although there are excellent historical studies of Delaware slavery (Essah 1996; Williams 1996), and the institution was much more prominent here than in any of the New England or other Mid-Atlantic colonies, there has been essentially no archaeological recognition or study of slave sites in the state. Delaware is in many ways unique in its slave history, with a much lower percentage of slaves in the population than in the Southern states, and with a higher percentage of freed blacks. This is perhaps a reflection of the state's status as a 'border colony,' comparable in climate and its tobacco economy to parts of Maryland, but unique in its close political ties to the Quaker colony of Pennsylvania. Usually Delaware is classified as a Mid-Atlantic colony along with Pennsylvania, New Jersey and New York, but its colonial demography, especially in the southern part of Delaware, shared many characteristics with Maryland and Virginia's Chesapeake. From the 1770s there was also a strong manumission movement that led to a steep decline in the slave population. Paradoxically, though, slavery played a prominent role in Delaware Society in the 18th century, and proved tenacious in the 19th century until the Civil War.

Preliminary discussions for the development of a historic context on the "minority experience" in Delaware took place in 1991 (Ames and Siders 1991). This included consideration of slavery as a part of African-American history, but the envisaged full context was never produced. A 2002 historic context study noted that no slave quarter sites (defined as "a dwelling area maintained by a slave owner for his or her slaves") had been archaeologically documented in Delaware up to that point (Bedell 2002:26). The situation has not changed since that time, although De Cunzo (2004) highlights the importance of slavery as a factor in the history of Delaware.

Only one standing slave structure is known to survive in the State. This is the 19th-century Ross Mansion Slave Quarter near Seaford, Sussex County (Ames *et al.* 1992).

D. APPROACHING THE ARCHAEOLOGICAL IDENTIFICATION OF AMERICAN SLAVERY AT FARMER'S DELIGHT

The archaeological identification of the enslaved people of African heritage and descent who lived in Colonial America might appear to be a straightforward task. Almost uniquely, American slavery was not only a legal, economic and social status, it was by the 18th century also racially defined. People of West and West Central African cultural and ethnic origin were essentially the only ones enslaved. Ostensibly, therefore, they form an almost classic "group" that should be readily observable in the archaeological record without the support of written sources, at least by the assumptions of traditional cultural archaeology and Processualist theory. It has however proved difficult to securely identify slave sites in the absence of documentary evidence. This is especially the case before the emergence of more "standardized" 19th-century Southern Plantation slavery. Zimmerman's recent geographical and landscape-based model for predicting 18th-century slave quarter locations in Anne Arundel County, Maryland is an interesting approach that has not apparently been replicated or further developed elsewhere (Zimmerman 2011).

Many of the archaeological studies of slave plantations have focused on the identification of patterns in the artifact data that can demonstrably be connected to enslaved Africans (e.g. Adams and Bolling 1989; Otto 1977; 1984; other references in Samford 1996). It has become apparent that portable artifacts, especially ceramics, can have meanings and uses that go well beyond the economic, functional or aesthetic, but that

understanding these meanings is very challenging. An alternative, Marxist-influenced view, forcefully expressed by Potter (1991), is that the search for such meanings is an intellectual and ultimately oppressive blind alley that denies the totally unequal economic and power relationships in slave societies. This viewpoint tends, paradoxically, to deny to enslaved people any freedom to express their group identity through material things, even though Potter is careful not to reject this completely (Potter 1991:98-99).

These issues are highlighted in a frequently cited example of the study of the complexity of relationships on plantation sites; the 19th-century Cannon's Point site in Georgia (Otto 1975; 1984; summarized in Orser 2004: 258-260). Otto identified several "statuses" among and between the managers, supervisors and slaves on this plantation, emphasizing that an individual might have several identities even in a rigid hierarchical structure. These different identities might be expressed in different and overlapping ways that make their archaeological identification a complex matter.

While these complexities have to be borne in mind when approaching the data from Farmer's Delight, the question here remains a relatively simple one: does the archaeological evidence support the hypothesis that this is predominantly a location occupied by enslaved Africans?

The most useful framing of this particular research question has been developed by Patricia Samford, first in her discussion of the archaeological identification of slave sites (Samford 1997), and more recently in her detailed study of subfloor pits as specifically slave-related features (Samford 2007). Her work stands in contrast to another 1990s synthesis, that by Theresa Singleton (1995). Singleton discusses the archaeology of slavery from an assumption that slavery has already been identified at a particular location, normally through documentary research. Her explication of four recurrent themes in slave archaeology: living conditions under slavery, status differences within the plantation community, relationships of planter dominance and slave resistance, and the formation of African-American cultural identity, is useful, but she does not address the critical question, for Farmer's Delight at Cedar Creek, of how to first identify slavery from archaeology alone.

Samford sets out two overlapping and complementary ways of identifying slavery: Pattern Recognition and African Cultural Retention. *Pattern Recognition* is derived from the philosophy of Processual archaeology, which believes that such patterns have the "ability to indicate underlying cultural processes" (Samford 1996:98, citing Sue Mullins Moore). This approach began with a strong emphasis on artifacts alone, but it has been recognized that structural features are also part of patterning. For example common small subfloor pits have come to be seen as largely, if not exclusively, artifacts of slave housing. Foodways, which seem to have both cultural and socio-economic meanings, are also an element to be considered (Samford 1996:99). Samford, however, cautions that it is "obvious that archaeologists cannot expect to formulate a single artifact pattern that can be used as a standard identifier for slave sites (Samford 1996:99).

Samford's second identifying "marker" is *African Cultural Retention*, defined as evidence demonstrating **"**physical or behavioral links to West Africa". Initially, efforts were directed towards the identification of artifacts actually from West Africa as indicators of the presence of Africans, but these items are likely to be rare. The best known instances of specifically African cultural behavior are rather the distinctive assemblages of artifacts from subfloor or basement areas which have now been identified in both rural and urban settings, and which have be plausibly interpreted as directly related to West African religious, ritual and healing practices. The artifacts that make up these assemblages are typically English or European

items that have been modified either physically, or by their use, into artifacts with a different meaning. This recognizes that African Cultural Retention was not a static or passive process, but one that saw adaptation and divergence in America. Samford views distinctive American artifact types such as Colonoware and Chesapeake tobacco pipes in this light.

The next section of this chapter will examine aspects of the site evidence primarily in relation to these two organizing principles.

E. SLAVERY PATTERNS AND AFRICAN CULTURAL RETENTION AT FARMER'S DELIGHT

In the following analysis, elements of the site that are considered to reflect either a pattern consistent with a Slave Pattern occupation, or that seem to show African Cultural Retention are noted as respectively "SP" or "AR".

1. Building Techniques, Features and Plans

Post-in-ground Construction (SP)

The use of post-in-ground or earthfast construction (as opposed to heavier framing construction using groundsill beams, or to log construction) has long been noted as characteristic of 17th- and 18th-century building in the Chesapeake and surrounding areas. As Samford notes (2007:86), this vernacular style was widely used in the 17th century, and was not at all specific to buildings for slaves at that time. It may have become more associated with slavery in the 18th century as more substantial and longer-lasting construction methods came to be used for the buildings of the free. Of 28 18th-century slave quarter buildings listed by Samford for Virginia, eleven are of earthfast construction (Samford 2007:Table 4.1). The dating evidence suggests that the technique fell out of favor in the second half of the century, although Samford's suggestion that log and timber-framing replaced it at that time because of their lower costs and greater speed and ease of construction is unconvincing, since this would presumably always have been the case. More probable is the general tendency, more pronounced in the 19th century, to move towards more permanent construction for slave buildings: a change related to complex evolving attitudes to slaves as economic resources.

The residential structures in Area A at Farmer's Delight all appear to be of earthfast/post-in-ground construction. To the extent that negative evidence is reliable, indications are that the apparently isolated, but probably contemporary, building in Area B was of groundsill or log construction. It is tempting, though indemonstrable at present, to relate this apparent contrast in technique and proximity to differences of function and status.

At the present state of knowledge, post-in-ground/ earthfast construction cannot in itself be taken as a definite marker for slave sites. What may be significant at Farmer's Delight is the concentration of several buildings of this type in close proximity both to each other and to industrial activity, as well as contexts that place them all temporally to the middle decades of the 18th century. That more substantial construction techniques were in use in the region at an earlier date is shown by the data recovered from late 17th- or early 18th-century house investigated in the Phase II studies. The selection of the slighter technology used at Area A was therefore a choice.

Size of Structure 1, A "Non-Kin Coresidential Building"? (SP)

Structure 1 in Area A has projected dimensions of roughly 36 feet east-west by 24 feet north-south. It may have had a 12-foot shed addition or porch on the north side and possibly a porch on the east side, increasing the overall dimensions of the structure to 36 feet north-south by 42 feet east-west. The main rectangle of the structure would have covered some 864 square feet (perhaps 750 square feet internally).

By any standard this would have been a relatively large dwelling for a single family in this region. The 18th-century quarters studied by Samford range in size from 144 to 704 square feet, and in 1785 over 75% of the people in Halifax county, Virginia were living in one-room homes of less than 320 square feet (Samford 2007:106). Small houses, mostly of log, also remained the norm in Delaware well into the 19th century (Herman 1992).

A large family dwelling in such close proximity to other buildings and to a bloomery operation seems anomalous in a mid-18th-century context. At Farmer's Delight there was in addition a probably contemporary two-bay log house with a central chimney on the other side of the road. One interpretation of Structure 1 is as a "non-kin coresidential building" like the examples cited by Samford at Utopia Structure 50 (24 by 16 feet/384 square feet) and Carter's Grove House 1 (42 by 20 feet/840 square feet). Both these buildings, however, have numerous subfloor pits. The two pits in Structure 1 may both have been wood-lined, and are therefore consistent with a personal storage function (see below)

Fence Construction (AR)

The series of connecting shallow, narrow trenches north of Structure 2 in Area A may reflect a paling-fence construction technique with West African antecedents . The excavation data suggests that individual pales were placed upright in the ditch to a depth of about three feet below the contemporary surface and spaced between two and four inches apart.

The argument for a degree of African Cultural Retention in this rather mundane feature lies in the fact that the fence appears to be of continuous palings without any intervening larger anchoring posts. The proposed reconstruction (Figure 3.12) shows the palings woven together with vegetable fibers. A similar West African tradition of loosely spaced posts/pales woven together as a base for mud or daub walling, or for other sheathing material, is noted by Ferguson (1992:63-73).

Subfloor Pits (SP and AR)

In her detailed examination of five slave quarters from three Virginian Tidewater plantations, Samford makes a compelling case that the shallow subfloor pits found within buildings on these (and by extension other) 18th-century sites in the Tidewater are usually to be taken as artifacts of African-American slavery (Samford 2007). These features are not generally found on 17th-century sites, are most common in the 18th century, and fall out of use in the early 19th century.

The three plantations studied- Kingsmill, Carter's Grove and Utopia - had close family and cultural connections of a kind not demonstrable on or between most sites, and certainly not available at Farmer's Delight.

Samford's wide-ranging discussion identifies three main probable uses for these pits: as root cellars (typically in hearthfront settings for the storage of sweet potatoes), as personal storage areas (perhaps more commonly in non-kin coresidential buildings), and as shrines (Samford 207:177). She argues that all three of these uses can be traced back to West African practice, modified by the environment of oppression and resistance in which the enslaved found themselves. Samford is therefore a proponent of the contextual view, shared by the authors of this report, that patterning in the archaeological record does indeed reflect cultural assumptions and practices. She stresses that understanding these requires the integration of archaeology with ethnohistoric, ethnographic and documentary data and insights (Samford 2007:3).

She lists a total of 68 known or probable slave structures in Virginia and North Carolina (Samford 2007:Appendix A). Of this number, 58, or 85%, had subfloor pit features. The number of pits ranges from 1 to an exceptional 22 (at Kingsmill Building 1 and Utopia Structure 140). The average number of pits per structure is 4.2. If the two 22-pit outliers are taken out of the calculation the average drops to 3.6 per structure. Of the 58 structures, 31, or over half, had one or two pits only. The structures with numerous pits discussed by Samford are therefore not necessarily typically, although they provided a wealth of sequential and material culture data.

At Farmer's Delight a total of five pits of this type are interpreted as being within four buildings in Area A: two in Structure 1, and one each in Structures 2 through 4. Investigation of the outlying structure in Area B did not locate any such features, though these could have been missed using the adopted methodology. However, the similarity of the archaeological signature of the Area B structure to the two more intensively investigated loci at the Reedy Island Cart Road Site (Hunter Research, Inc. 2011a, and forthcoming) may suggest that this was a log structure without subfloor pits. If this is the case, it may suggest that there are at least two structural traditions on some of these sites: post-in-ground structures with associated subfloor pits, and log structures lacking these features.

There were two pits roughly in the center of Structure 1, which, it has already been noted, was quite a large building. The larger of the two was 7.7 feet east-west by 4.5 feet north-south and had traces of plank floorboards. The planks on the bottom may represent the base of a prefabricated wooden box used to store personal items (Samford 2007:146-147).
The second pit was sub-rectangular, being just over 4.5.feet east-west and four feet wide. This pit too may have had a wood liner. (McKnight 2014).

The Structure 2 pit was lined with wood on its north and west sides, probably to help prevent collapsing of the earthen walls and rain water from seeping into the pit, and as a barrier against burrowing rodents. These linings likely represent exterior walls suggesting that this was a corner pit situated in the northwest corner of the dwelling. This would suggest that it is not a hearthfront feature. Its full dimensions were not established.

The oval pit associated with probable Structure 3 [322/323/336] is quite large at 13.5 feet north-south by a projected 8 feet east-west. The surface area at the surviving rim of the pit is roughly 85 square feet, and the pit is just under two feet deep. The depth is not a reliable indicator of the original dimensions because of deflation, but the surface area can be taken as a minimum.

By contrast, the largest subfloor pit studied by Samford was 46 square feet, a little over half the size of the Structure 3 pit (Samford 2007:Table 5.4 and Figure 5.1). The 96 Virginia examples exhibit mean and median sizes of between 17.7 and 12 square feet. The Structure 3 pit is evidently well outside the size range for subfloor pits associated with slave sites in

Virginia. The feature was not fully excavated since it was encountered at the end of the excavation, but it was sampled with two perpendicular trenches to obtain two profiles. The upper fill [322] was a shell deposit that also yielded the linen smoother (see below), brick daub and ceramics (tin-enameled earthenware, buff-bodied Staffordshire slipware, redware, creamware and some of the few examples of pearlware at the site). The lower fill [336] is a dark brown loam, probably exterior yard soil used to fill the abandoned pit. Artifacts from context 336 consist of ceramics (redware, tin-enameled earthenware and white salt-glazed stoneware), a gunflint fragment, a brass furniture tack, wrought nails, brick fragments and animal bones and teeth. This deposit appears to date to *circa* 1740 to 1760.

The partially excavated shallow pit representing the hypothesized Structure 4 had been backfilled with a mottled sandy loam mixed with decayed red bricks, charcoal and bits of burnt and unburned daub. It is suggested from the backfill that this was a hearthfront pit for food storage likely located at or near the gable end of a rectangular building with a clay and stick chimney.

Inferred Heating and Chimney Arrangements (SP)

No heating source was detected in any of the four structures in Area A, and so any inferences about fireplaces and chimneys must be largely speculative. It seems likely, however, that there were no massive brick or masonry cooking fireplaces in these buildings since the footings of such features could be predicted to survive. Assuming that there was some type of heating system in the buildings (as suggested by the possible hearthfront pit), hearths placed on the floor, with perhaps a single setting of hearthstones, ventilating to stick and clay chimneys at the gables, would seem most likely. Such features are not, of course, unique to slave sites (Ferguson 1992:67).

Possible Grave

Interpretation of this feature is uncertain in the absence of definitive evidence for human remains, and the complex stratigraphy at its southern end. If it is a grave, its off-axis location near two buildings in the corner of the probable yard is puzzling. Such evidence as there is may suggest it is of an earlier date that the reminder of the features in Area A.

2. Artifacts

Bloomery Signature (AR)

The report on the bloomery material by Carl Blair Report (Appendix A) provides a perspective on this aspect of the site that is based on his research on both African and Euro-American iron production technology. It should be referred to for the detailed support for the statements and conclusions presented here.

He points out that some aspects of the bloomery process are culturally dependent, while many others are not. Blair first of all confirms that the feature discovered on the site is indeed the remains of a medium-sized bloomery furnace, perhaps 40 to 50 cm in diameter set in a pit (a practice that makes charging from the top easier). He does not consider the lack of structural detail to be noteworthy since "bloomery furnaces are remarkably fragile things". The bricks found in the bottom of the pit would not have been used in the furnace structure itself, although they could have formed the foundation. After its abandonment the bloomery pit was infilled with materials and debris almost certainly from the ironworking and smithing operation on the site, a common practice.

Although the products of bloomeries of the African and European traditions are similar, the bloomery furnaces themselves show distinct cultural differences. European bloomeries have thick walls insulated on the

inside with "lute", a slurry of charcoal dust and clay (see Appendix A). The tuyere pipes from the bellows, used to enhance the blast, do not extend far into the body of the furnace.

West African furnaces are characterized by thin (5-8 cm) clay walls and long tuyere pipes extending well into the furnace. Lute is not used, and the production of the iron bloom is concentrated in the center of the furnace, with the surrounding charcoal providing the insulation for the clay walls, which is provided by the lute in Euro-American furnaces.

A key observation is that the Farmer's Delight bloomery has no evidence of lute on the identified pieces of the interior furnace walls. In some cases these have slag and charcoal directly adhering to them with no intervening lute layer. While the adage that "absence of evidence is not evidence of absence" is to be kept in mind here, this data indicates that at least one bloomery furnace on site was not lute-lined. This may reflect African practice in construction and use of the furnace, or it could perhaps indicate a hybridization of European and African traditions, with a European-style bloomery furnace lacking the lute because builders and operators were unfamiliar with its purpose and use.

The other unusual feature noted by Blair is the large number of "gromps" (small segments broken from larger blooms) in the backfill of the bloomery pit. Gromps are normally rare because standard practice would be to recycle them in a subsequent blast rather than waste their iron content. The presence of these artifacts may speak to a somewhat inefficient operation in which usable materials were being discarded rather than recycled. This is a long way from confirming a culture of resistance among enslaved African ironworkers on the site, deliberately using wasteful practices to defraud their owners, but the nature of 18th-century slave archaeology is such that markers like these, if replicated at other sites, may be the type of data that survives to show such behaviors. Instances of overt and effective slave resistance are recorded in documentary sources in Delaware, providing some context for this suggestion (e.g. Seitz and Reese 2011).

Spanish Pillar Dollar Button or Sleeve Link (PR/AR)

The copper alloy item, recovered from fence line trench [262] is of considerable interest (see above, Photograph 4.5). It is a contemporary replica of a 1744 Spanish *real* or pillar dollar. As a button or sleeve link it indicates the use of clothing items common to all levels of society in the 18th century at this site. However, the choice of a coin replica with a date may give the artifact a different meaning and possibly function. Samford points to the wearing of coins with drilled small holes attached to clothing as amulets with possible protective associations (Samford 1996: 101-102). The use of coins bearing the birth year of the wearer as a charm to turn away evil spirits was recorded in the early 20th century. It may be tentatively suggested that this object is an example of artifact being specifically selected and culturally transformed to function within the belief system of evolving African-American culture.

Gaming Piece or Charm (AR)

The possible interpretations of the rectangular stone "gaming piece" made from greenish gray sedimentary siltstone have been discussed in Chapter 4 (see above, Photograph 4.6). The intentionally ground margins of this item indicate deliberate shaping to a desired form. While identification as a gaming piece for widespread games such as mankala and wari is reasonable, objects of this kind also speak to the world of charms carried on the person or placed in shrine-like locations in the

floors of quarters. Perhaps significantly in this context, this item was recovered from a posthole along the perimeter of a subfloor pit within Structure 4.

Colono-Ware (PR)

The two thin, triangular, ceramic possible "gaming pieces" recovered from late 17th-century cellar hole identified during Phase II investigation may be examples of the culturally syncretic ceramic termed colono-ware (see above, Photograph 4.6) (Samford 1996:102-103), which has been widely associated with African slaves and also with Native Americans. These clearly represent the modification and re-use of an object for something other than its original intended function (a container in this case).

Ceramic Vessel Forms and Wares (PR)

Samford (1996:99) notes John Otto's hypothesis that the frequency of bowls and other hollow vessels, together with a higher percentage of chopped over sawn bone, on the 19th-century Cannon's Point Site in Georgia may reflect both the status and surviving cultural preferences of enslaved African-Americans. Stewed and simmered foods with multiple ingredients are more efficient to prepare than individually prepared items such as roasts, and are also similar to recorded West African foodways.

The highly fragmented nature of the bulk of the ceramics from the site makes any conclusions about the range and proportions of vessel types frustratingly difficult to draw. Analysis of the relative proportions of various vessel types would be expected to yield valuable information about foodways on the site, especially when compared with other sites. Hollowware vessels are certainly present in some numbers. This number includes handled porringers. These handled bowls speak to pre-Georgian ways of eating and living, perhaps even hinting at an absence of tables for the serving and consumption of food.

Possible Linen Smoother (PR)

A thick, sub-rectangular, smooth piece of dark green glass showing parallel striations is possibly a linen-smoother (see above, Photograph 4.7). This item was recovered from the upper fill [322] of the Structure 3 pit, along with other items considered to be part of an exterior sheet-midden, and therefore of limited contextual value. If it is being correctly interpreted, however, it speaks to both gender roles and economic diversification at the site. With the decline of tobacco cultivation by *circa* 1750, cloth production (often linen and wool combined as "linsey-woolsey") was one of the processes brought in to replace it (Williams 1996:53-54). Women played a prominent part in spinning, weaving and sewing of the yarn and cloth on Delaware plantations. The presence of this artifact therefore perhaps points not only to cloth production at Farmer's Delight, but also to the presence of women here. This in turn may be taken to indicate family units of two or possibly three generations on the site (one or both parents, children, and one or more grandparents). This is an important observation to be set against the interpretation of Structure 1 as a "Non-Kin Coresidential Building".

3. Overall Site Patterning (SP?)

In the absence of a complete plan of Area A it is not feasible to make firm statements about the overall layout in terms of the different exterior spaces and buildings and their interrelationships. Subjectively, however, it does appear that domestic, industrial, horticultural and kitchen/cooking functions are all in very close proximity within the excavated limits of Area A, giving the area a "crowded" feel.

There is a strong probability that a modestly substantial, two-bay, central chimney, structure was present on the other side of the road, but on the same property, while Area A was occupied. This building is shown on the *circa* 1827 Orphan's Court Map (Figure 1.3). That it may be contemporary with Area A, or at least that there was a predecessor on the same general site, is suggested by the informal observation of ceramics from the second half of the 18th century. The placement of this dwelling on the opposite side of the road might reflect a different status or function for the occupant(s).

The poorly preserved signature of the postulated contemporary log or frame building in Area B may also speak to differences of status and role on the site. This building is roughly halfway between Area A and the brick production area (C). It did not, on the basis of the admittedly partial data, appear to have any subfloor features or to be of post-in-ground or earthfast construction. The possibility may be entertained that this building was not built for, or used by, enslaved African-Americans.

F. COUNTER ARGUMENTS

During the process of developing the model presented above there has been an intention to consider alternatives to the slave quarter hypothesis, recognizing that an exceptional claim of this kind requires exceptional evidence of a quality that is basically not available at this site at current technical levels of data recovery. However, there is, as has been shown above, a case to be made that the archaeological patterning at Farmer's Delight cumulatively points to the site being primarily the residence and workplace of enslaved African-Americans for about 40 years.

The most fundamental objection to this model is that the excavations are an unknown percentage of a more extensive site that probably extends west, south and southeast of the investigated area. For that reason alone the evidence could be misleading.

It might also be argued that the lack of documentary evidence for slave ownership by the individuals who owned the property decreases the probability of this being a slave site. However, given the limited nature of the documentary record for this property, and the general limitations of 18th-century historical documentation on Sussex County, this is in fact not a strong argument. Given that enslaved African-Americans probably made up about 25% of the Delaware population at the time of the use of Farmer's Delight, they were clearly much more of an everyday presence in the landscape than the surviving documents would lead one to suspect. Ownership of slaves was common and probably to a degree unremarkable in the context of the time.

Any one of the specific elements discussed above can be dismissed as not specific to African-American slavery. Samford's research on subfloor pits makes a compelling case for these features, but they do occur on non-slave sites. In any event, it is not known how far the patterns she has identified in Tidewater Virginia can be extended onto the Eastern Shore and into Delaware. The pits at Farmer's Delight are not numerous, and one at least is so large that it cannot be regarded as the same type of feature.

The buildings containing the pits survived in a very fragmentary state, although there is enough evidence to indicate that they were of post-in-ground/earthfast construction. Like the pits, this pattern is not however confined to slave sites. The argument made here is that by the mid-18th century the co-occurrence of these features was becoming unusual as more perma-

nent architectural practices made their way down the social scale. The apparently large size of Structure 1 does however call for an explanation.

While the bloomery pit's contents do include material pointing very interestingly to the use of African technology in the construction of the furnace, the lack of comparable regional examples is a limiting factor. Was lute commonly not used in bloomeries in the region for some reason other than cultural practice? Did enslaved Africans really have the power to dictate the forms that bloomery furnaces would take?

None of the portable artifacts discussed above are necessarily associated with enslaved people. This is particularly true of the probable linen smoother, although it is very likely a gender-specific item of interest for that reason alone. The sleeve link, with its unusual choice of motif, may speak to African-American practice and beliefs, but this raises questions about its manufacture, and its subsequent acquisition by someone on this site. The fact that it is not possible to firmly identify the smooth rectangular stone as either a "gaming piece" or "charm" is typical of the difficulty of ascribing meaning to artifacts if they are not in contexts that suggest their use.

It seems probable that only the recognition of repeated patterns in a range of feature and artifact data, tested against the independent information derived from documents, will provide certainty on this question. Continued awareness of the possibilities and development of methodologies will be important for the future of slave archaeology in Delaware.

G. RECONSTRUCTING FARMER'S DELIGHT

Figures 6.1 and 6.2 are different approaches to the reconstruction of the site and its immediate surroundings as they might have looked in the 1760s. Figure 6.1 is an interpretive plan on which decreasing levels of certainty are indicated by the key. These extend from archaeological signatures that are certain or can reasonably be inferred from the archaeological data, through cartographic and documentary data to hypothetical but probable features such as the peach orchard (hypothesized from the presence of peach pits in Area A).

Figure 6.2 is intended as a much more impressionistic reconstruction based both on Figure 6.1 and on analogies and current understandings of 18th-century buildings and cultural landscapes. The oblique bird's eye view is from the northwest.

The oldest visible cultural feature is the abandoned and collapsed late 17th-/early 18th-century house with its cellar pit (1). It lies within cultivated fields in which grain crops are now being grown on its former tobacco fields (2). These fields have been rested for several decades and are now under the plow. The patchwork appearance is based on renditions of cultivated lands on early 19th-century maps, particularly the detailed U.S. Coast and Geodetic Survey series.

To the south of this ruin lies the brick production area (3) with a small clamp ready for firing, a shed-like structure where the bricks are molded by hand before stacking into the clamps, and a pugging area where trampling oxen are used to work the clay to the correct consistency. Immediately adjacent is the pit from which both clay for the brick operation and bog iron/limonite are extracted (4).

Further along the woodline is a charcoal-burning area (5), with two clamps ready for firing. This is shown as a small-scale operation, but in reality the bloomery would have had to exploit large areas of woodland to provide sufficient fuel for the firing, and was possibly a major factor in the deforestation of the surrounding area.

The overgrown and abandoned fields (6) between the charcoal area and Cedar Creek Road are more recently abandoned tobacco plots which had been placed near the woodline for shelter. It is imagined on general historical grounds that tobacco might have been cultivated at Farmer's Delight for a short time, perhaps in the 1740s, before it was replaced by more profitable grains. These fields, abandoned for over ten years at the time of the view, are experiencing successional growth and will not be used for crops for some years. A small stream tributary of the Cedar Creek rises as a spring in this area and is used instead of a well as the water source for the quarter (7).

The main group of buildings is envisaged as orderly but crowded together (8), with at least one building having a garden attached. One glazed window is shown, based on recovery of a limited amount of window glass. Roofs are of shingle. A small peach orchard (9) lies behind the cluster of buildings. The bloomery is protected by a slight polygonal shed structure.

On the west side of the road, close to but physically separate from the bloomery area, is a two-bay log building (10) with a central chimney (perhaps serving fireplaces in each of the two first-floor rooms). This presentation assumes that the building of this configuration shown at this location on the 1820s Orphan's Court Map was actually built in the mid-1700s, a suggestion supported by artifact finds on this side of the road. With its own garden and more permanent construction, this is considered a candidate for the house of an overseer.

On the north side of the hypothesized farm lane leading towards the brickworks is a second log (or possibly framed groundsill) building (11). The evidence for this is slight, being based essentially on an artifact scatter of a type observed at other 18th-century sites in Delaware, and the apparent absence of subfloor pits (see above). From its position and assumed form, this might also be the home of a white overseer, perhaps the person in charge of the brick and charcoal operations.

Transportation is envisaged as two-wheeled carts or sleds drawn by oxen, with horses being reserved for riding by overseers and owners.

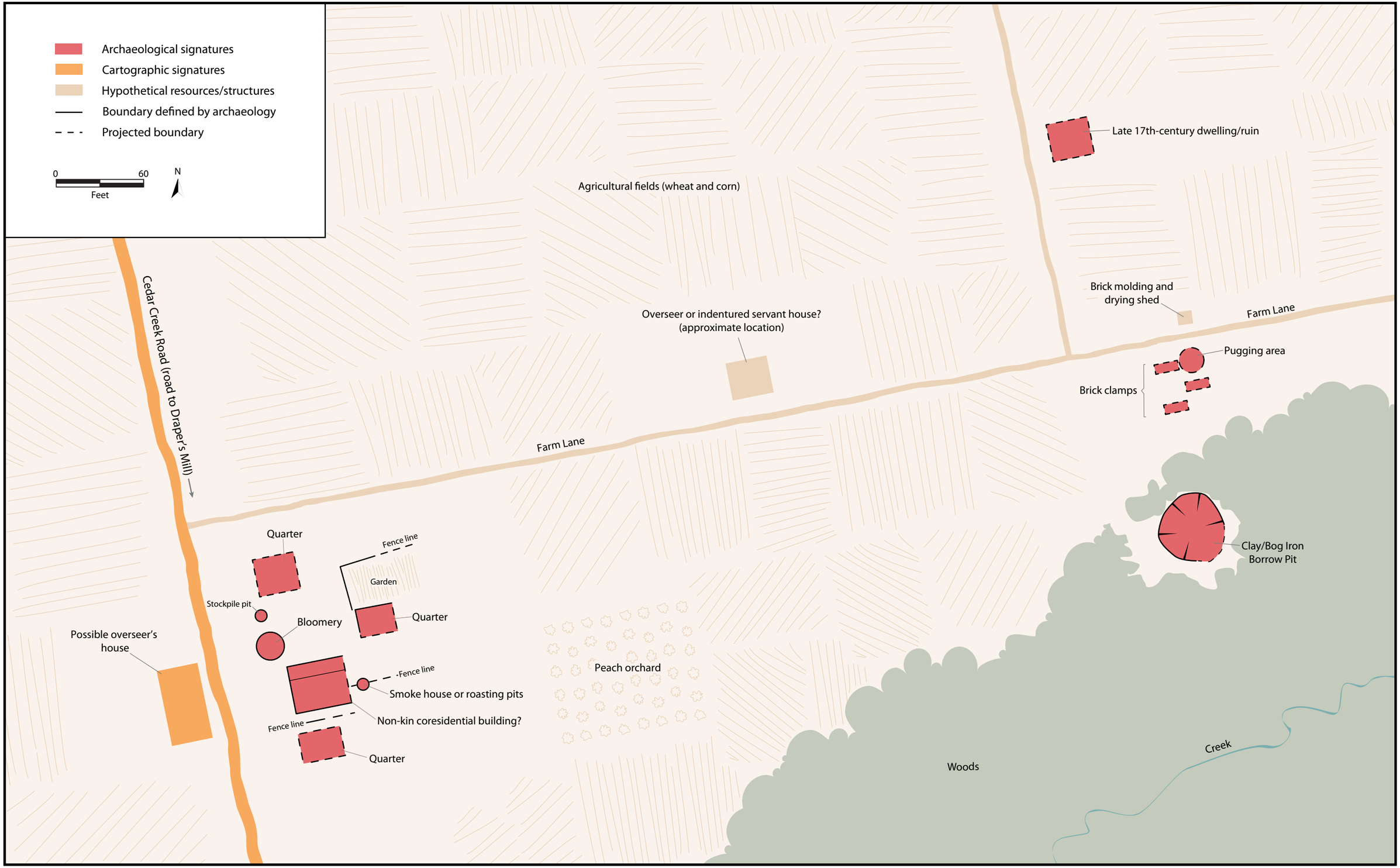


Figure 6.1. Interpretive Plan of Farmer's Delight, based on Archaeological and Documentary/Cartographic Evidence, with Assumed, but Hypothetical, Features Added. Drawing by Elizabeth Cottrell.

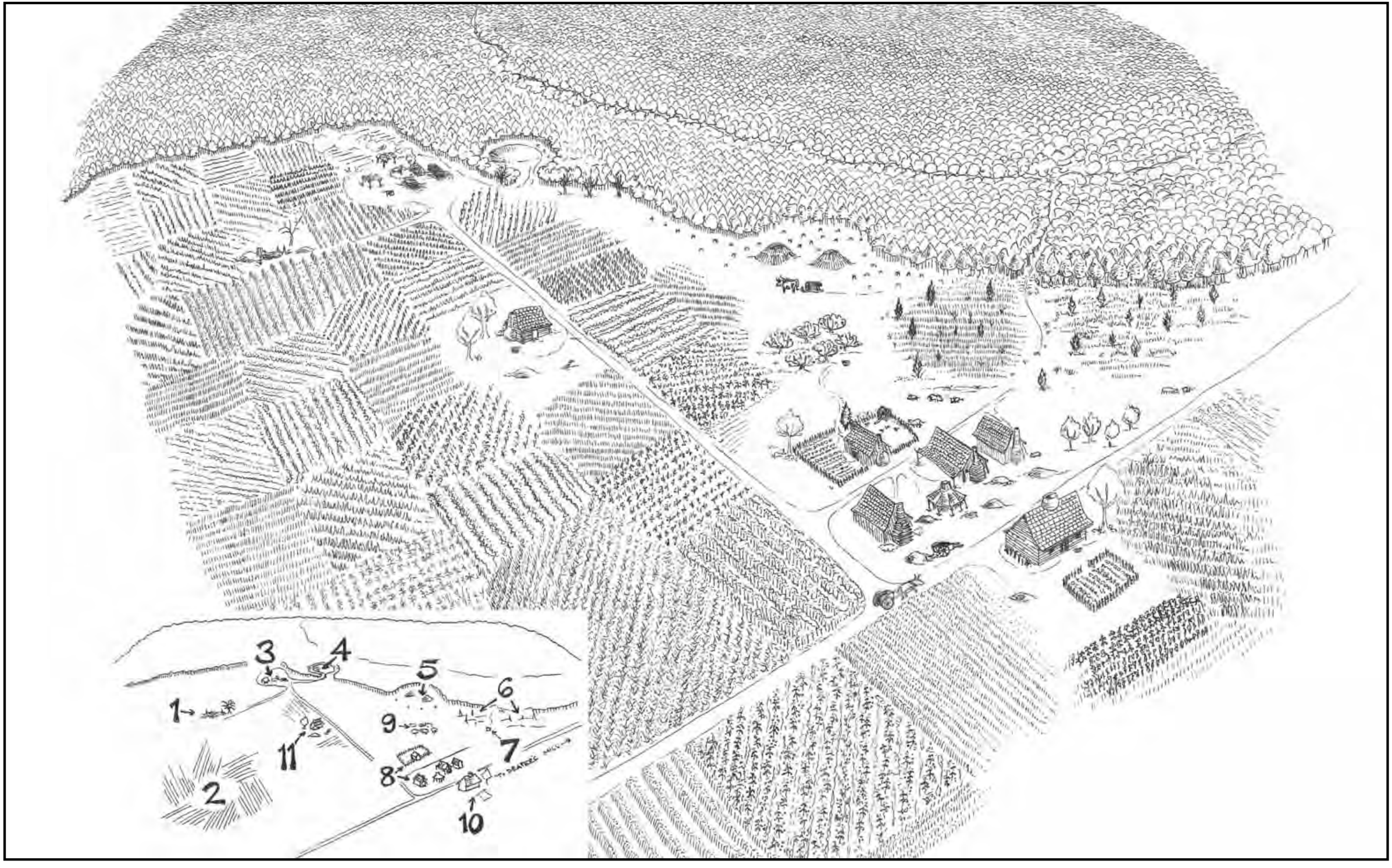


Figure 6.2. Reconstructed Bird's Eye View of the Farmer's Delight Landscape about 1760, Facing Southeast. See Text for Commentary on Numbers on Inset Key. Drawing by Elizabeth Cottrell.

Chapter 7

SUMMARY OF THE PREHISTORIC COMPONENT OF THE CEDAR CREEK SITE

A. THE HUNTER RESEARCH, INC. PHASE I SURVEY

The Hunter Research, Inc. Phase I survey recovered a total of ten prehistoric lithic artifacts from the western end of the proposed alignment of Ramps A and B. This assemblage consists of a portion of a small, narrow-bladed, black chert projectile point, a quartzite biface/knife, two pieces of lithic debitage and six fragments of thermally altered rock. These materials were considered to represent evidence of a hunting foray or short-term stay of a single-family unit, probably during the Archaic or Woodland I periods. The site was designated 7S-C-100 with the Delaware State Historic Preservation Office cultural resource identifier CRS # S10315 (Hunter Research, Inc. 2010).

B. THE EDWARD OTTER PHASE I SURVEY

The Edward Otter Phase I survey recognized two areas of archaeological interest. Area 1, was located closer to State Route 1 was designated 7S-C-102 (CRS # S12257). Area 2 effectively corresponded to the site identified by Hunter Research in the earlier Phase I survey designated 7S-C-100 (CRS # S10315). The prehistoric assemblage from Edward Otter's Area 2 comprised 20 artifacts: three projectile points (one quartz Madison type, one triangular Levanna type and one quartz Piscataway or Guilford type); a fragment of Hell Island-type cord-marked and sand-tempered pottery; seven pieces of lithic waste; and nine fragments of thermally altered rock (Custer 1989:175-176; Edward Otter, Inc. 2009). Area 2 was judged to have been a short-term sporadically visited during the Woodland I/Middle Woodland period (Edward Otter, Inc. 2009).

C. PHASE II ARCHAEOLOGICAL INVESTIGATIONS

Phase II archaeological investigations recovered a total of 85 prehistoric artifacts from site 7C-S-100 (seven of these through surface collection and 78 from excavation units (Hunter Research, Inc. 2011). The great majority of this material (69 items [89% of the total]) was retrieved from the plowzone through excavation and surface collection. Of the other nine artifacts recovered from excavation units in contexts below the plowzone, seven items were found in the fill of a prehistoric pit identified in Excavation Unit 57. The remaining two artifacts recovered from below the plowzone were found in the fill of an 18th-century root cellar in Excavation Unit 43.

The prehistoric artifacts recovered from site 7S-C-100 were dispersed over a wide area. The one concentration of note occurred over an area roughly 200 feet in diameter located approximately 600 feet east of State Route 30/Cedar Creek Road and extending into the alignment of the proposed connector road (see above Figure 3.1). Twelve excavation units were dug within this area (Excavation Units 19, 20, 25, 46-48, 51-53, 55, 57 and 58), of which three are worthy of particular note from the standpoint of prehistoric finds.

Excavation Unit 20 yielded 17 pieces of lithic debitage from the plowzone (13 jasper flakes, two quartz flakes, one quartzite flake and one chert flake) and three artifacts from the underlying B horizon (two pieces of lithic debitage and a fragment of thermally altered rock).

Excavation Unit 48 produced a jasper biface, six jasper flakes and one quartz flake from the plowzone.

Excavation Unit 57 encountered the only *bona fide* prehistoric feature identified during the first two phases of investigation: a shallow prehistoric pit filled with layered loamy sand. This feature yielded a small quartz/grit-tempered pottery sherd, a piece of wood charcoal, a chert flake and four pieces of sandstone. The plowzone above the pit produced three similar pottery sherds along with a chert flake and a jasper flake. Also picked up from the ground surface within the 200-foot-diameter area during the Phase II surface collection was a projectile point: a broadspear fashioned from gray argillite. This specimen was found roughly 50 feet east of Excavation Unit 52.

This limited area of intact prehistoric stratigraphy defined within the northeastern limits of site 7S-C-100 appears to reflect limited occupation dating from the Late Archaic/Woodland I periods. The majority of this area fell outside of the final limits of construction and within an archaeological covenant associated with a late 17th- early 18th-century house site.

As the cumulative Phase I and Phase II investigations failed to locate substantial, intact prehistoric remains within the limits of construction, no excavations were specifically dedicated for further investigation of the prehistoric component during the archaeological data recovery.

D. DATA RECOVERY

Although no excavations were specifically dedicated for further investigation of the prehistoric component during the Phase III archaeological data recovery, it was anticipated that prehistoric materials and subsurface features would be encountered. Phase III excavations in area A only recovered 14 additional prehistoric artifacts. These artifacts are all considered non-diagnostic, consisting of a quartz biface, a quartz core, eight thermally fractured rock fragments and four pieces of lithic debitage, one each of chert, chalcedony, jasper and argillite. Two subsurface features were encountered, one each in Areas A and B. In Area A a large pit [contexts 263/264] was identified extending beyond the northern limits of excavation and measured 3.7 feet east-west by a projected 5.3 feet north-south and extended 2.5 feet below the plowzone. No artifacts were recovered from the pit however charcoal was observed throughout the fill suggesting cultural activity. In Area B another large pit [3] filled by a dark yellowish brown loamy sand [4] measured 8.2 feet long by 4.5 feet wide and extended 2.3 feet below the plowzone. A single quartzite thermally altered rock fragment, and small fragments of mica and charcoal were recovered from the fill of the pit. This pit may have had multiple functions such as heating a structure or cooking as evidenced by the thermally fractured rock and charcoal followed by possible use as a storage pit that was emptied when the occupants moved on, as suggested by the lack of other remains. This pit is similar to the pit encountered in Area A.

Large prehistoric pits such as those recorded in Areas A and B often reveal little physical data for archaeologists to better understand their meaning. Pits such as this in Delaware and parts of Maryland have also been associated with semi-subterranean dwellings known as pit houses dating to the Woodland I and II periods by some archaeologist and as tree falls by others (Custer and Silber 1995, Custer et al. 1996, LeeDecker, et al. 2005; Petraglia 2002; Thomas 1995). The debate has been heated at times with many archaeologists firmly entrenched in their interpretations. Over the past three decades several archaeologists have looked at these features, mainly focusing on those pits packed with prehistoric artifacts, or recent tree-falls or tree-throws, but few have bothered to explore the empty or nearly empty pits (Cavallo and Mueller 1995). The occurrence of empty or near empty cultural pits has not been fully explained and should be the subject of further study. Do they represent storage pits below abandoned dwellings where the inhabitants cleaned them out when they left, taking with them what they

had stored? Were they lined with hides and when retrieved would leave little to nothing behind. In the future soil chemistry, pollen and phytolith analysis should be conducted on the soils from the bottoms of these pits to better understand their possible functions.

The low number of prehistoric artifacts and limited number of subsurface features at the Cedar Creek site suggest the prehistoric occupation was likely short-term and transitory, related to seasonal movement across the lower Delmarva Peninsula between the Delaware and Chesapeake Bays. Sites such as the Cedar Creek site are rarely studied beyond Phase II, as they are viewed as mundane and are thus under-represented in terms of archaeological data recoveries and are therefore poorly understood throughout the State of Delaware.

Chapter 8

CONTEXTS AND RECOMMENDATIONS

A. CONTEXTS

1. 18th-Century Slavery and Plantations

Whether or not the interpretation of Farmer's Delight as a site where slaves worked and lived in the middle decades of the 18th century is correct, this study has highlighted the issue of the archaeology of 18th-century slavery in Delaware. Well studied by social historians, slavery has received little attention in Delaware archaeology even though it was a very significant factor in colonial life. There is no specific historic context study for it, and the present contextual structure, while placing the site within the general framework for comparison with other sites, does not accommodate the slavery issue other than within the Settlement Patterns and Demographic Change cultural trend (Table 8.1). This lack was recognized more than 20 years ago (Ames and Siders 1991), but the preliminary work on the minority experience did not lead to the development of a full context document. While slavery is mentioned in the preliminary document, its emphasis lies elsewhere, primarily in concern for the identification and preservation of historic properties associated with African-Americans in the 19th and 20th centuries.

The historic context for farm and rural dwelling sites in New Castle and Kent Counties, 1730-1770 and 1770-1830 (Bedell 2002) addresses the slavery issue in rather more detail. The Slave Quarter is identified as a property type for this context ("a dwelling area maintained by a slave owner for his or her slaves"), but it is considered that such site elements "will generally have to be identified through documentary research" rather than showing distinctive archaeological features or patterning (Bedell 2002:26). The document reviews the small number of sites where the presence of enslaved Africans or African-Americans has been postulated but not proven, and notes that "the discovery of a documented black-occupied farm site from before 1830 remains an important goal" (Bedell 2002:91).

There is no doubt that the identification of enslaved Africans and African-Americans in the archaeological record is a highly challenging task, especially in the absence of supporting documentary evidence. As has been stressed, such identification currently depends largely on the widespread (but by no means universal) acceptance that group identities are expressed in recognizable ways in archaeological patterning. Research and analysis at Farmer's Delight has sought to show how this might work in practice, with several different types of data being used.

It should however be noted that the Farmer's Delight situation may not apply to sites further north in Delaware. There is ample documentary evidence to indicate that plantation owners in Sussex County were strongly connected to those of adjacent Eastern Shore Maryland and from there more broadly to the Chesapeake. Plantation culture, including in particular the use of larger numbers of slaves than was the norm in New Castle and Kent Counties, may therefore have closely resembled that of these regions. It is probable that Sussex County had more than twice the number of slaves than either Kent or New Castle in the 18th century, although reliable figures are not available until 1790 (Williams 1996:Appendix 1). The posited archaeological identification of slavery at Farmer's Delight may therefore be a factor of a larger number of enslaved people living in a distinctive quarter-like setting. This contrasts with the generally

Table 8.1. Cedar Creek Road Site [7S-C-100]: Historic Context Framework.

HISTORIC THEMES	CHRONOLOGICAL PERIODS AND THEMES	
	1630-1730 ± EXPLORATION AND FRONTIER SETTLEMENT	1730-1770± INTENSIFIED AND DURABLE OCCUPATION
ECONOMIC TRENDS		
AGRICULTURE	X	X
FORESTRY		
TRAPPING/HUNTING		
MINING/QUARRYING		
FISHING/OYSTERING		
MANUFACTURING		
RETAIL/WHOLESALING		
FINANCE		
PROFESSIONAL SERVICES		
TRANSPORTATION AND COMMUNICATION	X	X
CULTURAL TRENDS		
SETTLEMENT PATTERNS AND DEMOGRAPHIC CHANGES	X	X
ARCHITECTURE, ENGINEERING AND DECORATIVE ARTS	X	
GOVERNMENT		
RELIGION		
EDUCATION		
COMMUNITY ORGANIZATIONS		
OCCUPATIONAL ORGANIZATIONS		
MAJOR FAMILIES, INDIVIDUALS AND EVENTS		

Source: Ames et al 1989: Delaware Comprehensive Historic Preservation Plan Figure 1

lower numbers of slaves on plantations further north, and the shared spaces and close proximity of white owners and overseers to the slaves on these sites.

2. Farmer's Delight and Bloomery Iron Furnaces in 18th-Century Delaware

The recognition of probable bloomery materials at the site led to both the detailed analysis of the material presented in Appendix A, and to a secondary literature review conducted to find historic background and identify, if possible, comparable examples of rural, small-scale colonial bloomeries.

The outcome of these parallel lines of research has been to confirm that the feature excavated at Farmer's Delight is indeed the remains of a probably representative bloomery furnace operation in use in the third quarter of the 18th century. It is the only one certainly identified in Delaware of this time period. It has certain features which appear to be culturally derived rather than purely functional, and Carl Blair argues that this cultural reference is West African. The conclusion is that this rural bloomery operation was almost certainly associated with a forge and blacksmith, and probably represents a common type of site of this time period. In its syncretic use of African technology it speaks to the already known complexity of free-slave relationships and roles in colonial Delaware, and probably beyond. Its general economic basis appears to be that of a part-time or seasonal rural operation on a plantation that also produced bricks, probably grew grain cash crops, and may have been involved in the production of textiles. Such diversification fits well into current understanding of Delaware slavery in this time-period (Williams 1996).

The history of colonial commercial iron-making in Delaware, the Delmarva Peninsula, and the Chesapeake region in general, is well documented (Heite 1974; Heite 1983). Most of the emphasis of this research has been on larger commercial sites associated with primary ironworking (i.e. the reduction of iron ore into usable materials, either to wrought iron through a bloomery operation or into cast-iron through a furnace operation). The Bristol Iron Company in Virginia and the Principio Company in Maryland, both established in 1720, are recognized as among the earliest of the region's iron industries. Small-scale refining operations may have preceded these better-known commercial operations, given the availability of local bog ores, easily located and mined, but historical documentation and archaeological evidence of these operations has been largely minimal, anecdotal, or, perhaps, overlooked.

The relationship of features within an ironworking site may provide evidence of the activities undertaken and indicate solutions to larger historical questions about the place of ironworking within society. In rural colonial Sussex County, a bloomery in isolation from other ironworking activities would be unusual, since the effort to make so small a quantity of iron would have been of little commercial benefit unless bar iron was scarce or too dear to acquire through normal trade networks, but desired for some reason by a local blacksmith. For this reason, it seems reasonable to assume that the bloomery was located near a blacksmith shop, especially in light of the evidence that James Fisher, a blacksmith, owned the property *circa* 1747-49. The bloomery may have represented an effort to make a small amount of usable iron when iron bars from trade sources were in short supply.

Typical blacksmithing processes may have occurred alongside of a temporary bloomery since the smith would have wanted to move the bloom directly to refining and shaping into useful tools right away. Functional features of a smith's shop would have included a building or shelter housing a forge, anvil, bellows, quenching tub and workbench. A charcoal fuel pile was also likely to have been located some distance from the shop, and it seems likely that an

outdoor bloomery would have been placed a roughly equal distance away from the fuel source and the shop building, eliminating the danger of accidental combustion (Light 1984). The proximity of the bloomery to the other buildings at Farmer's Delight is surprising in this context.

Colonial ironworkers are usually presumed to have based their blooming techniques on those used in Europe, however, very few documents describe the exact processes used and how European-based techniques were adapted to specific American conditions (Gordon 1994:94-95). This observation seems especially true for small-scale, non-commercial operations that may have been similar to the one supposed to have existed at the Cedar Creek Road site from the late 1740s. The presumption was that the bloomery would have been based on European precedents, given evidence that James Fisher was a free landholder and a blacksmith, but from early in the research it was recognized that there was also a possibility that it could have been based on African precedents. The existence of slavery in the region, and the certainty that African-Americans with ironworking skills were sought out by some plantation owners, especially in the later colonial and early Federal periods made this a reasonable suggestion, and one that is now considered to be confirmed (Libby 1991).

Goucher hypothesizes that African metallurgy techniques were transferred by skilled African slaves and servants to New World locations in the period between 1600 and 1850, creating a culturally complex transference of technology. While clearly the techniques identified with the British industrial revolution were dominant, he suggests that there was indeed room within certain contexts for African techniques to survive, as they are argued to have done here (Goucher 1993).

The socio-economic context of colonial blacksmithing in a rural setting may also be on display at Farmer's Delight. The demand for blacksmiths grew with the increasing importance of wheat and the declining importance of tobacco during the early decades of the 18th century. Wheat cultivation required a greater diversity of iron tools and implements, and the growth of rural populations boosted demand for blacksmith's work, since everyone who owned a plow, a metal pot or an axe needed a smith.

A study of blacksmithing in Kent County, Maryland, by historian Christine Daniels found that 15 blacksmiths were active in the county *circa* 1750 (Daniels 1993). It seems reasonable that similar numbers were engaged in neighboring counties such as Sussex County, Delaware. The Kent County blacksmiths tended to fall into three categories: those who worked in small towns and produced finer goods; those who worked near mills and supplied those mills with needed services; and those who worked in rural areas, supplying the basic needs of planters. The rural smiths, perhaps similar to James Fisher, were often themselves small planters who worked iron seasonally. Daniels suggested that the busiest time for rural blacksmiths was traditionally from October to March when they and their neighbors were not so highly engaged in planting, cultivating and harvesting, but evidence for this is circumstantial and it might reasonably be stated that April to September would have been as busy a time because of the need to keep tools sharp and in good repair.

Daniels observes that a rural smith's shop was often located on marginally arable land, and compared to a town smith's shop often reflected a lower level of capitalization with minimal investment in permanent buildings. Farmer's Delight may fit the pattern of low capitalization and lack of permanent buildings. It is located on good arable land, but it also lies beside a locally important and early road that connected it to other nearby communities. The Kent County smiths often had a close business relationship with a city merchant or larger planter, who might loan the blacksmith the money to build a shop or purchase tools or

materials. In some instances, the merchant owned the shop and leased it to the smith. Critically, the merchant-planter provided the blacksmith with the backing to extend credit to customers in the chronically cash-strapped colonial economy. The existence of a bloomery might suggest that a particular blacksmith did not have the credit or a reliable business connection for supplying bar iron (Daniels 1993:753-54).

Some merchant-planters employed indentured servants as smiths on their land, although Daniels suggests that this practice was declining by the early decades of the 18th century. That servants working as blacksmiths in Sussex County at about the time of proposed ironworking activity at the Cedar Creek Road site is confirmed by Pennsylvania Gazette notices advertising for the return of runaway blacksmiths in 1737 and 1743, two of whom were identified as Irishmen. The demand for servants with blacksmithing skills suggests the possibility that Sussex County planters may have been unable to attract a sufficient number of free blacksmiths to supply their needs. The blacksmith James Fisher may have purchased property in Sussex County in 1747 to meet a perceived demand for his skills (*Pennsylvania Gazette* 8 December 1737, 30 April 1743; Daniels 1993:757-758).

B. RECOMMENDATIONS

> Slave quarter sites would therefore have high priority and could be considered for eligibility with a lower degree of integrity than farm sites that were occupied by white, male-headed households. Still, a slave quarter site would have to contain a substantial amount of information, including, probably, integrity in at least one of the three key areas: house foundations or other substantial architectural information; fences, ditches, or other good evidence of site landscape; and large, well-preserved artifact deposits. A site that does not contain large, well-preserved artifact deposits must still yield enough artifacts to securely date the occupation and give some indication of its character (Bedell 2002:107).

Bedell's above recommendations form a basis from which the archaeological study of slavery in Delaware can be moved forward.

The Farmer's Delight data firstly suggests that the property-type definition of " Slave Quarter" devised for the 2002 context document is now too generalized and may need to be replaced by at least two other terms. There is a considerable difference in function (and likely archaeological signature) between a single building, or part of a building (such as an attached or detached kitchen) occupied by two or three enslaved people in close proximity to owners and/or overseers, and a physically and functionally separate slave quarter of several buildings and possibly several functions of the type that has been proposed for Farmer's Delight. Part of the difficulty is the terminology, since the terms "plantation" and "quarter" have had multiple and shifting meanings through time, and some discernment is needed to understand what is being referred to in historical documents. "Domestic Slave Quarter" might be appropriate for the small scale situations more typical of the two northern counties. "Plantation Slave Quarter" would be used for groupings of buildings lived and worked in by enslaved people. These might in turn be subdivided between purely residential quarters, and quarters where work tasks and processes central to the economy of the plantation were also taking place. The latter situation is argued to be present at Farmer's Delight.

Beyond the definition of property types, however, there is now considered to be a need for a historic context for Delaware Slavery. This could form part of a wider context addressing ethnic and minority issues in Delaware (including the important evidence concerning the ethnic and cultural survival of Native American groups in the State). Alternatively, it could be framed as a stand-alone document, perhaps in two parts, with 1770 marking the division between the two. After 1770 the character of slavery changed in Delaware with the beginning of an extended episode

of manumissions that reduced the number of slaves considerably. The effective ending of the slave trade in the early 1800s further changed the way slavery functioned.

As part of the development of such a context, the hypothesis set out in this report should be tested elsewhere. Ideally, one or more similar-sized plantations in Delaware with historically documented slave populations would be archaeologically examined in such a way that the results can be compared to those of Farmer's Delight. This would provide a check on the conclusions drawn here.

Such a research project is unlikely to be undertaken within the current regulatory framework under which most large-scale archaeology is undertaken in the state. However, it could be promoted as a viable research program for academic institutions in the state.

Two other approaches to the issue are feasible. The first is a review of existing archaeological data in the light of the Farmer's Delight hypothesis. The assumption here is that there may indeed be similar patterning in some of the 18th-century sites already reported on, but which were not identified at the time. Delaware's strong record of both the completion and availability of archaeological and cultural resource management reports, and of the curation of records, artifacts and samples from these studies by the state, makes this task less daunting than it might otherwise be.

Looking forward, it is suggested that there be a concerted effort to included awareness of slave archaeology as an issue on 18th-century and pre-1860s sites in Delaware. Scopes of work, especially for evaluation and documentation studies of rural sites, should include consideration of African and African-American slavery as a research goal reflected in the proposed methodology. These measures may enable more of these currently largely "invisible" people to be seen, and their stories given their place in the history of the state.

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Appendix A

BLOOMERY MATERIALS ANALYSIS

Bloomery Materials Analysis

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I. Overview:

An assemblage of iron associated materials from the Cedar Creek Bloomery Forge were investigated focusing upon the archaeological context of the site, the physical analysis of the artifacts and a selection of the total body of artifacts were subjected to XRD analysis. The results were bi-modal, some of the results suggest that the Cedar Creek Bloomery was a typical example of a late direct process iron production as carried out in the 18th Century. Other results indicate that the human involvement in the process, specifically the African slave labor used at the location resulted in very different results which might have had significant economic and structural impacts upon the overall development of Cedar Creek.

II. The Basics of Iron Smelting and Its Role in Archaeology Analysis:

One of the core issues confronted when studying artifacts and then trying to relate them to a specific culture or a mixture of cultures is the mix of technical and cultural variables present. In some cases, such as the heat treating stone to enhance its flaking abilities it really does not matter what the culture is. A stone is heated in a fire and the mineral structure is changed. In other instances, such a painted object the pigments used may be similar from one culture to the next but the meaning and purpose of their use is so cultural dependent so as to make any study based upon the technical similarities and distinctions of the pigments relatively meaningless.

The remains of iron smelting are a happy exception to this problem. Some aspects of the process are not at all culturally dependent, e.g. the thermal and chemical requirements for chemically reducing iron oxides to metallic iron. Other aspects of the process are quite culturally dependent, e.g. furnace design, wall lining, etc., and variations from a norm, either the European or African, can be interpreted to show the interactions of the cultures present.

As might be expected with a multi-thousand year tradition that produced such an essential part of European and African life there is an extensive vocabulary that relates to iron smelting. Some terms are those that have survived from the past, and others are those used by contemporary archaeologists to describe what they observe. For the current consideration of the Cedar Creek remains the following terms are sufficient to understand the process.

Burden: The mix of slag and bloom that is formed as the charge in the furnace is reduced and iron is formed.

Bloom: The desired end product of the smelting process, a spongy mass of metallic iron in a physical association with slags, for a bloom to be used it needs to be further worked – or wrought – into wrought iron, at a blacksmiths forge. Because of the obvious inherent value of a bloom they are rarely found at a furnace site – having been removed upon their production in the past.

Charge: the mix of fuel, flux and ore that is added to the furnace.

Flux: One of any number of substances that can be added to the burden to promote more efficient smelting, at Cedar Creek the presumed flux was clam shell.

Gromp: A modern term introduced by Polish archaeologists in the Holy Cross Mountain region to describe bits of iron bloom that are too small to be forged as such, but which can be re-processed in a furnace to form a bloom (Bielenin 1977). Similar to a bloom a gromp has value as such and so is rarely found in any number at a smelting site.

Lute: A slurry of charcoal dust and clay used to line furnaces, first described in De Re Metallica, modern experimental work has shown that lute is a key component to ensure a smooth smelting operation (Blair 1994, Crew pers com.)

Slag: A catch-all term for any number of waste products from the smelting and smithing processes. The most common mineral found in bloomery slag is Fayalite – Fe_2SiO_4, as this mineral is very wasteful, the use of fluxes to substitute Calcium – Ca, for one of the Iron – Fe, atoms in a molecule Fayalite is an important part of the smelting process. Slags that were liquid when they drained from a furnace are referred to as tap slags, those which were removed as solids or semi-solids are known as raked slags.

Skull, Cap, or Plano-convex Bottom (PCB): three terms for the same thing, the mass of slag that forms in a smithing hearth, can form with any smith operations with wrought iron, but are particularly associated with the consolidation – forging – of bloom.

Not a term but an important consideration of any iron production site, European, African or American. The smelting furnace or blacksmiths forge is just one small part of an overall site, work areas for processing ores, storage areas for charcoal and other supplies, secure storage for bloom, space for bellows, areas to puddle clay for construction or repair, rain shelters for a furnace, etc. etc. A bloomery site is best seen as an entire complex not just a furnace or a forge

Quite commonly furnaces are found partially dug into the ground, with a further opening/dug out area in front of the furnace. Much debate has been offered as to why these operating pits were used, perhaps insulation, perhaps to help with the stability of the base of a furnace partially constructed against the side of the pit, etc. While it will never be entirely clear why this was done an Occam's Razor solution preferred by the present author is that as these furnaces were top charging, and also through experimental work we have learned a lot of manipulation of the charge/burden is done from above,

having the overall height of the furnace being, in effect, lowered by building it partially in a pit will make the operation of the furnace easier. So, why the presence of operating pits, it makes the work of the operating crew easier.

European Traditions of Iron Smelting:

The physical remains recovered at Cedar Creek are primarily the end result of an over 3,000 year old European tradition of direct process iron smelting. (Craddock 1985). While no living tradition of traditional bloomery production has survived extensive study of archaeology remains and a nearly 60 year long series of experimental furnace firings has provided a good understanding of the process perhaps best demonstrated by the production of bloomery iron that is essentially indistinguishable from that produced in Europe's past (Blair 1992, Crew 1991).

The centerpiece of European smelting is the furnace itself, essentially a clay tube with one, or more, openings near the base for air to enter to allow the necessary combustion to take place. The fuel and ore burden is added through the top of the furnace, making these top charging furnaces. The reduction of an iron oxide to metallic iron must be done in a reducing environment where incomplete combustion of the fuel – inevitably hardwood charcoal – produces carbon monoxide rather than the carbon dioxide that results from complete combustion. The control of the air flow into the furnace is a key part of any smelting operation. In all but the largest furnaces the air was forced into the furnace through one, or more, tuyere holes using bellows. In European furnaces the tuyere pipes – through which the air was moved from the bellows did not extend into the furnace.

Furnace sizes varied significantly, some small furnace were no more that 20 cm in diameter whilst the largest were over 100 cm in diameter. Extensive experimental work has shown that the best height of the shaft for a furnace is approximately 3 times its diameter or from just 60 cm for the smallest furnaces to over 3 meters for the largest (Blair 1992, Crew 1991, Cleere 1972). The largest furnaces, those with an interior of approximately a meter have been shown in experimental work to be able to draw sufficient air into them through convection so as to eliminate the need for bellows (Blair 1994)

To operate a furnace not just the air flow needs to be controlled, the fuel/ore ratios in the charge, the size of the pieces of the charcoal needs to be monitored, and the physical movement of the burden through the furnace requires encouragement at times. In short there are many factors that require a careful balance if any are out of line the a day's smelt most likely will fail. Perhaps the most important, but rarely considered factor is fuel. For a variety of factors charcoal was the primary fuel for direct process smelting (cite). While admirably suited for smelting its production is inherently wasteful, a kilogram of charcoal requires 6 – 7 kilograms of wood. In most European smelting contexts because of the vast requirements of wood to produce tons of charcoal coppice wood, primarily oak, was the fuel of

choice for smelting, especially coppice wood of about 3 centimeters in diameter. Minimizing the fuel consumed is an important part of any successful smelting operation. The European solution to this problem was to build quite thick wall furnaces, 20 – 30 cm thick which provide quite effective insulation. A furnace in full operation with an interior temperature of over 1400 degrees Centigrade will, after a full day's operation, be pleasantly warm to the touch on the outside. An advantage of this insulating property of the furnace wall is that virtually the entire interior of the furnace can be hot enough for smelting to take place which will maximize the production of bloom.

Smelting is a physically demanding process on the furnaces themselves. Experimental work undertaken by the present author from 1991 to 2007 showed that it could require up to 50 pounds of clay a day for running repairs to the furnace. One of the main problems is that while the thick walls are good insulators they are not, of course, perfect so the walls are cooler and slag moving down the furnace has a tendency to freeze onto the walls and then when sufficient weight has built up to tear the frozen lumps of slag – at c. 1300 degrees Centigrade - off, or the operators physically knock the slag cakes off the walls then it is quite common for a part of the furnace wall lining to be pulled away with the slag. If this tearing away a portion of the furnace wall is repeated it becomes progressively worse – as the wall becomes lumpier - and can necessitate major interior repairs being undertaken. Anything that can minimize the damage is welcomed; lining the interior of the furnace with as smooth a layer of lute as possible will make a dramatic difference as has been demonstrated by the rediscovery of lute by Dr. Peter Crew in 1993 after which in both his furnaces and the present author's experimental furnaces the wear and tear was dramatically reduced. Since that time lute lined furnace fragments have been recognized in both Dr Crew's and Dr. Blair's excavations in the U.K.

African Traditions of Iron Smelting:

African iron smelting, although nearly as old a tradition as European iron smelting, has an independent origin and followed a different trajectory. (Avery 1996, Schmidt 1997) There are many similarities between the two traditions due to the fixed nature of chemical reactions and the similarities of materials used. However there are also some important distinctions as well. Perhaps the single most important is that unlike European direct process smelting which died long before modern scholarly interest arose; African direct process traditions continued until virtually the modern era so that much useful scholarly work has been able to be done making use of those who at one time actually engaged in the smelting process or whom at least knew people who had done so (David 1996, Schmidt 1997). While some of the products of these efforts to replicate earlier techniques were of lesser quality than blooms produced by the original workers they have allowed for vital insights into social and ritual aspects of the process that have long been lost in European contexts.

Along with providing valuable ethnographic data current research into African iron making supports some of the key distinctions between the two traditions that are apparent in the Cedar Creek assemblage. Specifically, European furnaces were generally relatively thick walled so that the entire

diameter of the furnace would be at a smelting temperature. African furnaces were relatively thin walled, often no more than 5 - 8 cm thick and only the center of the furnace would be used for smelting (David 1996). The outer "cushion" of charcoal between the reduction zone and the walls served in effect as insulation. Although seeming more wasteful of fuel such a method does reduce the wear and tear on the walls and eliminated the need to carefully lime the furnace walls with a smooth layer of lute. A further aspect of the thin walls and "cushion" of charcoal is that African furnaces typically have long tuyere pipes that extend well into the furnace, there is much debate as to whether this not only delivers the needed air to the necessary location but may also help by pre-heating the air (Schmidt 1996)

Despite the differences in construction and operation Africa furnaces produce very similar blooms, slag assemblages, tapped, racked, and skulls and caps that look and are very similar to those produced by European furnaces (Killick 1999)

III Methods:

A three part sequence of study has been undertaken.

1. A careful study of excavation records, including plans, drawings and profiles

2. A study of the physical remains, in particular slags, furnace fabric, gromps, shell, and misc. bits and pieces that were in the excavation units. This is a macro-study, looking at the unit assemblages as a whole. The excellent quality and quantity of artifacts provided has allowed for the key issue of the project to be explored, were there multi-culture influences on the smelting process at Cedar Creek.

3. Instrumental analysis of the slags and furnace fabric. As slags are extraordinarily heterogeneous artifacts, point analysis tends to offer very little useful information, as the minerals present can vary tremendously. Instead "bulk" analysis such as is accomplished through X-ray Diffraction (XRD), have been carried out. As with the excavation records the primary result of these has been to demonstrate that the work done in the 18th Century at Cedar Creek was a direct process bloomery operation.

IV. Results:

The results of the current research into the Cedar Creek assemblage may be split into three parts; those obtained from the inspection of the excavation data supplied to the current author, those

from the physical study of the assemblage of artifacts, and those from the instrumental analysis of a selection of the artifacts. As will be discussed below while the results from the first and third methods are reassuring and useful – they show that indeed the artifacts are from an iron smelting and smithing operation – they are not much different from data that could be obtained from any similar site. The physical evidence is, perhaps not surprising, the most important. The actual artifacts provide the data that the conclusions discussed below are primarily based upon.

Archaeological Site Data:

As the bulk of the Hunter Group's report is based upon and explains the site plans, drawings and photos that were graciously supplied to the present author this will be a very short discussion. There are three main points that need to made.

1. It is clear that the work was undertaken and completed to a very high degree of professional competence, as will discussed further with the physical analysis of the data, the actual artifacts provided were in excellent shape and not excessively knocked about during the excavation process. Similarly the site plans, drawings and photos show a well excavated bloomery furnace site, that this is what was excavated is not open to question. Regrettably because of the nature of the project, a highway rescue site, areas outside of the impacted regions were not dug and so the slag dumps, additional furnace sites etc. were not excavated. But the fact that these were not dug in does not in any way diminish what was there, recovered and recorded.

2. The mix of materials, the layering of the slags and other debris shown in the site plans and photos is absolutely convincing for a multi-year/phase iron bloomery. The waste materials produced in a process such as this become quite staggering when considered in the aggregate. If a 40 - 50 cm diameter furnace was used – which fits all the physical evidence – it is reasonable to expect c. 40 pounds of slags/debris a day to be produced (Cleere 1972, Blair 1992). If this was done for perhaps 100 days a year, for even a decade then at least 20 tons of materials would be expected, bloom consolidation and forging would produce an equivalent amount of debris. So finding a variety of materials, layered and mixed is to be expected at any such site.

3. The concentration of brick found in the base of the bloomery feature, surrounded by CX 106 does require some further discussion as brick is not an expected part of any bloomery furnace, as it is a poor insulator and rammed clay is a superior material for a bloomery furnace (Blair 1992). However, brick is admirable for any number of other purposes from providing a foundation upon which to build a furnace, to lining a pit, reinforcing a wall, etc.

In summation the bloomery feature, based upon the excavation data, is just that; a bloomery, quite possibly an old one that was later used as a convenient location for the dumping of other debris from

later bloomery activity, an entirely standard activity. (Blair 1992, Crew 1991) The size and shape of the pit strongly suggest that the furnace was of a middle size, c. 40 – 50 cm.

Physical Artifact Data:

The physical analysis of the artifacts sent to the present author proved to be the heart of the project, not the instrumental work as was initially expected. As was briefly discussed above in "**Archaeological Site Data**" the quality of the materials was much appreciated. The samples sent were largely intact and well suited for study. Contrasted to some sites where careless excavation is done and broken "skulls" or "caps" are the norm and fragmented pieces of slag are the rule the Hunter Research assemblage was a pleasure to work with. Obviously some were broken, slag being basically vitrified silica (glass), but frankly these provided helpful cross sections that saved time breaking them myself.

Aside from a reasonable desire to praise good field work what is the significance of the good quality of the materials sent for analysis? It provided a trap that was almost sprung. The quality of the materials leads one to want to do equally quality analysis, which has, I believe been done. However, one needs to avoid falling into a trap of excessive precision that would mask the limits of accuracy resulting from the nature of the data recovery – see above. It was very tempting to provide a level of analysis beyond what is justified in a partial site excavation done as a highway rescue project. As the present author looked at every piece of material sent, at least three times; the initial artifact spread, while screening the materials, and then after screening it would be very tempting to separate out all the gromps and say something along the lines of, "Ah ha, in ex 65 there are___% more than in ex 106." This would be a meaningless statement as the samples are not equivalent, and represent at best a tiny fraction of what was once produced at the site.

As the data is in effect a small snapshot of what was once there the physical analysis is a more of a subjective picture than an objective one, counting the number of pieces of tap slag tells one…? However, the presence of dozens of pieces of tap slag tells one without a doubt smelting was taking place. In the summary of the excavation units below a primary emphasis is on the nature of the assemblage in each unit, not so much the exact number of gromps, skulls, or shell fragments. However, when one compares and groups excavation unit assemblages a very clear picture emerges.

A final, subjective introductory observation. As mentioned above all materials sent were screened by the present author using a standard ¼ inch mesh rocker screen. Approximately 50% of the initial weight sent was lost as dust in this process. After over 20 years of work on bloomery iron sites if there were any questions as to whether Cedar Creek was a bloomery site, and that were the materials that were sent came from the initial production of iron bloom and associated bloom consolidation/forging this process would answer this question. The nasty, caustic, abrasive matrix that came from the screening and filtered through the air mask worn by the author were identical to bloomery production debris from archeological and experimental sites from multiple countries and separated by thousands of years. Cedar Creek physically is initially an absolutely standard bloomery production site, however the artifacts tell more.

Unit Summaries:

Phase II EU 41 CX 1

Artifacts: A small collection of mixed slags, largely raked. Quite weathered and smooth.

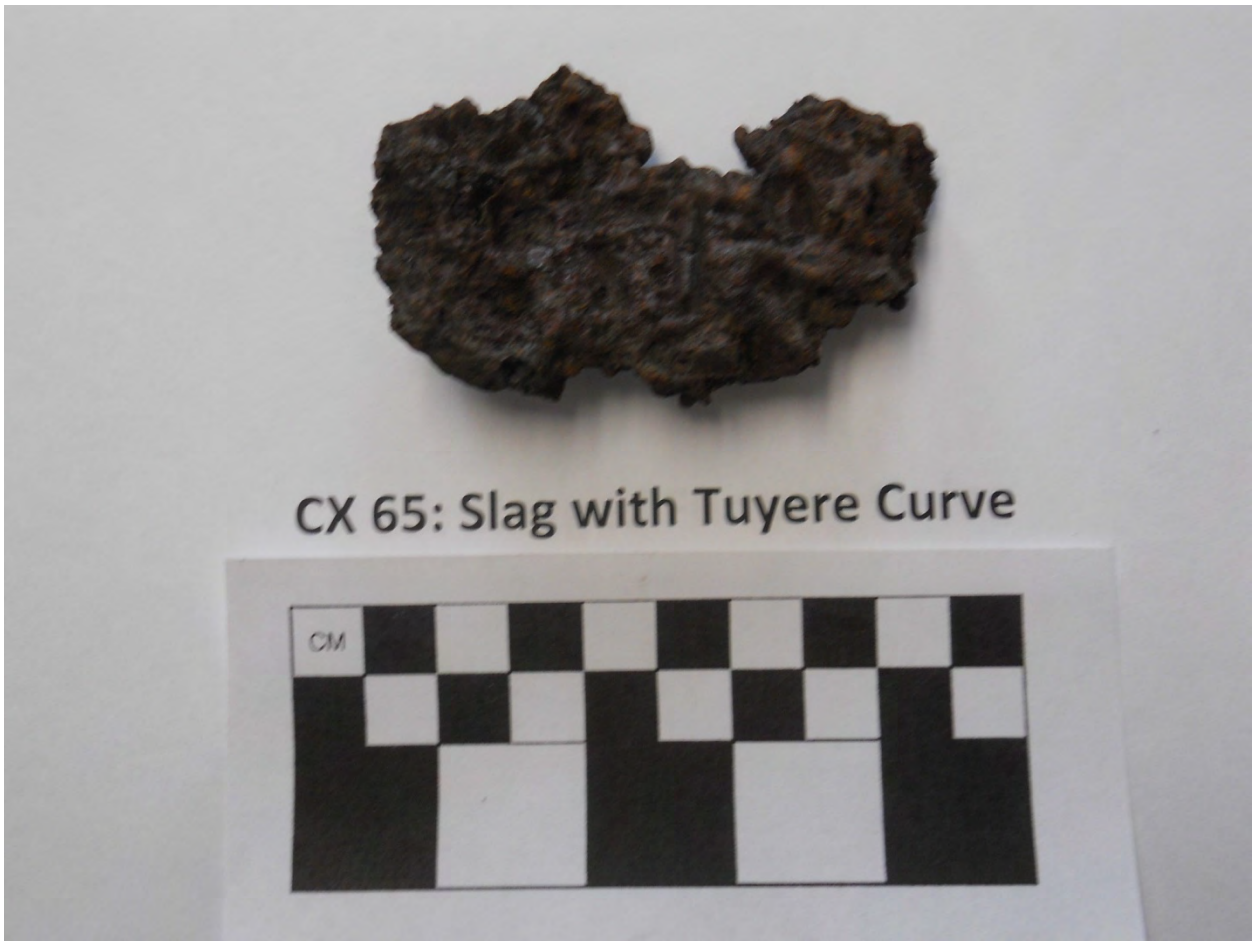
Phase II EU8 CX 1

Artifacts: 2 very compacted bits of bloom – larger than a typical gromp – look to be partially consolidated bloom fragments, almost at the bar stock stage.

CX 65

Artifacts: A large assemblage of mixed iron associated materials. Racked slags – many small pieces, slags with pieces of clay – presumably furnace wall - attached, slags with charcoal embedded. Clay burnt and vitrified, gromps, charcoal fragments, a few stray pieces of metal and shell fragments.

Noteworthy pieces: One of the slag pieces (pictured below) strongly resembles slag that froze just below a tuyere hole, if so a reasonable extrapolation of the tuyere hole is that it would have been 5 – 6 cm in diameter, the desired diameter for a mid-shaft furnace. The vitrified clay reassembles typical wall pieces, no evidence of relining. One of the charcoal fragments is a cross-section of a small piece of dense wood, c. 3 cm in diameter, it appears to be oak. A number of gromps, c. 10, were in this group.


CX 65: Slag with Tuyere Curve
CM


CX 65: Gromp
CM

CX 65 & 68

Artifacts: A mix of racked and tap slags – the highest concentration of any lot, yet less than 5% of total slag assemblage. Clay fragments, burnt clay and brick, gromps, burnt stone, some charcoal, shell.

Noteworthy pieces: Several of the clay pieces show evidence of relining; however, there is no evidence of lute being used as a part of this process. Some of the clay pieces are quite vitrified. Several, est. 20, gromps are in the mix too.

CX 66

Artifacts: Mixed lot of slags, some skulls/PCBs, racked slags. Vitrified clay, charcoal fragments, brick fragments.

Noteworthy pieces: a mixed lot, many small bits along with larger, lots of dust/grit in the mix, looks virtually as if various debris had been swept into the operating pit of an old/out of use furnace.

CX 68

Artifacts: Slags mostly racked and skulls/PCBs, many small pieces of slag, some brick, clay, burnt and some vitrified, shell, metal fragments.

Noteworthy pieces: Very similar to CX66, looks to be a mixed lot of debris swept into, or in this case on top of an old operating pit. Some of the larger slag bits have clay fragments adhering to them,

presumably from the inner wall of a furnace – again no sign of lute. The Skulls have characteristic banding typical of those from bloom consolidation smithing.

CX 106

Artifacts: Slag: racked, tap and skulls/PCBS charcoal and brick fragments, some small slag bits, vitrified furnace lining, gromps – several c. 12 – metal pieces, and shell fragments.

Noteworthy pieces: Two of the gromps are very metallic, these would be very hard to miss if one was looking for gromps. The skulls/PCBs display characteristic layering that fits with bloom consolidation. One of the pieces of char is a good cross-section of a small, c. 3 cm dia., piece of dense wood, with some traces left of the bark, probably oak. Not as "dusty" as CX 66, more larger pieces of slag, and larger pieces of brick – given its spatial relation of CX 66 perhaps the first larger pieces from whatever "clean-up" was underway that used the operating pit as a convenient dump.


CX 106: Tap Slag
CM

CX 112

Artifacts: A very few decayed and weathered fragments of slag.

Surface Collections

Artifacts: Slag and gromp, very weather and decayed.

Summation of the physical analysis:

With two glaring exceptions the artifacts from the bloomery features at Cedar Creek are just what one would expect from a mid-sized smelting/bloom consolidation operation. There are masses of racked slags, a bit of tap slag, a plentiful array of skulls/PCBs from smithing operations, fragments of furnace lining/wall, some charcoal, a few bits of shell – for flux, along with brick fragments and stray bits of stone and metal. Clearly this was not the main slag dump for the Cedar Creek operation, rather an

old operating pit that served as a convenient dump for whatever was at hand at the moment. All in all a rather straight forward and moderately interesting assemblage but really not of any great import. However, there are two aspects to the assemblage that are very interesting. First the remarkable number of gromps found. As discussed above exact counts of artifacts would give a perception of precision that is not in line with the levels of site accuracy that are present, yet having 50+ gromps out of a relatively small assemblage, under 100 kgs is rather striking. In the excavations the present author directed at the Low Birker site in Cumbria England between 1997 and 2005, only 5 gromps were found from a total of over 7 tons of slags and smelting debris excavated. The second significant variation in the materials from Cedar Creek is the lack of lute in the pieces of furnace fabric found. Having worked with experimental furnaces that were lined with lute and those that were not there is no comparison, a lute lined furnace is just plain and simply better, it lasts longer, is easier to repair, and is easier to operate. So why no lute and too many gromps at Cedar Creek? A possible explanation will be offered below.

Instrumental Analysis Data:

A selection of representative artifacts from Cedar Creek was subjected to Powder X-ray Diffraction Analysis (XRD). As has been discussed elsewhere the extraordinarily heterogeneous nature of iron associated materials – especially slags and Skulls/PCBs - make point analysis problematic at best (Blair 1992). A bulk analysis through powder XRD provides a very robust overview of the character of the materials being looked at, and can show valid distinctions between classes of artifacts, if indeed differences do exist. The goal of this variety of XRD is to identify the primary mineral phases present in each artifact, and by looking at the assemblage of mineral phases to see if valid patterns of similarities and distinctions exist between and among the assumed categories. One difficulty in doing this work is that the "cards", a term still used although instead of a physical file card all the data is on searchable data bases, are based upon current modern, frequently industrial, standards, which do not necessarily reflect the nature of production in the past or the impacts of the taphonomic processes that the artifacts have been subjected to. The above having been stated the artifacts form Cedar Creek provide an extremely plausible set of groupings that support without any doubt the evidence of the excavations carried out, that the site was a typical/standard bloomery site.

The XRD analysis of 13 iron associated materials artifacts from Cedar Creek, and one ore sample, was undertaken at the Michigan Technological University's XRD labs, grateful thanks is offered to Mr. Edward Laitila who oversees these labs for his profoundly useful advice. The artifacts can be grouped into four categories: slags, tap slags, Skulls/PCBs and gromps, and the ore. While some similarities exist between all groups – significant SiO2 presence in all – there are clear distinctions between the groupings and more importantly they reflect absolutely standard mineral phase assemblages.

In the following listings the four most important (highest concentration) mineral phases are given for each artifact in order from the most significant to the least, as multiple names are often used for each

mineral phase the elemental composition is also used rather than the common name, a list on the most common names for each mineral phase is provided below.

Slags:

CX 65:	**CX 68**:
SIO2	SiO2
Fe2SiO4	Fe2SiO4
FeO	FeO
FeCa (Si2O6)	Fe3O4

CX 68

Fe2SiO4

FeCa (Si2O6)

SiO2

FeO

Tap Slags:

Cx 106	**CX 106**
SiO2	SiO2
FeO	FeO
Fe2SiO4	Fe2SiO4
Fe3O4	Fe

Skulls/PCBs:

CX 65	**CX 66**
SiO2	SiO2
Fe	FeO
FeO	Fe2SiO4

Fe2SiO4

FeCa (Si2O6)

CX 69

CX 106

SiO2

SiO2

Fe2SiO4

FeO

FeCa (Si2O6)

Fe2SiO4

FeO

FeCa (Si2O6)

CX 106

SiO2

Fe2SiO4

FeCa (Si2O6)

FeO

Gromps:

EX 65

EX 65

FeO

FeO

SiO2

SiO2

FeCa (Si2O6)

Fe3O4

Fe2SiO4

FeCa (Si2O6)

65 & 68:

FeO

SiO2

FeCa (Si2O6)

Fe2SiO4

Ore: Surface Collection:

SiO2

Fe_2O_3

Useful names for the phases – please note for many of the phases there are multiple names, the ones used here are the ones most commonly used in archaeology

SiO_2 – sand – quartz

FeO – Wustite

Fe_2SiO_4 – Fayalite

$FeCa(Si_2O_6)$ – Hedenbergite – note this is a modern industrial mineral, Mr. Laitial and the present author plan to file a "card" for the archaeological equivalent presently.

Fe_3O_4 – Hematite

Summation of the Instrumental Analysis:

While obvious overlaps exist between each of the groupings there are also clear distinctions in the order of the mineral phases. That these reflect similar physical distinctions, and those found in similar, albeit larger assemblages (Blair 1992), serves to reinforce the point that there are real variations between the artifact groups, and that the artifacts at Cedar Creek are absolutely typical bloomery materials.

The presence of $FeCa(SiO_6)$ in many of the samples is a clear demonstration that fluxing was being undertaken. While direct proof is impossible it is hard to ignore the fact that shell fragments are common in the bloomery debris and also a shell dump has been found on the site. While other possibilities exist for the presences of calcium – CA – as a fluxing material the plausible answer is that the shells were being used.

In combination, this is as "typical" an assemblage mineral phases that are a part of a group of iron associated materials as could be imagined. The various groupings stand a part, but each is obviously related to the others.

V. Conclusions

There are several strands of data and evidence that, when combined, allow for some rather interesting conclusions to be drawn about the bloomery at Cedar Creek. These strands are, the excavation process itself, the physical examination of the artifacts, the instrumental examination of the

artifacts, and finally the historical data known about Cedar Creek. As is discussed in the main body of this report the sample set of bloomery sites that could be used for comparisons to Cedar Creek is small. Even smaller, as in virtually non-existent, is equivalent archeo-metalurgical analysis of North American bloomery sites. Accordingly the referenced sources and data in this appendix have come from largely European sites with an awareness of the impact of African equivalents. Direct process iron production, bloomery production, is, of course, a fortunate aspect of archaeological science in that the processes are not just culturally dependent, but are also based upon the firm limits of chemistry and physics. Accordingly using European data is not unreasonable, especially as the site was part of an English colony.

The excellent excavations and recording done by the Hunter Research Group are, of course the basis for the main body of this report. Suffice it say here that the excavations uncovered the remains of what is referred to as "the bloomery feature" along the northwest boundary of the study/excavation area. Early hopes that further analysis by the present author might shed light on the nature of the furnace proved to be false, bloomery furnaces are remarkably fragile things and it is no surprise that no in-situ remains or traces were recorded by the excavation teams. However, the shape of the excavated area, the colors of the soils and the artifacts – slag, etc. – found lead to only one plausible conclusion, this was a location of the bloomery furnace. The furnace was mostly likely a mid-sized, mid shaft furnace, c. 50 cm in internal diameter, the "workhorse" of European iron smelting for over 2000 years and still in relatively frequent use throughout the 18th century. After the end of its useful life the operating pit was used as a minor dump for the multitude of debris that is associated with the smelting and consolidation – smithing- of bloomery iron. The reuse of the operating pit of the furnace as a dump for future iron working debris is in itself a telling point about the works at Cedar Creek, that this was an active iron production site, while some non-smelting/smithing debris were in the matrix the overwhelming bulk were iron associated materials. In other words when one wants to fill in an otherwise useless hole in the ground you use what is convenient, in this case the debris of the on-going smelting and smithing work at the site.

The debris used to fill in the old bloomery operating pit is the most interesting part of this present study of the bloomery site. To the first approximation this is the most "typical" assemblage of materials one could imagine to represent the activities of a bloomery site, slags of multiple kinds; smelting – both racked and tap, smithing – in particular the skulls/PCBs from bloom consolidation work, and literally thousands of small non-descript slag fragments that could be from anything. In addition there are pieces of burnt and vitrified clay, both fragments of a furnace itself and also the clay adhering to slag cakes which had torn the clay from the furnace walls. One also finds charcoal, brick bits, even burnt stones, shells from the fluxing process, and gromps. One thing that is not found is any evidence of lute, the charcoal/clay slurry used to line European furnaces, a puzzling lack as in the experimental smelting field it is often described as the "wonder drug" of smelting as it solves or minimizes almost any ill found in the interior of an iron smelting furnace. Equally puzzling is the presence of so many gromps. These small pieces of iron rich bloom represent virtually the end product of iron smelting, the ore has been mined/processed, it has been smelted – at considerable cost in charcoal, time and labor, and the only thing wrong with a gromp is that it is too small. With experimental smelting to have a total of up to

5% of one's output with a mid or tall shaft furnace being gromps is not unreasonable (Blair 1992). However as these are very easy to identify, recover, and either toss back in the furnace or use for something else discarding 50+ in the small 100 kilogram assemblage at Cedar Creek is in many ways like throwing out money.

The instrumental portion of the picture is rather like the excavation, just what one might expect. Fluxed slags, skulls with mixes of iron and slag right as one ought to expect. All in all an absolutely typical site/assemblage no different than any of the, admitted, handful of others that have been so studied. What conclusions may be drawn, the furnaces were charged with a good mix of fuel, ore and flux, the smiths knew what they were doing. In other words the more visible, skilled work was being done to a perfectly reasonable standard resulting in what one would expect to be good functional wrought iron products.

Then the fourth strand of data, the humans doing this work, hitherto basically ignored in this technical appendix, but ultimately the point of the Cedar Creek study and really any legitimate archaeological site study – what of the people? The Cedar Creek works were owned and operated by Europeans, English – see the main report for details. Much of the labor was supplied by enslaved Africans; in this case presumably those who had some knowledge of iron working from their own ancient traditions.

When these four stands are put together what can be said? The excavations and instrumentation say this is as standard a bloomery operation as one could hope for. The artifact study and labor used tell a different story. While one must allow for contemporary values and not just condemn the evil of slavery as the horror that it is and then dismiss anything associated with it as "just bad" it is hard not to see how the slave labor of the stolen Africans impacted the works at Cedar Creek. To do so a "just-so" story needs to be envisioned with European/English supervisors and African slave workers. Superficially a well run site, proper charges were put into the furnace, resulting in products that based on chemistry and mineralogical standards are just what one wants. However the furnace was not lined properly with lute – why not? Anecdotally all that can be offered by the present author is the observation while it is the wonder drug of smelting lute is also a horror to work with, it is unbelievably abrasive when wet, it will suck any moisture out of your skin – strangely even when wearing rubber gloves. So without an incentive – either academic research or pay – both not offered to the slaves – why do it? So too with gromps; while the observations made in above discussion stand – gromps are easily identified and are frankly money in the bank – as a slave why care? What possible benefit would be achieved by doing dirty unpleasant – yet possibly largely unobserved/unsupervised – work, why hurt your hands lining a furnace, why scramble through slag and dust to find gromps? The simple answer as to why to do this is, outside modern experimental archaeology, that to have more structurally sound furnaces and to have more iron product recovered at the end of the day would make a significant economic impact upon the overall business at Cedar Creek. It is impossible presently to quantify the impacts, but envision even a 5 – 10% reduction in costs or increase in profits and the results become significant. But why should the slaves care?

Not to place too much significance upon the results of studying the Bloomery at Cedar Creek, but it does provide an interesting view into a number of areas, the use and re-use of a Colonial era bloomery site, the mixture – not necessarily helpful – of two traditions of iron smelting, and perhaps most importantly a possible glimpse into the working attitudes and results of incorporating slave labor into a complex and subtle process of smelting iron, and the impacts of the slaves wither passive or active resistance to European methods of smelting.

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Appendix B

ANALYSIS OF FLOTATION-RECOVERED ARCHEOBOTANICAL REMAINS

Report on the Analysis of Flotation-recovered Archeobotanical Remains from the Cedar Creek Site (7S-C-100), Sussex County, Delaware. Phase III Archaeological Data Recovery

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February 13, 2014

INTRODUCTION

Phase III archaeological data recovery at the Cedar Creek Site (7S-C-100) in Cedar Creek Hundred, Sussex County, Delaware, was conducted by Hunter Research, Inc. as part of the Delaware Department of Transportation's U.S. Route 301 Development Project. The Cedar Creek Site describes a domestic, rural farmstead, iron bloomery and brick kiln with occupations spanning the late 17th through 18th centuries. The site includes a cluster of closely tied households likely representing the remains of an industrial slave quarter associated with field agriculture and commercial iron production. The Phase III research effort included extensive supplementary background research and archaeology focused on better understanding the history of site occupancy and land use during the period 1700-1775. Field investigations focused on three activity loci within the Limits of Construction (LOC): Area A describes a dense locus of activity immediately east of SR30 and Cedar Creek Road including a series of adjacent structures occupied during the early to mid 18th century; Area B is a concentration of mid 18th century artifacts likely associated with an un-located domestic structure; and Area C defines the brick manufacturing area.

An important research goal of the data recovery effort was the definition of cultural occupancy, landscape, economy and foodways throughout the site's history. Excavated features yielded carbonized plant macro-remains which relate directly to site economy, site function, feature development, and local landscape conditions. In addition, archeobotanical data from the Cedar Creek Site contribute to our understanding of regional archeobotany on the Delmarva Peninsula, and provide the first macro-botanical dataset linked directly to a community of enslaved Africans in Delaware.

A total of 13 soil samples for flotation were obtained from historic features excavated during Phase II archaeological investigation and Phase III Data Recovery excavations within Area A at the Cedar Creek Site. Samples were selected for processing and macro-botanical analysis based on their potential to provide information regarding historic subsistence and land use issues. The selected samples derive from eight discrete cultural features directly related to domestic and economic activities.

METHODS

Soil samples collected from cultural features ranged in volume from approximately 0.2 liters to 3.8 liters in sediment volume. Exact soil volumes were not measured, but were calculated based on field maps and profile drawings. Flotation processing was conducted at the Delaware laboratory facility of Hunter Research, Inc. using a "Delaware Park" type water flotation machine. The Delaware Park drum flotation device was based on a design by Williams (1973), built by William Sandy (Thomas 1981; Sandy 1985) and is somewhat similar to the SMAP-style flotation system (Pearsall 1990:32-35). Processing resulted in a heavy fraction captured in nylon

window screening (16 by 18 mesh per inch), and a light fraction collected in 80 mesh nylon drawstring bags. Fractions were air dried. Preliminary screening and sorting of archeobotanical remains was conducted by staff at Hunter Research, Inc.

Selected plant artifacts and small-fraction products of flotation from 55 sub-divisions within the 13 flotation sample contexts were delivered to Justine McKnight's Severna Park, Maryland laboratory for analysis. Table 01 provides an overview of studied contexts. Remains from each of the 55 sub-samples were individually passed through a series of geologic sieve to produce standard divisions for analysis. The greater than or equal to 2mm specimens were examined under low magnification (10X to 40X) and sorted into general categories of material (i.e. wood, seed, cultigen, miscellaneous material, etc.). Description, count and weight were taken for each category of the greater than or equal to 2mm carbonized material. The less than 2mm size fractions were examined under low magnification and the remains of cultivated plants and carbonized seeds were isolated for identification and quantification.

Table 01: Summary of flotation samples from cultural features.

CX	Description	Area	Delaware State Museum Catalog Number	Associated with Structure N	N of sub-samples	Approximate soil volume (liters)	Weight carbonized plant remains (grams)
5	root cellar	A	210-3-210 T, U, Y, AC, AD	2	5	3.785	10.83
22	pit	A	210-3-211K, L, M, N, R	4	5	0.946	0.025
65	bloomery	A	210-3-212H, K, R, S, X, AA		6	3.785	11.02
66	bloomery	A	210-3-213D, L, P, R, S		5	3.785	0.03
68	bloomery	A	210-3-214G, K, L, U, V		5	3.785	0
86	subfloor pit	A	210-3-215K, L, N, P, Q	1	5	0.473	0.27
88	subfloor pit	A	210-3-216C, D, G	1	3	0.473	0.025
90	paling fence	A	210-3-217G, H, K, M	2	4	0.237	0.04
106	bloomery	A	210-3-218T, Q, R		3	0.946	0.015
116	pit	A	210-3-219G, H, K, L	4	4	0.946	0.035
156	possible burial	A	210-3-220G, L, N, K	2	4	0.946	0.43
270	possible burial	A	210-3-221C, D, E	2	3	0.946	0.02
302	animal wallow	A	210-3-222D, E, G	2	3	0.473	0.24
total	**13 contexts**		**8 features**		**55**	**21.526**	**22.98**

The processed samples yielded both carbonized and uncarbonized plant remains. Uncarbonized plant remains observed in the flotation-derived botanical assemblage included modern roots and uncarbonized seeds. It is highly unlikely that these uncarbonized plant specimens relate to historic occupations at the Cedar Creek Site. Although the persistence of uncarbonized plant remains from consistently xeric or water-saturated environments does occur (Hastorf and Popper 1988; Minnis 1981; Pearsall 2000), such soil conditions do not describe the U.S. Route 301 Development Project Area. Uncarbonized plant remains occurring within archaeological soil samples from similar site environments are usually considered to be intrusive modern specimens

(Minnis 1981; Keepax 1977). The recovery of uncarbonized plant remains may reveal specific contamination episodes associated with animal burrowing (i.e. rodent, insect, gastropod), the action of root growth and decay, aeolian or fluvial processes, or by some combination of these natural forces.

Sample matrices were predominantly composed of coarse sands and gravel, with various inclusions of natural ecofacts and historic cultural debris. Coal, clinker, ceramics, mortar, crushed shell, insect eggs and body parts, roots and dust were observed within the analyzed samples. Some of the flotation samples also contained moderate quantities of sclerotia. Sclerotium are a dense, compact mass of fungal mycelium that function as a resilient food reserve. This dormant fungal body is durable in the ground and is often found in association with tree roots. Sclerotia are small, spherical bodies (to 4 mm in diameter) belonging to many diverse groups of fungi.

Identifications were routinely attempted on all seed, cultigen and miscellaneous plant remains, and on a sub-sample of ten selected wood fragments from each sub-sample containing *more* than ten specimens, in accordance with standard practice (Pearsall 2000). Identifications of all classes of botanical remains were made to the genus level when possible, to the family level when limited diagnostic information was available, and to the species level only when the assignment could be made with absolute certainty. When botanical specimens were found to be in such eroded or fragmentary condition as to prevent their complete examination or recognition, a variety of general categories were used to reflect the degree of identification possible. General wood categories within the analyzed assemblage include *'diffuse porous'*, *'deciduous'*, and *'unidentifiable'* where specimens were so fragmentary or minute that no clear section could be obtained upon which to base identification. The categories *'amorphous carbon'* and *'unidentifiable carbon'* were used in this report to classify burned plant remains which lacked any identifiable characteristics whatsoever. Identifications were made under low magnification (10X to 40X) with the aid of standard texts (Panshin and deZeeuw 1980; Edlin 1969; Schopmeyer 1974; Martin and Barkley 1961), and checked against plant specimens from a modern reference collection representative of the flora of the Delmarva Peninsula (McAvoy 2011; Taber 1960; Tatnall 1946).

RESULTS

Flotation-recovered plant remains from 55 subsamples derived from 13 soil samples collected from eight historic cultural features within Area A at the Cedar Creek Site (7S-C-100). A total of an estimated 21.5 liters of feature fill was flotation-processed yielding 22.98 grams of carbonized plant macro-remains (an average of 1.0675 grams per liter of soil). A variety of economically important cultivated and wild plant resources were documented from cultural contexts spanning the period 1700-1775. Wood charcoal dominated the assemblage (based on fragment count and aggregate weight) with oak species being the most common wood types identified. The remains of maize (corn) confirms the importance of field crops to farmstead economy and the diet of site residents. The presence of peach pits document cultivated orchard fruits in site diet, and the presence of grass seeds inform our understanding of local landscape conditions and perhaps the use of grass as tinder material. Miscellaneous plant materials identified include amorphous and unidentifiable carbon. A summary of the flotation-recovered archeobotanical remains by feature is provided in Table 02. A full flotation inventory by

Table 02: Summary of Flotation-recovered Plant Macro-Remains by Context. Site 7S-C-100.

CX Number	**5**	**22**	**65**	**66**	**68**	**86**	**88**	**90**	**106**	**116**	**156**	**270**	**302**	**13 contexts**
Description	**root cellar**	**pit**	**bloomery**	**bloomery**	**bloomery**	**subfloor pit**	**subfloor pit**	**paling fence**	**bloomery**	**pit**	**burial**	**burial**	**animal wallow**	
n of samples	**5**	**5**	**6**	**5**	**5**	**5**	**3**	**4**	**3**	**4**	**4**	**3**	**3**	**55 subsamples**
associated with structure	**2**	**4**				**1**	**1**	**2**		**4**	**2**	**2**	**2**	
volume (liters)	**3.785**	**0.946**	**3.785**	**3.785**	**3.785**	**0.473**	**0.473**	**0.237**	**0.946**	**0.946**	**0.946**	**0.946**	**0.473**	**21.526**
weight carbonized plant remains (grams)	**10.83**	**0.025**	**11.02**	**0.03**	**0**	**0.27**	**0.025**	**0.04**	**0.015**	**0.035**	**0.43**	**0.02**	**0.24**	**22.98**
WOOD CHARCOAL (n of >2mm fragments)	168	4	983	4	0	40	1	4	0	5	36	3	7	1255
total weight (grams)	9.15	0.02	10.96	0.03	0	0.25	0.02	0.02	0	0.03	0.41	0.02	0.24	21.15
Acer spp. (maple)	7													7
Carya sp. (hickory)			1			2					3		2	8
Pinus spp. (pine)		1				10								11
Quercus sp. (white oak group)	5		15	2		8	1	4		4	7			46
Quercus sp. (red oak group)	2		2											4
diffuse porous			2								1			3
deciduous	9			2						1	3	3	5	23
unidentifiable		3									2			5
total identified fragments	23	4	20	4	0	20	1	4	0	5	16	3	7	107
FIELD CULTIGEN (carbonized) (n of specimens)	0	0	3	0	0	3	0	0	0	1	2	0	0	9
total weight (grams)	0	0	0.02	0	0	0.015	0	0	0	0.005	0.01	0	0	0.05
Zea mays (maize) cupule			1			2								3
Zea mays (maize) cupule fragment			2			1				1	2			6
SEEDS (carbonized) (n of specimens)	17	1	4	0	0	1	1	0	1	0	4	0	0	29
total weight (grams)	1.06	0.005	0.04	0	0	0.005	0.005	0	0.005	0	0.01	0	0	1.13
Prunus persica (peach) pit fragment	17		1											18
POACEAE (grass)		1	3			1	1		1		4			11
MISCELLANEOUS (carbonized) (n of specimens)	0	0	0	0	0	0	0	1	1	0	0	0	0	2
total weight (grams)	0	0	0	0	0	0	0	0.02	0.01	0	0	0	0	0.03
amorphous carbon								1						1
unidentifiable carbon									1					1
UNCARBONIZED SEEDS (presence)	x	x	x	x	x	x	x	x	x	x	x	x	x	
Acalypha spp. (copperleaves)		x	x								x			
Amaranthus spp. (pigweed)	x	x	x	x	x	x	x	x	x	x	x			
Datura stramonium (jimsonweed)							x							
Mollugo verticillata (carpetweed)		x	x	x	x	x	x	x		x	x	x	x	
Oxalis stricta (sheep sorrel)		x		x										
Phytolacca americana (poke)					x									
Silene spp. (catchfly)			x		x		x							
Stellaria medai (chickweed)		x				x		x		x	x			
Viola spp. (violet)		x								x				
POACEAE (grass)				x										
PRIMULACEAE (prirmrose)				x										

Context Number is provided in the Appendix, Tables 1 through 13. A discussion of each class of plant material encountered within the assemblage is provided below.

Wood Charcoal

Wood charcoal was present in 85 percent of the 13 flotation samples analyzed from Cedar Creek. A total of 1,255 fragments of carbonized wood (>2mm in diameter) weighing 21.15 grams was recovered (accounting for over 92 percent of the analyzed plant carbon, by weight). Of the total wood charcoal, a sub-sample of 107 fragments (a maximum of 10 fragments per context sub-sample) was randomly selected for identification. This sub-sample revealed a predominance of white oak species (*Quercus spp. LEUCOBALANUS group)* (46 fragments or 43 percent of the selected sub-sample), pine *(Pinus spp.)* (11 fragments or 10 percent), hickory *(Carya spp.)* (eight fragments or seven percent), maple *(Acer spp.)* (seven fragments or seven percent) and red oak (*Quercus spp. ERYTHROBALANUS group)* (four fragments or four percent). Wood specimens which were too minute or which exhibited incomplete morphology were assigned to the categories *'diffuse porous'* (three fragments or three percent), *'deciduous'* (23 fragments or 21 percent), and *'unidentifiable'* (five fragments or five percent). The percent composition of wood types from the Cedar Creek Site is illustrated in Figure 01.

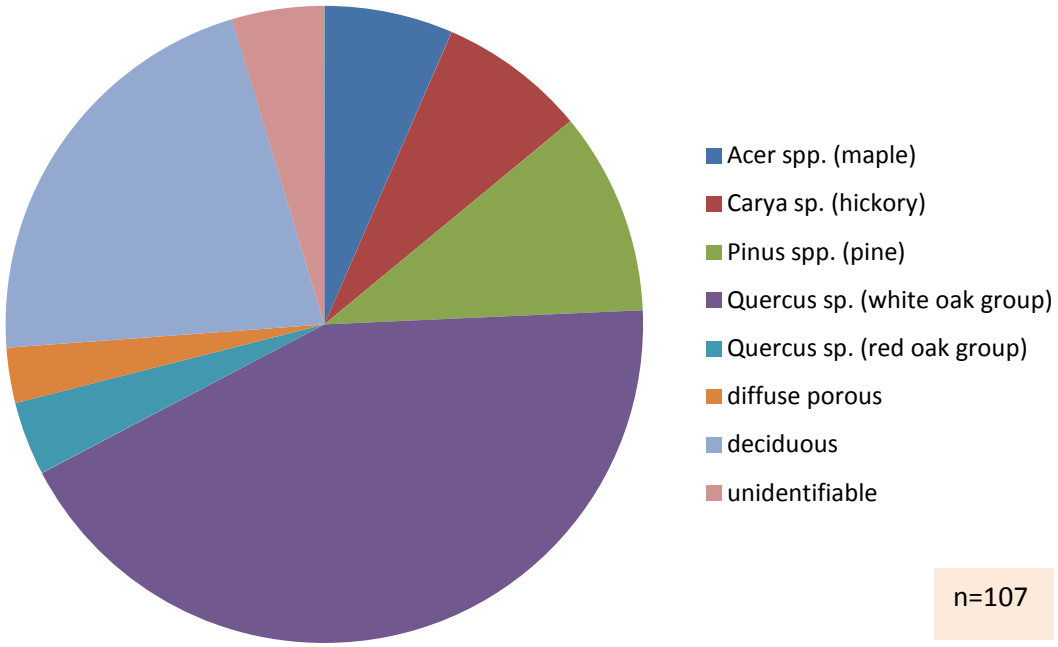

Figure 01: Percent Composition of Wood Types Represented in the Assemblage.

Carbonized Seeds

A total of 29 carbonized seeds or seed fragments (0.05 grams) were recovered from Contexts 5, 22, 65, 86, 88, 106 and 156. Only two taxa are represented: grass *(POACEAE)* (11 seeds), and peach *(Prunus persica)* (18 pit fragments).

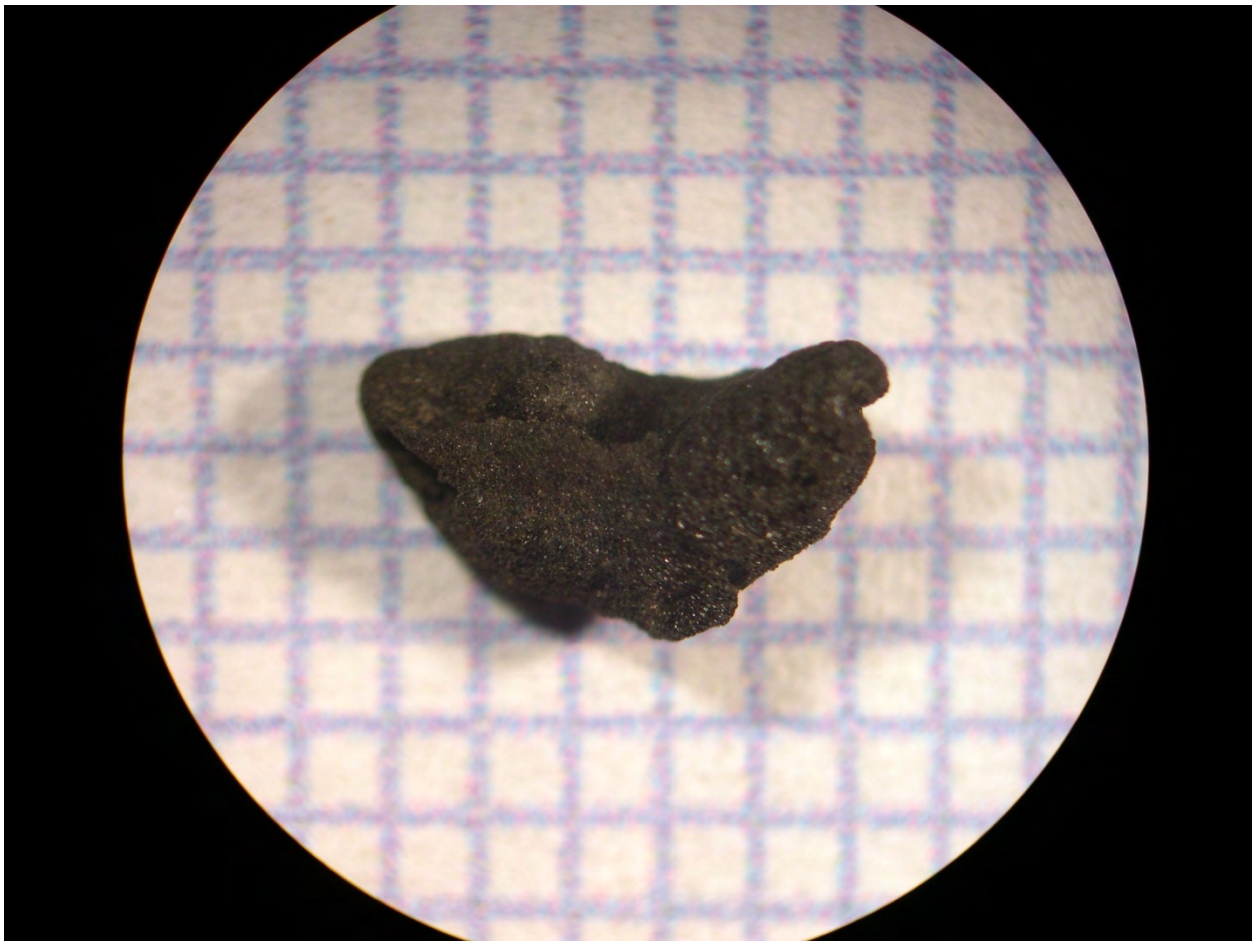

Figure 02: Maize/corn *(Zea mays spp. mays.)* cupule recovered from the Bloomery (CX 65, 210-3-212R). scale = 1mm grid.

Field Cultigens
The remains of cultivated grains total nine elements (0.05 grams) from four contexts (65, 86, 116 and 156). Maize/corn *(Zea mays spp. mays)* was the only species identified. Three cupules (Figure 02) and six cupule fragments were recovered.

Miscellaneous
Miscellaneous archeobotanical materials recovered through flotation total two specimens weighing 0.03 grams. One fragment of *'unidentifiable carbon'* and one piece of *'amorphous carbon'* were recovered.

Uncarbonized Seeds
Uncarbonized seed remains were ubiquitous within the analyzed samples. One hundred percent of the contexts analyzed contained unburned seeds. Eleven taxa were represented, including copperleaves *(Acalypha spp.)*, pigweed *(Amaranthus spp.)*, jimsonweed *(Datura stramonium)*, carpetweed *(Mollugo verticillata)*, sheep sorrel *(Oxalis stricta)*, poke *(Phytolacca americana)*, *catchfly (Silene spp.)*, chickweed *(Stellaria media)*, violet *(Viola spp.*, grass *(POACEAE)* and

primrose *(PRIMULACEAE)*. The recovery of uncarbonized seeds of probable modern origin from archaeological features at the Cedar Creek Site accords with the regional pattern of feature contamination by minute organic materials through coastal plain sediments (Affleck et al. 1997: 108-115).

Table 03: Percentage presence of uncarbonized seed types within flotation samples.

uncarbonized seeds, presence within 13 context analyzed		100%
common name	**scientific name**	**presence**
copperleaves	*Acalypha sp.*	23%
pigweed	*Amaranthus sp.*	85%
jimsonweed	*Datura stramonium*	8%
carpetweed	*Mollugo verticillata*	85%
sheep sorrel	*Oxalis stricta*	15%
poke	*Phytolacca americana*	8%
catchfly	*Silene spp.*	23%
chickweed	*Stellaria media*	38%
violet	*Viola spp.*	15%
grass family	*POACEAE*	8%
primrose family	*PRIMULACEAE*	8%

DISCUSSION

The archeobotanical data generated from 13 cultural contexts within eight features at the Cedar Creek Site (7S-C-100) provide important information about human-plant interactions at a unique site type in Delaware. Domestic life and commercial enterprise at Cedar Creek during the first three quarters of the 18th century centered around a community of enslaved Africans who lived and worked there. This archeobotanical assemblage is the first in the state of Delaware linked directly to a slave quarter (Bedell 2002:26). The site offers the opportunity to examine a series of closely-tied, contemporary domestic structures and small-scale industries (iron smelting, grain production, brick manufacture). The floral assemblage from Cedar Creek provides important information about the ways in which site residents used the natural and cultivated landscape. The sampled features yielded a variety of economically important cultivated and wild plants which document a plant-derived subsistence base that included the cultivation of maize (corn) and peaches, and the use of the products of the native forest for fuel, industry and construction. The assemblage also provides indicators of local landscape conditions at the time of feature formation.

Plant macro-remains pose a unique challenge to archaeologists, as they represent artifacts that are largely biodegradable. The great majority of plant remains originally deposited decomposes quickly, leaving only a limited and grossly prejudiced sample of the original material. This ensures that there are tremendous biases inherent in interpreting archeobotanical data. The recovery of adequate plant artifacts from archaeological contexts has proved particularly difficult from prehistoric sites in Delaware, where loose, coarse sediments provide a particularly sieve-like and abrasive matrix for the preservation of carbonized plant remains (Bedell 2002). Patterns

of macro-botanical preservation across Delaware include a general scarcity of carbonized remains and evidence of significant erosion and fragmentation attributed to coarse coastal plain sediments which permit the movement and leaching of organic remains. The presence of ubiquitous and abundant uncarbonized seeds in the Cedar Creek flotation samples is also consistent with the pattern observed at other historic sites in Delaware (Bedell et al. 2001; Bedell et al. 2002; Affleck et al.1997; Affleck et al. 2011). Despite these biases, floral data from diverse cultural landscapes across Delaware provides us, incrementally, with critical information about the history of human-plant relationships.

The Cedar Creek Site is located within the U.S. Route 301 Development Project Area in Cedar Creek Hundred, Sussex County, Delaware. The project area is located in the Mid-drainage Zone of the Lower Coastal Plain physiographic province. The site has been under mechanized field agriculture in recent years. Prior to European settlement of the region, Delaware supported vast forest and marshlands with plant communities largely determined by topography and the permanence of abundant water. The site lies within the Oak-Pine Forest (Atlantic Slope Section) as defined by Braun (1950:192) and the Oak-Hickory-Pine forest association outlined by Kuchler (1964). Native forest cover over the project area was characterized by a medium tall to tall forest of broadleaf deciduous and needleleaf evergreen trees. Dominant species would have included hickory, shortleaf pine, loblolly pine, white oak and post oak. The flotation-recovered wood assemblage from the Cedar Creek Site is composed of taxa common to this forest association (Little 1971; Sargent 1884; Taber 1960; Tatnall 1946). See Figure 03.

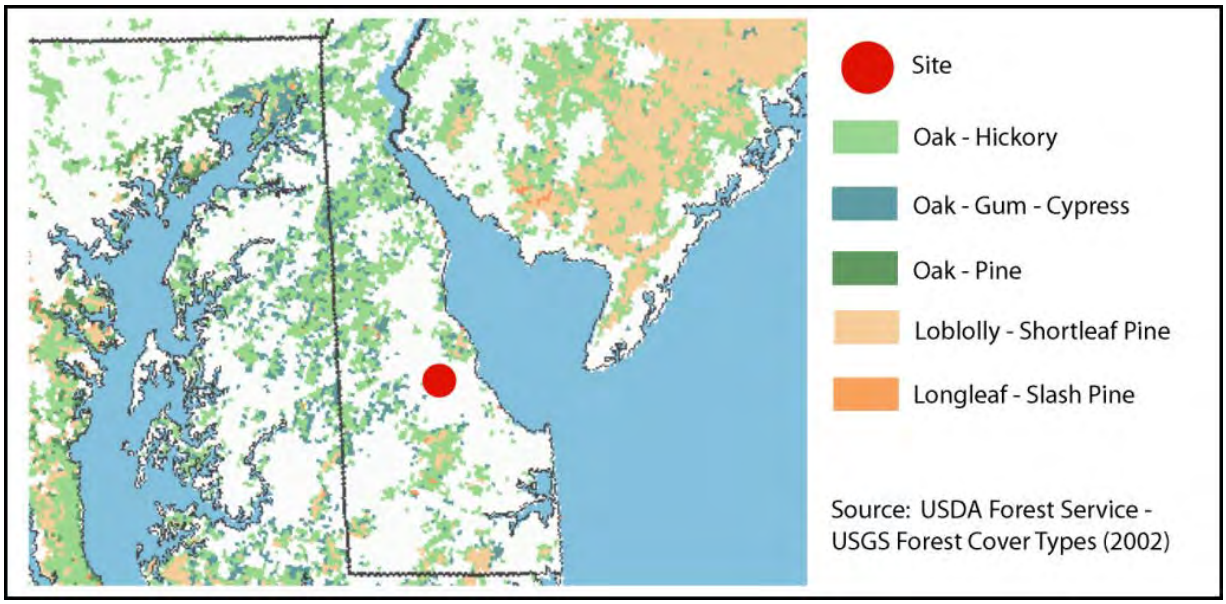

Figure 03: Existing forest cover over the Cedar Creek Site (7S-C-100).

The floral dataset from Cedar Creek derives exclusively from Area A of the site – the zone of cultural activity immediately east of Cedar Creek road and containing a series of closely tied domestic structures and an iron bloomery. Based on the results of the Data Recovery effort, this area is interpreted as a slave quarter that includes at least four domestic structures with associated features (fencelines, subfloor pits, a burial, trenches, posts and the remains of an

animal wallow). Eight distinct cultural features conforming to five feature types were sampled for macro-botanical remains. Table 04 presents a summary of the macro-botanical remains by feature type. A comparison of the density of plant macro-remains is presented in Figure 04. The 'Pit' features (Context Numbers 5, 22, 86, 88 and 116) produced the greatest concentration of carbonized plant remains (over 1.68 grams per liter) as well as the richest deposits of comestibles (maize and peaches were very well represented). This pattern is not unexpected – the various pit types identified at Cedar Creek (subfloor, root cellar and indeterminate) were associated with household operations – where food preparation would have been an important activity, and fuel debris (charcoal, ash) would have been produced. The 'Bloomery' contexts (n=4) produced moderate concentrations of carbonized material (an average of 0.899 grams per liter) and the remains of edible plants (maize, peach) were in evidence. The 'Possible Burial" produced a low density of charcoal (0.238 grams per liter) but a diversity of plant material types (maize and grass seeds were identified). The 'Animal Wallow' and 'Paling Fence" feature types included a single context each. Charcoal densities are low (0.507 and 0.169 grams per liter) within these features, as is the diversity of plant material types represented (no plant food remains were recovered).

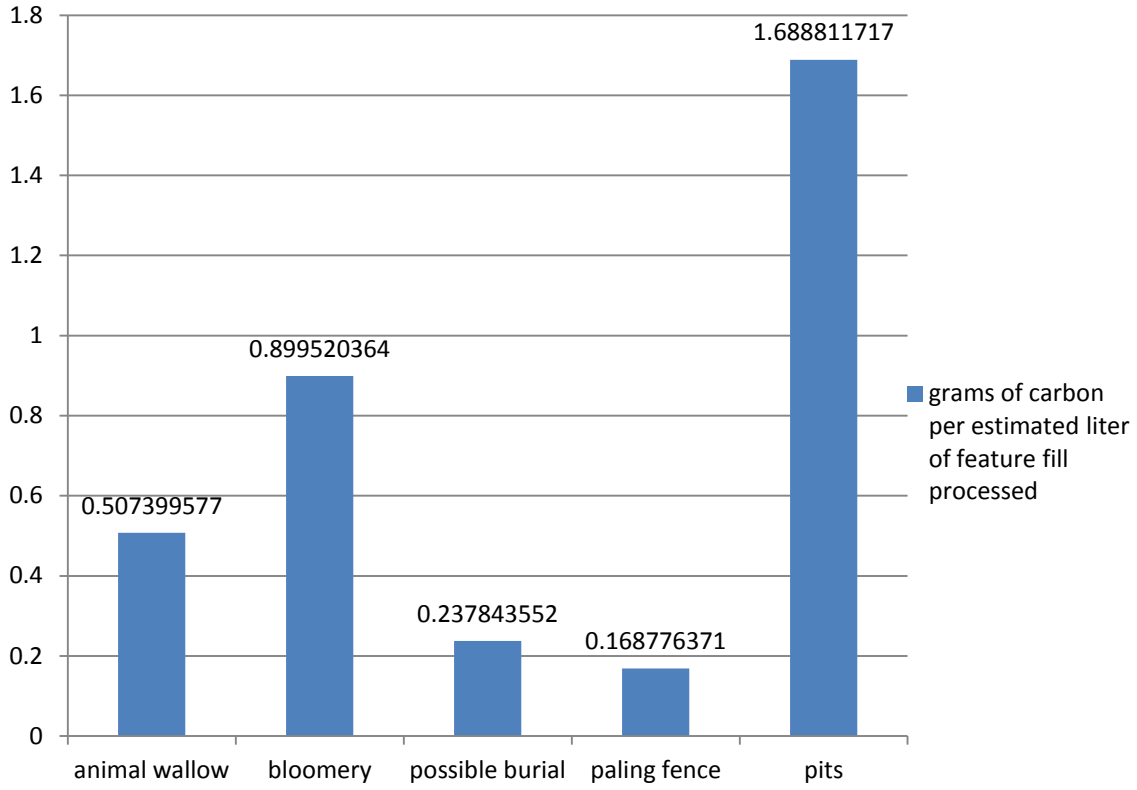

Figure 04: Density of Carbonized Plant Remains by Feature Type.

An examination of wood types across the Cedar Creek feature types (Figure 05) suggests general uniformity in white oak preference across all feature types except for the 'Animal Wallow'. Hickory is similarly ubiquitous across all feature types except the paling fence. The 'Pit' feature class reflects the greatest diversity of wood types, and pine and maple species are unique to the pits. Red oak woods were only identified within the 'Bloomery' and the 'Pit' classes

Table 04: Summary of Macro-botanical Results by Feature Type. Site 7S-C-100.

Description		animal wallow	bloomery	possible burial	paling fence	pits	5 feature types
CX Number		**302**	**65, 66, 68, 106**	**156, 270**	**90**	**5, 22, 86, 88, 116**	
n of contexts		**1**	**4**	**2**	**1**	**5**	**13 contexts**
n of samples		**3**	**19**	**7**	**4**	**22**	**55 subsamples**
associated with structure		**2**		**4**	**2**	**12**	
volume (liters)		**0.473**	**12.301**	**1.892**	**0.237**	**6.623**	**21.526**
weight carbonized plant remains (grams)		**0.24**	**11.065**	**0.45**	**0.04**	**11.185**	**22.98**
WOOD CHARCOAL	(n of >2mm fragments)	7	987	39	4	218	1255
	total weight (grams)	0.24	10.99	0.43	0.02	9.47	21.15
Acer spp. (maple)						7	7
Carya sp. (hickory)		2	1	3		2	8
Pinus spp. (pine)						11	11
Quercus sp. (white oak group)			17	7	4	18	46
Quercus sp. (red oak group)			2			2	4
diffuse porous			2	1			3
deciduous		5	2	6		10	23
unidentifiable				2		3	5
total identified fragments		7	24	19	4	53	107
FIELD CULTIGEN (carbonized)	(n of specimens)	0	3	2	0	4	9
	total weight (grams)	0	0.02	0.01	0	0.02	0.05
Zea mays (maize) cupule			1			2	3
Zea mays (maize) cupule fragment			2	2		2	6
SEEDS (carbonized)	(n of specimens)	0	5	4	0	20	29
	total weight (grams)	0	0.045	0.01	0	1.075	1.13
Prunus persica (peach) pit fragment			1			17	18
POACEAE (grass)			4	4		3	11
MISCELLANEOUS (carbonized)	(n of specimens)	0	1	0	1	0	2
	total weight (grams)	0	0.01	0	0.02	0	0.03
amorphous carbon					1		1
unidentifiable carbon			1				1

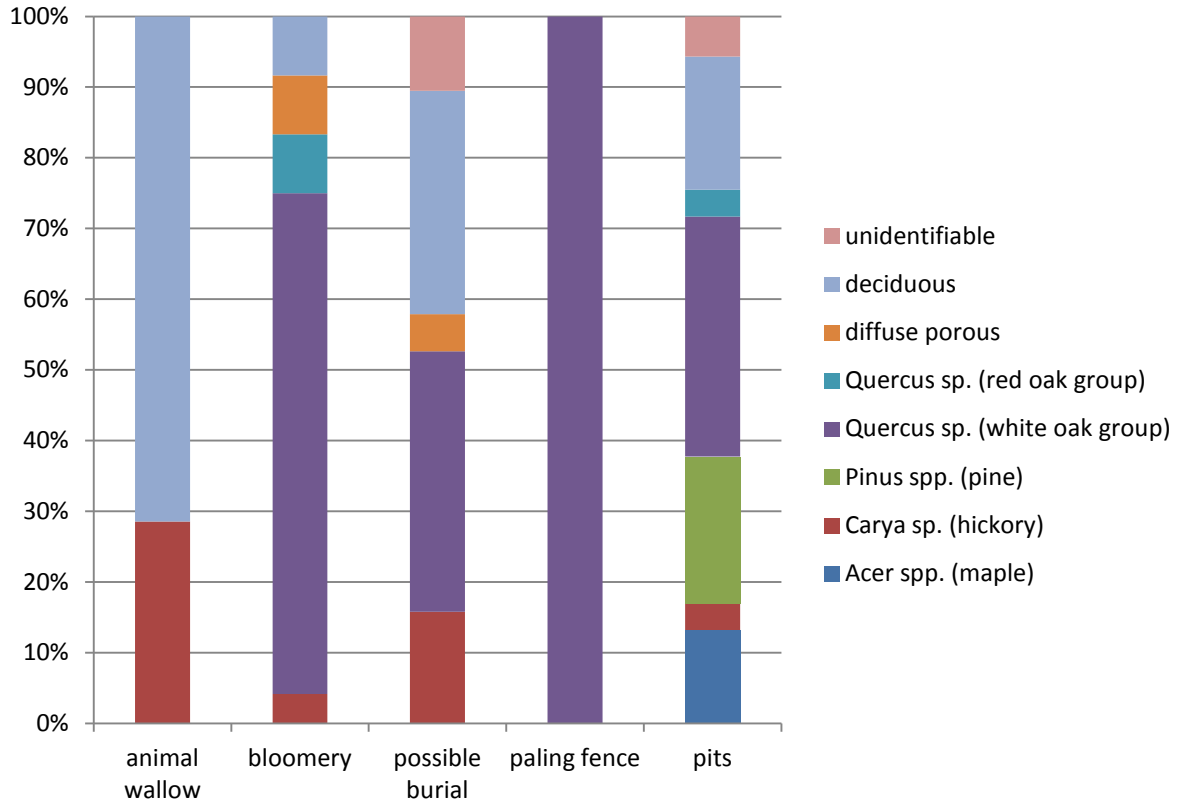

Figure 05: Composition of Woods Identified within Types of Features.

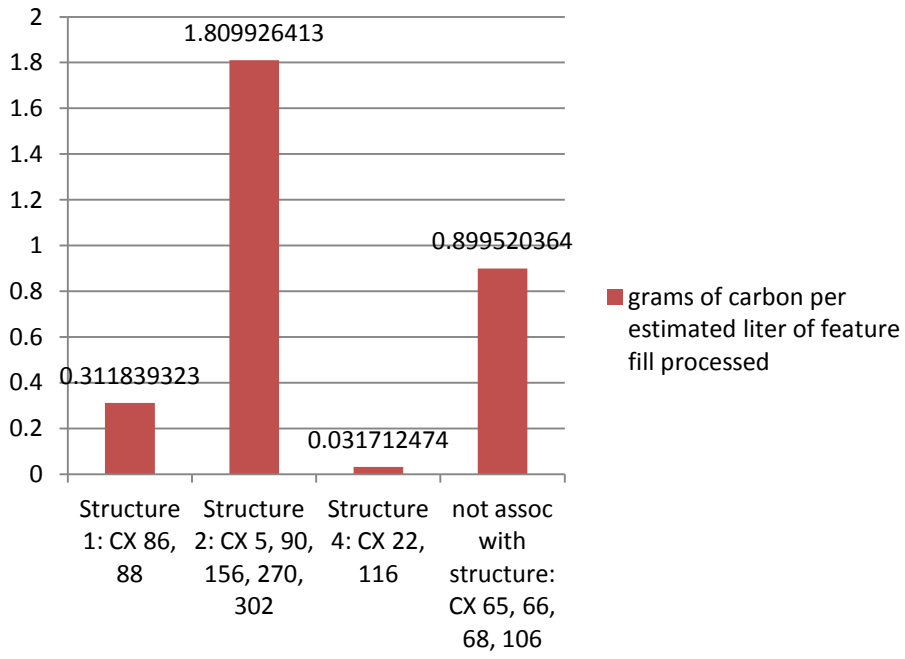

Figure 06: Comparison of Carbon Densities for Contexts Associated with Structures.

Nine of the 13 contexts samples for plant remains at the Cedar Creek Site are directly related to activities in and around three of the identified domestic structures (Structure 1, 2 and 4). These buildings were occupied during much of the 18th century by enslaved Africans who lived and worked on the site. Grouping the floral data by structural association (Table 05 and Figure 06) reveals some significant patterns. An overwhelming density of carbonized material is noted in features associated with Structure 2 (Contexts 5, 90, 156, 270 and 302). The Structure 2 features also produced the majority of the seed remains identified at the site (72 percent of the total seeds and 94 percent of the peach remains). Maize is also represented within the Structure 2 features with two specimens recovered. Two subfloor pits were associated with Structure 1, and these produced moderately low carbon densities (0.312 grams per liter). Wood charcoal, maize and grass seed were identified. Low carbon densities characterize the features associated with Structure 4 (Contexts 22 and 116) – two pits of indeterminate function. In addition to wood charcoal, the pits associated with Structure 4 contained grass seed and a maize cupule fragment.

While plant remains can be very strong markers for seasonality, data can often be skewed by the presence of storable food resources which can enter the archaeological record at other times of the seasonal cycle than that in which the product ripened. While the recovery of a variety of late-summer and fall ripening nuts and fruits suggest that contexts sampled at the Cedar Creek Site developed during this harvest season, the edible plant remains identified constitute readily storable food resources. Surplus harvest could have been preserve for consumption during times of limited fresh-food availability. Identified patterns of plant material distribution across the Cedar Creek Site (maize, for example is found in subfloor pits as well as in burial contexts) suggests that recovered food remains could represent redeposited debris.

SUMMARY

The Cedar Creek Site (7S-C-100) archeobotanical assemblage derives from eight cultural features within Area A of the site and associated with an industrial slave quarter occupied during the period 1700-1775. The site is unique in Delaware, and offers the opportunity to examine the archaeology of domestic life and commercial enterprise within an enslaved community in Sussex County. Fifty-five macro-botanical subsamples from 13 cultural contexts provide data from a variety of cultural features directly associated with household activities and site industries (which included farming, brick manufacture and iron smelting).

A program of soil flotation (approximately 22 liters) of feature fill produced a moderate quantity of historically significant plant macro-fossils, including wood charcoal, seeds, cultivated fruit pits, maize (corn) and vegetal miscellany.

While the macro-botanical assemblage recovered from the site was not particularly rich or diverse, a variety of economically important cultivated and wild plant resources were documented within the assemblage. Wood charcoal dominated the site flotation assemblage and was ubiquitous across the analyzed samples, with white oak species being the most common wood type identified. The remains of maize (corn) and peaches confirm the importance of field crops and orchard products to site economy and the diet of site residents. The remains of small grass seeds suggest a local landscape that included ruderal, herbaceous plants. And all wood charcoal types recovered identify common constituents to central Delaware forests. The distribution of plant remains across a variety of cultural contexts, feature types and activity areas

Table 05: Summary of Results by Structural Affiliation.

associated with structure	**1**	**2**	**4**	**not assoc w structure**	**13 contexts**
CX Number	**86, 88**	**5, 90, 156, 270, 302**	**22, 116**	**65, 66, 68, 106**	
n of contexts	**2**	**5**	**2**	**4**	
n of samples	**8**	**19**	**9**	**19**	**55 subsamples**
volume (liters)	**0.946**	**6.387**	**1.892**	**12.301**	**21.526**
weight carbonized plant remains (grams)	**0.295**	**11.56**	**0.06**	**11.065**	**22.98**
WOOD CHARCOAL (n of >2mm fragments)	41	218	9	987	1255
total weight (grams)	0.27	9.84	0.05	10.99	21.15
Acer spp. (maple)		7			7
Carya sp. (hickory)	2	5		1	8
Pinus spp. (pine)	10		1		11
Quercus sp. (white oak group)	9	16	4	17	46
Quercus sp. (red oak group)		2		2	4
diffuse porous		1		2	3
deciduous		20	1	2	23
unidentifiable		2	3		5
total identified fragments	21	53	9	24	107
FIELD CULTIGEN (carbonized) (n of specimens)	3	2	1	3	9
total weight (grams)	0.015	0.01	0.005	0.02	0.05
Zea mays (maize) cupule	2			1	3
Zea mays (maize) cupule fragment	1	2	1	2	6
SEEDS (carbonized) (n of specimens)	2	21	1	5	29
total weight (grams)	0.01	1.07	0.005	0.045	1.13
Prunus persica (peach) pit fragment		17		1	18
POACEAE (grass)	2	4	1	4	11
MISCELLANEOUS (carbonized) (n of specimens)	0	1	0	1	2
total weight (grams)	0	0.02	0	0.01	0.03
amorphous carbon		1			1
unidentifiable carbon				1	1

reveal patterns that contribute to understanding feature development and the history of site operation.

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APPENDIX
Inventories of Recovered Archeobotanical Remains From Historic Contexts

Cedar Creek Site (7S-C-100)

CX Number					**302**
Description					**Animal Wallow**
Designation					**2010-3-222**
volume (liters)					**0.473**
Specimen Number		222-D	222-E	222-G	
fraction		heavy	light	light	
description on label		"carbon"	"seeds"	"carbon"	
>2mm description					
<2mm description			sand, gravel	wood charcoal	
weight carbonized plant remains (grams)		0.24	0	0	0.24
WOOD CHARCOAL	(n of >2mm fragments)	7	0	0	7
	total weight (grams)	0.24	0	0	0.24
Carya sp. (hickory)		2			2
deciduous		5			5
total identified fragments		7	0	0	7
UNCARBONIZED SEEDS (presence)			x		
Mollugo verticillata (carpetweed)			x		

CX Number					**270**
Description					**Possible Burial**
Designation					**2010-3-221**
volume (liters)					**0.946**
Specimen Number		221-C	221-D	221-E	
fraction		heavy	light	light	
description on label		"carbon"	"seeds"	"carbon"	
>2mm description		gravel			
<2mm description		gravel, wood charcoal	sand, gravel, sclerotia	wood charcoal	
weight carbonized plant remains (grams)		0.02	0	0	0.02
WOOD CHARCOAL	(n of >2mm fragments)	3	0	0	3
	total weight (grams)	0.02	0	0	0.02
deciduous		3			3
total identified fragments		3	0	0	3
UNCARBONIZED SEEDS (presence)			x		
Mollugo verticillata (carpetweed)			x		

CX Number						**156**
Description						**Possible Burial**
Designation						**2010-3-220**
volume (liters)						**0.946**
Specimen Number		220-G	220-L	220-N	220-K	
fraction		heavy	light	light	light	
description on label		"carbon"	"seeds"	"carbon"	"seeds?"	
>2mm description						
<2mm description		wood charcoal		wood charcoal		
weight carbonized plant remains (grams)		0.37	0.005	0.055	0	0.43
WOOD CHARCOAL	(n of >2mm fragments)	30	0	6	0	36
	total weight (grams)	0.36	0	0.05	0	0.41
Carya sp. (hickory)		3				3
Quercus sp. (white oak group)		5		2		7
diffuse porous				1		1
deciduous				3		3
unidentifiable		2				2
total identified fragments		10	0	6	0	16
FIELD CULTIGEN (carbonized)	(n of specimens)	2	0	0	0	2
	total weight (grams)	0.01	0	0	0	0.01
Zea mays (maize) cupule fragment		2	0			2
SEEDS (carbonized)	(n of specimens)		2	2	0	4
	total weight (grams)		0.005	0.005	0	0.01
POACEAE (grass)			2	2		4
UNCARBONIZED SEEDS (presence)			x	x	x	
Acalypha spp. (copperleaves)			x			
Amaranthus spp. (pigweed)					x	
Mollugo verticillata (carpetweed)			x	x		
Oxalis stricta (sheep sorrel)			x			
Stellaria media (chickweed)			x		x	

CX Number						**116**
Description						**Historic Pit**
Designation						**2010-3-219**
volume (liters)						**0.946**
Specimen Number		219-G	219-H	219-K	219-L	
fraction		heavy	light	light	light	
description on label		"carbon"	"seeds?"	"seeds"	"carbon"	
>2mm description		rock, gravel				
<2mm description		l, gravel, wood charcoal		sclerotia	wood charcoal	
weight carbonized plant remains (grams)		0.02	0	0	0.015	0.035
WOOD CHARCOAL	(n of >2mm fragments)	4	0	0	1	5
	total weight (grams)	0.02	0	0	0.01	0.03
Quercus sp. (white oak group)		4				4
deciduous					1	1
total identified fragments		4	0	0	1	5
FIELD CULTIGEN (carbonized)	(n of specimens)	0	0	0	1	1
	total weight (grams)	0	0	0	0.005	0.005
Zea mays (maize) cupule fragment					1	1
UNCARBONIZED SEEDS (presence)			x	x		
Amaranthus spp. (pigweed)			x			
Mollugo verticillata (carpetweed)				x		
Stellaria media (chickweed)				x		
Viola spp. (violet)				x		

CX Number					**106**
Description					**Bloomery**
Designation					**2010-3-218**
volume (liters)					**0.946**
Specimen Number		218-T	218-Q	218-R	
fraction		heavy	light	light	
description on label		"seeds"	"seeds?"	"seeds"	
>2mm description		rock, gravel			
<2mm description				ant eggs, sclerotia	
weight carbonized plant remains (grams)		0.01	0	0.005	0.015
SEEDS (carbonized)	(n of specimens)	0	0	1	1
	total weight (grams)	0	0	0.005	0.005
POACEAE (grass)				1	1
MISCELLANEOUS (carbonized)	(n of specimens)	1	0	0	1
	total weight (grams)	0.01	0	0	0.01
unidentifiable carbon		1			1
UNCARBONIZED SEEDS (presence)			x		
Amaranthus spp. (pigweed)			x		

CX Number						**90**
Description						**Paling Fence**
Designation						**2010-3-217**
volume (liters)						**0.237**
Specimen Number		217-G	217-H	217-K	217-M	
fraction		heavy	light	light	light	
description on label		"carbon"	"seeds"	"seeds?"	"carbon"	
>2mm description		clinker				
<2mm description		clinker, wood charcoal, gravel	ant eggs		wood charcoal	
weight carbonized plant remains (grams)		0.02	0	0	0.02	0.04
WOOD CHARCOAL	(n of >2mm fragments)	4	0	0	0	4
	total weight (grams)	0.02	0	0	0	0.02
Quercus sp. (white oak group)		4				4
total identified fragments		4	0	0	0	4
MISCELLANEOUS (carbonized)	(n of specimens)	0	0	0	1	1
	total weight (grams)	0	0	0	0.02	0.02
Amorphous carbon					1	1
UNCARBONIZED SEEDS (presence)			x	x	x	
Amaranthus spp. (pigweed)				x	x	
Mollugo verticillata (carpetweed)					x	
Stellaria media (chickweed)			x			

CX Number					**88**
Description					**Root Cellar**
Designation					**2010-3-216**
volume (liters)					**0.473**
Specimen Number		216-C	216-D	216-G	
fraction		heavy	heavy	light	
description on label		"nut hulls"	"seeds?"	"seeds"	
>2mm description					
<2mm description			sand and gravel		
weight carbonized plant remains (grams)		0.02	0	0.005	0.025
WOOD CHARCOAL	(n of >2mm fragments)	1	0	0	1
	total weight (grams)	0.02	0	0	0.02
Quercus sp. (white oak group)		1			1
total identified fragments		1	0	0	1
SEEDS (carbonized)	(n of specimens)	0	0	1	1
	total weight (grams)	0	0	0.005	0.005
POACEAE (grass)				1	1
UNCARBONIZED SEEDS (presence)				x	
Amaranthus spp. (pigweed)				x	
Datura stramonium (jimsonweed)				x	
Mollugo verticillata (carpetweed)				x	
Silene spp. (catchfly)				x	

CX Number							**86**
Description							**Subfloor**
Designation							**2010-3-215**
volume (liters)							**0.473**
Specimen Number		215-K	215-L	215-N	215-P	215-Q	
fraction		heavy	light	light	light	light	
description on label		"carbon"	"seeds?"	"seeds"	"carbon"	"unpicked"	
>2mm description		burned bone					
<2mm description					wood charcoal	wood charcoal	
weight carbonized plant remains (grams)		0.11	0	0	0.15	0.01	0.27
WOOD CHARCOAL	(n of >2mm fragments)	18	0	0	22	0	40
	total weight (grams)	0.1	0	0	0.15	0	0.25
Carya sp. (hickory)					2		2
Pinus spp. (pine)		10					10
Quercus sp. (white oak group)					8		8
total identified fragments		10	0	0	10	0	20
FIELD CULTIGEN (carbonized)	(n of specimens)	2	0	0	0	1	3
	total weight (grams)	0.01	0	0	0	0.005	0.015
Zea mays (maize) kernel fragment		2					2
Zea mays (maize) cupule fragment						1	1
SEEDS (carbonized)	(n of specimens)	0	0	0	0	1	1
	total weight (grams)	0	0	0	0	0.005	0.005
POACEAE (grass)						1	1
UNCARBONIZED SEEDS (presence)			x	x		x	
Amaranthus spp. (pigweed)			x	x		x	
Mollugo verticillata (carpetweed)				x		x	
Stellaria media (chickweed)				x			

CX Number						**68**
Description						**Bloomery**
Designation						**2010-3-214**
volume (l)						**3.785**
Specimen Number	214-G	214-K	214-L	214-U	214-V	
fraction	heavy	heavy	heavy	heavy	heavy	
description on label	"seeds?"	"seeds"	"nut hull"	"seeds?"	"seeds"	
>2mm description	single specimen	insect body parts	single rock	single specimen	insect body parts, rock	
<2mm description		wood fragments		sclerotia	sclerotia	
weight carbonized plant remains (grams)	0	0	0	0	0	0
UNCARBONIZED SEEDS (presence)	x			x	x	
Amaranthus spp. (pigweed)				x	x	
Mollugo verticillata (carpetweed)					x	
Phytolacca americana (poke)	x			x		
Silene spp. (catchfly)					x	

Appendix C

SOIL CHEMISTRY ANALYSIS

Report on Soil Chemistry Analysis of Cedar Creek Road Site [7S-C-100], Cedar Creek Hundred, Sussex County, Delaware

Prepared for:

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Prepared by:

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January 2014

Introduction

This report details the purpose, methodology, results and interpretation of chemical analysis of 15 sediment samples taken from the Cedar Creek Road Site [7S-C-100] during Phase III data recovery excavations performed by staff from Hunter Research, Inc. in December 2011 and January 2012. The processing and chemical assays of the sediments were performed by the University of Delaware's Soil Testing Laboratory, and subsequent background research, data analysis, interpretation, and report preparation was conducted by Andrew Wilkins, M.A., a doctoral candidate in Anthropology at the University of Tennessee, Knoxville. This analysis was undertaken in order to supply evidence on the presence, type, and location of possible domestic and light industrial activities at the mid-18th-century site.

Soil chemistry is one of several environmental analyses employed in recovering and interpreting past human activity and landscapes that are ephemeral and difficult to interpret through traditional means alone. Soil chemistry has been applied archaeologically in survey, the study of site formation processes, and in interpretations of specific elements as they relate to past human activities. Anthropogenic soil chemical signatures can indicate the deposition of human and animal tissue and waste found in occupation sites and burials, as well as organic residues deposited during food preparation, the use of fire, food consumption, agricultural fertilization, livestock husbandry, metallurgy, and refuse disposal (Cook and Heizer 1965; Sjoberg 1976; Eidt 1984; Holliday and Gartner 2007). Soil chemical analyses have been employed on many Mid-Atlantic historic sites (Keeler 1973; Stone et al 1987; Pogue 1988; Neiman et al 2000; Heath and Bennett; 2000; Fischer 2001; Wilkins 2010) as well as specifically in the context of CRM mitigation projects (Lawrence 2007; Rypkema et al 2007; Calhoun et al 2011).

Phosphorus has been the most studied element in archaeological soil chemistry due to its wide range of anthropogenic sources and general stability in soils (Holliday and Gartner 2007). Compounds including phosphorus constitute a significant component of human and animal waste and are present in all living organisms as carbohydrates, lipids, and nucleic acids (Cook and Heizer 1965; Stevenson and Cole 1999). Other elements such as calcium, potassium, and magnesium are regularly studied at historic sites in North America, and all three are components of wood and ash (Braadbaart et al 2012). Calcium has been associated with deposition of bone, shell, and architectural materials such as mortar and plaster (Pogue 1988). Potassium has been associated primarily with wood ash, but also plant residue in general (Asher and Fairbanks 1971; Pogue 1988), and magnesium has been more tentatively associated with ash and 'burning' though some researchers have questioned the strength of this interpretation (Pogue 1988; Fischer 2001). Experimental studies have largely supported these interpretative connections between chemicals and inputs (Custer et al 1986; Wilson et al 2007; Braadbaart et al 2012).

Aside from the four commonly studied elements of phosphorus, calcium, potassium, and magnesium, concentrations of metals such as iron, copper and zinc within hearth sediment deposits have been used to interpret presence and specific location of metallurgy on sites in both Britain and Israel (Cook et al 2005; 2010; Eliyahu-Behar et al 2008). These elements are of particular interest in the following analysis of the Cedar Creek Road Site due to the presence of possible blacksmithing, iron bloomery, and brick making activities at the site (Liebeknech and Burrow 2012). The findings below offer an additional line of evidence supporting the current interpretation of features such as the animal wallow, iron bloomery, and a possible grave. Additionally, the uniqueness of several possible cellar and refuse pit features suggests distinct depositional histories and offers interesting possibilities for future analysis and interpretation.

Site Background

Archaeological investigations performed prior to construction of new ramps connecting State Route 1 and US Route 301, south of Milford, Delaware, identified the Cedar Creek Road Site [7S-C-100] in Cedar Creek Hundred, Sussex County, Delaware as the remains of an extensive historic period complex with at least four loci. Phase II investigations determined the site as eligible for listing on the National Register of Historic Places under Criterion. Three areas within the Limits of Construction [LOC] underwent Phase III data recovery in December 2011 and January 2012. Those areas included an early-mid 18th-century house and farmstead designated Area A, a loci of mid-18th-century artifacts designated Area B, and a brick-clamp designated Area C. A late 17th to early 18th-century cellar outside the LOC and a small Woodland I period (3,000 B.C. – A.D. 1000) component were also identified, but not included in the soil chemistry analysis (Liebeknech and Burrow 2012). The soil chemistry samples analyzed in this report were all taken from various contexts of Area A.

Both natural and cultural processes can affect the deposition, retention, and loss of soil chemicals and therefore distort measurements attempting to observe anthropogenic soil chemistry enhancements. Holiday and Gartner (2007) note that variations in soil composition, pH, moisture, overlying vegetation, and underlying geological circumstances can all affect the retention of various elements. The homogeneity or heterogeneity of such variables across the area of archaeological interest merits consideration.

Sussex County soils in general are sandy with a high amount of natural wetness, and almost half the arable land necessitating some kind of drainage for agricultural purposes (Ireland and Matthews 1974: 1). The area is relatively flat and therefore faces little hazard of serious soil erosion, though many soils are heavily leached of soluble materials and therefore strongly acid

and relatively low in plant nutrients. The parent materials for most of the county's soils consist of ancient fluviomarine sediments deposited in the shallow sea that once covered the Delmarva Peninsula (Ireland and Matthews 1974: 66-67).

Two main sources exist for detailed soil classifications in the United States, both of which are produced by the Department of Agriculture [USDA]: published hard-copies of county-based soil surveys done by the Soil Conservation Service, most of which date to the 1970s and 80s, and the most recent data is available online through the USDA's Natural Resources Conservations Service Web Soil Survey tool. Both were consulted for information on the soil characteristics of the Cedar Creek Road Site sediments.

The older soil survey (Ireland and Matthews 1974:71) lists the portion of Sussex County containing the Cedar Creek Road Site part of the Sassafras Association: a coarse-loamy, siliceous, and thermic Typic Hapludult of the Ultisol taxonomic Order. These taxonomic classifications refer to an order and subgroup that cover a large extent of the Eastern and Southeastern United States with moderate to warm soil temperatures, deep, well-drained, sandy-loamy soils underlain by clay-rich subsoil, or agrillic horizon (USDA 1999: 721). The particular soil series that Ireland and Matthews (1974: 27) chart at the location of the Cedar Creek Road Site Area A is the Rumford series: a deep, well drained soil of loamy sand of 0-2% slopes on uplands with a native vegetation of mixed hardwoods and loblolly pine. Figure 1 shows a representative profile of the Rumford soil series, created from information listed in Ireland and Matthews (1974: 27) for areas under cultivations, as is the case at the Cedar Creek Road site.

The more recent classifications for the same area reported on the USDA's Web Soil Survey tool list the soil classification in the same location as Downer series (Soil Survey Staff 2013a: 8). However, the characteristics of the Downer series [DnA] are largely the same as

Table 1: Typical profile of Rumford Series soils as described in Ireland and Matthews (974: 27).

Stratum	Depth	Description	Notes
Ap	0-9 inches	Dark yellowish-brown (10YR 4/4) loamy sand	Weak, medium, sub-angular blocky and coarse granular structure; very friable; many roots; many pores; slightly acid (if limed); abrupt, smooth boundary
A2	9-14 inches	Yellowish-brown (10YR 5/4) loamy sand	Single grain; very friable; many roots; many pores; strongly acid; clear, smooth boundary
B1	14-18 inches	Strong-brown (7.5YR 5/6) with yellowish-brown (10YR 5/6) loamy sand	Weak, medium, sub-angular blocky structure; very friable; few roots; many pores; strongly acid; abrupt, smooth boundary
B2t	18-28 inches	Yellowish-red (5YR 4/6) sandy loam	Weak, coarse, sub-angular blocky structure; very friable; few roots; many pores; thin discontinuous clay films; very strongly acid; clear, smooth boundary
C1	28-42 inches	Strong-brown (7.5YR 5/6) loamy sand	Massive; very friable; few roots; many pores; very strongly acid; abrupt, smooth boundary

Figure 1: Custom map of Cedar Creek Road Site with USDA Soil Classification areas.

the previously listed Rumford series (Soil Survey Staff 2013b), and the distinction appears to be in name only. Figure 2 shows a custom map of the Cedar Creek Road site location with current USDA soil classification areas. In summation, the soils of the Cedar Creek Road site area appear to be generally well-suited to soil chemistry analysis, and though some nutrients may be leached from the plowzone, those most resistant such as phosphorus should immobilize well in sandy loams with strong acidity. Other factors such as erosion and inundation appear to be minor, so feature soils should also be relatively intact for chemical analysis.

Methodology

The 15 samples were sent to the University of Delaware's Soil Testing Laboratory for analysis. This laboratory offers a basic package of tests using the Mehlich 3 extraction (Mehlich 1984) and Inductively Couple Plasma Mass Spectrometry (ICP-MS) measurement. The Mehlich 3 extraction and ICP-MS measurement are some of the most commonly applied techniques in archaeological soil chemistry and have been used with success by the author in other Delaware Department of Transportation projects (Calhoun et al 2011). The laboratory assayed and reported the following elements and characteristics: soil acidity (pH), organic matter content, in addition to the concentrations of phosphorus, potassium, calcium, magnesium, manganese, zinc, copper, iron, aluminum, boron, and sulphur.

The University of Delaware returned the results of the chemical tests electronically to the author, and the data was examined both statistically and spatially. The four off-site control samples were used as a baseline from which the relative addition or subtraction of soil chemical levels from each sampled context could be assessed. Specifically, Microsoft Excel and Statistics Package for the Social Sciences (SPSS) 21 were employed in data analysis.

Results

The 15 soil samples were taken from Area A contexts including features interpreted as an animal wallow, a pit in the Iron Bloomery, a refuse pit, the root cellar of Structure 1, a possible grave, and 4 control locations (see Appendix A). Descriptive statistics for all samples with each element analyzed, plus acidity (pH) and organic matter (Om) are listed in Table 2.

Table 2: Descriptive statistics: elements in parts per million (ppm), acidity on the pH scales, and organic matter as a percentage (Om).

	N	Range	Minimum	Maximum	Mean	Std. Deviation
pH	15	1.90	4.50	6.40	5.3438	.53662
P	15	238.40	10.03	248.43	94.8506	71.74094
K	15	143.92	36.05	179.97	98.2269	43.82400
Ca	15	1205.58	103.61	1309.19	430.1519	341.74560
Mg	15	84.40	16.53	100.93	48.8125	22.71755
Mn	15	193.75	20.33	214.08	67.7319	53.37045
Zn	15	14.70	.41	15.11	4.0425	4.53381
Cu	15	3.59	.61	4.20	1.8275	1.10252
Fe	15	96.92	40.57	137.49	81.4425	27.07040
B	15	.81	.06	.87	.2269	.21269
S	15	7.28	3.11	10.39	6.8069	2.37600
Al	15	352.05	572.13	924.18	796.7769	105.57214
Om	15	.70	.00	.70	.2063	.18786

For all subsequent comparisons of different elements within or between features, a relative index value is necessary due to the variation in the range of concentrations of between any two elements. Therefore, relative values (Z scores) were calculated and used. The Z score for each observation is the number of standard deviations above (positive values) or below (negative values) the mean observation for each element, allowing for the comparison between elements. For example, a Z score of 1 in the phosphors content of a sample is 1 standard deviation (71.7 ppm) higher than the average of phosphorus concentration of all samples, and would be considered significantly elevated. The concentration of any other element rating a similar Z score could be considered as at a similarly elevated status. Likewise, a -1 Z score would be 1 standard deviation below the average of a given element and could be considered significantly low.

Control Samples: Contexts 2A, 2B, 2C, 2D

The control samples from Area A of the Cedar Creek Road site show generally low values across all elements with moderate to low levels of variation (see Figure 2). This is as expected given that these samples are taken in an effort to capture 'background' levels of soils in the immediate vicinity, against which samples from cultural features can be compared and significant deviations from the background levels can be interpreted as possible anthropogenic inputs.

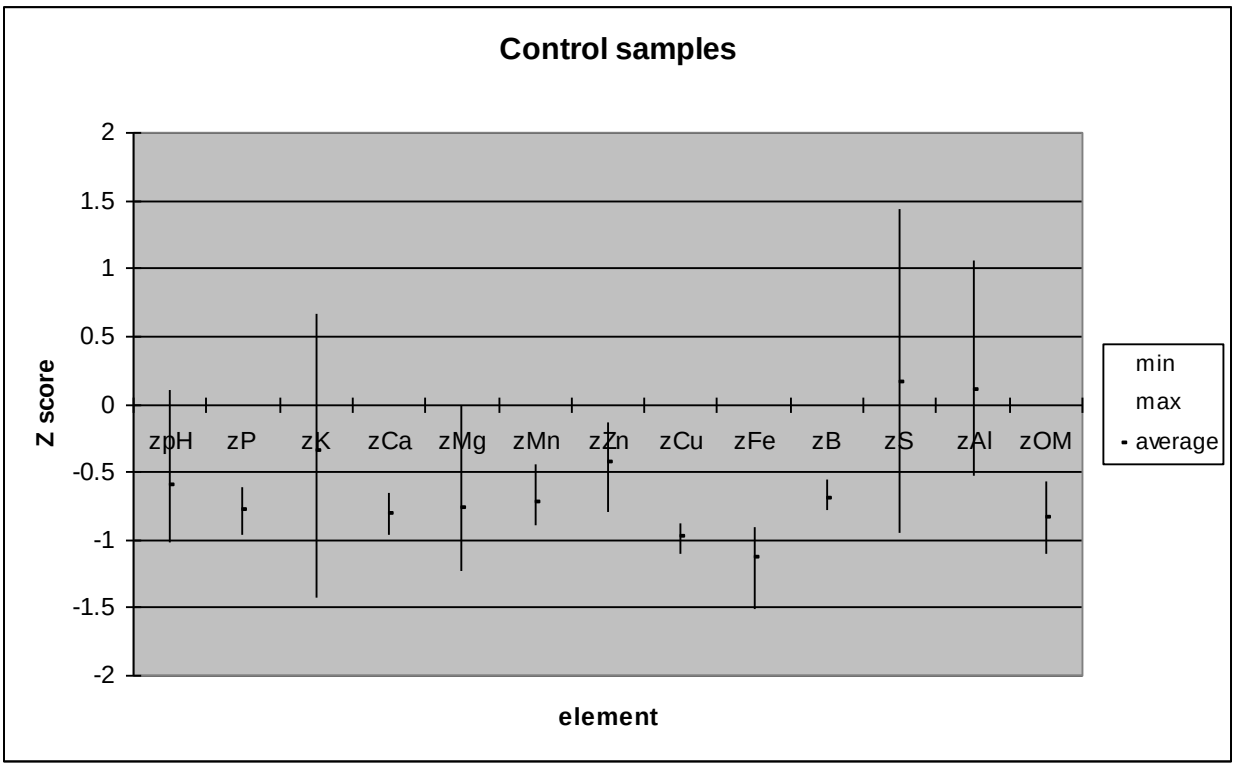

Figure 2: Min-max-average chart comparing relative values (Z scores) of elements and soil characteristics in four control samples.

Animal wallow: Context 302

The chemical signature of the feature interpreted as an animal wallow is almost identical to that of the control samples. Most elements show moderately low concentration, with only potassium (K) and iron (Fe) showing minimal enhancement, though both are well within 1

standard deviation of their averages, and are not considered to be significantly elevated (see Figure 3). These results indicate that the animal wallow feature includes almost no recognizable anthropogenic chemical input which, coupled with the few artifacts recovered (Liebeknecht and Burrow 2012: Table 2.2), is expected given the context's interpretation.

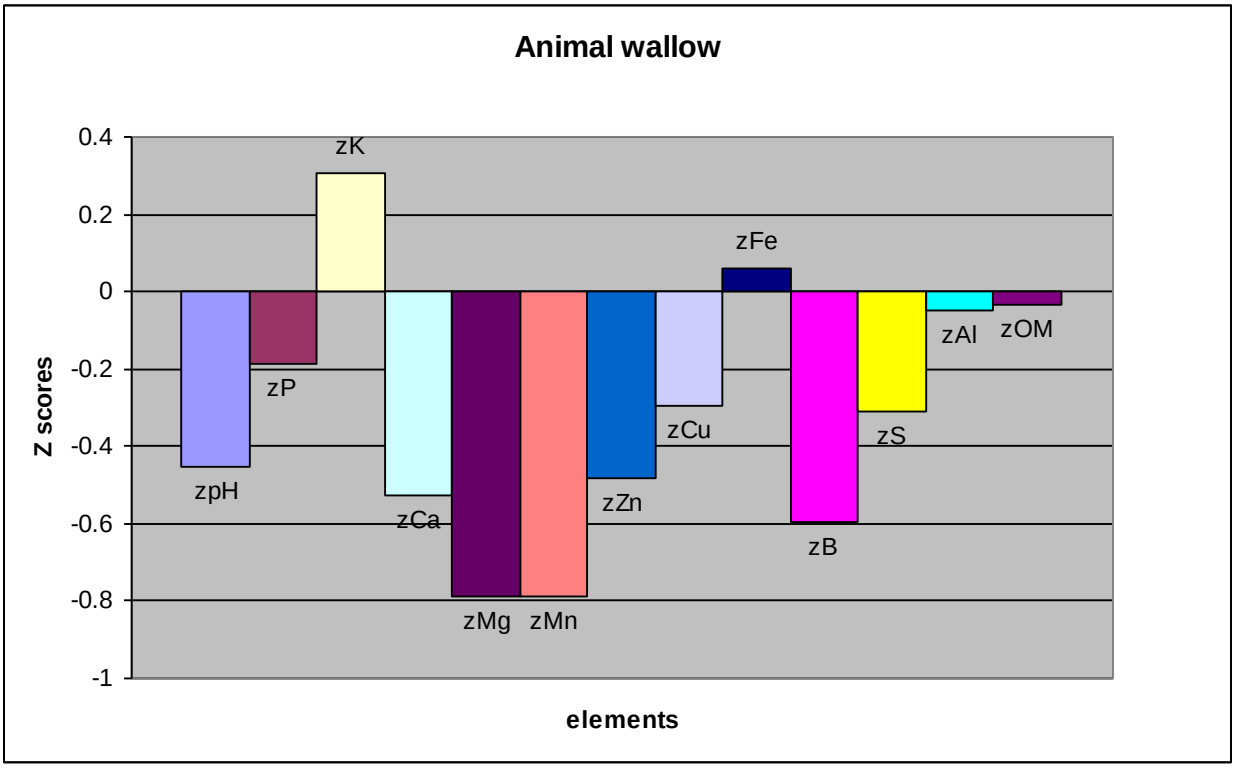

Figure 3: Bar graph comparing soil element and characteristic Z scores in the animal wallow feature.

Large pit, Iron Bloomery: Contexts 106, 66A, 66B

The large pit feature interpreted as an iron bloomery in Area A contained a variety of iron-production related artifacts including iron slag, wedges, nails, and other metal artifacts (Liebeknecht and Burrow 2012: 2-8). Chemically, the three contexts sampled for soil analysis exhibit elevated concentrations of calcium (Ca), magnesium (Mg), copper (Cu), iron (Fe), organic matter (Om), and an elevated pH level nearer to neutral acidity (see Figure 4). The organic matter, calcium and magnesium signatures are highly significant, with Z scores well over

1, and are likely the result of the intense fire and burning that would have taken place in the smelting of iron, depositing both ash and slag that would contain these elements. The increased pH may also be a direct result of ash and/or slag deposition from within the bloomery, which would serve to neutralize (raise the pH) of the naturally acidic soils of the area. The metallic elements of iron and copper would not be contained in slag or ash, but could be a more direct result of the metals produced in the furnace or the metallic artifacts deposited in the fills of the feature. While these elements do not appear to be greatly elevated over the average for all samples, they are significantly higher Z scores, approximately 0.42 on average, than the Z scores of the control samples for those two elements, each around -1.

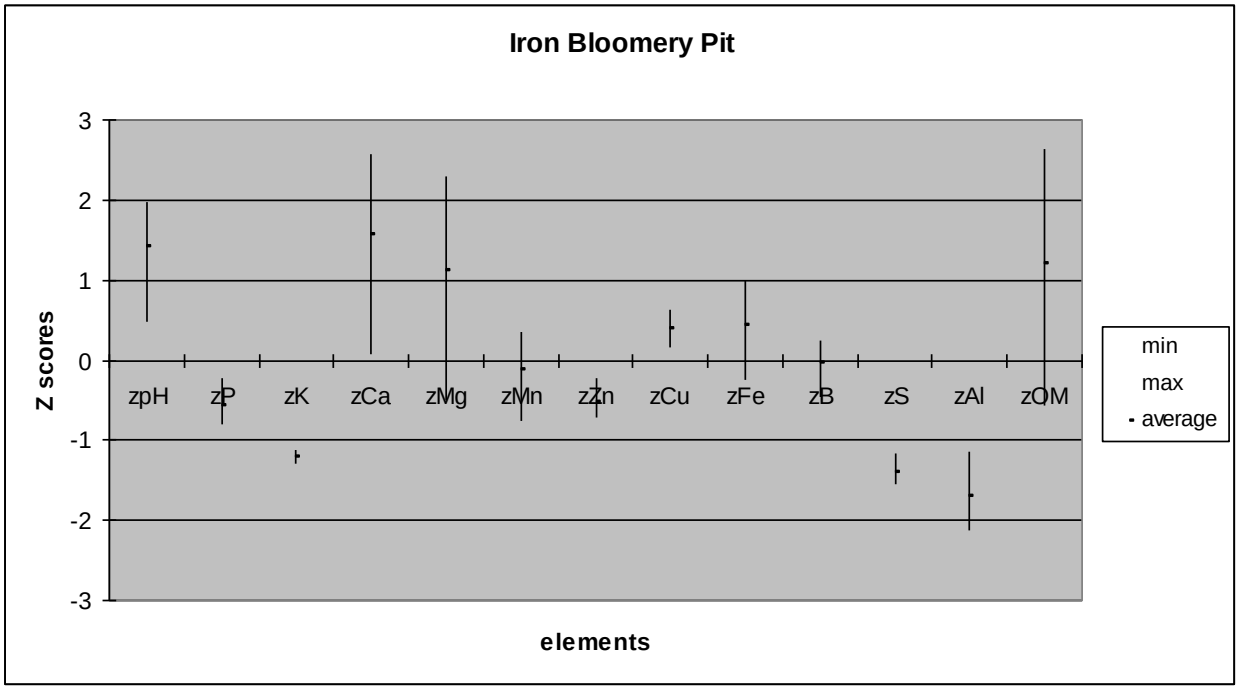

Figure 4: Min-max-average chart of the soil elements and characteristics of the Iron Bloomery Pit samples.

Root Cellar / Refuse Pit: Contexts 22 and 116

Two samples were also taken from a large circular feature located at the southern end of the Area A, and partial excavation recovered red brick, daub, redware, window glass and

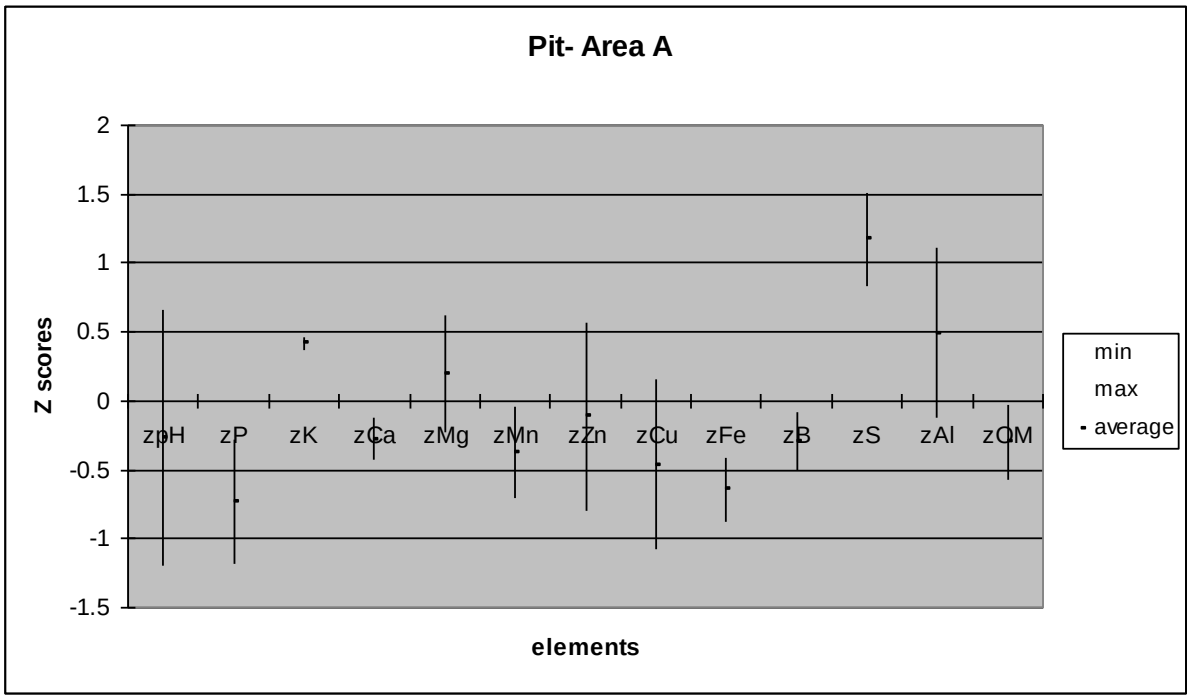

Figure 5: Min-max-average chart of the soil elements and characteristics of the pit feature samples.

olive green bottle glass (Liebeknecht and Burrow 2012: 2-12 – 2-13). This feature's interpretation was indeterminate in the field but may represent a either a refuse pit or the cellar of a fourth structure within Area A. Interestingly, this feature contains a very unique chemical signature, with a significantly elevated level of sulphur (S) and more moderately elevated levels of aluminum (Al), potassium (K), and magnesium (Mg); all other elements and characteristics appear to have near-background levels at or below their site-wide averages. Sulphur deposition, along with aluminum, could potentially have resulted from the light industrial activities at the Cedar Creek Road site, but the accompanying potassium and magnesium are potentially associated with ash and architectural material such as mortar and daub. By comparison with other features investigated in the analysis, the pit does not appear to be chemically similar to any of the other interpreted features on site, making it's interpretation as a root cellar tenuous (see Figure 6). The lack of significant concentrations of phosphorus, calcium, and organic matter also

suggest that the pit did not receive organic refuse such as human or animal waste, food production or consumption waste. Given the mixed assortment of artifacts and chemicals, this feature may simply be a pit filled with occupation and industrial debris.

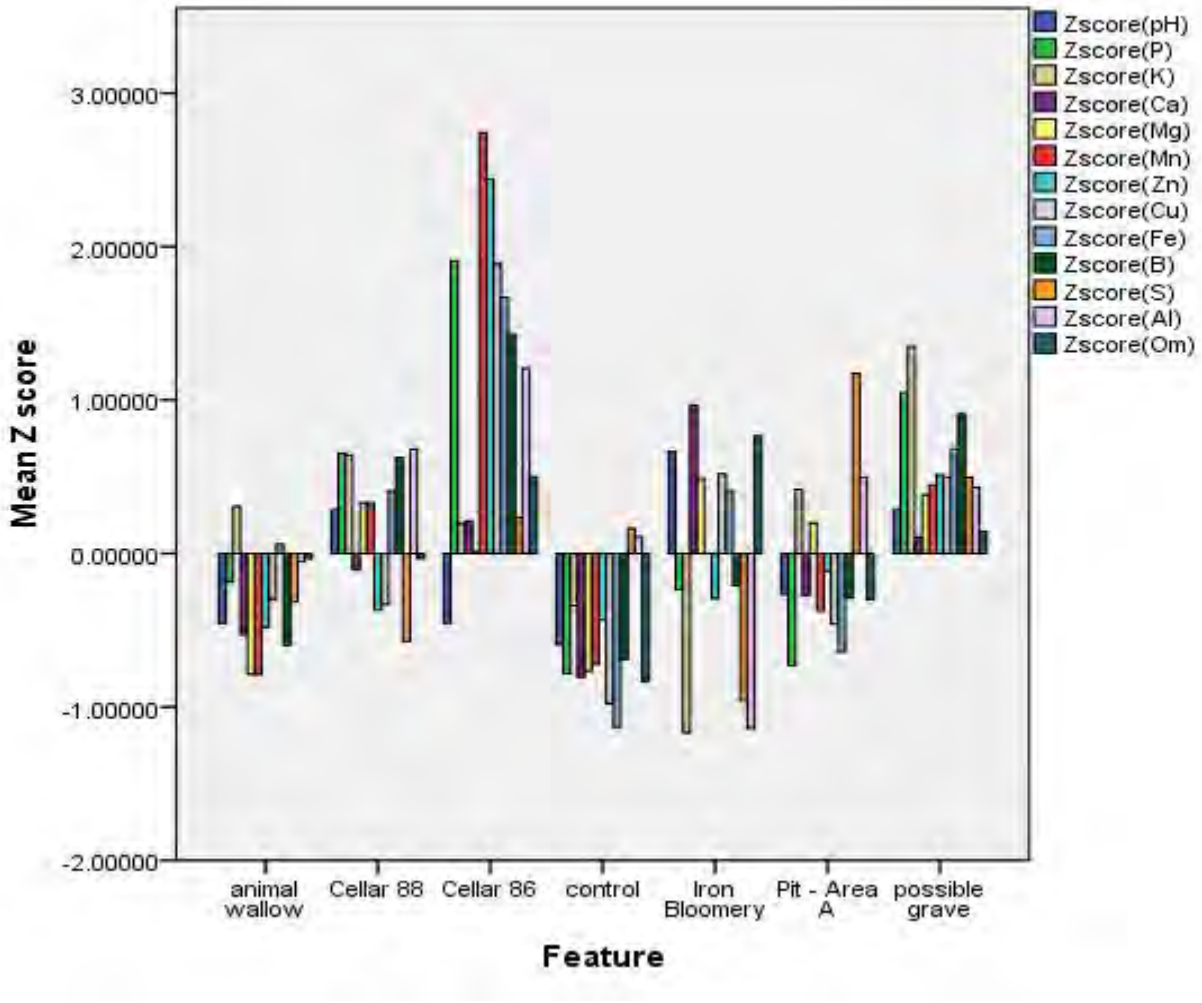

Figure 6: Bar chart comparing the average Z score for each soil element and characteristic across features.

Possible Grave: Contexts 156, 270A, 270B

Three soil samples taken for chemical analysis came from contexts within a linear feature west of Structure 2, first thought to be part of a fence, but now interpreted as a possible human burial. The feature contained only a few small bone fragments, potentially but not definitively human, and two nails (Liebeknecht and Burrow 2012: 2-8). The soils from the possible grave do

exhibit significantly elevated levels of phosphorus and potassium, as well as more moderately elevated every other element and soil characteristic when all three contexts averaged (see Figure 7). Phosphorus is a principal constituent of animal tissue, notably coupled with calcium in bone apatite. The potassium could potentially be from the degraded wood of a coffin.

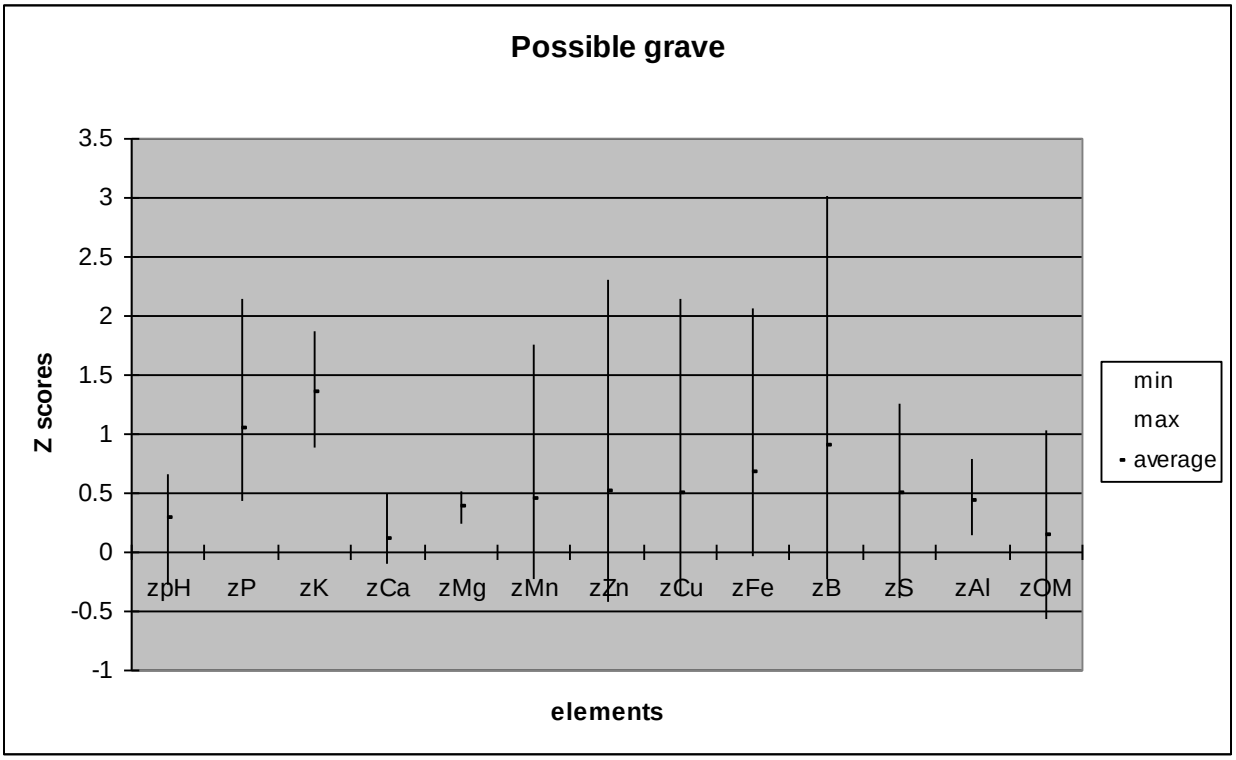

Figure 7: Min-max-average chart of soil elements and characteristics for possible grave feature.

The variation of values is considerable for most other elements, ranging from below 0 to over 2 for several elements such as zinc, copper, iron, and boron. When the individual contexts from the grave feature are compared, context 156 clearly stands out as distinct from the other two contexts (see Figure 8). Context 156 has significantly higher Z scores for phosphorus, calcium, and organic matter; all of which could be attributed to the presence of degraded bone and tissue, and fit well with the interpretation of buried animal or human remains. The other high elements including manganese, zinc, copper, iron, boron and sulphur are all trace elements found

in the human body, and have been shown to be at lower concentrations in the background levels of the control samples. Thus, context 156 appears to be most directly influenced by the decomposition of some kind of human or animal tissue. Interestingly, contexts 270 A and B exhibit higher concentrations of potassium; and may be more directly influenced by the decomposition of wood, possibly from a coffin. While these elemental signatures alone cannot distinguish between decomposed species of animals versus humans; it does appear that the soil elements of the possible grave feature do support the presence of decomposed organic tissues, particularly in context 156. Taken together with possibility of a head-marker feature (Liebeknecht and Burrow 2012: 2-8), and the potassium signature which could represent a decomposed coffin; the interpretation of the feature as a grave is viable. However, elemental concentrations alone cannot identify human remains, and therefore verification of the feature as a human burial, if possible, will necessitate detailed analysis of the individual bone fragments.

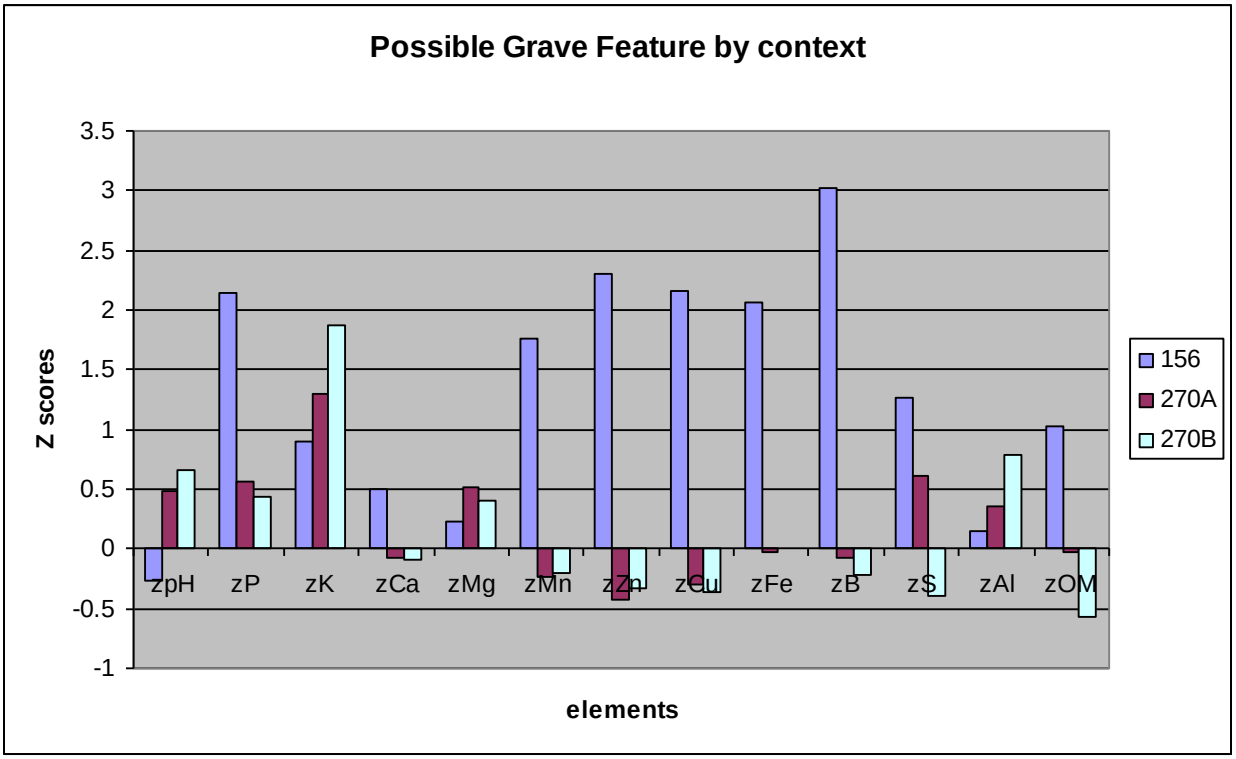

Figure 8: Bar chart comparing soil elements and characteristics by context of the grave feature.

Structure 1 Root Cellar: Contexts 86 and 88

Two root cellar features were uncovered associated with Structure 1, and one soil sample was taken from each cellar for chemical analysis. The chemical signatures in each were distinct enough to warrant separate analysis and discussion. Context 88 is from the first, larger cellar uncovered in the Phase II excavations, and context 86 is from the second, shallower root cellar found later (Liebeknecht and Burrow 2012: 2-5). While both features contained a similar assortment of artifacts, only the second cellar, represent by context 86, exhibited significant chemical enrichment in phosphors and heavy metals including manganese, zinc, copper, iron, boron and aluminum (see Figure 9). By contrast, the larger cellar, represented by context 88, showed only moderately elevated levels of phosphorus, potassium, boron, and aluminum; and the level of enrichment for those elements is significantly less than context 86.

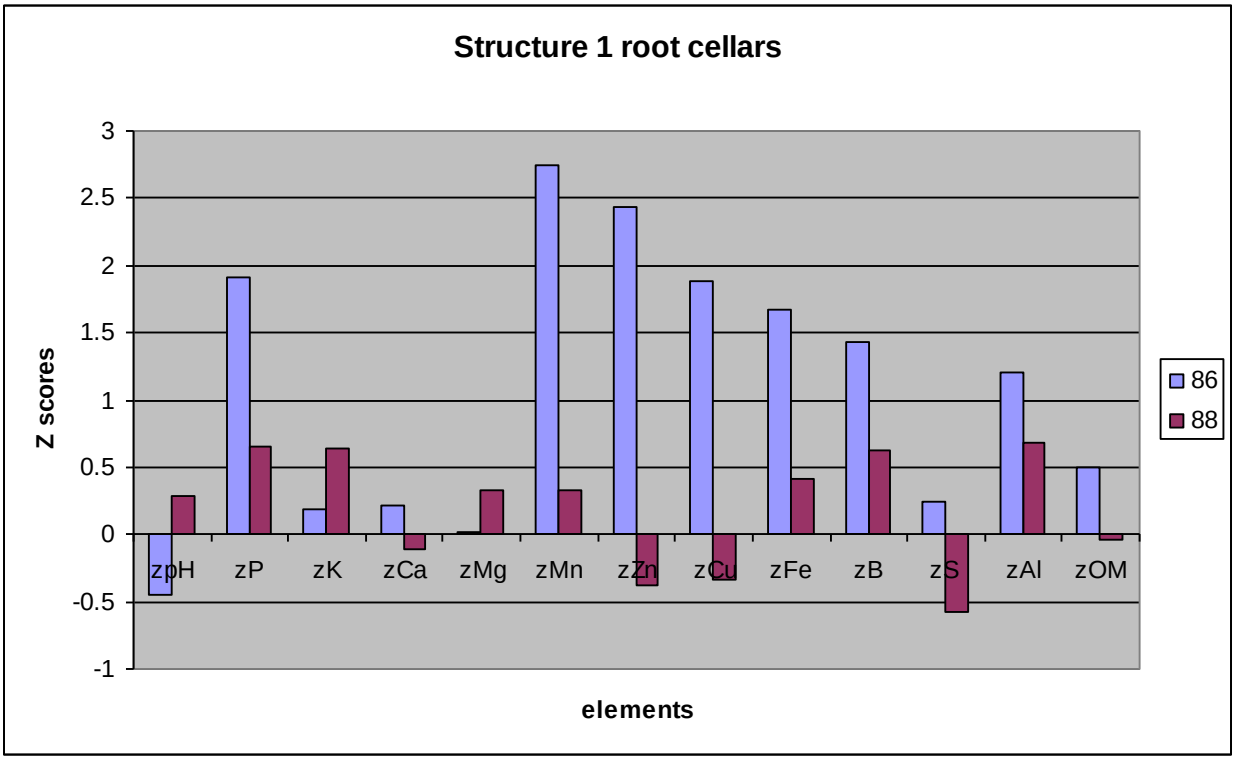

Figure 9: Bar chart comparing the soil elements and characteristics of the larger (88) and smaller (86) cellar features of Structure 1.

The phosphorus content of the cellar fills is attributable to decomposed organic tissues likely from the daily refuse of a domestic occupation. The other metals, especially elevated in the context 86, are likely the result of the contamination of soils on site due to the light industrial activities such as iron and brick production. One possible interpretation for the distinction in chemical signatures of two cellars of Structure 1 could be the sequence of filling of the features. If the larger cellar (context 88) were indeed filled first, earlier than context 86, or even during the occupation of Structure 1, the soils deposited as fill could have less accumulated organic refuse or may even have come from off site. Then if the second, small cellar (context 86) was filled at the end of the occupation of Structure 1, fill soils could have more organic refuse accumulated in them, or come directly from the area of occupation, including the iron bloomery and brick clamp. A more detailed artifact analysis of the two cellars could possibly elucidate the timing of the fill events. While these chemical signatures alone do not have the ability to identify the exact cause of the difference in the two cellars, they do provide clear evidence that the two features were filled with soils of rather different levels anthropogenic alterations; suggesting that either their uses or depositional history was significantly distinct.

Conclusion

In summary, the soil chemical analysis of sediments collected from 6 distinct features provided 6 distinct chemical signatures. Except for the animal wallow, all of the cultural features did appear to have some measurable anthropogenic input that distinguishes those fills chemically from the background levels of the control samples (see Figure 6). The root cellars of Structure 1 have a generally diverse assortment of elemental concentrations, and these features were likely filled with a mixture of household refuse and industrial activity residues, though to much

differing extents. The possible grave contains mostly organic signatures: interestingly separated with a possible animal or human tissue signature of phosphorus and trace metals in one context, and a more moderate signature in two other contexts that could potentially come from decomposed wood. The iron bloomery predictably contains elements consistent with intense burning and ore-refining residues. The large pit feature, represented by contexts 22 and 116, was the feature of least certain interpretation in the field, and unfortunately chemical analysis has not been able to identify any one associated activity with the area or fill soils, though the signature is distinct enough to likely rule out it's function as a root cellar.

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Appendix A – Soil Sample Data

Context	Interpretation	pH	P	K	Ca	Mg	S	Al	OM
302	animal wallow	5.1	81.51	111.73	249.53	30.91	6.07	791.50	0.2
2A	control	4.9	35.53	85.66	159.86	33.56	7.83	818.24	0.0
2B	control	5.0	50.80	127.30	207.91	48.59	10.23	908.60	0.1
2C	control	4.8	25.62	36.05	103.61	20.97	6.17	741.77	0.0
2D	control	5.4	43.02	84.47	147.03	22.62	4.54	765.49	0.1
106-2	large pit Iron Bloomery	6.3	43.88	48.66	1309.19	84.98	3.25	601.41	0.7
66A	large pit Iron Bloomery	6.4	37.45	44.85	1134.31	100.93	3.11	572.13	0.5
66B	large pit Iron Bloomery	5.6	79.40	41.20	454.79	37.24	4.02	676.71	0.1
22	Pit - Area A	4.7	75.05	118.65	283.79	43.77	10.39	913.76	0.2
116	Pit - Area A	5.7	10.03	114.44	388.88	62.91	8.80	784.24	0.1
156	possible grave	5.2	248.43	137.42	598.65	54.18	9.80	812.83	0.4
270A	possible grave	5.6	135.65	155.03	404.73	60.39	8.27	834.87	0.2
270B	possible grave	5.7	126.61	179.97	398.07	57.92	5.89	879.61	0.1
86	Structure 1 root cellar	5.1	231.74	106.69	502.67	49.18	7.37	924.18	0.3
88	Structure 1 root cellar		141.75	126.29	394.00	56.32	5.45	868.63	0.2

Context	Interpretation	Mn	Zn	Cu	Fe	B
302	animal wallow	25.58	1.86	1.50	83.06	0.10
2A	control	30.09	3.42	0.61	49.69	0.11
2B	control	43.95	2.61	0.77	55.80	0.08
2C	control	22.33	1.84	0.76	40.57	0.06
2D	control	20.33	0.46	0.86	57.09	0.07
106-2	large pit Iron Bloomery	86.26	1.18	2.52	96.58	0.25
66A	large pit Iron Bloomery	69.82	0.78	2.01	108.17	0.28
66B	large pit Iron Bloomery	27.18	3.04	2.28	74.60	0.13
22	Pit - Area A	65.63	6.64	2.00	70.34	0.12
116	Pit - Area A	30.20	0.41	0.64	57.84	0.21
156	possible grave	161.81	14.49	4.20	137.49	0.87
270A	possible grave	55.65	2.11	1.50	80.59	0.21
270B	possible grave	57.25	2.54	1.43	81.64	0.18
86	Structure 1 root cellar	214.08	15.11	3.91	126.65	0.53
88	Structure 1 root cellar	85.40	2.36	1.46	92.47	0.36

Appendix D

ARTIFACT INVENTORY

APPENDIX D
PHASE III ARTIFACT INVENTORY

Area A Context 1 **Catalog # 113**

2	Historic Arms and Armor, Flint, gunflint, flake, fragment, black, cortex	Row # A
1	Historic Arms and Armor, Flint, gunflint, flake, fragment, grey	Row # B
58	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # D
2	Historic Building Materials, Ferrous metal, nail, rose head, fragment, wrought, corroded	Row # C
33	Historic Building Materials, Glass, window glass, fragment, light aqua	Row # CG
5	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, hollow ware, body, slip decorated interior, clear exterior, clear lead, 1740 - 1850	Row # F
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, hollow ware, body, white slip ground both surfaces, clear with brown mottling, 1740 - 1800	Row # H
3	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, plate, rim, slip trailed, clear lead, 1740 - 1850	Row # E
5	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, unidentified, fragment, slip decorated, clear lead, exterior surface missing, 1740 - 1850	Row # G
5	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, cordoned, black, burned, 1700 - 1820	Row # T
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, clear lead, 1700 - 1850	Row # K
3	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, clear with brown mottling, 1700 - 1850	Row # L
4	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base, glazed interior, clear with brown mottling, multiple vessels, 1700 - 1850	Row # M
5	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, fragment, glazed, clear with brown mottling, surface missing, 1700 - 1850	Row # N
5	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed interior, clear with brown mottling, multiple vessels, 1700 - 1850	Row # P
9	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, cordoned, black, 1700 - 1820	Row # S
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, rim, glazed both surfaces, rounded rim, black, two vessels, 1700 - 1820	Row # AA
6	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, handle, glazed both surfaces, molded, black, multiple vessels, 1700 - 1820	Row # U
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, handle, glazed both surfaces, attachment, black, 1700 - 1820	Row # V
27	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, burned, 1700 - 1820	Row # W
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, rim, glazed both surfaces, rounded rim, slightly everted with seat for lid, black, burned, 1700 - 1820	Row # X
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base, glazed exterior, black, 1700 - 1820	Row # AC
48	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, fragment, glazed, black, surface missing, multiple vessels, 1700 - 1820	Row # AD
5	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base and body, glazed both surfaces, black, multiple vessels, 1700 - 1820	Row # AE
69	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, multiple vessels, 1700 - 1820	Row # AF
23	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base and body, glazed interior, black, multiple vessels, 1700 - 1820	Row # AG
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, rim and body, glazed both surfaces, clear with brown mottling, 1700 - 1850	Row # R
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, small hollow ware, rim, glazed both surfaces, black, possible lid fragments, 1700 - 1820	Row # Y
10	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, small hollow ware, rim, glazed both surfaces, slightly everted rim, black, multiple vessels, 1700 - 1820	Row # AB

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

32	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, both surfaces missing, 1700 - 1870	Row # AK
12	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, unglazed exterior, interior surface missing, 1700 - 1870	Row # AH
14	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, glazed, clear lead, surface missing, multiple vessels, 1700 - 1850	Row # Q
8	Historic Ceramic Vessel Sherds, Earthenware, Buckley-type, hollow ware, body with ear, glazed exterior, black, same vessel, 17th to 18th century	Row # AL
1	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, handle, glazed both surfaces, clear lead, 1700 - 1775	Row # AQ
2	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, body, glazed both surfaces, clear lead, 1700 - 1775	Row # AR
3	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, base and body, slip decorated, brown, 1700 - 1775	Row # AP
1	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, body, slip dot(s), clear with brown decoration, 1700 - 1775	Row # AN
5	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, body, slip combed, clear with brown decoration, 1700 - 1775	Row # AM
5	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, body, surface missing, 1700 - 1775	Row # AS
4	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, hollow ware, body, glazed both surfaces, light blue tint, 1640 - 1800	Row # AX
3	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, hollow ware, body, hand painted, floral decoration, blue and brown, same vessel, 1675 - 1800	Row # AU
2	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, saucer, rim, banded (hand painted), yellow and brown, exterior surface missing, sherds mend, 1675 - 1800	Row # AT
3	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, glazed, white, surface missing, 1625 - 1800	Row # BA
7	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, glazed, light blue tint, surface missing, 1640 - 1800	Row # AY
11	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, hand painted, unidentified decoration, blue, surface missing, multiple vessels, 1640 - 1800	Row # AV
4	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, both surfaces missing, 1625 - 1800	Row # BB
3	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, hand painted, unidentified decoration, purple, surface missing, 1640 - 1800	Row # AW
2	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, pink body, unidentified, fragment, both surfaces missing, 1625 - 1800	Row # BC
3	Historic Ceramic Vessel Sherds, Porcelain, Chinese Export, dish/bowl, base with foot ring and rim, hand painted underglaze, floral decoration, blue, 1700 - 1840	Row # BD
1	Historic Ceramic Vessel Sherds, Porcelain, hard paste, unidentified, base with foot ring, pedestal foot, both surfaces missing	Row # BE
7	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, unidentified, fragment, 1762 - 1820	Row # BF
1	Historic Ceramic Vessel Sherds, Refined Earthenware, Pearlware, hollow ware, body, dipped/annular, brown and yellow, interior surface missing, 1790 - 1890	Row # BH
1	Historic Ceramic Vessel Sherds, Refined Earthenware, Pearlware, hollow ware, body, dipped/annular, brown, interior surface missing, 1790 - 1890	Row # BK
1	Historic Ceramic Vessel Sherds, Refined Earthenware, Pearlware, saucer, rim, banded (hand painted), blue, 1775 - 1820	Row # BG
2	Historic Ceramic Vessel Sherds, Refined Earthenware, Pearlware, unidentified, fragment, surface missing, 1775 - 1840	Row # BL
1	Historic Ceramic Vessel Sherds, Stoneware, English Brown Mottled-type, hollow ware, body, salt glaze, cordoned, brown mottled, 1690 - 1775	Row # BW
1	Historic Ceramic Vessel Sherds, Stoneware, grey body, hollow ware, rim, salt glaze, brown	Row # BX

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

1	Historic Ceramic Vessel Sherds, Stoneware, grey body, hollow ware, body, salt glaze, brown, burned	Row # BY
1	Historic Ceramic Vessel Sherds, Stoneware, grey body, hollow ware, body, salt glaze, cordoned, grey	Row # CA
4	Historic Ceramic Vessel Sherds, Stoneware, grey body, hollow ware, body, salt glaze, grey	Row # CB
1	Historic Ceramic Vessel Sherds, Stoneware, Westerwald-type, hollow ware, body, salt glaze, etched, cobalt blue and grey, 1650 - 1750	Row # BV
1	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, dish/bowl, base with foot ring and body, salt glaze, scratch interior, blue, 1744 - 1783	Row # BM
1	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, hollow ware, lid, salt glaze, scratch exterior, blue, 1744 - 1783	Row # BN
1	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, hollow ware, rim, salt glaze, scratch both surfaces, blue, 1744 - 1783	Row # BP
1	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, unidentified, rim, salt glaze, 1720 - 1805	Row # BT
1	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, unidentified, fragment, salt glaze, scratch one surface, blue, 1744 - 1783	Row # BQ
6	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, unidentified, fragment, salt glaze, 1720 - 1805	Row # BU
1	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, unidentified, base, salt glaze, pedestal foot, 1720 - 1805	Row # BS
1	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, unidentified, rim, salt glaze, molded design, 1740 - 1783	Row # BR
1	Historic Clothing Related, Brass, button, hollow-cast, whole, seam brazed and polished, .64" diameter, exhibits two holes for escaping gasses, 1726 - 1776 *	Row # CC
2	Historic Fauna, Bone, mammal, unidentified, fragment, 1g	Row # CE
1	Historic Fauna, Bone, mammal, unidentified, fragment, burned, 2g	Row # CF
1	Historic Fauna, Bone, rodent, vertebra, fragment, 1g	Row # CD
8	Historic Glass Vessel Fragments, Glass, bottle, fragment, light olive green	Row # CL
25	Historic Glass Vessel Fragments, Glass, bottle, base and body, dark olive green	Row # CP
21	Historic Glass Vessel Fragments, Glass, bottle, fragment, olive green	Row # CM
8	Historic Glass Vessel Fragments, Glass, curved, fragment, clear/uncolored	Row # CK
8	Historic Glass Vessel Fragments, Glass, curved, fragment, olive green, thin walled	Row # CN
2	Historic Glass Vessel Fragments, Glass, curved, fragment, aqua	Row # CH
1	Historic Glass Vessel Fragments, Glass, flat, fragment, amber, burned	Row # CR
5	Historic Glass Vessel Fragments, Glass, lamp chimney, fragment, clear/uncolored, thin walled	Row # CQ
1	Historic Manufacturing, Ferrous metal, indeterminate ferrous metal, fragment, triangular, corroded	Row # DC
13	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, medium, 11 oz	Row # DG
6	Historic Recreation/Activities, Ball Clay, smoking pipe, bowl, fragment	Row # CS
3	Historic Recreation/Activities, Ball Clay, smoking pipe, bowl/stem, fragment, 6/64"	Row # CT
3	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 7/64"	Row # CU
10	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 6/64"	Row # CV
20	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 5/64"	Row # CW
5	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment	Row # CX
1	Historic Tools/Hardware, Ferrous metal, hand tool, neck, fragment, corroded, neck of hand tool with hole	Row # CY
1	Historic Tools/Hardware, Ferrous metal, hand tool, shim, fragment, corroded, fits in hole of 113.CY	Row # DA
1	Historic Unidentified, Ferrous metal, ferrous metal, whole, oval, corroded, 105g, possible counter weight	Row # DB
1	Historic Unidentified, Lead, lead, fragment, flattened, round, 1.12" duameter	Row # DD
1	Prehistoric Lithics, Quartz, core, whole, white, L 44.3mm, W 42mm, T 37mm, 94g	Row # DE
1	Prehistoric Lithics, Quartzite, thermally-altered rock, fragment, reddened, cortex, 55g	Row # DF

Total Artifacts in Context 1: 649

Area A Context 4 **Catalog # 202**

1	Historic Flora, Wood, carbon sample, fragment, partial vile	Row # A

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

Total Artifacts in Context 4: 1

Area A Context 8 **Catalog # 114**

1 Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, 37g Row # A

1 Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, hollow ware, body, hand painted, blue, 1640 - 1800 Row # B

Total Artifacts in Context 8: 2

Area A Context 10 **Catalog # 115**

1 Historic Glass Vessel Fragments, Glass, curved, fragment, olive green Row # A

Total Artifacts in Context 10: 1

Area A Context 18 **Catalog # 116**

1 Historic Building Materials, Coarse Earthenware, brick, fragment, light orange and blackened, burned, 172g Row # B

2 Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 45g Row # A

1 Historic Ceramic Vessel Sherds, Earthenware, Redware, hollow ware, body, glazed both surfaces, black, burned, possible Jackfield, 1740 - 1850 Row # C

1 Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, light blue tint, 1640 - 1800 Row # D

Total Artifacts in Context 18: 5

Area A Context 22 **Catalog # 117**

8 Historic Building Materials, Clay, daub, fragment, tan, 36g Row # B

24 Historic Building Materials, Coarse Earthenware, brick, fragment, light orange and tan, 68g Row # A

3 Historic Building Materials, Glass, window glass, fragment, light aqua Row # C

1 Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, handle, glazed both surfaces, black, 1700 - 1820 Row # D

1 Historic Glass Vessel Fragments, Glass, bottle, body, olive green Row # E

Total Artifacts in Context 22: 37

Area A Context 26 **Catalog # 118**

1 Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820 Row # A

Total Artifacts in Context 26: 1

Area A Context 32 **Catalog # 119**

1 Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded Row # A

Total Artifacts in Context 32: 1

Area A Context 42 **Catalog # 120**

1 Historic Building Materials, Clay, daub, fragment, light orange and tan, 6g Row # B

2 Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 2g Row # A

1 Historic Recreation/Activities, Ball Clay, smoking pipe, bowl, fragment Row # C

Total Artifacts in Context 42: 4

Area A Context 46 **Catalog # 121**

5 Historic Building Materials, Clay, daub, fragment, light orange and tan, 7g Row # B

6 Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 20g Row # A

1 Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, fragment, glazed, black, surface missing, 1700 - 1820 Row # D

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, fragment, glazed, clear with brown mottling, surface missing, 1700 - 1850	Row # C
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, unglazed, surface missing, L , 1700 - 1870	Row # E
1	Historic Manufacturing, Limonite, slag (limonite), bloomery, fragment, 1g	Row # F

Total Artifacts in Context 46: 15

Area A Context 48 **Catalog # 122**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 4g	Row # A
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # B

Total Artifacts in Context 48: 2

Area A Context 50 **Catalog # 123**

3	Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, 5g	Row # B
3	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 8g	Row # A
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, both surfaces missing, 1625 - 1800	Row # C
2	Historic Flora, Wood, carbon sample, fragment, 1g	Row # D

Total Artifacts in Context 50: 9

Area A Context 52 **Catalog # 124**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 1g	Row # A
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, fragment, glazed interior, black, 1700 - 1820	Row # C
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # B
1	Historic Fauna, Shell, clam, fragment, .5g	Row # D
1	Historic Glass Vessel Fragments, Glass, bottle/jar, body, clear/uncolored, mold seam	Row # E

Total Artifacts in Context 52: 5

Area A Context 54 **Catalog # 125**

1	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # A
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # B
5	Historic Fauna, Bone, mammal, fragment, 2g	Row # C
2	Historic Fauna, Shell, clam, fragment, 4g	Row # D

Total Artifacts in Context 54: 9

Area A Context 56 **Catalog # 126**

3	Historic Building Materials, Clay, daub, fragment, light orange and tan, 1g	Row # G
3	Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, 7g	Row # B
4	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 4g	Row # A
5	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # C
3	Historic Fauna, Bone, mammal, long bone, fragment, 16g	Row # D
1	Historic Fauna, Shell, clam, fragment, 3g	Row # E
1	Historic Manufacturing, Limonite, slag (limonite), bloomery, fragment, 4.5g	Row # F

Total Artifacts in Context 56: 20

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

Area A Context 58 **Catalog # 127**

1	Historic Recreation/Activities, Ball Clay, smoking pipe, bowl, fragment	Row # A

Total Artifacts in Context 58: 1

Area A Context 62 **Catalog # 128**

6	Historic Building Materials, Clay, daub, fragment, light orange and tan, 34g	Row # B
2	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 1g	Row # A
3	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # C
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, cordoned, black, 1700 - 1820	Row # D
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, rim, glazed both surfaces, black, 1700 - 1820	Row # E
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # F
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, light blue tint, surface missing, 1640 - 1800	Row # G
2	Historic Fauna, Bone, mammal, fragment, .5g	Row # H
2	Historic Fauna, Shell, clam, fragment, 2g	Row # L
1	Historic Fauna, Shell, unidentified, fragment, 1g	Row # N
5	Historic Fauna, Shell, whelk, fragment, 14g	Row # M
2	Historic Fauna, Tooth, mammal, fragment, .5g	Row # K
1	Historic Flora, Wood, carbon sample, fragment, partial vile	Row # Q
1	Historic Recreation/Activities, Ball Clay, smoking pipe, bowl, fragment	Row # P

Total Artifacts in Context 62: 29

Area A Context 65 **Catalog # 129**

1	Historic Agriculture/Equestrian, Ferrous metal, horseshoe, fragment, corroded	Row # W
1	Historic Agriculture/Equestrian, Ferrous metal, horseshoe, fragment, broken, corroded	Row # AR
120	Historic Building Materials, Clay, daub, fragment, very small, tan, 268g, brick or daub	Row # L
14	Historic Building Materials, Clay, daub, fragment, tan, 125g	Row # H
32	Historic Building Materials, Clay, daub, fragment, black, burned, melted, 32g, brick or daub	Row # M
9	Historic Building Materials, Clay, daub, fragment, blackened and tan, burned, 118g	Row # K
7	Historic Building Materials, Coarse Earthenware, brick, fragment, tan, 232g	Row # D
1	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, blackened, burned, T 2.6in, 1 lb	Row # T
3	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened and orange, burned, 340g	Row # E
13	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, blackened and orange, burned, 601g	Row # F
234	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 986g, sampled	Row # B
8	Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, 302g	Row # C
7	Historic Building Materials, Coarse Earthenware, brick, fragment, red, 272g	Row # A
2	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 47g	Row # G
30	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # R
1	Historic Building Materials, Ferrous metal, nail, clench, fragment, wrought, corroded, head missing	Row # P
2	Historic Building Materials, Ferrous metal, nail, indeterminate head, fragment, wrought, corroded, possible rose head	Row # Q
1	Historic Building Materials, Ferrous metal, nail, rose head, whole, wrought, corroded, L 2.5in	Row # N
2	Historic Building Materials, Glass, window glass, fragment, light aqua	Row # S
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, brown, 1740 - 1870	Row # X

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, fragment, glazed exterior, black, interior surface missing, 1700 - 1820	Row # AB
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # Y
3	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base, glazed interior, black, 1700 - 1820	Row # AA
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, unglazed, interior surface missing, 1700 - 1870	Row # AC
1	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, hollow ware, rim, colored glaze both surfaces, green, 1750 - 1800	Row # AD
2	Historic Ceramic Vessel Sherds, Stoneware, Westerwald-type, hollow ware, base and body, salt glaze, cordoned, grey, 1650 - 1750	Row # AF
2	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, hollow ware, base and body, salt glaze, pedastal foot, molded, 1740 - 1765	Row # AE
1	Historic Clothing Related, Brass, buckle, fragment, etched letters "RA"	Row # AY
4	Historic Fauna, Bone, mammal, unidentified, fragment, 3g	Row # AH
4	Historic Fauna, Shell, clam, fragment, 11g	Row # BM
3	Historic Fauna, Shell, oyster, whole, 57g	Row # BN
53	Historic Fauna, Shell, oyster, fragment, 124g	Row # BP
1	Historic Fauna, Tooth, mammal, unidentified, fragment, 1g	Row # BL
1	Historic Furnishings, Brass, tack, fragment, head missing	Row # AX
1	Historic Furnishings, Brass, tack, fragment, corroded	Row # AG
1	Historic Furnishings, Ferrous metal, unidentified, fragment, corroded, L 4in, W 0.87in, T 0.33in, possible handle, peg-shaped wood attached	Row # AS
3	Historic Glass Vessel Fragments, Glass, curved, fragment, clear/uncolored	Row # AK
2	Historic Glass Vessel Fragments, Glass, flat, fragment, olive green, burned	Row # AL
1	Historic Manufacturing, Ferrous metal, bar stock, fragment, corroded, L 3.9in, W 1.43in, T 0.65in	Row # BB
70	Historic Manufacturing, Ferrous metal, bloomery slag (bead), bloomery slag, whole, round, 21g	Row # BC
145	Historic Manufacturing, Ferrous metal, bloomery slag (scale/shell), bloomery slag, fragment, 21g	Row # BD
4	Historic Manufacturing, Ferrous metal, horseshoe stock, stock, fragment, corroded, fragments mend	Row # AT
46	Historic Manufacturing, Ferrous metal, scrap, bloomery, fragment, 595g	Row # BE
3	Historic Manufacturing, Ferrous metal, unidentified, fragment, 2g, thin walled, curved iron fragments	Row # BF
1	Historic Manufacturing, Limonite, raw material, bloomery, fragment, burned, 6g	Row # AW
5	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, small, five bags, 105 lbs	Row # BH
7	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, large, seven bags, 99.7 lbs	Row # BG
1	Historic Manufacturing, Wood, charcoal, bloomery, fragment, 370g, one bag	Row # BK
1	Historic Personal Items, Brass, watch, fragment, corroded, similar to 131.AW	Row # AV
1	Historic Tools/Hardware, Ferrous metal, spike, fragment, corroded, head missing	Row # AN
1	Historic Tools/Hardware, Ferrous metal, spike, round head, fragment, corroded	Row # AM
1	Historic Tools/Hardware, Ferrous metal, unidentified, fragment, tapered, corroded, L 4in, W 1in, T 0.64in, possible bloomery tool	Row # AQ
1	Historic Unidentified, Ferrous metal, ferrous metal, fragment, corroded, pipe-like curled iron fragment	Row # AU
2	Historic Unidentified, Ferrous metal, ferrous metal, fragment, triangular, corroded	Row # AP
1	Prehistoric Lithics, Chert, debitage, whole flake, black, burned	Row # BA

Total Artifacts in Context 65: 867

Area A Context 66 **Catalog # 130**

14	Historic Building Materials, Clay, daub, fragment, blackened, burned, 14g	Row # F
2	Historic Building Materials, Clay, daub, fragment, blackened, burned, 10g, combined contexts 65 and 68	Row # D
41	Historic Building Materials, Clay, daub, fragment, tan, 16g, combined contexts 65 and 68	Row # C

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

5	Historic Building Materials, Clay, daub, fragment, tan, 5g	Row # E
4	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 139g, combined contexts 65 and 68	Row # B
10	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 17g, combined contexts 65 and 68	Row # A
44	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 462g, sampled	Row # A
48	Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, 224g, sampled	Row # B
1	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 35g	Row # C
4	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, blackened and orange, burned, 223g	Row # D
1	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded, head missing, combined contexts 65 and 68	Row # E
3	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded, possible rose head	Row # G
1	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # H
2	Historic Building Materials, Ferrous metal, nail, fragment, corroded, combined contexts 65 and 68	Row # H
1	Historic Building Materials, Glass, window glass, fragment, light aqua	Row # K
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base, glazed interior, black, 1700 - 1820	Row # P
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, rim, glazed both surfaces, slightly flared, black, 1700 - 1820	Row # M
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # N
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, rim and body, glazed both surfaces, clear lead, 1700 - 1850	Row # L
1	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, body, glazed both surfaces, clear lead, 1700 - 1775	Row # Q
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, hollow ware, rim, hand painted, blue, 1640 - 1800	Row # R
1	Historic Ceramic Vessel Sherds, Stoneware, grey body, handle, salt glaze, blackened, burned, combined contexts 65 and 68	Row # F
1	Historic Fauna, Bone, mammal, long bone, fragment, several cut marks, 18g	Row # S
2	Historic Fauna, Bone, mammal, unidentified, fragment, .5g	Row # T
1	Historic Fauna, Shell, clam, whole, 131g	Row # U
1	Historic Fauna, Shell, clam, fragment, 2g	Row # V
5	Historic Fauna, Shell, oyster, fragment, 21g	Row # W
1	Historic Glass Vessel Fragments, Glass, curved, fragment, clear/uncolored, combined contexts 65 and 68	Row # G
2	Historic Manufacturing, Coal, slag, fragment, 8g, combined contexts 65 and 68	Row # K
12	Historic Manufacturing, Ferrous metal, bloomery slag (bead), bloomery slag, whole, round, .198" to .322" diameter	Row # AA
8	Historic Manufacturing, Ferrous metal, bloomery slag (bead), bloomery slag, whole, round, 2.5g, .175" to .29" diameter, combined contexts 65 and 68	Row # N
21	Historic Manufacturing, Ferrous metal, bloomery slag (scale/shell), bloomery slag, fragment, 5g, thin, flat iron fragments, combined contexts 65 and 68	Row # M
22	Historic Manufacturing, Ferrous metal, bloomery slag (scale/shell), bloomery slag, fragment, thin, flat iron fragments	Row # Y
1	Historic Manufacturing, Ferrous metal, indeterminate ferrous metal, fragment, corroded, heavy chunk of iron	Row # X
1	Historic Manufacturing, Ferrous metal, slag, fragment, corroded, 49.5g, combined contexts 65 and 68	Row # L
2	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, large, two bags, 31.10 lbs, combined contexts 65 and 68	Row # Q
1	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, large, one bag, 15.6 lbs	Row # AD
2	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, small, two bags, 14 lbs	Row # AE
2	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, small, two bags, 19.6 lbs, combined contexts 65 and 68	Row # R
1	Historic Manufacturing, Wood, charcoal, fragment, 43g, one bag, combined contexts 65 and 68	Row # P
1	Historic Manufacturing, Wood, charcoal, bloomery, fragment, 56g, one bag	Row # AF

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

1	Historic Tools/Hardware, Ferrous metal, indeterminate type, fragment, round, corroded, 2.32" diameter, possible wedge head	Row # AB
1	Prehistoric Lithics, Jasper, thermally-altered rock, fragment, yellow, 28g	Row # AC

Total Artifacts in Context 66: 279

Area A Context 68 **Catalog # 131**

7	Historic Building Materials, Clay, daub, fragment, blackened, burned, 298g	Row # G
69	Historic Building Materials, Clay, daub, fragment, tan and white, 77g	Row # F
37	Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, 171g, sampled	Row # B
3	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, red, 224g, sampled	Row # E
4	Historic Building Materials, Coarse Earthenware, brick, fragment, red, 28g	Row # C
54	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 429g, sampled	Row # A
1	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, orange, burned, W 4.4in, T 2.4in, 3.4 lbs	Row # BH
11	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 1098g, sampled	Row # D
19	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # M
7	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded, head missing	Row # L
4	Historic Building Materials, Ferrous metal, nail, rose head, whole, wrought, corroded, 1" to 2" in length	Row # K
2	Historic Building Materials, Glass, window glass, fragment, light aqua	Row # N
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, unidentified, fragment, slip decorated, clear lead, surface missing, 1740 - 1850	Row # AD
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, cordoned, black, 1700 - 1820	Row # P
8	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, one burned, 1700 - 1820	Row # Q
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base, glazed interior, black, 1700 - 1820	Row # R
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed, brown, exterior surface missing, 1740 - 1870	Row # S
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, both surfaces missing, 1700 - 1870	Row # T
1	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, body, slip combed, clear with brown decoration, 1700 - 1775	Row # U
1	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, body, glazed both surfaces, clear lead, 1700 - 1775	Row # V
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, hollow ware, body, hand painted, blue, 1640 - 1800	Row # W
5	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, hollow ware, body, light blue tint, 1640 - 1800	Row # X
1	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, hollow ware, rim, colored glaze, green, 1750 - 1800	Row # Y
3	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, hollow ware, body, two sherds mend, 1762 - 1820	Row # AA
1	Historic Ceramic Vessel Sherds, Stoneware, buff body, hollow ware, body, salt glaze, brown, possible English Mottled, 1690 - 1775	Row # AB
1	Historic Ceramic Vessel Sherds, Stoneware, grey body, hollow ware, body, salt glaze, grey with brown mottling, possible English Mottled, 1690 - 1775	Row # AC
4	Historic Clothing Related, Brass, buckle, fragment, corroded, two buckles	Row # AE
1	Historic Fauna, Bone, mammal, long bone, fragment, calcined, 1.5g	Row # AF
7	Historic Fauna, Bone, mammal, unidentified, fragment, .5g	Row # AG
11	Historic Fauna, Shell, clam, fragment, 71g	Row # BA
7	Historic Fauna, Shell, oyster, whole, 104g, 1.58" to 3.74"	Row # BB
70	Historic Fauna, Shell, oyster, fragment, 87g	Row # BC
2	Historic Fauna, Tooth, pig, canine, fragment, 6g	Row # AH
2	Historic Flora, Wood, indeterminate wood, fragment, 1g	Row # BD

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

1	Historic Furnishings, Brass, tack, fragment, rectangular shaft, wrought, corroded, head missing	Row # H
1	Historic Glass Vessel Fragments, Glass, curved, fragment, clear/uncolored	Row # AK
6	Historic Manufacturing, Ferrous metal, bar stock, fragment, corroded	Row # AQ
28	Historic Manufacturing, Ferrous metal, bloomery slag (bead), bloomery slag, whole, round, .38" to .42" diameter	Row # AY
106	Historic Manufacturing, Ferrous metal, bloomery slag (scale/shell), bloomery slag, fragment, 17g, thin, flat iron fragments	Row # AX
4	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, large, four bags, 38.8 lbs	Row # BF
2	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, small, two bags, 17.8 ibs	Row # BG
1	Historic Manufacturing, Wood, charcoal, bloomery, fragment, 112g, one bag	Row # BE
2	Historic Personal Items, Brass, watch, fragment, corroded, two flat square fragments, one with two holes, one with two pins that fit holes, similar to 129.AV	Row # AW
3	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 5/64"	Row # AM
2	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 6/64"	Row # AL
1	Historic Tools/Hardware, Ferrous metal, spike, flat point, fragment, wrought, corroded, head missing	Row # AP
1	Historic Tools/Hardware, Ferrous metal, spike, tapered, fragment, wrought, corroded, head missing	Row # AN
2	Historic Tools/Hardware, Ferrous metal, unidentified, fragment, wrought, corroded, one a possible pry bar	Row # AS
1	Historic Tools/Hardware, Ferrous metal, washer, square, fragment, wrought, corroded, W 1.89in, T 0.53in, .64" hole diameter, large	Row # AT
1	Historic Tools/Hardware, Ferrous metal, wedge, fragment, wrought, corroded, head missing, tapered shaft	Row # AR
1	Historic Unidentified, Ferrous metal, ferrous metal, fragment, wrought, corroded, small blade/tooth-like iron fragment	Row # AU
3	Historic Unidentified, Ferrous metal, ferrous metal, fragment, triangular, corroded	Row # AV

Total Artifacts in Context 68: 517

Area A Context 70 **Catalog # 132**

1	Historic Building Materials, Clay, daub, fragment, tan, 4g	Row # M
1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, burned, 13g	Row # C
6	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 7g	Row # A
2	Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, 28g	Row # B
2	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # D
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, clear with brown decoration, 1700 - 1850	Row # F
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body and handle, glazed both surfaces, black, possible tea pot, 1700 - 1820	Row # E
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, unidentified decoration, blue, surface missing, 1640 - 1800	Row # G
1	Historic Fauna, Tooth, mammal, fragment, possible cow	Row # H
1	Historic Glass Vessel Fragments, Glass, bottle, fragment, olive green	Row # K
1	Historic Manufacturing, Limonite, slag (limonite), bloomery, fragment, 82g	Row # L

Total Artifacts in Context 70: 20

Area A Context 72 **Catalog # 133**

2	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 2g	Row # A

Total Artifacts in Context 72: 2

Area A Context 74 **Catalog # 134**

16	Historic Fauna, Bone, mammal, fragment, 3.5g	Row # A

Total Artifacts in Context 74: 16

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

Area A Context 80 **Catalog # 135**

2	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 3g	Row # A
5	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # B
2	Historic Fauna, Bone, mammal, fragment, 1g	Row # C
1	Historic Fauna, Shell, unidentified, fragment, .5g	Row # D

Total Artifacts in Context 80: 10

Area A Context 82 **Catalog # 136**

1	Historic Agriculture/Equestrian, Ferrous metal, horse bridle, bridle, fragment, wrought, corroded	Row # D
11	Historic Building Materials, Clay, daub, fragment, light orange and tan, 61g	Row # B
6	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 37g	Row # A
1	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # C
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, plate, body, slip and copper oxide decorated, clear with green decoration, 1700 - 1820	Row # E
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, plate, body, slip decorated, clear lead, 1740 - 1850	Row # F
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, cordoned, black, 1700 - 1820	Row # G
1	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, body, glazed both surfaces, clear lead, 1700 - 1775	Row # H
1	Historic Fauna, Bone, mammal, long bone, fragment, 2.5g	Row # K
1	Historic Fauna, Shell, oyster, fragment, 36g	Row # L
1	Historic Glass Vessel Fragments, Glass, curved, fragment, light aqua	Row # M
1	Historic Glass Vessel Fragments, Glass, curved, fragment, olive green	Row # N
2	Historic Recreation/Activities, Ball Clay, smoking pipe, bowl, fragment	Row # P

Total Artifacts in Context 82: 29

Area A Context 84 **Catalog # 137**

1	Historic Recreation/Activities, Siltstone, unidentified, fragment, shaped, rectangular, L 0.95, W 0.41, T 0.1, 1g, possible gaming piece	Row # A

Total Artifacts in Context 84: 1

Area A Context 86 **Catalog # 138**

16	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 14g	Row # A
2	Historic Building Materials, Coarse Earthenware, brick, fragment, pale orange and tan, 5g	Row # B
4	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 30g	Row # C
5	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # D
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, unidentified, rim, slip decorated, clear lead, exterior surface missing, 1740 - 1850	Row # H
4	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # E
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed exterior, black, 1700 - 1820	Row # F
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed, black, surface missing, 1700 - 1820	Row # G
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, rim, glazed both surfaces, brown, 1740 - 1870	Row # K
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, rim, glazed both surfaces, brown, burned, 1740 - 1870	Row # L
4	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, both surfaces missing, 1625 - 1800	Row # W

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

2	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, hand painted, blue, 1640 - 1800	Row # M
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, white, surface missing, 1625 - 1800	Row # N
1	Historic Fauna, Bone, mammal, fragment, burned, 2.5g	Row # P
1	Historic Fauna, Bone, mammal, fragment, 1g	Row # Q
1	Historic Fauna, Bone, mammal, jaw, fragment, 1g	Row # R
9	Historic Fauna, Shell, clam, fragment, 11g	Row # T
1	Historic Fauna, Tooth, large mammal, fragment, 1g	Row # S
5	Historic Recreation/Activities, Ball Clay, smoking pipe, bowl, fragment	Row # U
2	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 5/64"	Row # V

Total Artifacts in Context 86: 64

Area A Context 88 **Catalog # 139**

3	Historic Building Materials, Clay, daub, fragment, light orange and tan, 7g	Row # B
17	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 37g	Row # A
2	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 11g	Row # C
2	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # D
3	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, hollow ware, rim and body, white slip ground interior, clear lead, 1740 - 1800	Row # E
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed interior, brown, exterior surface missing, 1740 - 1870	Row # G
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, possible tea pot, 1700 - 1820	Row # H
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base, glazed interior, black, 1700 - 1820	Row # K
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, glazed, clear lead, surface missing, 1700 - 1850	Row # F
4	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, both surfaces missing, 1700 - 1870	Row # L
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, light blue tint, body missing, 1640 - 1800	Row # M
1	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, unidentified, fragment, salt glaze, surface missing, 1720 - 1805	Row # N
5	Historic Fauna, Bone, mammal, fragment, 2g	Row # P
2	Historic Fauna, Tooth, mammal, fragment, 2g	Row # R
1	Historic Fauna, Tooth, pig, fragment, 1g	Row # Q
1	Historic Glass Vessel Fragments, Glass, curved, fragment, olive green, burned	Row # T
1	Historic Glass Vessel Fragments, Glass, curved, fragment, olive green, burned	Row # U
1	Historic Glass Vessel Fragments, Glass, flat, fragment, olive green, burned	Row # S
1	Historic Glass Vessel Fragments, Glass, flat, fragment, clear/uncolored	Row # V
1	Historic Recreation/Activities, Ball Clay, smoking pipe, bowl, fragment	Row # AA
1	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 6/64"	Row # W
2	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 5/64"	Row # X
1	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment	Row # Y

Total Artifacts in Context 88: 55

Area A Context 90 **Catalog # 140**

5	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 6g	Row # A
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # B

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, both surfaces missing, 1700 - 1870	Row # C
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, light blue tint, interior surface missing, 1640 - 1800	Row # D
1	Historic Fauna, Bone, mammal, fragment, 1g	Row # E
2	Historic Fauna, Shell, clam, fragment, 3g	Row # F
1	Historic Flora, Wood, carbon sample, fragment, .5g	Row # H
1	Historic Unidentified, Ferrous metal, ferrous metal, fragment, small, corroded	Row # G

Total Artifacts in Context 90: 13

Area A Context 98 **Catalog # 141**

1	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # A

Total Artifacts in Context 98: 1

Area A Context 100 **Catalog # 142**

1	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # A
1	Historic Glass Vessel Fragments, Glass, curved, body, olive green	Row # B
1	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 6/64"	Row # C

Total Artifacts in Context 100: 3

Area A Context 104 **Catalog # 143**

3	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, hollow ware, body, white slip ground interior, clear exterior, clear lead, 1740 - 1800	Row # A
7	Historic Fauna, Bone, mammal, fragment, 2g	Row # B

Total Artifacts in Context 104: 10

Area A Context 106 **Catalog # 144**

1	Historic Agriculture/Equestrian, Ferrous metal, horse bridle, bridle, fragment, wrought, corroded	Row # U
1	Historic Agriculture/Equestrian, Ferrous metal, horseshoe, fragment, broken, corroded	Row # V
1	Historic Building Materials, Clay, daub, fragment, white and blackened, burned, 60g	Row # G
35	Historic Building Materials, Clay, daub, fragment, tan and white, 156g	Row # F
374	Historic Building Materials, Coarse Earthenware, brick, fragment, orange and blackened, burned, 3.1 lbs, sampled	Row # D
1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, burned, W 4.48in, T 2.43in, 2.4 lbs	Row # H
31	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, orange and blackened, burned, 4 lbs, sampled	Row # E
1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, burned, W 4.5in, T 2.75in, 2.8 lbs	Row # K
8	Historic Building Materials, Coarse Earthenware, brick, fragment, red, 180g, sampled	Row # C
45	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 702g, sampled	Row # B
182	Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, 4.2 lbs, sampled	Row # A
1	Historic Fauna, Bone, avian, long bone, fragment, 1g	Row # L
1	Historic Fauna, Bone, mammal, long bone, fragment, 1g	Row # M
1	Historic Fauna, Bone, unidentified, unidentified, fragment, .3g	Row # N
11	Historic Fauna, Shell, oyster, fragment	Row # P
15	Historic Fauna, Shell, unidentified, fragment	Row # Q
1	Historic Glass Vessel Fragments, Glass, curved, fragment, olive green	Row # R
1	Historic Kitchen, Ferrous metal, cauldron, handle and body, broken square, cast, corroded	Row # T
3	Historic Manufacturing, Ferrous metal, bloomery slag (scale/shell), bloomery slag, fragment, .5g, thin, flat iron fragments	Row # AB
1	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, large, one bag, 11.2 lbs	Row # AC

2	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, small, two bags, 41 lbs	Row # AD
1	Historic Manufacturing, Wood, charcoal, bloomery, fragment, .5g, copper colored	Row # AF
3	Historic Manufacturing, Wood, charcoal, bloomery, fragment, 150g, three bags	Row # AE
1	Historic Tools/Hardware, Ferrous metal, wedge, bloomery, >90% complete, cast, corroded, L 2.3in, W 1.34in, T 0.9in	Row # S
2	Historic Unidentified, Ferrous metal, ferrous metal, fragment, corroded, flattened iron fragments	Row # Y
4	Historic Unidentified, Ferrous metal, ferrous metal, fragment, corroded, round iron fragments	Row # X
1	Historic Unidentified, Ferrous metal, ferrous metal, fragment, corroded, L 6in, brick attached to curved iron fragment	Row # W
1	Indeterminate Lithics, Sandstone, indeterminate type, >90% complete, smoothed, triangular, white, 252g	Row # AA

Total Artifacts in Context 106: 730

Area A Context 112 **Catalog # 145**

5	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, 29g	Row # A

Total Artifacts in Context 112: 5

Area A Context 118 **Catalog # 146**

1	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # A
5	Historic Fauna, Bone, unidentified, fragment, .5g	Row # B

Total Artifacts in Context 118: 6

Area A Context 120 **Catalog # 147**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 3g	Row # A
1	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 18g	Row # B
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base, glazed interior, black, 1700 - 1820	Row # C
1	Historic Fauna, Shell, clam, fragment, 5g	Row # D

Total Artifacts in Context 120: 4

Area A Context 124 **Catalog # 149**

2	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 2g	Row # A
3	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # B
1	Historic Building Materials, Glass, window glass, fragment, light aqua	Row # C
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # D
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, clear lead, 1700 - 1850	Row # E
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, glazed, black, surface missing, 1700 - 1820	Row # F
1	Historic Ceramic Vessel Sherds, Earthenware, Buckley-type, unidentified, fragment, glazed interior, black, 17th century to 18th century	Row # G
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, hand painted, blue, surface missing, 1640 - 1800	Row # H
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, light blue tint, surface missing, 1640 - 1800	Row # K
1	Historic Fauna, Bone, large mammal, long bone, fragment, 8g	Row # L
4	Historic Fauna, Bone, mammal, long bone, fragment, 1g	Row # M
4	Historic Fauna, Shell, oyster, fragment, 32g	Row # N
7	Historic Fauna, Shell, unidentified, fragment, 2g	Row # P
1	Historic Flora, Shell, walnut, fragment	Row # Q

Total Artifacts in Context 124: 29

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

Area A Context 126 **Catalog # 150**

3	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # A
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # B
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, clear with brown mottling, 1700 - 1850	Row # C

Total Artifacts in Context 126: 5

Area A Context 128 **Catalog # 151**

1	Historic Ceramic Vessel Sherds, Porcelain, Chinese Export, unidentified, rim, hand painted, geometric design, blue, 1700 - 1840	Row # A
1	Historic Fauna, Shell, clam, fragment, 2g	Row # B

Total Artifacts in Context 128: 2

Area A Context 130 **Catalog # 152**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, 15g	Row # B
3	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 2g	Row # A
2	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # C
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, cordoned, black	Row # D
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, glazed, black, surface missing	Row # E
1	Historic Fauna, Shell, clam, fragment, 2g	Row # F
1	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment	Row # G

Total Artifacts in Context 130: 11

Area A Context 132 **Catalog # 153**

1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, slip decorated interior, clear lead, possible plate, 1740 - 1850	Row # A
1	Historic Ceramic Vessel Sherds, Stoneware, Westerwald-type, hollow ware, body, salt glaze, grey, 1650 - 1750	Row # B

Total Artifacts in Context 132: 2

Area A Context 136 **Catalog # 154**

3	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 6g	Row # A
1	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # B
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, both surfaces missing, 1700 - 1870	Row # C
5	Historic Fauna, Shell, clam, fragment, 10g	Row # D

Total Artifacts in Context 136: 11

Area A Context 138 **Catalog # 155**

1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed interior, clear with brown mottling, 1700 - 1850	Row # A

Total Artifacts in Context 138: 1

Area A Context 140 **Catalog # 156**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, blackened, burned, 320g	Row # A
1	Historic Recreation/Activities, Ball Clay, smoking pipe, bowl, fragment	Row # B

Total Artifacts in Context 140: 2

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

Area A Context 144 **Catalog # 157**

1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, hand painted, blue, surface missing, 1640 - 1800	Row # A

Total Artifacts in Context 144: 1

Area A Context 150 **Catalog # 158**

1	Historic Building Materials, Glass, window glass, fragment, light aqua	Row # B
2	Historic Fauna, Shell, clam, fragment, 1g	Row # A

Total Artifacts in Context 150: 3

Area A Context 156 **Catalog # 159**

5	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 2g	Row # A
1	Historic Building Materials, Coarse Earthenware, brick, fragment, red, 15g	Row # B
1	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 9g	Row # C
4	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # D
1	Historic Building Materials, Glass, window glass, fragment, light aqua	Row # P
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base, glazed interior, black, 1700 - 1820	Row # E
3	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, both surfaces missing, 1700 - 1870	Row # G
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, glazed, black, surface missing, 1700 - 1820	Row # F
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, glaze missing, 1625 - 1800	Row # H
1	Historic Ceramic Vessel Sherds, Stoneware, Westerwald-type, hollow ware, body, salt glaze, cordoned, etched, cobalt blue, possible tankard, 1650 - 1750	Row # K
3	Historic Fauna, Shell, clam, fragment, 3g	Row # L
2	Historic Fauna, Shell, oyster, fragment, 5g	Row # M
1	Historic Glass Vessel Fragments, Glass, bottle, base and body, olive green	Row # N

Total Artifacts in Context 156: 25

Area A Context 158 **Catalog # 160**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 3g	Row # A
1	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # B
3	Historic Building Materials, Glass, window glass, fragment, light aqua	Row # C

Total Artifacts in Context 158: 5

Area A Context 162 **Catalog # 161**

1	Historic Building Materials, Clay, daub, fragment, tan, 4g	Row # B
2	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 2g	Row # A
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, glazed, black, surface missing, 1700 - 1820	Row # C
1	Historic Fauna, Shell, unidentified, fragment, .5g	Row # D
1	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, 4g	Row # E

Total Artifacts in Context 162: 6

Area A Context 168 **Catalog # 162**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 1g	Row # A
1	Historic Fauna, Tooth, pig, fragment, 2g	Row # B

Total Artifacts in Context 168: 2

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

Area A Context 170 **Catalog # 163**

1 Historic Fauna, Tooth, unidentified, fragment Row # A

Total Artifacts in Context 170: 1

Area A Context 180 **Catalog # 164**

1 Historic Building Materials, Glass, window glass, fragment, light aqua Row # A

Total Artifacts in Context 180: 1

Area A Context 186 **Catalog # 165**

1 Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 1g Row # A

4 Historic Building Materials, Ferrous metal, nail, fragment, corroded Row # B

1 Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, body, glazed, clear lead, surface missing, 1700 - 1775 Row # C

Total Artifacts in Context 186: 6

Area A Context 194 **Catalog # 166**

1 Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 6g Row # A

2 Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded Row # B

Total Artifacts in Context 194: 3

Area A Context 204 **Catalog # 167**

1 Historic Fauna, Bone, mammal, unidentified, fragment, 1g Row # C

2 Historic Fauna, Shell, clam, fragment, 6g Row # B

4 Historic Fauna, Shell, oyster, fragment, 33g Row # A

2 Historic Flora, Wood, carbon sample, fragment Row # D

Total Artifacts in Context 204: 9

Area A Context 206 **Catalog # 168**

1 Historic Building Materials, Ferrous metal, nail, fragment, corroded Row # A

5 Historic Fauna, Shell, clam, fragment, 12g Row # B

Total Artifacts in Context 206: 6

Area A Context 218 **Catalog # 169**

1 Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, hand painted, blue, surface missing, 1640 - 1800 Row # A

Total Artifacts in Context 218: 1

Area A Context 222 **Catalog # 170**

1 Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, blackened, burned, 10g Row # A

1 Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, rim, hand painted, purple, 1640 - 1800 Row # B

Total Artifacts in Context 222: 2

Area A Context 232 **Catalog # 171**

1 Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded Row # A

Total Artifacts in Context 232: 1

Area A Context 235 **Catalog # 172**

1 Historic Building Materials, Coarse Earthenware, brick, fragment, orange, .5g Row # A

1	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # B
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, two vessels, 1700 - 1820	Row # C

Total Artifacts in Context 235: 4

Area A Context 248 **Catalog # 173**

1	Historic Building Materials, Clay, daub, fragment, tan, 2g	Row # A
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, light blue tint, surface missing, 1640 - 1800	Row # B

Total Artifacts in Context 248: 2

Area A Context 250 **Catalog # 174**

2	Historic Building Materials, Clay, daub, fragment, tan, 4g	Row # B
1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 1g	Row # A
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, base, glazed interior, black, 1700 - 1820	Row # C

Total Artifacts in Context 250: 4

Area A Context 252 **Catalog # 175**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, burned, 15g	Row # B
1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, .5g	Row # A

Total Artifacts in Context 252: 2

Area A Context 262 **Catalog # 176**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, burned, 60g	Row # A
3	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # B
1	Historic Building Materials, Quartzite, thermally-altered rock, fragment, reddened, cortex, 238g	Row # H
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, both surfaces missing, 1700 - 1870	Row # C
1	Historic Clothing Related, Copper alloy, sleeve link, fragment, eye missing, .61" diameter, replica of a Spanish real dated "1744"	Row # D
1	Historic Fauna, Shell, oyster, fragment, 2g	Row # E
1	Historic Glass Vessel Fragments, Glass, flat, fragment, olive green	Row # F
1	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 6/64"	Row # G

Total Artifacts in Context 262: 10

Area A Context 264 **Catalog # 177**

1	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # A
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, hollow ware, base and body, white slip ground interior, clear exterior, pedastal foot, clear lead, 1740 - 1800	Row # B
1	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, unidentified, fragment, surface missing, 1762 - 1820	Row # C

Total Artifacts in Context 264: 3

Area A Context 270 **Catalog # 178**

2	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 28g	Row # B
3	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 1g	Row # A
3	Historic Fauna, Bone, mammal, unidentified, fragment, .5g	Row # C
3	Historic Fauna, Shell, oyster, fragment, 6g	Row # D
1	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 7/64"	Row # E

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

Total Artifacts in Context 270: 12

Area A Context 271 **Catalog # 179**

1 Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, both surfaces missing, 1625 - 1800 Row # B

1 Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, light blue tint, surface missing, 1640 - 1800 Row # A

1 Historic Fauna, Bone, mammal, long bone, fragment, burned, 1g Row # C

Total Artifacts in Context 271: 3

Area A Context 272 **Catalog # 180**

1 Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, both surfaces missing, 1700 - 1870 Row # A

Total Artifacts in Context 272: 1

Area A Context 273 **Catalog # 181**

1 Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, blackened, burned, 101g Row # B

2 Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 9g Row # A

3 Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded Row # C

1 Historic Building Materials, Glass, window glass, fragment, light aqua Row # D

1 Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, hand painted, blue, surface missing, 1640 - 1800 Row # E

1 Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, both surfaces missing, 1625 - 1800 Row # F

1 Historic Fauna, Shell, clam, fragment, .5g Row # G

1 Historic Flora, Shell, nut, carbon, fragment, .2g Row # H

1 Historic Flora, Wood, carbon sample, fragment, .5g Row # K

Total Artifacts in Context 273: 12

Area A Context 274 **Catalog # 182**

1 Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded Row # B

2 Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, both surfaces missing, 1700 - 1870 Row # A

Total Artifacts in Context 274: 3

Area A Context 280 **Catalog # 183**

1 Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820 Row # A

3 Historic Fauna, Bone, mammal, fragment, 1g Row # B

Total Artifacts in Context 280: 4

Area A Context 282 **Catalog # 184**

3 Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 1g Row # A

1 Historic Building Materials, Ferrous metal, nail, fragment, corroded Row # B

Total Artifacts in Context 282: 4

Area A Context 286 **Catalog # 185**

3 Historic Building Materials, Clay, daub, fragment, light orange and tan, 1g Row # A

6 Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 107g Row # B

3 Historic Building Materials, Ferrous metal, nail, fragment, corroded Row # C

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, burned, 1700 - 1820	Row # D
5	Historic Fauna, Bone, mammal, long bone, fragment, 9g	Row # E
1	Historic Fauna, Shell, clam, fragment, .5g	Row # F

Total Artifacts in Context 286: 19

Area A Context 290 **Catalog # 186**

2	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 190g	Row # A
7	Historic Fauna, Bone, mammal, fragment, 2g	Row # C
3	Historic Fauna, Bone, mammal, long bone, fragment, 35g	Row # B

Total Artifacts in Context 290: 12

Area A Context 300 **Catalog # 187**

1	Historic Arms and Armor, Flint, gunflint, fragment, grey	Row # G
1	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 172g	Row # A
3	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # B
2	Historic Building Materials, Glass, window glass, fragment, light aqua	Row # C
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # D
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, both surfaces missing, 1700 - 1870	Row # E
6	Historic Fauna, Bone, mammal, long bone, fragment, 3g	Row # F

Total Artifacts in Context 300: 16

Area A Context 302 **Catalog # 188**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 1g	Row # A
1	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # B
2	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, hollow ware, body, hand painted, blue, sherds mend, 1640 - 1800	Row # C
2	Historic Recreation/Activities, Ball Clay, smoking pipe, bowl, fragment	Row # D

Total Artifacts in Context 302: 6

Area A Context 306 **Catalog # 189**

1	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # A

Total Artifacts in Context 306: 1

Area A Context 314 **Catalog # 190**

3	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 16g	Row # A
1	Historic Building Materials, Coarse Earthenware, brick, fragment, tan, .2g	Row # B
2	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # C
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # D
3	Historic Fauna, Bone, cow, mandible, fragment, 9g	Row # E
4	Historic Fauna, Bone, mammal, fragment, 5g	Row # F
1	Historic Fauna, Shell, indeterminate shell, fragment, .5g, possible scallop	Row # H
1	Historic Fauna, Tooth, cow, molar, fragment, 26g	Row # G

Total Artifacts in Context 314: 16

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

Area A Context 317 **Catalog # 191**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, burned, W 4.5in, T 2.6in, 2.8 lbs	Row # A
104	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 29 lbs	Row # E
1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, W 4.54in, T 2.5in, 2 lbs	Row # B
1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, W 4.46in, T 2.65in, 2 lbs	Row # C
2	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, orange, burned, L 8.7in, W 4.5in, T 2.55in, two fragments mend, 6.2 lbs	Row # D
7	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, burned, 2.2 lbs	Row # F
1	Historic Tools/Hardware, Ferrous metal, wedge, bloomery, >90% complete, cast, corroded, L 2.78in, W 1.46in, T 0.88in	Row # G

Total Artifacts in Context 317: 117

Area A Context 318 **Catalog # 192**

38	Historic Building Materials, Clay, daub, fragment, pale orange and tan, 43g	Row # B
8	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 9g	Row # A
1	Historic Building Materials, Glass, window glass, fragment, light aqua	Row # C
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, cordoned, black, burned, 1700 - 1820	Row # F
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # E
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed, clear lead, surface missing, 1700 - 1850	Row # D
1	Historic Fauna, Bone, mammal, fragment, 2g	Row # G
2	Historic Fauna, Shell, unidentified, fragment, 1g	Row # H

Total Artifacts in Context 318: 53

Area A Context 322 **Catalog # 193**

4	Historic Agriculture/Equestrian, Lime, lime, fragment, white, 3g	Row # C
146	Historic Building Materials, Clay, daub, fragment, light orange and tan, 802g	Row # D
5	Historic Building Materials, Clay, daub, fragment, white, 9g	Row # CX
17	Historic Building Materials, Clay, daub, fragment, tan and blackened, burned, 28.5g	Row # CA
264	Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, 2896g, sampled	Row # CU
165	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 3011g, sampled	Row # B
225	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 1316g, sampled	Row # A
15	Historic Building Materials, Coarse Earthenware, brick, fragment, red, burned, 304g	Row # CV
23	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, orange and blackened, burned, 873g	Row # CW
1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange and blackened, burned, W 4.85in, T 2.4in, 958g	Row # CY
1	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, W 4.25in, T 2.26in, 898g	Row # DA
21	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded, head missing	Row # AK
11	Historic Building Materials, Ferrous metal, nail, fragment, rectangular shank, wrought, corroded, head missing	Row # AM
13	Historic Building Materials, Ferrous metal, nail, fragment, square shank, wrought, corroded, head missing	Row # AN
2	Historic Building Materials, Ferrous metal, nail, fragment, rectangular shank, wrought, corroded, head missing, flat point	Row # AV
4	Historic Building Materials, Ferrous metal, nail, clench, whole, rectangular shank, wrought, corroded	Row # EB
3	Historic Building Materials, Ferrous metal, nail, lath, fragment, wrought, corroded	Row # ED
6	Historic Building Materials, Ferrous metal, nail, rose head, whole, rectangular shank, wrought, corroded	Row # AT
3	Historic Building Materials, Ferrous metal, nail, rose head, whole, wrought, corroded, two curved, one L shaped	Row # AU
1	Historic Building Materials, Ferrous metal, nail, rose head, fragment, rectangular shank, wrought, corroded, large head	Row # EC

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

15	Historic Building Materials, Ferrous metal, nail, rose head, fragment, rectangular shank, wrought, corroded	Row # AP
7	Historic Building Materials, Ferrous metal, nail, rose head, whole, square shank, wrought, corroded	Row # AS
1	Historic Building Materials, Ferrous metal, nail, T head, whole, wrought, corroded, L 3.73in, W 0.27in, T 0.22in, bent in middle	Row # AR
9	Historic Building Materials, Glass, window glass, fragment, light aqua	Row # AL
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, hollow ware, body, white slip ground interior, clear exterior, clear lead, 1740 - 1800	Row # EM
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, bowl, rim and body, glazed both surfaces, slightly everted rim, clear with brown mottling, 8.5" diameter, 1700 - 1850	Row # DE
6	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, fragment, glazed, black, surface missing, 1700 - 1820	Row # DN
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, handle, glazed both surfaces, black, 1700 - 1820	Row # DF
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, cordoned, black, 1700 - 1820	Row # DG
10	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base, glazed interior, black, 1700 - 1820	Row # DH
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, white slip ground interior, clear exterior, incised, sgrafitto, clear with brown decoration, 1650 - 1710	Row # K
4	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, burned glaze, 1700 - 1870	Row # DV
7	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, clear with brown mottling, 1740 - 1870	Row # H
20	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # DM
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, molded ribbed, brown, 1740 - 1870	Row # R
3	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed interior, clear with brown mottling, two vessels, 1700 - 1850	Row # DU
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, rim and body, glazed both surfaces, straight rim, black, 1700 - 1820	Row # DT
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, large hollow ware, rim and body, glazed interior, flat everted rim, black, 1700 - 1820	Row # DS
11	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, glazed, clear with brown mottling, surface missing, 1700 - 1850	Row # DK
8	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, unglazed, surface missing, 1700 - 1870	Row # DL
1	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, body, slip decorated, clear with brown decoration, 1700 - 1775	Row # DD
1	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, body, clear lead, exterior surface missing, 1700 - 1775	Row # EU
10	Historic Ceramic Vessel Sherds, Earthenware, Staffordshire with buff body, hollow ware, body, slip combed/dot, clear with brown decoration, same vessel, 1700 - 1775	Row # F
2	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, hollow ware, body, hand painted, blue, 1640 - 1800	Row # N
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, light blue tint, surface missing, 1640 - 1800	Row # P
3	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, bowl/dish-shallow, base and well, 1762 - 1820	Row # EN
1	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, hollow ware, fragment, colored glaze, green, 1750 - 1800	Row # M
1	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, hollow ware, body, hand painted overglaze, polychrome, 1765 - 1810	Row # EQ
12	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, hollow ware, rim, body and handle, 1762 - 1820	Row # EP
1	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, hollow ware, body, hand painted overglaze, brown, 1765 - 1810	Row # Q

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

1	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, plate, rim, 1762 - 1820	Row # DC
7	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, plate/dish, rim, scalloped, molded, 1762 - 1820	Row # DB
52	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, tableware, body, 1762 - 1820	Row # E
4	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, tableware, fragment, hand painted overglaze, floral/geometric design, orange, same vessel, 1765 - 1810	Row # L
1	Historic Ceramic Vessel Sherds, Refined Earthenware, Creamware, teapot, spout, burned glaze, 1762 - 1820	Row # S
1	Historic Ceramic Vessel Sherds, Refined Earthenware, Pearlware, hollow ware, body, hand painted underglaze, blue, possible Willowware, 1775 - 1820	Row # ER
1	Historic Ceramic Vessel Sherds, Refined Earthenware, Pearlware, hollow ware, rim, dipped/annular, brown, 1790 - 1890	Row # DP
1	Historic Ceramic Vessel Sherds, Refined Earthenware, unidentified, unidentified, fragment, hand painted underglaze, green, burned	Row # DQ
2	Historic Ceramic Vessel Sherds, Refined Earthenware, unidentified, unidentified, fragment, burned glaze, possible creamware, 1762 - 1820	Row # DR
1	Historic Ceramic Vessel Sherds, Stoneware, buff body, hollow ware, rim and body, salt glaze, rounded everted rim, brown	Row # DY
1	Historic Ceramic Vessel Sherds, Stoneware, grey body, hollow ware, handle, salt glaze, molded, grey	Row # DX
1	Historic Ceramic Vessel Sherds, Stoneware, grey body, hollow ware, body, salt glaze, grey	Row # U
6	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, hollow ware, body, salt glaze, 1720 - 1805	Row # G
1	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, plate/dish, rim and cavetto, dot/diaper/basket, molded, 1690 - 1740	Row # DW
1	Historic Clothing Related, Bone, button, 40-50% complete, brown and white, .84" diameter	Row # T
1	Historic Clothing Related, Brass, buckle, fragment	Row # EX
1	Historic Clothing Related, Brass, button, loop shank, fragment, eye missing, Tombac button	Row # EW
1	Historic Clothing Related, Brass, fastener, fragment, face missing, lapel pin backer	Row # BA
4	Historic Fauna, Bone, amphibian, toad/frog, two whole, two fragments	Row # CD
33	Historic Fauna, Bone, avian, long bone, fragment, 3g	Row # BG
11	Historic Fauna, Bone, avian, various, fragment, 1.5g, rib and cranial	Row # FD
1	Historic Fauna, Bone, bass, left dentary, fragment	Row # CF
1	Historic Fauna, Bone, cow, astragalus, whole, 44g	Row # FH
1	Historic Fauna, Bone, cow, calcaneus, fragment, 68g	Row # FK
1	Historic Fauna, Bone, cow, phalanges, fragment, 2.5g	Row # FF
2	Historic Fauna, Bone, deer, metatarsal, fragment, 18g	Row # BH
37	Historic Fauna, Bone, fish, various, fragment, 1g, ribs, quadrale etc.	Row # BM
25	Historic Fauna, Bone, fish, vertebra, fragment and whole, 3.5g	Row # BL
71	Historic Fauna, Bone, large mammal, various, fragment, 225g, long bone and unidentified	Row # BS
101	Historic Fauna, Bone, mammal, unidentified, fragment, burned, 58g	Row # BU
105	Historic Fauna, Bone, mammal, unidentified, fragment, calcined, 49g	Row # BW
341	Historic Fauna, Bone, mammal, unidentified, fragment, 68g	Row # BX
3	Historic Fauna, Bone, medium mammal, phalanges, fragment, 2g, possible pig	Row # FE
1	Historic Fauna, Bone, pig, metatarsal, whole, cut marks along medial shaft, 6g	Row # BP
1	Historic Fauna, Bone, rodent, vertebra, whole, .5g	Row # FC
1	Historic Fauna, Bone, small mammal, phalanges, fragment, .5g	Row # FG
55	Historic Fauna, Bone, small mammal, unidentified, fragment, burned, 12g	Row # BV
32	Historic Fauna, Bone, small mammal, various, fragment, 9g, scapulae, podials, vertebrate and unidentified	Row # BR
3	Historic Fauna, Bone, unidentified, scapula, fragment, 2g, possible fish or amphibian	Row # CE
29	Historic Fauna, Fish scale, scale, small to medium fish, fragment	Row # BK
2	Historic Fauna, Shell, barnacle, fragment, 1g	Row # FP

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

27	Historic Fauna, Shell, clam, fragment, burned, 54g	Row # CK
24	Historic Fauna, Shell, clam, whole, 1723.7g, 3.8 lbs	Row # CG
678	Historic Fauna, Shell, clam, fragment, 4717.4g, 10.4 lbs	Row # CH
12	Historic Fauna, Shell, mussel, fragment, burned, 3g	Row # FL
102	Historic Fauna, Shell, mussel, fragment, 16g	Row # CL
E+03	Historic Fauna, Shell, oyster, whole, 6894.6g, 15.2 lbs	Row # CM
E+03	Historic Fauna, Shell, oyster, fragment, large, 6123.5g, 13.5 lbs	Row # CN
7	Historic Fauna, Shell, oyster, whole and fragments, 61688.6g, 7 five gallon buckets, 136 lbs	Row # FR
1	Historic Fauna, Shell, scallop, fragment, .2g	Row # FN
1	Historic Fauna, Shell, snail, ground snail, whole, small	Row # CB
5	Historic Fauna, Shell, snail, saltwater snail, whole, 2g	Row # FM
6	Historic Fauna, Shell, unidentified, fragment, 3g	Row # CS
3	Historic Fauna, Shell, whelk, knobbed whelk, fragment, 30.5g, one whole, two fragments	Row # CT
4	Historic Fauna, Tooth, cow, molar, fragment, 48g	Row # BN
18	Historic Fauna, Tooth, mammal, various, fragment, 8g, pig, cow molars, canines etc.	Row # BT
1	Historic Fauna, Tooth, pig, canine, fragment, 3g	Row # FB
8	Historic Fauna, Tooth, pig, molar, fragment, 12.5g	Row # BQ
2	Historic Fauna, Turtle/tortoise shell, turtle/tortoise plate, unidentified, fragment, 1.5g, one top plate and one bottom plate	Row # FQ
3	Historic Flora, Carbon, seed, fruit, fragment	Row # CC
7	Historic Flora, Shell, nut, carbon, fragment, 1g, walnut and unidentified	Row # FT
2	Historic Flora, Wood, carbon sample, fragment, 91g, two 4" x 6" bags	Row # V
5	Historic Flora, Wood, seed, peach pit, fragment, 1g	Row # FS
6	Historic Flora, Wood, seed pod, unidentified, fragment, one whole	Row # BY
1	Historic Furnishings, Brass, tack, whole, square shank, L 0.43, .42" diameter, round head	Row # EY
1	Historic Glass Vessel Fragments, Glass, bottle, shoulder, aqua	Row # AD
15	Historic Glass Vessel Fragments, Glass, bottle, body, olive green, heat exposure	Row # AE
1	Historic Glass Vessel Fragments, Glass, bottle, body, green	Row # EF
23	Historic Glass Vessel Fragments, Glass, bottle, pocket flask, body, ribbed, olive green, same vessel	Row # W
8	Historic Glass Vessel Fragments, Glass, container, tumbler, base and body, paneled, clear/uncolored	Row # AC
6	Historic Glass Vessel Fragments, Glass, curved, fragment, olive green, patination, thin walled	Row # EE
5	Historic Glass Vessel Fragments, Glass, curved, fragment, clear/uncolored, burned	Row # AA
1	Historic Glass Vessel Fragments, Glass, curved, fragment, amber	Row # AB
13	Historic Glass Vessel Fragments, Glass, curved, fragment, clear/uncolored	Row # X
26	Historic Glass Vessel Fragments, Glass, curved, fragment, light aqua, thin walled	Row # Y
1	Historic Glass Vessel Fragments, Glass, curved, body, light olive green, thin walled	Row # EA
7	Historic Glass Vessel Fragments, Glass, lamp chimney, rim and body, etched, clear/uncolored	Row # EG
1	Historic Kitchen, Ferrous metal, fork, two-tined, fragment, wrought, corroded	Row # ES
1	Historic Kitchen, Ferrous metal, knife, handle, wrought, corroded	Row # ET
21	Historic Manufacturing, Ferrous metal, sheet, fragment, flat, corroded	Row # AX
21	Historic Manufacturing, Ferrous metal, slag, fragment, 119g	Row # AF
1	Historic Manufacturing, Lead, slag (lead), fragment, heat exposure, 44g, amorphous shape	Row # FA
1	Historic Personal Items, Glass, linen smoother, curved, 60-70% complete, five rounded sides with flat top and bottom, green	Row # AG
2	Historic Personal Items, Paper, paper, fragment, yellowed	Row # FV
4	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 6/64"	Row # AH
1	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment	Row # EV

2	Historic Recreation/Activities, Ball Clay, smoking pipe, stem, fragment, 5/64"	Row # EL
1	Historic Tools/Hardware, Ferrous metal, sheet, fragment, flat, corroded, one end rounded and perforated, other end broken	Row # AY
1	Historic Tools/Hardware, Ferrous metal, spike, fragment, rectangular shank, wrought, corroded, head missing	Row # AW
1	Historic Tools/Hardware, Ferrous metal, spike, rose head, whole, wrought, corroded, L 3.92in, W 0.36in, T 0.3in, L shape at bottom	Row # AQ
1	Historic Unidentified, Pewter, pewter, fragment, small, decayed, possible utensil fragment	Row # FW
1	Prehistoric Lithics, Argillite, debitage, flake fragment, grey	Row # BE
1	Prehistoric Lithics, Chalcedony, debitage, whole flake, grey	Row # BC
1	Prehistoric Lithics, Jasper, debitage, flake fragment, brown	Row # BD
1	Prehistoric Lithics, Jasper, thermally-altered rock, fragment, reddened, 11g	Row # EH
1	Prehistoric Lithics, Jasper, unmodified stone, yellow/brown	Row # BF
3	Prehistoric Lithics, Quartzite, thermally-altered rock, fragment, reddened, 45g	Row # EK

Total Artifacts in Context 322: 5358

Area A Context 328 **Catalog # 194**

5	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 190g	Row # A
5	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # B
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed interior, clear with brown mottling, exterior surface missing, 1700 - 1850	Row # C
2	Historic Glass Vessel Fragments, Glass, bottle, case, body, olive green	Row # D

Total Artifacts in Context 328: 13

Area A Context 330 **Catalog # 195**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, .5g	Row # A
1	Historic Glass Vessel Fragments, Glass, bottle, body, olive green	Row # B
6	Historic Manufacturing, Slag, bloomery slag, bloomery slag, fragment, 36g	Row # C

Total Artifacts in Context 330: 8

Area A Context 332 **Catalog # 196**

2	Historic Building Materials, Coarse Earthenware, brick, fragment, light orange and tan, 50g	Row # B
5	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 107g	Row # A
2	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, orange, burned, 80g	Row # C
6	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # D
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base and body, glazed both surfaces, black, 1700 - 1820	Row # E
3	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base, glazed interior, black, 1700 - 1820	Row # F
2	Historic Ceramic Vessel Sherds, Refined Earthenware, Midlands Mottled, hollow ware, body, glazed both surfaces, clear with brown mottling, 1680 - 1780	Row # G
3	Historic Fauna, Shell, clam, fragment, 8g	Row # L
1	Historic Glass Vessel Fragments, Glass, bottle, body, olive green	Row # H
2	Historic Manufacturing, Slag, indeterminate slag, fragment, 279g	Row # K

Total Artifacts in Context 332: 27

Area A Context 334 **Catalog # 197**

2	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 18g	Row # A
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, glazed, brown, surface missing, 1740 - 1870	Row # B
1	Historic Flora, Wood, carbon sample, fragment, 2g	Row # C

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

Total Artifacts in Context 334: 4

Area A Context 336 **Catalog # 203**

1	Historic Arms and Armor, Flint, gunflint, nodule, fragment, black and grey, cortex, 6.5g	Row # A
16	Historic Building Materials, Clay, daub, fragment, light orange and tan, 66g	Row # L
1	Historic Building Materials, Coarse Earthenware, brick, fragment, red, T 2.62in, 402g	Row # E
1	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, blackened, burned, T 2.35in, 406g	Row # F
1	Historic Building Materials, Coarse Earthenware, brick, fragment, red and blackened, burned, T 2.65in, 652g	Row # D
2	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, blackened, burned, 303g	Row # G
13	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 506g, sampled	Row # C
1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, W 4.39in, T 2.6in, 2.8 lbs	Row # B
32	Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, 143g, sampled	Row # H
10	Historic Building Materials, Coarse Earthenware, brick, fragment, red, 45g, sampled	Row # K
8	Historic Building Materials, Ferrous metal, nail, fragment, wrought, corroded	Row # P
2	Historic Building Materials, Ferrous metal, nail, clinched, fragment, wrought, corroded	Row # N
1	Historic Building Materials, Ferrous metal, nail, rose head, fragment, wrought, corroded	Row # M
1	Historic Building Materials, Glass, window glass, fragment, light aqua	Row # Q
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, hollow ware, body, white slip ground interior, clear exterior, clear with brown mottling, 1740 - 1800	Row # S
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Red bodied slipware, plate, base, slip decorated, clear lead, 1740 - 1850	Row # R
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, clear with brown mottling interior, black exterior, 1700 - 1850	Row # U
2	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, small hollow ware, rim and body, glazed both surfaces, slightly everted, narrow rim, black, 1700 - 1820	Row # T
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, unidentified, fragment, glazed interior, clear with brown mottling, 1700 - 1850	Row # V
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, hollow ware, body, hand painted, blue, 1640 - 1800	Row # X
2	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, hollow ware, body, glazed both surfaces, light blue tint, 1640 - 1800	Row # Y
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, hollow ware, body, glazed interior, white, exterior surface missing, 1625 - 1800	Row # AA
1	Historic Ceramic Vessel Sherds, Earthenware, tin enameled, buff body, unidentified, fragment, both surfaces missing, 1625 - 1800	Row # AB
1	Historic Ceramic Vessel Sherds, Refined Earthenware, agate ware, hollow ware, body, glazed both surfaces, clear lead, 1740 - 1783	Row # W
1	Historic Ceramic Vessel Sherds, Stoneware, White salt-glazed, hollow ware, body, salt glaze, molded annular, white, 1740 - 1765	Row # AC
1	Historic Fauna, Bone, cow, metacarpus, fragment, 49g	Row # AD
1	Historic Fauna, Bone, large mammal, scapula, fragment, 15g	Row # AE
3	Historic Fauna, Bone, mammal, long bone, fragment, 7g	Row # AF
3	Historic Fauna, Bone, mammal, unidentified, fragment, 2g	Row # AK
2	Historic Fauna, Bone, mammal, unidentified, fragment, burned, 2g	Row # AH
3	Historic Fauna, Bone, small mammal, long bone, fragment, 1g	Row # AG
2	Historic Fauna, Fish scale, scale, large fish, whole, two species	Row # AN
1	Historic Fauna, Fish scale, scale, small fish, whole	Row # AP
1	Historic Fauna, Fish scale, unidentified, fragment	Row # AQ
29	Historic Fauna, Shell, clam, fragment, 177g	Row # AR
187	Historic Fauna, Shell, oyster, fragment, 267g	Row # AT

17	Historic Fauna, Shell, oyster, whole, 195g	Row # AS
1	Historic Fauna, Tooth, pig, incisor, fragment, 1g	Row # AM
2	Historic Fauna, Tooth, pig, molar, fragment, 3g	Row # AL
9	Historic Flora, Wood, carbon sample, fragment, 7g	Row # BA
3	Historic Glass Vessel Fragments, Glass, container, tumbler, base and body, paneled, clear/uncolored	Row # AU
1	Historic Glass Vessel Fragments, Glass, curved, fragment, olive green	Row # AV
1	Historic Manufacturing, Slag, indeterminate slag, fragment, 7g	Row # AW
1	Historic Tools/Hardware, Ferrous metal, tack, fragment, corroded	Row # AX
3	Historic Unidentified, Ferrous metal, ferrous metal, fragment, corroded, small amorphous iron fragments	Row # AY

Total Artifacts in Context 336: 375

Area A Context 337 **Catalog # 198**

1	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 3g	Row # A
1	Historic Building Materials, Coarse Earthenware, brick, fragment, red, 13g	Row # B
1	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 3g	Row # C

Total Artifacts in Context 337: 3

Area A Context 338 **Catalog # 199**

3	Historic Building Materials, Ferrous metal, nail, fragment, corroded	Row # A
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, base and body, glazed both surfaces, black, 1700 - 1820	Row # B
1	Historic Ceramic Vessel Sherds, Coarse Earthenware, Redware, hollow ware, body, glazed both surfaces, black, 1700 - 1820	Row # C

Total Artifacts in Context 338: 5

Total Artifacts in : 9655

Area B Trench 1 and 2 Trench Context 4 **Catalog # 200**

1	Prehistoric Lithics, Quartzite, thermally-altered rock, fragment, tan, 30g	Row # A

Total Artifacts in Context 4: 1

Total Artifacts in Trench : 1

Area C Context 1 **Catalog # 204**

7	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, 78g	Row # A
12	Historic Building Materials, Coarse Earthenware, brick, fragment, blackened, burned, 736g	Row # E
2	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, burned, 112g	Row # D
3	Historic Building Materials, Coarse Earthenware, brick, fragment, glazed, orange, burned, 108g	Row # C
1	Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, 10g	Row # B

Total Artifacts in Context 1: 25

Total Artifacts in : 25

Area C Context 4 **Catalog # 201**

7	Historic Building Materials, Coarse Earthenware, brick, fragment, pale orange, 136g	Row # B
10	Historic Building Materials, Coarse Earthenware, brick, fragment, tan, 2.6 lbs	Row # C
53	Historic Building Materials, Coarse Earthenware, brick, fragment, orange, sampled, 13.5 lbs	Row # D
1	Prehistoric Lithics, Quartz, biface, fragment, translucent	Row # A

APPENDIX D (Cont.)
PHASE III ARTIFACT INVENTORY

Total Artifacts in Context 4: 71

Area C Context 6 **Catalog # 205**

1 Historic Building Materials, Coarse Earthenware, brick, fragment, tan, 97g Row # A

Total Artifacts in Context 6: 1

Area C Context 8 **Catalog # 206**

1 Historic Building Materials, Coarse Earthenware, brick, fragment, tan, 122g Row # A

Total Artifacts in Context 8: 1

Area C Context 14 **Catalog # 207**

23 Historic Building Materials, Coarse Earthenware, brick, fragment, light orange, 526g Row # A

Total Artifacts in Context 14: 23

Total Artifacts in : 96

Total Number of Artifacts: 9777

*** Item Discarded in Laboratory**

Appendix E

SUMMARY OF SUBSURFACE TESTING

APPENDIX E

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		1	loamy sand, plow zone	10YR 4/3	--
					Historic Arms and Armor
			loamy sand, plow zone, overlies contexts 2 to 19	10YR 4/4	Historic Building Materials
			loamy sand, plow zone	10YR 4/3	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Clothing Related*
					Historic Fauna
					Historic Glass Vessel Fragments
					Historic Manufacturing
					Historic Recreation/Activities
					Historic Tools/Hardware
					Historic Unidentified
					Prehistoric Lithics
		2	silty sand, B horizon, overlaid by context 1	10YR 5/6	--
			sand, B horizon, overlaid by contexts 1, 5, 16 and 19, cut by contexts 3, 7, 9, 11, 13 and 17	10YR 6/4	--
		3	cut, filled by context 4, overlaid by context 1, cuts context 2	--	--
			cut, filled by context 4, overlaid by contexts 1 and 5, cuts context 2		--
		4	mottled sand with carbon, clay pockets , brick clamp, overlaid by contexts 1 and 5, fill of context 3	10YR 3/3, 5YR 5/6, 10YR 5/4	Historic Building Materials
			mottled loamy sand, historic post hole, overlaid by context 1, fill of context 3	7.5YR 4/2, 10YR 5/6	Historic Flora
			mottled sand with carbon, clay pockets , brick clamp, overlaid by contexts 1 and 5, fill of context 3	10YR 3/3, 5YR 5/6, 10YR 5/4	Prehistoric Lithics
		5	mottled silty sand, brick clamp activity area, overlaid by contexts 1 and 14, overlies contexts 2 to 4	10YR 4/3, 10YR 5/4	--
		6	mottled loamy sand, root disturbance	10YR 5/6, 7.5YR 4/2	--
			mottled silty sand with clay pockets , historic post hole, overlaid by context 1, fill of context 7	10YR 4/3, 10YR 6/4	Historic Building Materials
		7	cut, filled by context 8, overlaid by context 1, cuts context 2	--	--
			cut, filled by contexts 6 and 15, overlaid by context 1, cuts context 2		--

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		8	mottled loamy sand, historic possible driven post, overlaid by context 1, fill of context 7	7.5YR 4/2, 10YR 5/6	Historic Building Materials
			mottled silty sand with clay pocket , historic post hole, overlaid by context 1, fill of context 9	10YR 4/4, 10YR 5/6	Historic Building Materials
			mottled loamy sand, historic possible driven post, overlaid by context 1, fill of context 7	7.5YR 4/2, 10YR 5/6	Historic Ceramic Vessel Sherds
		9	cut, filled by context 8, overlaid by context 1, cuts context 2	--	--
			cut, filled by context 10, overlaid by context 1, cuts context 2		--
		10	mottled silty sand with carbon , historic post hole, overlaid by context 1, fill of context 11	10YR 4/3, 10YR 4/4, 10YR 5/4	--
			mottled silty sand, historic pit, overlaid by context 1, fill of context 9	10YR 3/3, 10YR 6/3	Historic Glass Vessel Fragments
		11	cut, filled by context 10, overlaid by context 1, cuts context 2	--	--
			cut, filled by context 12, overlaid by context 1, cuts context 2		--
		12	mottled silty sand, historic post hole, overlaid by context 1, fill of context 13	10YR 3/2, 10YR 4/3, 10YR 5/4	--
			silty sand with carbon flecking , historic post hole, overlaid by context 1, fill of context 11	10YR 4/3	--
		13	cut, filled by context 12, overlaid by context 1, cuts context 2	--	--
		14	mottled loamy sand, root disturbance	10YR 4/3, 10YR 5/6	--
			clay with brick , remnant brick clamp, overlaid by context 1, overlies context 5	2.5YR 4/8	Historic Building Materials
		15	cut, filled by context 16, overlaid by context 1, cuts context 2	--	--
			silty sand, historic post mold, overlaid by context 1, fill of context 7	10YR 4/3	--
		16	mottled silty sand with carbon , rodent or root disturbance	10YR 3/4, 10YR 4/4, 10YR 5/4	--
			greasy loamy sand with charcoal , historic post hole, overlaid by context 1, fill of context 15	10YR 5/3	--
		17	cut, filled by context 18, overlaid by context 1, cuts contexts 2, 139 and 140	--	--
			cut, filled by context 18, overlaid by context 1, cuts context 2		--
		18	silty sand, possible post hole, overlaid by context 1, fill of context 17	10YR 4/3	--
			mottled loamy sand, historic post hole, overlaid by context 1, fill of context 17	10YR 4/3, 10YR 5/6	Historic Building Materials Historic Ceramic Vessel Sherds
		19	silty sand, Buried plow zone, overlaid by contexts 1 and 5, overlies context 2	10YR 4/3	--
			cut, filled by context 20, overlaid by context 1, cuts contexts 2, 22 and 115	--	--

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		20	loamy sand with charcoal , historic post mold, overlaid by context 1, fill of context 19	10YR 4/3	--
		22	mottled loamy sand with daub, brick, burnt earth , historic pit, overlaid by context 1, overlies context 116, fill of context 115, cut by cxs 19 and 83	10YR 5/4, 10YR 6/3	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Glass Vessel Fragments
		23	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 105	10YR 4/3, 10YR 5/6	--
		24	silty sand, historic post mold, overlaid by context 1, fill of context 119	10YR 3/3	--
		25	cut, filled by context 26, overlaid by context 1, cuts context 2	--	--
		26	mottled silty sand, historic post hole, overlaid by context 1, fill of context 25	10YR 4/4, 10YR 5/6	Historic Ceramic Vessel Sherds
		27	cut, filled by contexts 28 and 227, overlaid by context 1, cuts context 2, cut by context 117	--	--
		28	loamy sand, historic post mold, overlaid by context 1, fill of context 27, cut by context 117	10YR 5/4	--
		29	cut, filled by contexts 30 and 114, overlaid by context 1, cuts context 2	--	--
		30	loamy sand, historic post mold, overlaid by context 1, fill of context 29	10YR 4/4	--
		31	cut, filled by context 32, overlaid by context 1, cuts context 2	--	--
		32	loamy sand, historic post hole, overlaid by context 1, fill of context 31	10YR 4/3	Historic Building Materials
		34	mottled silty sand, root or rodent disturbance	10YR 4/4, 10YR 5/6	--
		35	cut, filled by context 36, overlaid by context 1, cuts context 2	--	--
		36	loamy sand, historic post hole, overlaid by context 1, fill of context 35	10YR 4/3	--
		37	cut, filled by contexts 38 and 60, overlaid by context 1	--	--
		38	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 37	10YR 4/3, 10YR 5/6	--
		39	cut, filled by context 40, overlaid by context 1, cuts contexts 2, 130, 243 and 244	--	--
		40	loamy sand with charcoal , historic post hole, overlaid by context 1, fill of context 39	10YR 4/3	--
		41	cut, filled by contexts 42 and 230, overlaid by context 1, cuts context 2	--	--
		42	loamy sand, historic post hole, overlaid by context 1, fill of context 41	10YR 4/3	Historic Building Materials
					Historic Recreation/Activities
		45	cut, filled by contexts 46 and 143, overlaid by context 1, cuts context 2	--	--
		46	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 45	10YR 4/3, 10YR 5/6	Historic Building Materials
					Historic Ceramic Vessel Sherds

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		46	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 45	10YR 4/3, 10YR 5/6	Historic Manufacturing
		47	cut, filled by context 48, overlaid by context 1, cuts context 2	--	--
		48	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 47	10YR 5/6, 10YR 4/3	Historic Building Materials Historic Ceramic Vessel Sherds
		49	cut, filled by context 50, overlaid by context 1, cuts context 2	--	--
		50	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 49	10YR 5/6, 10YR 4/3	Historic Building Materials Historic Ceramic Vessel Sherds Historic Flora
		51	cut, filled by context 52, overlaid by context 1, cuts context 2	--	--
		52	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 51	10YR 5/6, 10YR 2/1	Historic Building Materials Historic Ceramic Vessel Sherds Historic Fauna Historic Glass Vessel Fragments
		53	cut, filled by context 54, overlaid by context 1, cuts context 2	--	--
		54	mottled loamy sand, historic possible driven post, overlaid by context 1, fill of context 53	10YR 5/6, 10YR 4/3	Historic Building Materials Historic Ceramic Vessel Sherds Historic Fauna
		55	cut, filled by context 56, overlaid by context 1, cuts context 2	--	--
		56	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 55	10YR 4/3, 10YR 5/6	Historic Building Materials Historic Fauna Historic Manufacturing
		57	cut, filled by contexts 58 and 225, overlaid by context 1, cuts context 2	--	--
		58	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 57	10YR 4/3, 10YR 5/6	Historic Recreation/Activities
		60	silty sand, historic post mold, overlaid by context 1, fill of context 37	10YR 4/3	--
		61	cut, filled by context 62, overlaid by context 1, cuts context 2, cut by context 63	--	--
		62	sand, historic post hole, overlaid by context 1, fill of context 61, cut by context 63	10YR 3/3	Historic Building Materials Historic Ceramic Vessel Sherds Historic Fauna

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		62	sand, historic post hole, overlaid by context 1, fill of context 61, cut by context 63	10YR 3/3	Historic Flora
					Historic Recreation/Activities
		63	cut, filled by context 64, overlaid by context 1, cuts contexts 2, 61 and 62	--	--
		64	silty sand with charcoal , possible post mold, overlaid by context 1, fill of context 63	10YR 3/2	--
		65	sand with charcoal , historic fill, overlaid by context 68, overlies contexts 66, 106 and 317, fill of context 67	10YR 2/1	--
					Historic
					Historic Agriculture/Equestrian
					Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Clothing Related
					Historic Fauna
					Historic Furnishings
					Historic Glass Vessel Fragments
					Historic Manufacturing
					Historic Personal Items
					Historic Tools/Hardware
					Historic Unidentified
					Prehistoric Lithics
		66	combined with context 68	--	Historic Building Materials
			mottled loamy sand with pockets of charcoal , historic fill, overlaid by context 65, fill of context 67	10YR 5/8, 10YR 3/2, 10YR 2/1	Historic Building Materials
					Historic Ceramic Vessel Sherds
			combined with context 68	--	Historic Ceramic Vessel Sherds
			mottled loamy sand with pockets of charcoal , historic fill, overlaid by context 65, fill of context 67	10YR 5/8, 10YR 3/2, 10YR 2/1	Historic Fauna
			combined with context 68	--	Historic Glass Vessel Fragments
			mottled loamy sand with pockets of charcoal , historic fill, overlaid by context 65, fill of context 67	10YR 5/8, 10YR 3/2, 10YR 2/1	Historic Manufacturing
			combined with context 68	--	Historic Manufacturing

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		66	mottled loamy sand with pockets of charcoal , historic fill, overlaid by context 65, fill of context 67	10YR 5/8, 10YR 3/2, 10YR 2/1	Historic Tools/Hardware
					Prehistoric Lithics
		67	cut, filled by contexts 65, 66, 68, 106 and 317, overlaid by context 1, cuts contexts 2 and 231	--	--
		68	mottled loamy sand with pockets of charcoal , historic fill, overlaid by context 1, overlies context 65, fill of context 67	10YR 4/2, 10YR 2/1	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Clothing Related
					Historic Fauna
					Historic Flora
					Historic Furnishings
					Historic Glass Vessel Fragments
					Historic Manufacturing
					Historic Personal Items
					Historic Recreation/Activities
					Historic Tools/Hardware
					Historic Unidentified
		69	cut, filled by context 70, overlaid by context 1, cuts context 2	--	--
		70	loamy sand with charcoal , historic post hole, overlaid by context 1, fill of context 69	10YR 4/3	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Fauna
					Historic Glass Vessel Fragments
					Historic Manufacturing
		71	cut, filled by context 72, overlaid by context 1, cuts context 2	--	--
		72	loamy sand, historic disturbance, overlaid by context 1, fill of context 71	10YR 3/4	Historic Building Materials
		73	cut, filled by context 74, overlaid by context 1, cuts context 2	--	--
		74	mottled silty sand with charcoal , possible post, overlaid by context 1, fill of context 73	10YR 3/4, 10YR 5/6	Historic Fauna
		75	cut, filled by context 76, overlaid by context 1, cuts context 2	--	--

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		76	silty sand with brick flecking, carbon , possible post, overlaid by context 1, fill of context 75	10YR 4/4	--
		77	cut, filled by context 78, overlaid by context 1, cuts context 2	--	--
		78	silty sand with carbon flecking , possible post, overlaid by context 1, fill of context 77	10YR 4/4	--
		79	cut, filled by context 80, overlaid by context 1, cuts context 2	--	--
		80	loamy sand, historic post hole, overlaid by context 1, fill of context 79	10YR 4/3	Historic Building Materials
					Historic Fauna
		81	cut, filled by context 82, overlaid by context 1, cuts context 2	--	--
		82	sand, historic post hole, overlaid by context 1, fill of context 81	10YR 3/3	Historic Agriculture/Equestrian
					Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Fauna
					Historic Glass Vessel Fragments
					Historic Recreation/Activities
		83	cut, filled by context 84, overlaid by context 1, cuts contexts 2 and 22	--	--
		84	mottled loamy sand with gravel , historic post hole, overlaid by context 1, fill of context 83	10YR 5/6, 7.5YR 5/6, 10YR 4/3	Historic Recreation/Activities
		85	cut, filled by context 86, overlaid by context 1, cuts context 2	--	--
		86	mottled loamy sand with carbon flecking , historic pit, overlaid by context 1, fill of context 85	10YR 4/3, 10YR 5/6	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Fauna
					Historic Recreation/Activities
		87	cut, filled by context 88, overlaid by context 1	--	--
		88	mottled silty sand with carbon flecking , planked root cellar, overlaid by context 1, fill of context 87	10YR 4/4, 10YR 6/4, 10YR 5/6	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Fauna
					Historic Glass Vessel Fragments
					Historic Recreation/Activities

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		89	cut, filled by context 90, overlaid by context 1, cuts context 2	--	--
		90	mottled loamy sand with brick and carbon flecking , paling fence, overlaid by context 1, fill of context 89	10YR 4/3, 10YR 5/6	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Fauna
					Historic Flora
					Historic Unidentified
		91	cut, filled by context 92, overlaid by context 1, cuts context 2	--	--
		92	silty loam, historic post hole, overlaid by context 1, fill of context 91	10YR 4/3	--
		93	cut, filled by contexts 94 and 226, overlaid by context 1, cuts context 2	--	--
		94	loamy sand, historic post hole, overlaid by context 1, fill of context 93	10YR 5/4	--
		95	cut, filled by contexts 96 and 228, overlaid by context 1, cuts context 2	--	--
		96	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 95	10YR 5/6, 10YR 4/3	--
		97	cut, filled by 98, overlaid by context 1, cuts context 2	--	--
		98	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 97	10YR 5/4, 10YR 5/6	Historic Building Materials
		99	cut, filled by context 100, overlaid by context 1, cuts context 2	--	--
		100	mottled silty sand with carbon flecking , possible historic post, overlaid by context 1, fill of context 99	10YR 3/3, 10YR 5/6	Historic Building Materials
					Historic Glass Vessel Fragments
					Historic Recreation/Activities
		101	cut, filled by context 102, overlaid by context 1, cuts context 2	--	--
		102	loamy sand with carbon flecking , possible driven post, overlaid by context 1, fill of context 101	10YR 5/4	--
		103	cut, filled by context 104, overlaid by context 1, cuts context 2	--	--
		104	loamy sand, driven post, overlaid by context 1, fill of context 103	10YR 5/4	Historic Ceramic Vessel Sherds
					Historic Fauna
		105	cut, filled by contexts 23 and 224, overlaid by context 1, cuts context 2	--	--
		106	mottled loamy sand, historic fill, overlaid by context 65, overlies contexts 65 and 231, fill of context 67	10YR 6/4, 10YR 3/2	Historic Agriculture/Equestrian
					Historic Building Materials

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		106	mottled loamy sand, historic fill, overlaid by context 65, overlies contexts 65 and 231, fill of context 67	10YR 6/4, 10YR 3/2	Historic Fauna
					Historic Glass Vessel Fragments
					Historic Kitchen
					Historic Manufacturing
					Historic Tools/Hardware
					Historic Unidentified
					Indeterminate Lithics
		108	loamy sand, rodent or root disturbance	10YR 4/3	--
		110			--
		112	silty sand, rodent or root disturbance	5YR 5/6	Historic Manufacturing
		114	mottled silty sand, historic post hole, overlaid by context 1, fill of context 29	10YR 5/6, 10YR 4/3	--
		115	cut, filled by contexts 22 and 116, overlaid by context 1, cuts context 2, cut by contexts 19 and 83	--	--
		116	mottled loamy sand, historic pit, overlaid by context 22, fill of context 115, cut by contexts 19 and 83	10YR 5/6, 10YR 5/4	--
		117	cut, filled by context 118, overlaid by context 1, cuts contexts 2, 27, 28 and 221	--	--
		118	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 117	10YR 4/3, 10YR 5/4	Historic Building Materials
					Historic Fauna
		119	cut, filled by contexts 24 and 120, cuts context 2	--	--
		120	mottled silty sand, historic post hole, overlaid by context 1, fill of context 119	10YR 4/3, 10YR 6/4	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Fauna
		121	cut, filled by context 122, overlaid by context 1, cuts context 2	--	--
		122	loamy sand with charcoal , historic driven post, overlaid by context 1, fill of context 121	10YR 4/3	--
		123	cut, filled by context 124, overlaid by context 1, cuts contexts 2, 125 and 126	--	--
		124	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 123	10YR 4/3, 10YR 5/6	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Fauna

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		124	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 123	10YR 4/3, 10YR 5/6	Historic Flora
		125	cut, filled by context 126, overlaid by context 1, cuts context 2, cut by context 123	--	--
		126	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 125, cut by context 123	10YR 4/3, 10YR 5/6	Historic Building Materials
					Historic Ceramic Vessel Sherds
		127	cut, filled by contexts 128 and 293, overlaid by context 1, cuts context 2	--	--
		128	loamy sand with charcoal , historic post hole, overlaid by context 1, fill of context 127	10YR 4/3	Historic Ceramic Vessel Sherds
					Historic Fauna
		129	cut, filled by contexts 130 and 234, overlaid by context 1, cuts cxs 2, 236 and 237, cut by cx 243	--	--
		130	loamy sand with charcoal , historic post hole, overlaid by context 1, fill of context 129, cut by contexts 39 and 243	10YR 4/3	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Fauna
					Historic Recreation/Activities
		131	cut, filled by contexts 132 and 232, overlaid by context 1, cuts context 2	--	--
		132	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 131	10YR 4/3, 10YR 5/6	--
					Historic Ceramic Vessel Sherds
		133	cut, filled by context 134, overlaid by context 1, cuts context 2	--	--
		134	loamy sand with charcoal , historic post hole, overlaid by context 1, fill of context 133	10YR 4/2	--
		135	cut, filled by contexts 136 and 238, overlaid by context 1, cuts context 2	--	--
		136	mottled silty sand, historic post hole, overlaid by context 1, fill of context 135	10YR 5/4, 10YR 3/2	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Fauna
		137	cut, filled by contexts 138 and 233, overlaid by context 1, cuts context 2	--	--
		138	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 137	10YR 5/6, 10YR 4/3	Historic Ceramic Vessel Sherds
		139	cut, filled by context 140, overlaid by context 1, cuts context 2, cut by context 17	--	--
		140	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 139, cut by context 17	10YR 4/3, 10YR 5/6	Historic Building Materials
					Historic Recreation/Activities

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		142	loamy sand, rodent or root disturbance	10YR 4/3	--
		143	loamy sand, historic post mold, overlaid by context 1, fill of congtext 45		--
		144	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 145	10YR 4/3, 10YR 5/6	Historic Ceramic Vessel Sherds
		145	cut, filled by context 144, overlaid by context 1, cuts context 2	--	--
		146	silty loam, rodent disturbance	10YR 4/2	--
		147	cut, filled by 148 and 229, overlaid by context 1, cuts context 2	--	--
		148	loamy sand, historic post hole, overlaid by context 1, fill of context 147	10YR 5/3	--
		150	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 151	10YR 4/3, 10YR 5/6	Historic Building Materials Historic Fauna
		151	cut, filled by contexts 150 and 235, overlaid by context 1, cuts context 2	--	--
		152	mottled loamy sand, possible post hole, overlaid by context 1, fill of context 153	10YR 4/3, 10YR 5/6	--
		153	cut, filled by context 152, overlaid by context 1, cuts context 2	--	--
		154	mottled loamy sand with carbon , indeterminate, overlaid by context 1, fill of context 155	10YR 5/6, 10YR 4/3	--
		155	cut, filled by context 154, overlaid by context 1, cuts context 2	--	--
		156	mottled loamy sand, historic fill, overlaid by context 1, overlies context 270, fill of context 157, cut by context 325	10YR 3/3, 10YR 5/6	Historic Building Materials Historic Ceramic Vessel Sherds Historic Fauna Historic Glass Vessel Fragments
		157	cut, filled by contexts 156 and 270, overlaid by context 1, cuts context 2, cut by context 325	--	--
		158	silty sand, indeterminate, overlaid by context 1, fill of context 159	10YR 3/3	-- Historic Building Materials
		159	cut, filled by context 158, overlaid by context 1, cuts context 2	--	--
		160	mottled loamy sand, possible historic post, overlaid by context 1, fill of context 161	10YR 4/3, 10YR 5/6	--
		161	cut, filled by context 160, overlaid by context 1, cuts context 2	--	--
		162	silty sand, indeterminate, overlaid by context 1, fill of context 163	10YR 4/3	Historic Building Materials Historic Ceramic Vessel Sherds Historic Fauna

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		162	silty sand, indeterminate, overlaid by context 1, fill of context 163	10YR 4/3	Historic Manufacturing
		163	cut, filled by context 162, overlaid by context 1, cuts context 2	--	--
		164	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 165	10YR 5/4, 10YR 4/3, 10YR 5/6	--
		165	cut, filled by context 164, overlaid by context 1, cuts context 2	--	--
		168	mottled silty sand, historic post hole, overlaid by context 1, fill of context 169	10YR 4/3, 10YR 5/4	Historic Building Materials Historic Fauna
		169	cut, filled by context 168, overlaid by context 1, cuts context 2	--	--
		170	mottled silty sand with carbon , historic pit, overlaid by context 1, fill of context 171	10YR 4/3, 10YR 6/4	Historic Fauna
		171	cut, filled by context 170, overlaid by context 1, cuts context 2	--	--
		174	mottled silty sand with carbon flecking , root disturbance	10YR 4/3, 10YR 4/4, 10YR 5/4	--
		176	loamy sand, historic post hole, overlaid by context 1, fill of context 177	10YR 4/3	--
		177	cut, filled by context 176, overlaid by context 1, cuts context 2	--	--
		178	loamy sand, historic post hole, overlaid by context 1, fill of context 179	10YR 4/3	--
		179	cut, filled by context 178, overlaid by context 1, cuts context 2	--	--
		180	loamy sand with charcoal , historic post hole, overlaid by context 1, fill of context 181	10YR 4/3	Historic Building Materials
		181	cut, filled by contexts 180 and 305, overlaid by context 1, cuts context 2	--	--
		182	loamy sand, historic post hole, overlaid by context 1, fill of context 183	10YR 4/2	--
		183	cut, filled by context 182, overlaid by context 1, cuts context 2	--	--
		184	mottled silty sand, historic post hole, overlaid by context 1, fill of context 185	10YR 4/3, 10YR 5/4	--
		185	cut, filled by contexts 184, 303 and 304, overlaid by context 1, cuts context 2	--	--
		186	mottled silty sand, historic post hole, overlaid by context 1, fill of context 187	10YR 4/3, 10YR 5/6	Historic Building Materials Historic Ceramic Vessel Sherds
		187	cut, filled by contexts 186 and 290, overlaid by context 1, cuts context 2	--	--
		188	sand loam, rodent or root disturbance	10YR 4/3	--
		190	sand loam with brick and charcoal flecking , possible post hole, overlaid by context 1, fill of context 191		--
		191	cut, filled by context 190, overlaid by congtext 1, cuts context 2	--	--
		194	mottled loamy sand with charcoal , historic pit, overlaid by context 1, fill of context 195	10YR 4/3, 10YR 5/6	Historic Building Materials

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		195	cut, filled by context 194, overlaid by context 1, cuts context 2, cut by contexts 313 and 315	--	--
		196	loamy sand, rodent disturbance	10YR 4/3	--
		198	loamy sand, historic post hole, overlaid by context 1, fill of context 199		--
		199	cut, filled by context 198, overlaid by context 1, cuts context 2	--	--
		200	sand loam with charcoal , historic post hole, overlaid by context 1, fill of context 201	10YR 4/3	--
		201	cut, filled by context 200, overlaid by context 1, cuts context 2	--	--
		202	sand loam with charcoal , possible post, overlaid by context 1, fill of context 203	10YR 4/3	--
		203	cut, filled by context 202, overlaid by context 1, cuts context 2	--	--
		204	silty sand with carbon , historic post mold, overlaid by context 1, fill of context 205	10YR 3/3	Historic Fauna Historic Flora
		205	cut, filled by contexts 204 and 309, overlaid by context 1, cuts context 2	--	--
		206	mottled silty sand, historic post hole, overlaid by context 1, fill of context 207	10YR 3/3, 10YR 5/4	Historic Building Materials Historic Fauna
		207	cut, filled by contexts 206 and 310, overlaid by context 1, cuts context 2	--	--
		210	silty sand with brick flecking , root disturbance	10YR 4/3	--
		212	sand loam, historic post hole, overlaid by context 1, fill of context 213		--
		213	cut, filled by context 212, overlaid by context 1, cuts context 2	--	--
		216	sand loam, historic post hole, overlaid by context 1, fill of context 217	10YR 4/3	--
		217	cut, filled by context 216, overlaid by context 1, cuts context 2	--	--
		218	mottled silty sand, possible post, overlaid by context 1, fill of context 219	10YR 4/4, 10YR 5/4	Historic Ceramic Vessel Sherds
		219	cut, filled by context 218, overlaid by context 1, cuts context 2	--	--
		220	silty sand, root disturbance	10YR 4/4	--
		222	mottled loamy sand with silty sand , root disturbance	10YR 3/3, 10YR 4/4	Historic Building Materials Historic Ceramic Vessel Sherds
		224	loamy sand, historic post mold, overlaid by context 1, fill of context 105	10YR 4/3	--
		225	loamy sand, historic post mold, overlaid by context 1, fill of context 57		--
		226	mottled loamy sand, historic post mold, overlaid by context 1, fill of context 93	10YR 3/3, 10YR 5/6	--

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		227	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 27, cut by context 117	10YR 5/4, 10YR 5/6	--
		228	mottled loamy sand, historic post mold, overlaid by context 1, fill of context 95	10YR 4/3, 10YR 5/6	--
		229	loamy sand with carbon , historic post mold, overlaid by context 1, fill of context 147	10YR 5/3	--
		230	mottled loamy sand, historic post mold, overlaid by context 1, fill of context 41	10YR 4/3, 10YR 5/6	--
		231	coarse, mottled sand with gravel, lamallae bands , C horizon, overlaid by contexts 1 and 2, cut by contexts 67, 117, 323 and 333	10YR 6/3, 10YR 5/8	--
		232	loamy sand with degraded wood , historic post mold, overlaid by context 1, fill of context 131	10YR 3/3	Historic Building Materials
		233	mottled loamy sand with carbon , historic post mold, overlaid by context 1, fill of context 137	10YR 4/3, 10YR 5/6	--
		234	loamy sand, historic post mold, overlaid by context 1, fill of context 129	10YR 4/3	--
		235	loamy sand, historic post mold, overlaid by context 1, fill of context 151		Historic Building Materials Historic Ceramic Vessel Sherds
		236	loamy sand with charcoal , historic post hole, overlaid by context 1, fill of context 237, cut by context 129		--
		237	cut, filled by context 236, overlaid by context 1, cuts context 2, cut by context 129	--	--
		238	silty sand, historic post mold, overlaid by context 1, fill of context 135	10YR 3/2	--
		239	silty sand, historic post hole, overlaid by context 1, fill of context 269	10YR 3/3	--
		243	cut, filled by context 244, overlaid by context 1, cuts contexts 2, 129 and 130, cut by context 39	--	--
		244	loamy sand with charcoal , historic post hole, overlaid by context 1, fill of context 243, cut by context 39	10YR 4/3	--
		245	silty sand, historic post hole, overlaid by context 1, fill of context 275	10YR 3/2	--
		248	loamy sand, historic pit, overlaid by context 1, fill of context 249	10YR 4/3	Historic Building Materials Historic Ceramic Vessel Sherds
		249	cut, filled by context 248, overlaid by context 1, cuts context 2	--	--
		250	sand loam with charcoal , historic post hole, overlaid by context 1, fill of context 251	10YR 4/3	Historic Building Materials Historic Ceramic Vessel Sherds
		251	cut, filled by context 250, overlaid by context 1, cuts context 2	--	--
		252	sand loam with charcoal , historic post hole, overlaid by context 1, fill of context 253	10YR 4/3	Historic Building Materials

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		253	cut, filled by context 252, overlaid by context 1, cuts context 2	--	--
		254	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 255	10YR 4/3, 10YR 5/6	--
		255	cut, filled by contexts 254 and 271 to 274, overlaid by context 1, cuts context 2	--	--
		256	loamy sand, historic post hole, overlaid by context 1, fill of context 257	10YR 4/4	--
		257	cut, filled by contexts 256 and 258, overlaid by context 1, cuts context 2	--	--
		258	mottled loamy sand, historic post mold, overlaid by context 1, fill of context 257	10YR 4/3, 10YR 5/3	--
		260	mottled loamy sand, natural depression, overlaid by context 1, overlies context 2	10YR 4/3, 10YR 5/6	--
		261	cut, filled by context 262, overlaid by context 1, cuts context 2	--	--
		262	mottled loamy sand, historic fill of paling fence, overlaid by context 1, fill of context 261, cut by context 339	10YR 5/4, 10YR 5/6	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Clothing Related
					Historic Fauna
					Historic Glass Vessel Fragments
					Historic Recreation/Activities
		263	cut, filled by context 264, overlaid by context 1, cuts contexts 2, 284 and 294	--	--
		264	mottled loamy sand, historic fill of paling fence, overlaid by context 1, fill of context 263	10YR 5/4, 10YR 5/6	Historic Building Materials
					Historic Ceramic Vessel Sherds
		268	mottled silty sand, root disturbance	10YR 3/3, 10YR 6/4, 10YR 5/4	--
		269	cut, filled by 239, overlaid by context 1, cuts context 2	--	--
		270	mottled loamy sand, historic fill, overlaid by contexts 1 and 156, fill of context 157	10YR 5/6, 10YR 4/3	Historic Building Materials
					Historic Fauna
					Historic Recreation/Activities
		271	loamy sand, historic post hole, overlaid by context 1, fill of context 255	10YR 4/3	--
					Historic Ceramic Vessel Sherds
					Historic Fauna
		272	loamy sand, historic post mold, overlaid by context 1, fill of context 255		Historic Ceramic Vessel Sherds
		273			Historic Building Materials

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		273	loamy sand, historic post mold, overlaid by context 1, fill of context 255	10YR 4/3	Historic Ceramic Vessel Sherds
					Historic Fauna
					Historic Flora
		274			Historic Building Materials
					Historic Ceramic Vessel Sherds
		275	cut, filled by context 245, overlaid by context 1, cuts context 2	--	--
		276	loamy sand, natural depression, overlaid by context 1, overlies context 2	10YR 4/3	--
		280	mottled loamy sand, root disturbance	10YR 3/3, 10YR 5/4	Historic Ceramic Vessel Sherds
					Historic Fauna
		282	loamy sand, historic post hole, overlaid by context 1, fill of context 283	10YR 4/3	Historic Building Materials
		283	cut, filled by context 282, overlaid by context 1, cuts context 2	--	--
		284	loamy sand, prehistoric pit, overlaid by context 1, overlies context 294, fill of context 285, cut by cx 263	10YR 5/4	--
		285	cut, filled by contexts 284 and 294, overlaid by context 1, cuts context 2, cut by context 263	--	--
		286	sand loam with charcoal , historic post hole, overlaid by context 1, fill of context 287	10YR 4/3	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Fauna
		287	cut, filled by context 286, overlaid by context 1, cuts context 2	--	--
		290	silty sand, historic post mold, overlaid by context 1, fill of context 187	10YR 4/3	Historic Building Materials
					Historic Fauna
		291	cut, filled by context 292, overlaid by context 1, cuts context 2	--	--
		292	mottled silty sand with heavy carbon , historic post hole, overlaid by context 1, fill of context 291	10YR 5/4, 10YR 4/4	--
		293	loamy sand, historic post mold, overlaid by context 1, fill of context 127	10YR 4/3	--
		294	loamy sand, prehistoric pit, overlaid by contexts 1 and 264, fill of context 285, cut by context 263	10YR 5/6	--
		295	cut, filled by context 296, overlaid by context 1	--	--
		296	loamy sand, historic post hole, overlaid by context 1, fill of context 295	10YR 4/4	--
		297	cut, filled by contexts 298 and 306, overlaid by context 1, cuts context 2	--	--

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		298	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 297	10YR 4/3, 10YR 5/6	--
		299	cut, filled by context 300, overlaid by context 1, cuts context 2	--	--
		300	loamy sand, historic fill, overlaid by context 1, fill of context 299	10YR 5/4	Historic Arms and Armor
					Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Fauna
		302	mottled loamy sand, animal wallow, overlaid by context 1, overlies context 2	10YR 4/3, 10YR 5/4, 10YR 5/6	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Recreation/Activities
		303	silty sand with carbon , historic post mold, overlaid by context 1, fill of context 185	10YR 4/3	--
		304	mottled silty sand with carbon , historic post mold, overlaid by context 1, fill of context 185	10YR 4/3, 10YR 6/4	--
		305	spongy loamy sand, historic post mold, overlaid by context 1, fill of context 181	10YR 3/4	--
		306	loamy sand, historic post mold, overlaid by context 1, fill of context 297	10YR 4/3	Historic Building Materials
		309	mottled silty sand with carbon , historic post hole, overlaid by context 1, fill of context 205	10YR 5/4, 10YR 5/6, 10YR 4/3	--
		310	mottled silty sand, historic post hole, overlaid by context 1, fill of context 207	10YR 5/4, 10YR 5/6, 10YR 6/4	--
		311	cut, filled by context 312, overlaid by context 1, cuts context 2	--	--
		312	mottled loamy sand, historic post hole, overlaid by context 1, fill of context 311	10YR 5/4, 10YR 5/6	--
		313	cut, filled by context 314, overlaid by context 1, cuts contexts 2, 194 and 195	--	--
		314	greasy loamy sand, historic pit, overlaid by context 1, fill of context 313	10YR 4/3	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Fauna
		315	cut, filled by context 316, overlaid by context 1, cuts contexts 2, 194 and 195	--	--
		316	loamy sand, historic post hole, overlaid by context 1, fill of context 315	10YR 4/3	--
		317	brick tumble, overlaid by contexts 65 and 106, overlies contexts 65 and 106, fill of context 67	--	Historic Building Materials
					Historic Tools/Hardware
		318	mottled loamy sand with carbon , historic fill, overlaid by context 1, fill of context 319	10YR 3/2, 10YR 5/4	Historic Building Materials
					Historic Ceramic Vessel Sherds

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		318	mottled loamy sand with carbon , historic fill, overlaid by context 1, fill of context 319	10YR 3/2, 10YR 5/4	Historic Fauna
		319	cut, filled by context 318, overlaid by context 1, cuts context 2	--	--
		320	sand loam with charcoal , historic post hole, overlaid by context 1, fill of context 321	10YR 4/3	--
		321	cut, filled by context 320, overlaid by context 1, cuts context 2	--	--
		322	loamy sand with dense shell , historic pit, overlaid by context 1, overlies context 336, fill of context 323	10YR 3/3	Historic
					Historic Agriculture/Equestrian
					Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Clothing Related
					Historic Fauna
					Historic Flora
					Historic Furnishings
					Historic Glass Vessel Fragments
					Historic Kitchen
					Historic Manufacturing
					Historic Personal Items
					Historic Recreation/Activities
					Historic Tools/Hardware
					Historic Unidentified
					Prehistoric Lithics
		323	cut, filled by contexts 322 and 336, overlaid by context 1, cuts context 2	--	--
		324	mottled loamy sand, historic fill, overlaid by context 1, fill of context 325	10YR 4/4, 10YR 5/6	--
		325	cut, filled by context 324, overlaid by context 1, cuts contexts 2, 156, 157 and 270	--	--
		326	loamy sand, historic post hole, overlaid by context 1, fill of context 327	10YR 5/4	--
		327	cut, filled by context 326, overlaid by context 1, cuts context 2	--	--
		328	sand loam, possible post, overlaid by context 1, fill of context 329	10YR 4/3	Historic Building Materials
					Historic Ceramic Vessel Sherds
					Historic Glass Vessel Fragments

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		329	cut, filled by context 328, overlaid by context 1, cuts context 2	--	--
		330	sand loam, historic post hole, overlaid by context 1, fill of context 331	10YR 4/3	Historic Building Materials Historic Glass Vessel Fragments Historic Manufacturing
		331	cut, filled by context 330, overlaid by context 1, cuts context 2	--	--
		332	mottled loamy sand with pebbles , historic fill, overlaid by context 1, fill of context 333	10YR 5/4, 10YR 5/6	Historic Building Materials Historic Ceramic Vessel Sherds Historic Fauna Historic Glass Vessel Fragments Historic Manufacturing
		333	cut, filled by contexts 332 and 349 to 354, overlaid by context 1, cuts contexts 2 and 231	--	--
		334	loamy sand, historic fill, overlaid by context 1, fill of context 335, cut by context 347	10YR 4/3	Historic Building Materials Historic Ceramic Vessel Sherds Historic Flora
		335	cut, filled by context 335, overlaid by context 1, cuts context 2, cut by context 347	--	--
		336	loamy sand, historic fill, overlaid by context 322, fill of context 323	10YR 4/3	Historic Arms and Armor Historic Building Materials Historic Ceramic Vessel Sherds Historic Fauna Historic Flora Historic Glass Vessel Fragments Historic Manufacturing Historic Tools/Hardware Historic Unidentified
		337	compact loamy sand, historic fill, overlaid by context 1, overlies contexts 2, 341, 344 and 345	10YR 4/3, 10YR 5/6	--
		338	mottled loamy sand, historic fill, overlaid by context 1, overlies context 2	10YR 4/4	Historic Building Materials Historic Building Materials

APPENDIX E (Cont.)

PHASE III SUMMARY OF SUBSURFACE TESTING

Unit Type	No.	Context	Soil Description/Interpretation	Munsell	Cultural Materials
		338	mottled loamy sand, historic fill, overlaid by context 1, overlies context 2	10YR 4/4	Historic Ceramic Vessel Sherds
		339	cut, filled by context 348, overlaid by context 1, cuts contexts 2 and 262	--	--
		340	loamy sand, historic fill, overlaid by context 1, overlies context 2	10YR 4/3	--
		341	loamy sand, historic post mold, overlaid by context 337, fill of context 345	10YR 4/4	--
		342	silty sand, natural depression, overlaid by context 1, overlies context 2		--
		344	compact loamy sand, historic post hole, overlaid by context 337, fill of context 345		--
		345	cut, filled by contexts 341 and 344, overlaid by context 1, cuts context 2	--	--
		346	loamy sand, historic post hole, overlaid by context 1, filled by context 347	10YR 4/3	--
		347	cut, filled by context 346, overlaid by context 1, cuts contexts 2, 334 and 335	--	--
		348	loamy sand, historic post hole, overlaid by context 1, fill of context 339	10YR 4/3	--
		349	coarse loamy sand, historic fill, overlaid by context 332, overlies contexts 350, 353 and 354, fill of context 333	10YR 6/4	--
		350	mottled sand with gravel , historic fill, overlaid by contexts 349, 353 and 354, overlies contexts 351 and 352, fill of cx 333	10YR 5/6, 10YR 6/2	--
		351	fine, moist sand, historic fill, overlaid by context 350, overlies context 352, fill of context 333	10YR 6/3	--
		352	compact, mottled clayey sand, historic fill, overlaid by contexts 350 and 351, fill of context 333	10YR 5/6, 10YR 7/1	--
		353	loamy sand, historic fill, overlaid by context 349, overlies context 350, fill of context 333	10YR 5/3	--
		354	greasy silty sand, historic fill, overlaid by context 349, overlies context 350, fill of context 333	10YR 4/3	--
Trench	1 - 4	1	loamy sand, plow zone, overlies contexts 2 to 4	10YR 4/3	--
		2	sand, B horizon, overlaid by context 1, cut by context 3	10YR 6/3	--
	1 and 2	3	cut, filled by context 4, overlaid by context 1, cuts context 2	--	--
		4	loamy sand, prehistoric pit, overlaid by context 1, fill of context 3	10YR 4/4	Prehistoric Lithics

*** Discarded**

Appendix F

DELAWARE STATE HISTORIC PRESERVATION OFFICE
CULTURAL RESOURCE SURVEY FORMS

Appendix G

PUBLIC OUTREACH MATERIALS

DISCOVERING COLONIAL-ERA SETTLEMENT:
CEDAR CREEK ROAD (S.R.30), CEDAR CREEK HUNDRED

What's Happening Here?

Underneath the ground in this farm field, not marked on any map and barely known to history, lie the remains of Colonial-era farmsteads dating to the 1700s.

Archaeologists from Hunter Research, a private historical resource consulting company, are working here on behalf of the Delaware Department of Transportation (DelDOT). The investigations will continue through the end of December 2011.

In 2012, DelDOT will be constructing new ramps across the field to connect S.R. 30 with Route 1 to create an improved connection between the two roads. The farmstead sites lie partly within the alignment of the new ramps, and so those portions are being fully studied before road construction begins. DelDOT is meeting its responsibilities under the National Historic Preservation Act by doing these studies.

Part of an 1827 map that shows a house on the opposite side of Route 30, but no buildings on the site.

How Were the Farmsteads Discovered?

The sites were first identified in 2009-10 during the early stages of planning for the new ramps. Archaeologists found artifacts on the surface and then did small-scale excavations to locate foundations and other features of the farmsteads.

At the same time, historical researchers tried to work out when the farmsteads had been built, and who had built and lived on them in the Colonial period and later. This proved to be a difficult task. We know who owned the land as far back as 1704, but it was part of a much larger tract of property and landowners did not live at this location. These people were probably tenants and so far we have not been able to find any records of who they were.

Several types of 18th century pottery.

What is Being Found?

As well as artifacts such as pottery, glass (from windows, bottles and tableware), metal (such as iron nails) we are finding the traces of the buildings themselves. The buildings were all of timber. The wood has of course rotted away, but what is left behind are slight changes in the color and texture of the soils that show a trained archaeologists where posts, pits, cellar holes and other parts of the farmstead were once located. We hope to get a complete plan of what the farmsteads looked like.

The main farmstead site is close to the road. Further into the field is the site of a possible outbuilding, and also a place where bricks were made (called a "clamp"). These are being investigated also.

How is the Work Done?

You may be surprised to see a small backhoe on the site. We use this to carefully remove the upper levels of soil (the plowzone) without damaging what lies underneath. This saves a lot of time. Once that is done the exposed archaeological remains are carefully excavated by hand and then photographed, mapped and documented. Artifacts are recovered by passing the dirt through screens, and are then bagged up for transport to our laboratory facilities for cleaning and cataloging.

Pits and post-holes of the farmstead exposed after the plow-zone soils have been removed.

What Happens Next?

When the excavations are completed all the data will be analyzed and written up in a full technical report. When this report has been approved by the State of Delaware it will be available on the Archaeology/Historic Preservation page of Delaware Department of Transportation website (*http://www.deldot.gov/archaeology/*).

All the artifacts and records from the study will go to the Delaware State Museum where they will be available for researchers.

Can I Volunteer?

Yes! Contact David Clarke, DelDOT Archaeologist, at 302-760-2271 or email *David.Clarke@state.de.us* to sign up to help on Saturday December 10th or Saturday December 17th, 2011. No experience is necessary: we will train you.

Want to Know More?

1. Ask any member of our field team for information.

2. Contact David Clarke, DelDOT Archaeologist, at 302-760-2271 or email *David.Clarke@state.de.us*.

3. Contact Ian Burrow, Vice President, Hunter Research, at 609-695-0122 extn 102, or email *iburrow@hunterresearch.com*. Please also visit our website *www.hunterresearch.com*.

4. Visit *http://www.deldot.gov/archaeology/* to learn more about DelDOT's archaeology and historic preservation programs.

DELDOT
CULTURAL RESOURCES

HUNTER RESEARCH
Historical Resource Consultants
120 West State Street Trenton, N.J. 08608
(609) 695-0122
www.hunterresearch.com

MilfordBeacon.com

Students dig history at DelDOT project site

Sixth grader Kendra Kimmey shows off evidence of her participation in the field trip with a dirty hand.

Christine Miller, Milford Beacon

Tuesday morning, select students from Milford Middle School met with DelDDOT staff members as well as archeologists from Hunter Research at the DelDOT project site at the intersection of Del. Route 1 and Del. Route 30 to see if any new Delaware history could be unearthed before safety improvements begin there.

According to DelDOT, the Highway Safety Improvement Program analyzed the frequency and severity of accidents at the intersection and concluded that improvements were necessary.

The improvements will include the installation of an overpass and a connecting ramp system for access: northbound access will be via a loop ramp and southbound traffic will access the overpass via a ramp that ties into SR30 just south of the overpass.

Construction is anticipated to start in Spring 2012.

However, before construction can begin, the National Historic Preservation Act requires that studies be conducted to determine if the land has any historical significance or artifacts.

In 2009-10, during the early stages of planning for the new ramps, archeologists found surface artifacts. This led to small-scale excavations to locate structure foundations and other features of farmsteads.

Artifacts such as pottery, glass from windows, bottles, and tableware, metal from iron nails, and traces of the buildings themselves have been found and mapped all over the excavation site. These discoveries highlight what life was like for early Delawareans.

The main farmstead site is located close to the road. Over the course of the excavation of this part of the site, a bloomery was discovered by the research team. A bloomery was a type of furnace used to smelt iron from its oxides.

Hunter Research Archeologist Ian Burrow noted that the ramifications of this find prove that settlers were most likely making their own iron from the soil and sediment of nearby rivers and streams.

“Exporting tools from England would have been expensive,” Burrow said. “This find shows that they were most likely making their own tools and possibly selling and trading the things they made. Settlers were always looking for things to sell or trade.”

Further into the field is the site of a possible outbuilding as well as a place where bricks were made.

The middle school students selected to attend the archeology site were given instruction by members of the Hunter Research staff on what was being found and what they would have the opportunity to look for.

Students then spent several hours sifting through sand in the hopes of making their own historical discoveries.

Sixth-grader Adrianna Englemann was excited to be there with her classmates and for the opportunity to merge her love of the outdoors with her love of learning.

“I like to get dirty and read books about bones,” she said.

The field trip was also furthering a passion for archeology for Makayla Parson as well.

“I watch lots of shows about stuff like this,” Makayla said. “I also dig in the backyard with my mom. Once, we even found a really big shell.”

Sixth-grade Science Teacher Jacquelyn Powers was thrilled that her students were getting the opportunity for some hands-on, Earth Science learning.

“I told them this is a once-in-a-lifetime opportunity in their own backyards,” Powers said. “Even as we were coming here, students were pointing out their houses, and couldn’t believe that the site was so close to where they live, learn, and play.”

Middle-schoolers join hunt for centuries-old artifacts

Middle-schoolers join hunt for centuries-old artifacts

Glen Keeton of Hunter Research shows children from Milford Middle school how to find small artifacts from a screen sifter. About 60 Milford Middle School students will get a taste of archaeological adventure during a visit to a dig south of Milford on Tuesday. The dig is being conducted as part of DelDOT□s early work to build an overpass at the Del. 30 intersection with Del. 1.

Written by Dan Shortridge
The News Journal

The boys stood around the wire-bottomed sifting box, their gloved hands eagerly picking up and smashing dirt clods in a hunt for history.

How are we supposed to find something?" asked sixth-grader Shane Gaglione.

A minute later, they did.

"Those are roots off the old cornstalks," said archaeologist Bill Liebeknecht, standing by. "That's a rock."

"There's lots of rocks," observed Milford Middle School classmate Alex Robbins, 11.

One of them then picked up something better -- a shard of pottery.

"That's cool!" exclaimed Gaglione, his eyes lighting up.

The Milford students were spending part of their school day getting a close-up glimpse of life in early colonial Delaware, participating in an archaeological dig south of Milford.

The 1700s-era farmstead site is being studied by the Delaware Department of Transportation and an archaeological consulting firm before an overpass is built on the land to improvesafety on Del. 1 and Del. 30.

Though the dig has uncovered evidence of a house, a metalworks and a brick kiln, researchso far has been unable to determine who lived on the site, likely tenants, Liebeknecht told the students. The land's owners have been traced back to 1704, but they did not live there.

The survey team has found bits of pottery, chunks of brick, pieces of iron, a fence line, the remains of an American Indian food storage pit, an old root cellar and the outline of a farmer's house and porch.

"It's like fishing -- you never know what you're going to come up with," said archaeologist Glen Keeton.

Sixth-grader Brandon Pittman sorted through the contents of his sifter. "I think this is a ceramic," he said, holding it up.

"That's a nail," archaeologist Dawn Cheshaek replied after leaning down to inspect the dirt-caked object.

"Sweet!" Pittman said gleefully. "I found a nail!"

Milford sixth graders raising their hands to ask questions about the archaelogical site near Milford Tuesday.

Much of what the professionals find is deduced from staining of the dirt, said Keeton, down on one knee in a trench showing a group of students the site of a brick kiln.

"We can paint a picture, we can tell a story about what happened here just by the soils," Keeton said. "Everything needs to be examined to make sure it doesn't get past us."

The Milford students, who wrote essays to vie for the privilege of participating, will study earth sciences next semester, so the opportunity to learn about layers of soil is especially helpful and inspiring, said teacher Jacquelyn Powers.

"It's really cool that it's right here. ... There's nothing that beats it, the hands-on learning," Powers said. "I know a lot of them will be going home digging up the backyards tonight."

The dig will wind down at the end of December, with construction on the overpass expected to start next spring. The artifacts and research will head to the state historic preservation office, said the office's deputy director, Gwen Davis.

Davis, an archaeologist, said the dig fits in well with the state's focus on 17th- and 18th-century Delaware history, and added it's good to have the opportunity to examine such a location.

"Obviously, there are farmstead sites all over the place. They can't all be preserved," she said.

But the work being done at this site is helpful -- both the professional discovery and the introduction of the young students to the craft, Liebeknecht said.

"These kids are focused," he said, standing back and watching them sift and sort. "They want to find stuff."

Milford Milddle school student Billy Stoeckel found what he thought was a small rock but Glen Keeton of Hunter Research held it up to the sun and identified it as olive glass.

Ian Burrow of Hunter Research giving Milford 6th graders a tour of the archaelogical site.

Ian Burrow of Hunter Research giving Milford 6th graders a tour of the archaelogical site southeast of Milford.

Glen Keeton of Trenton, NJ based Hunter Research sifts through soil along with other students.

Jim Westhoff of DelDOT complimenting Milford students for their essays and desire to learn more about the archaelogical site near Milford.

Bill Liebeknecht of Hunter Research showing Milford sixth graders a map made of an archaelogical site near Milford where artifacts from an 18th century farm house were found.

Milford sixth graders Brandon Pittman (left) and Wisman Castillo apply high speed boy-power to sift through soil excavated from a former farm site dating back more than 250 years ago.

Ian Burrow of Hunter Research talks with (right) and helps sift thought dirt (left) with Milford 6th graders at the archaelogical site near Milford.

Delaware
State News

Milford Middle students get chance to find history

School takes part in archeological dig of colonial-era farmstead

By Jamie-Leigh Bissett

Delaware State News MILFORD — About 50 Milford Middle School students discovered history last Tuesday when they got to be part of an ar-chaeological dig in their own backyard.

" What's been my favorite part? It's hard to choose," said sixth-grader Brandon Pit-tman, of Milford, about his fi eld trip to a site on Ceder Creek Road, south of Milford. "Sifting (the dirt) is fun, but I also learned a lot of neat facts."

He added, "I did discover something for myself today. It takes a lot more muscle to be an archaeologist than I had imagined."

Ian Hunter, an archaeologist with Hunt-er Research in Trenton, N.J., said he and his team were happy to have a little extra help from the Milford kids last week.

" This is good, free labor," he said, jok-ingly, while he watched the sixth- and sev-enth- graders sift through dirt, finding pieces of brick, glass and other artifacts along the way. " They're doing the work for us."

Sixth-grader Makayla Parson, of Milford, said, " The coolest part" about an archaeo-logical dig for her, "is fi nding old things that can change history."

Jacquelyn Powers, a science teacher at Milford Middle, said the best part of the field trip for her was seeing her students so engaged in a practice that combines sci-ence with history.

"A lot of the kids got on the bus today, and as we were driving here, many of them couldn't believe this was in their own back-yard," she said. " This is a great opportunity for them. They can discover on their own." Mr. Hunter agreed, saying you can teach and read about archaeology all you want, but nothing compares to actually experi-encing a dig.

The archaeological research is being conducted in conjunction with a federally funded Delaware Department of Transpor-tation project connecting a ramp system from Del. 30 to U.S. 1, in Milford. The proj-ect also includes upgrades to the existing intersection of Wilkins Road and Cedar Creek Road.

Archaeologists from both DelDOT and Hunter Research have been on the scene since early November and will conclude their studies on Friday.

Archaeologist Glen Keeton with Hunter Research helps Anaiya Washington and her classmates from Milford Middle School sift through some of the dirt at an archaeological dig in Milford. The stu-dents and professionals were search-ing for artifacts that could be linked to an 18th-century farmstead researchers believe once stood on the site just off of Cedar Creek Road in Milford.

DelDOT offi cials invited local students to view the dig prior to its completion, but be-cause of the site's size and transportation, only 50 kids could attend.

Ms. Powers said the children who were chosen to participate in the fi eld trip won an essay writing contest at school, which asked students what they could learn about science and history from going on

an ar-chaeological dig in 100 words or less.

" You can learn anything from an archae-ological dig," said sixth-grader Cameron Maule's essay. " The dig site is a discovery waiting to happen."

Her classmate, Adrianna Engelmann, was looking forward to the dirtier side of things. "I love to get muddy," she wrote.

Jim Westoff, spokesman for DelDOT, told students that they were in for a treat during last week's dig. He said the artifacts that have been uncovered at the site are "re-writing the history of colonial Delaware."

Mr. Westoff said first discovered in 2009-10 during the planning stages for the new ramps, archaeologists found artifacts on the ground surface that led them to believe a colonial-era farmstead once stood on the site. "It had not been marked on any map and barely known to history," DelDOT's historical reference sheet read.

He said researchers have since done small-scale excavations to locate structure foundations and other historical treasures, of which they have found many.

Artifacts such as pottery, glass from win-dows, bottles and tableware, have been found on the site, Mr. Westoff said, as have metal pieces such as iron nails and traces of the buildings themselves.

But perhaps the most unique find, Mr. Hunter said, was a bloomery, also known as an iron smelter.

A bloomery is a type of furnace once widely used for smelting, or producing, a metal from its ore. Archaeologists believe the metal — iron — was produced in a smelter south of Milford, and was probably used to make tools, nails, plows and other equipment.

" This is the first one to be found in Delaware," Mr. Hunter said. " We're really pumped about this."

Mr. Hunter explained that colonial peo-ple must have collected iron deposits from the creek that lay behind the old farmstead and brought them back to the smelter to extract the metal.

"Importing is expensive. They were always looking for ways to make things cheaper," he said. " They were also very good about exploiting natural resources."

Just behind the main farmstead and bloomery, archeologists also found what they believe

Ian Hunter, an archaeologist with Hunter Research in Trenton, N. J., explains to a group of students from Milford Middle School on Wednesday some of the discover-ies made by researchers during an archaeological dig south of Mil-ford.

Glen Keeton, an archaeologist with Hunter Research, explains that Wil-liam Stoekel, a sixth-grader at Milford Middle School, just discovered a piece of olive glass while sifting through the dirt at the site of an old 18th century farmstead south of Milford.

Eagerly raising their hand to answer a question, Milford Middle School sixth-graders Brandon Pittman, of Milford, left, and Wisman Castillo, of Milford, said they enjoyed their field trip to an archaeological dig south of Milford.

Kendra Kimmey, a sixth-grader at Mil-ford Middle School, shows she's not afraid to get her hands dirty during her school's field trip to an archaeo-logical dig off of Cedar Creek Road, south of Milford.

to be an outhouse that was once used as a brick clamp to fire and make bricks for construction. Mr. Hunter said they were able to determine this based on the amount of brick that has been found on the site, and the markings in the dirt.

" You don't have to have a structure," he explained to the students. "A change in soil can tell the story as well."

Also discovered out in the field behind the farmstead was a food storage pit that is believed to be about 2,000 years old. "Most sites in Delaware have at least one or two," Mr. Hunter said.

Mr. Westoff said archaeologists have been unable to pin-point the exact time the farmstead was built, who may have built the farmstead, and who may have lived there. However, he said, they do know the structure was part of a larger tract of land that was owned as far back as 1704.

Mr. Hunter said when it comes to an archaeological dig on the site of a future construction project, the first step for an archaeologist is to fi nd an artifact and then determine how significant they think it is.

Once they determine significance, they then confer with the agency, in this case DelDOT, and the state Historic Preservation office to see if state officials agree with their findings.

Once everyone is on the same page, Mr. Hunter said, construction work will either stop if the find is extremely significant, or construction will resume after archaeolo-gists collect as many artifacts as possible and preserve the history on paper.

Mr. Westoff said Milford's road construc-tion will go on as scheduled and is expect-ed to be completed by the spring of 2013.

DelDOT said a full technical report will be written, and once it is approved by the state, it will be available to view on the Archaeology/Historic Preservation page of DelDOT's website. www.deldot.gov/ar-chaeology/.

Staff writer Jamie-Leigh Bissett can be reached at 741-8250 orjlhughes@newszap.com.

School Children held DelDOT uncover more of Delaware's history

DelDOT Community Relations Officer Jim Westhoff explains to sixth graders from Milford Middle School about what they'll be doing at an archaeological dig on Cedar Creek Road.

UPDATED BY ANDREW KOCH: Sixth and seventh-grade students from Milford Middle School got to help professional archaeologists uncover artifacts that belong to previously unknown features of colonial Delaware.

The archaeologists are working with DelDOT on the dig, which is required before starting a road construction project by federal law, on the 18th-century farmstead on Cedar Creek Road, near the intersection of Routes 1 and 30. That intersection will be undergoing a renovation project starting next spring after a series of serious and fatal accidents.

The students got to take part in the dig after being named winners in an archaeology essay contest that was put on by Milford Middle School and DelDOT. Sixth-grade science and social studies teacher Jacquelyn Powers says the students were surprised to learn that the dig site was close to where they lived.

DelDOT archaeologist David Clark says the artifacts that've been found indicate that the owners of the farmstead made their own bricks and iron for their farm tools on the property. The iron was made in what's called a bloomery, which was previously thought to be very rare in 18th-century Delaware. This is why DelDOT officials say these findings may lead to the "rewriting" of Delaware history.

ORIGINAL STORY

An estimated 60 6th and 7th-grade students from Milford Middle School will visit a DelDOT archaeological dig today.

The students will learn why a part of Delaware's colonial history is being re-written because of the artifacts uncovered from the site, which is located about a quarter-mile south of the Wilkins Road, Route 30 intersection.

DelDOT says the students will spend most of their time today assisting archaeologists as they sift through the soil, in search of artifacts.

WGMD's Andrew Koch will visit the dig site and speak with the students and archaeologists. He'll have more information for us this afternoon.

Appendix H

DOCUMENTATION OF PROCEDURES AND ANALYSES RELATING TO POSSIBLE HUMAN BURIAL

APPENDIX I

DOCUMENTATION OF PROCEDURES AND ANALYSES RELATING TO POSSIBLE HUMAN BURIAL AT THE CEDAR CREEK ROAD SITE [7S-C-100]

Timeline

December 16, 2011:	Hunter Research Team identifies possible graft feature and notifies David Clarke of Delaware Department of Transportation (DelDOT) by phone and email on the same day (Document 1).
December 19, 2011:	Hunter Research prepares document with photographs of shaft feature and bone fragments, for use by Delaware Department of Transportation and Delaware Historic preservation Office (Document 2).
December 20, 2011:	Documentation Form of discovery of human remains completed by Delaware Historic Preservation Office (Document 3).
December 21, 2011:	Delaware Department of Transportation email to Hunter Research setting out requirements and procedures for excavation of the remainder of the possible shaft, which extends onto adjacent private property (Document 4).
December 22, 2011:	Delaware Historic Preservation Office (DHPO) notifies Medical Examiner's Office of discovery, and expresses opinion that the possible grave is under DHPO jurisdiction (Document 5).
January 10, 2012:	DelDOT notifies DHPO and Hunter Research of confirmation that possible grave is not within Medical Examiner's jurisdiction (Document 6).
Jan. 2012 – Jan. 2013:	Bone fragments stored at Hunter Research field laboratory in Townsend, DE, pending approval of Task Order for final analysis and report of project.
June 3, 2013:	Parent Agreement 1535 Task 10 Notice to Proceed for analysis and report of site 7S-C-100
June 20, 2013:	Agreement between Dr. Karen Rosenberg (University of Delaware), and Hunter Research for her examination of bone fragments (Document 7).
August 23, 2013:	Dr Rosenberg reports that bones cannot be identified as to species (Document 8).
February 12, 2013:	Soil Chemistry report by Andrew Wilkins, University of Tennessee, notes elevated levels of phosphorus and potassium in the feature fills. These could be markers for animal and plant material, but are not conclusive evidence for human remains (Document 9).

From: ian Burrow [iburrow@hunterresearch.com]
Sent: Friday, December 16, 2011 10:23 AM
To: 'Clarke David S. (DelDOT)'
Cc: 'William Leibeknecht (William Leibeknecht)'
Subject: Possible Grave Shaft at Cedar Creek Site

Importance: High

Dave: just following up on my phone message that the field team today exposed and excavated a portion of a sub-rectangular vertical sided and flat –bottomed feature emerging from the edge of the excavated area at the LOC. Two iron nails were recovered but no bone fragments or other signs of a burial. Soil samples have been retained.

Ian Burrow, Ph.D. , Registered Professional Archaeologist
Vice President,
Hunter Research Inc.
Historical Resource Consultants
120 West State Street
Trenton, Nj 08608-1185
www.hunterresearch.com

Celebrating 25 Years in 2011

609-695-0122 xtn 102
Fax 609-695-0147
Mobile: 609-462-2363
iburrow@hunterresearch.com

President, Register of Professional Archaeologists 2009-2011

December 19, 2011

Archaeological Site 7S-C-100
Possible burial shaft feature (excavated)

December 19, 2011

Archaeological Site 7S-C-100
Bone fragments recovered from feature fill

CRS No. S10315
Site No. 7S-C-100
SPO Map No. 14-15-15

DISCOVERY OF HUMAN REMAINS

1. Date of Discovery: December 16, 2011 **Date of Investigation:** December 20, 2011

2. Location: East side of Cedar Creek Road (SR 30), south of intersection with Wilkins Road (Rd. 206), north of an unnamed tributary of Cedar Creek, within right of way of "Ramp B" of the Delaware Department of Transportation's SR 1/SR 30 Grade Separated Intersection project, south of Milford, Sussex County, DE

3. Contact Person/Address/Phone/Email:
Gwenyth A. Davis, Archaeologist and Deputy State Historic Preservation Officer
State Historic Preservation Office
Delaware Division of Historical & Cultural Affairs
21 The Green, Dover, DE 19901
(302) 736- 7410 gwen.davis@state.de.us

4. Property Owner(s)/Address/Phone/Email:
State of Delaware - Delaware Department of Transportation (DelDOT)
800 Bay Road, P.O. Box 778, Dover, DE 19903
Contact person: David Clarke, Archaeologist, (302) 760-2271 David.Clarke@state.de.us

Note: Part of the burial may extend onto adjacent property owned by W. Nelson and Dorothy I. Hall, tax parcel 3-30-11.00-6.00. DelDOT has obtained permission from the property owner to complete the excavation of the feature. DelDOT plans to undertake this work the week of December 26, 2011.

5. Details of Discovery (describe setting, field conditions, how remains were encountered):
The Federal Highway Administration and DelDOT are, in consultation with the Division of Historical and Cultural Affairs (DHCA), subjecting this 18th c. archaeological site to data recovery excavations. The investigation is being conducted in advance of DelDOT's road construction project, in compliance with Section 106 of the National Historic Preservation Act. This part of the project area is currently an agricultural field. Topsoil has been removed from select sections of Site 7S-C-100 to reveal cultural features, which are then being tested to determine age, function, etc.

On Friday December 16, 2011, DelDOT's archaeological consultant, Hunter Research Inc. of Trenton, New Jersey, encountered a rectangular feature that, during the course of the excavation, was assessed as likely to be an unmarked human burial shaft. The crew fully excavated the feature within the project limits, and the soil was screened. Five (5) small bone fragments were recovered from the feature fill. The recovery of bone fragments was reported to the DHCA on December 19, 2011. On December 20, 2011, I met in the field with DelDOT's archaeologist, David Clarke, and the consultant. It was the professional opinion of those present that the feature and remains most likely constitute an unmarked human burial.

6. Description of Remains (include notations on skeletal remains, state of preservation, associated artifacts, features, buildings, ground disturbances):

As noted above, only 5 small mammalian bone fragments (photos attached) have been recovered to date. The assertion that the remains are likely human is based on the context in which the remains were found.

7. JURISDICTION:

Date of initial telephone contact with Medical Examiner: December 21, 2011 (left message)

As per Section 5404 of Chapter 54 of the Delaware Code, the Medical Examiner's Office has reviewed the above description surrounding the discovery of human remains and has determined:
These remains _____ fall within the jurisdiction of the State Medical Examiner's Office.
_____ do not fall within the jurisdiction of the State Medical Examiner's Office.

CERTIFIED: _____
DATE: _____

From: Clarke David S. (DelDOT) [David.Clarke@state.de.us]
Sent: Wednesday, December 21, 2011 9:08 AM
To: 'ian Burrow'; wbl@hunterresearch.com
Cc: Clarke David S. (DelDOT)
Subject: sr 1 and 30 burial

Ian, Bill,

Ok, I just finalized everything with Gwen, and here is our path forward for the Burial feature out at SR 1 and 30 Cedar Creek.

1. First thing is for you to contact the property owner's (Mr. Hall) lawyer, David Rutt at (302) 856-9568, to go over things. Let him know both DelDOT and DHCA are in support of this project, per the state law, and he can contact me with any questions. But the excavation will be very small in size and carefully done, and once all remains are out of the ground there will be NO legal issues with the future use of the parcel. It's in his best interest to allow us to take the remains out and that the state will be paying for it, etc…

2. Once the property owner Lawyer's on board and the chief medical examiner has given the ok (this all should happen this week) then next week you can do the exaction.

3. To get around the crop damage issue you will have to remove the sod cap in pieces and replace it upon completion.

4. Make sure to get control soil samples, and screen all dirt with at least 1/8 in mesh, and backfill upon completion and put the sod cap back. If other features are found they will be mapped and photographed, but NOT excavated.

5. Also during and after exaction, I'll need detailed photos, and really good mapping, aka total station of the feature and its relationship to features and the LOC line, knowing that a portion of the feature is on private property.

6. Our plan forward is after fieldwork is done, DE SHPO will move forward with the public comment process, they'll get from you most likely names of property owners from the time period of occupation, (this will most likely happen late winter).

7. As part of the next phase of work on this site (lab, reporting, curation) you will have to have the remains analyzed by an osteologist, etc…

8. If nobody comes forward for next of kin, then we'll do a reburial on the square plot of land we are buying adjacent to our project to protect the early site, you will have to budget for excavation of 1 unit for this, the cost of the reburial process (head stone, minister, etc…) Gwen and I have done these in the past and can help speck this out

9. What else am I forgetting?

Thanks,
David S. Clarke
DelDOT Archaeologist
Department of Transportation
P.O. Box 778-800 Bay Road
Dover, DE 19903
Phone: (302) 760-2271

From: Clarke David S. (DelDOT) [David.Clarke@state.de.us]
Sent: Wednesday, December 28, 2011 8:53 AM
To: 'ian Burrow'
Subject: FW: Notice to Medical Examiner: unmarked burial found during archaeological excavation
Attachments: SR1-SR30_UMHR_notification_to_ME.doc; DelDOT_Project+General_Site_Location.pdf; 7S-C-100_fea+bonefrag_photos.pdf

See below for your records

David S. Clarke
DelDOT Archaeologist
Department of Transportation
P.O. Box 778-800 Bay Road
Dover, DE 19903
Phone: (302) 760-2271
Fax: (302) 739-8282
david.clarke@state.de.us
www.archaeology.deldot.gov

From: Davis Gwen (DOS)
Sent: Thursday, December 22, 2011 2:44 PM
To: Brown Hal (DHSS)
Cc: Slavin Timothy A (DOS); Clarke David S. (DelDOT); Callery Richard (DHSS)
Subject: Notice to Medical Examiner: unmarked burial found during archaeological excavation

Mr. Brown,
As indicated in a voice-mail message I left for you yesterday, an archaeological consultant working for DelDOT has uncovered a feature believed to be an unmarked human burial. Only a few small, unarticulated bone fragments were recovered from the feature fill. In accordance with Title 7 Chapter 54 § 5403(d), we are notifying the Medical Examiner's office of this discovery. The project is located just south of Milford. Please see attached for more information.
The Delaware Division of Historical and Cultural Affairs believes this discovery to be within its jurisdiction. If you agree with our determination, please print and sign the attached form and return it to us. The remainder of the feature is scheduled to be excavated next week. If you have concerns or questions about the discovery, please let us know ASAP. Thank you.

-- Gwen Davis

-- Gwenyth A. Davis, Deputy State Historic Preservation Officer
Delaware Division of Historical & Cultural Affairs
21 The Green, Dover, DE 19901
(302) 736- 7410 direct line
(302) 736- 7400 main desk
(302) 739-5660 fax
gwen.davis@state.de.us

From: Clarke David S. (DelDOT) [David.Clarke@state.de.us]
Sent: Tuesday, January 10, 2012 8:03 AM
To: Davis Gwen (DOS); 'archsue@aol.com'; 'IBurrow@hunterresearch.com'; Cunningham Kevin (DelDOT)
Subject: RE: Cedar Creek

Yep, sounds like a plan, but be advised Gwen that the timing of the next phase of work for this project, lab, reporting, curation, public outreach, is a bit out and in the meantime the bones will stay safe and sound at the Pole Barn.

David S. Clarke
DelDOT Archaeologist
Department of Transportation
P.O. Box 778-800 Bay Road
Dover, DE 19903
Phone: (302) 760-2271
Fax: (302) 739-8282
david.clarke@state.de.us
www.archaeology.deldot.gov

From: Davis Gwen (DOS)
Sent: Tuesday, January 10, 2012 7:58 AM
To: 'archsue@aol.com'; 'IBurrow@hunterresearch.com'; Clarke David S. (DelDOT); Cunningham Kevin (DelDOT)
Subject: RE: Cedar Creek

All,
I've received the ME's official statement, in which they affirm that the case is not within their jurisdiction. So now we'll need to discuss what steps should be taken to further analyze the material, as part of the report/analysis scope of work. Thanks.
-- Gwen

From: archsue@aol.com [mailto:archsue@aol.com]
Sent: Monday, January 09, 2012 12:16 PM
To: Davis Gwen (DOS); IBurrow@hunterresearch.com; Clarke David S. (DelDOT); Cunningham Kevin (DelDOT)
Subject: Re: Cedar Creek

I have them here at the pole barn.
-----Original Message-----
From: Davis Gwen (DOS) <Gwen.Davis@State.De.US>
To: 'archsue@aol.com' <archsue@aol.com>; 'IBurrow@hunterresearch.com' <IBurrow@hunterresearch.com>; Clarke David S. (DelDOT) <David.Clarke@state.de.us>; Cunningham Kevin (DelDOT) <Kevin.Cunningham@state.de.us>
Sent: Mon, Jan 9, 2012 7:10 am
Subject: RE: Cedar Creek
Sue,
Thanks for coordinating this. Did you take the remains back with you, or are they still with the ME's office?
-- Gwen

DOCUMENT 6

From: archsue@aol.com [mailto:archsue@aol.com]
Sent: Monday, January 09, 2012 12:04 PM
To: Davis Gwen (DOS); IBurrow@hunterresearch.com; Clarke David S. (DelDOT); Cunningham Kevin (DelDOT)
Subject: Cedar Creek

Hello all,

I took the shaft feature bone fragments to the Stockley Center for examination this morning. Dr. McDonough measured, took pictures and examined them. He could not tell if they were human. I imagine scientific testing will be needed for proper identification.

Let me know if you have any questions.

sue

HUNTER RESEARCH, INC
Historical Resource Consultants

Richard W. Hunter PRESIDENT
Ian C. Burrow VICE PRESIDENT

June 17, 2013

Dr. Karen Rosenberg
Department of Anthropology
University of Delaware
Newark, DE 19716

Re: Examination, Identification, and Reporting of bone fragments from the Cedar Creek Archaeological Site [7S-C-100], SR 1 and 30 Highway Improvement Project, Cedar Creek Hundred, Sussex County, Delaware.

Dear Dr. Rosenburg:

This is a letter of appointment for your services for examining and identifying fragments of bone from a possible 18th century grave shaft at the Cedar Creek Site in Sussex County Delaware, to establish if they are human. The fragments were found during the data recovery excavation of an 18th century homestead site that is to be impacted by DelDOT road construction.

I have previously sent you a copy of the fieldwork summary report. The grave shaft is the yellow feature on Figure 2.2, and is briefly described on pages 2-6 and 2-8. Additional documentation can be provided if required.

The fragments will be delivered to you by Hunter Research, Inc. staff. After examination of the fragments you will provide Hunter Research with a brief written report which will contain your professional opinion on the species and specific portion of the skeleton the fragments are from, and any other pertinent conclusions and observations.

This report and the fragments will be delivered to

Dr. Ian Burrow
Vice President
Hunter Research, Inc.
120 West State Street
Trenton, NJ 08608

Within one month of receipt of the fragments.

The fee for these services is two hundred dollars, which will be paid within one month of receipt of the report.

If this agreement is acceptable please sign and date below, and return a copy to me.

Yours sincerely

Vice President

Accepted: Date:

____ _____June 20,. 2013_____

From: Karen Rosenberg [krr@udel.edu]
Sent: Friday, August 23, 2013 10:39 AM
To: ian Burrow; archsue@aol.com
Cc: wbl@hunterresearch.com
Subject: Re: Possible Human Bone Fragments from a site in Sussex County Delaware

Dear Ian, I took another look at the bone you sent me. Some (and perhaps all) of the material you sent me is certainly bone and while it COULD be human, there is nothing diagnostic that makes it definitely human. I"m sorry that I can't be more definitive about this -- there's not much to work with! Let me know what else I should do. Best, Karen

Karen R. Rosenberg wrote:
> Hi Ian -- I did get a quick look at it before I left town (I am in
> California). It is certainly bone, but I am not optimistic about
> being able to say that it either IS or is NOT human. I will get a
> closer look at it late next week -- I return on July 24th. Will that
> be okay? Best Karen
>
> ian Burrow wrote:
>> Hi Karen:
>>
>> Have you had a chance to look at this material yet?
>>
>>
>> Ian Burrow, Ph.D. , Registered Professional Archaeologist Vice
>> President, Hunter Research Inc.
>> Historical Resource Consultants
>> 120 West State Street
>> Trenton, Nj 08608-1185
>> www.hunterresearch.com
>> 609-695-0122 xtn 102
>> Fax 609-695-0147
>> Mobile: 609-462-2363
>> iburrow@hunterresearch.com
>> (Past-President, Register of Professional Archaeologists;
>> Past-President, American Cultural Resources Association)
>>
>> **Hunter Research: Over 25 Years of excellence in cultural resource
>> management**
>>
>>
>>
>>
>>
>> -----Original Message-----
>> From: Karen Rosenberg [mailto:krr@udel.edu]
>> Sent: Monday, June 17, 2013 2:38 PM
>> To: archsue@aol.com; iburrow@hunterresearch.com
>> Cc: wbl@hunterresearch.com
>> Subject: Re: Possible Human Bone Fragments from a site in Sussex
>> County Delaware
>>

>> As long as I know when Tim is coming, anytime on Friday is fine.
>> Just let
>> me know. Best, Karen
>>
>> archsue@aol.com wrote:
>>> Good Morning Karen.....Friday June 28th looks good for
>>> delivery. Tim Hitchens will be bringing the fragments to you. What
>>> time would be good for you?
>>> sue
>>> Susan Ferenbach
>>> archsue@aol.com
>>> Senior Archaeologist/Lab Director
>>> Hunter Research, Inc.
>>> Delaware Office
>>> cell: 302-561-5090
>>> -----Original Message-----
>>> From: Karen Rosenberg <krr@udel.edu>
>>> To: ian Burrow <iburrow@hunterresearch.com>
>>> Cc: 'Bill Liebeknecht' <wbl@hunterresearch.com>; archsue
>>> <archsue@aol.com>
>>> Sent: Mon, Jun 17, 2013 11:05 am
>>> Subject: Re: Possible Human Bone Fragments from a site in Sussex
>>> County Delaware
>>>
>>> Thursday or Friday this week are good or I should be around almost
>>> all the time next week.
>>>
>>> ian Burrow wrote:
>>>> Thanks Karen: I doubt it will be this week, but Sue will be in
>>>> touch to arrange a time that works for everyone. Thanks.
>>>>
>>>> Ian
>>>>
>>>> Ian Burrow, Ph.D. , Registered Professional Archaeologist Vice
>>>> President, Hunter Research Inc.
>>>> Historical Resource Consultants
>>>> 120 West State Street
>>>> Trenton, Nj 08608-1185
>>>> www.hunterresearch.com <http://www.hunterresearch.com>
>>>> 609-695-0122 xtn 102
>>>> Fax 609-695-0147
>>>> Mobile: 609-462-2363
>>>> iburrow@hunterresearch.com <mailto:iburrow@hunterresearch.com>
>>>> (Past-President, Register of Professional Archaeologists;
>>>> Past-President, American Cultural Resources Association)
>>>>
>>>> **Hunter Research: Over 25 Years of excellence in cultural resource
>>>> management**
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>>>>
>>>>
>>>>
>>>> -----Original Message-----

>>>> From: Karen Rosenberg [mailto:krr@udel.edu <mailto:krr@udel.edu?>]
>>>> Sent: Saturday, June 15, 2013 3:41 PM
>>>> To: ian Burrow
>>>> Cc: Bill Liebeknecht;archsue@aol.com <mailto:archsue@aol.com>
>>>> Subject: RE: Possible Human Bone Fragments from a site in Sussex
>>>> County Delaware
>>>>
>>>> Dear Ian, I was out of town but I am now back and would be happy to
>>>> take a look at the bones anytime in the next few weeks. Tuesday and
>>>> Wednesday of this week are very busy for me with all day meetings,
>>>> but if I know when you are coming I can manage to be in the lab.
>>>>
>>>> Best, Karen
>>>>
>>>> On Fri, 7 Jun 2013, ian Burrow wrote:
>>>>
>>>>> Dear Karen:
>>>>>
>>>>> We now have formal Notice to Proceed for the Cedar Creek site in
>>>>> Sussex County Delaware, which means that we can now have you
>>>>> examine the possible human bone fragments for us. Our senior
>>>>> archaeologist in Delaware, Sue Ferenbach, will be bringing some
>>>>> soil samples up to the University a some point in the next few
>>>>> weeks and she could combine that with delivering this sample to you.
>>>>>
>>>>> Can you let me know if you are going to be away at any point in
>>>>> the near future so that we can plan accordingly? Thanks
>>>>>
>>>>> Ian
>>>>>
>>>>>
>>>>> Ian Burrow, Ph.D. , Registered Professional Archaeologist Vice
>>>>> President, Hunter Research Inc.
>>>>> Historical Resource Consultants
>>>>> 120 West State Street
>>>>> Trenton, Nj 08608-1185
>>>>> www.hunterresearch.com <http://www.hunterresearch.com>
>>>>> 609-695-0122 xtn 102
>>>>> Fax 609-695-0147
>>>>> Mobile: 609-462-2363
>>>>> iburrow@hunterresearch.com <mailto:iburrow@hunterresearch.com>
>>>>> (Past-President, Register of Professional Archaeologists;
>>>>> Past-President, American Cultural Resources Association)
>>>>>
>>>>> **Hunter Research: Over 25 Years of excellence in cultural
>>>>> resource
>>>>> management**
>>>>>
>>>>>
>>>>>
>>>>>
>>>>>
>>>>> -----Original Message-----
>>>>> From: Karen Rosenberg [mailto:krr@UDel.Edu <mailto:krr@UDel.Edu?>]

>>>>> Sent: Wednesday, March 27, 2013 2:52 PM
>>>>> To: ian Burrow
>>>>> Cc: 'Bill Liebeknecht'
>>>>> Subject: RE: Possible Human Bone Fragments from a site in Sussex
>>>>> County Delaware
>>>>>
>>>>> That will be fine Ian. Can you bring it up to my lab?
>>>>>
>>>>>
>>>>> On Wed, 27 Mar 2013, ian Burrow wrote:
>>>>>
>>>>>> That's fine. Thank you. I don't think it will take you very
>>>>>> long to look at them, but we can certainly pay for your time.
>>>>>> Would
>>>>>> $200 work
>>>> for you?
>>>>>> I think there are actually only three pieces.
>>>>>>
>>>>>> Ian
>>>>>>
>>>>>>
>>>>>> Ian Burrow, Ph.D. , Registered Professional Archaeologist Vice
>>>>>> President, Hunter Research Inc.
>>>>>> Historical Resource Consultants
>>>>>> 120 West State Street
>>>>>> Trenton, Nj 08608-1185
>>>>>> www.hunterresearch.com <http://www.hunterresearch.com>
>>>>>> 609-695-0122 xtn 102
>>>>>> Fax 609-695-0147
>>>>>> Mobile: 609-462-2363
>>>>>> iburrow@hunterresearch.com <mailto:iburrow@hunterresearch.com>
>>>>>> (Past-President, Register of Professional Archaeologists;
>>>>>> Past-President, American Cultural Resources Association)
>>>>>>
>>>>>> **Hunter Research: Over 25 Years of excellence in cultural
>>>>>> resource
>>>>>> management**
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>>>>>>
>>>>>> -----Original Message-----
>>>>>> From: Karen Rosenberg [mailto:krr@UDel.Edu
>>>>>> <mailto:krr@UDel.Edu?>]
>>>>>> Sent: Wednesday, March 27, 2013 2:31 PM
>>>>>> To: ian Burrow
>>>>>> Cc: 'Bill Liebeknecht'
>>>>>> Subject: Re: Possible Human Bone Fragments from a site in Sussex
>>>>>> County Delaware
>>>>>>
>>>>>> I would be very happy to look at the bone. I am in California
>>>>>> now and won't be back in Delaware for more than a day until the
>>>>>> 15th of

>>>> April.
>>>>>> Could I put this off until then? Best, Karen
>>>>>>
>>>>>>
>>>>>> On Tue, 26 Mar 2013, ian Burrow wrote:
>>>>>>
>>>>>>> Dear Dr. Rosenberg:
>>>>>>>
>>>>>>>
>>>>>>>
>>>>>>> I'm writing to ask if we can enlist your assistance. We need to
>>>>> establish
>>>>>>> if some small fragments of bone from a possible 18th century
>>>>>>> grave shaft
>>>>>> at
>>>>>>> the Cedar Creek Site in Sussex County Delaware are human. The
>>>>>>> fragments were found during the data recovery excavation of an
>>>>>>> 18th century
>>>>>> homestead
>>>>>>> site that is to be impacted by DelDOT road construction. I have
>>>>>>> attached
>>>>>> a
>>>>>>> copy of the fieldwork summary report.
>>>>>>>
>>>>>>> The grave shaft is the yellow feature on Figure 2.2, and is
>>>>>>> briefly described on pages 2-6 and 2-8.
>>>>>>>
>>>>>>>
>>>>>>>
>>>>>>> We are in the process of completing revisions to a proposal for
>>>>>>> the final analysis and reporting of the site for DelDOT. The
>>>>>>> grave-shaft-like
>>>>>> feature
>>>>>>> was the only one found in the excavated portion of the site, and
>>>>>>> it was aligned almost north-south. It contained only two
>>>>>>> wrought iron nails and there was no evidence for a coffin. So
>>>>>>> it is possible that the feature
>>>>> is
>>>>>>> not a grave, or is perhaps a grave from which the burial has
>>>>>>> been
>>>>> removed.
>>>>>>> We are hoping that phosphate analysis may help to establish if
>>>>>>> there was
>>>>> a
>>>>>>> burial in the shaft, but obviously establishing the species of
>>>>>>> the bone would be very helpful.
>>>>>>>
>>>>>>>
>>>>>>>
>>>>>>> Would you be able to assist us by examining the bone and
>>>>>>> providing a
>>>>> short
>>>>>>> report? As I say, we are talking about a few (not more than 10)
>>>>>>> small pieces, probably from long bones (?radius/ulna if human).

>>>>>>> What would be
>>>>>> your
>>>>>>> cost and timeframe for doing this?
>>>>>>>
>>>>>>>
>>>>>>>
>>>>>>> I look forward to hearing from you.
>>>>>>>
>>>>>>>
>>>>>>>
>>>>>>>
>>>>>>>
>>>>>>> Ian Burrow, Ph.D. , Registered Professional Archaeologist
>>>>>>>
>>>>>>> Vice President,
>>>>>>>
>>>>>>> Hunter Research Inc.
>>>>>>>
>>>>>>> Historical Resource Consultants
>>>>>>>
>>>>>>> 120 West State Street
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>>>>>>> Past-President, American Cultural Resources Association)
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>

From: Clarke, David S. (DelDOT) [David.Clarke@state.de.us]
Sent: Wednesday, August 28, 2013 12:54 PM
To: ian Burrow
Cc: 'Bill'; archsue@aol.com
Subject: RE: Possible Human Bone Fragments from a site in Sussex County Delaware

Hunter,

Ok, after discussions with SHPO today we agree that this is not a burial case, even though the bone is indeterminate. In the report please state all the facts, that the feature "could" be a burial, with our without anybody home, as well is it could be another cultural phenomena, please state and show all the coordination that has been done to determine if the bone is human, etc... so future readers of your report understand that we did NOT make this a formal burial case under state law, but that the feature "could" have been a burial or something else.

I hope this makes sense!

David

-----Original Message-----
From: ian Burrow [mailto:iburrow@hunterresearch.com]
Sent: Friday, August 23, 2013 11:07 AM
To: Clarke, David S. (DelDOT)
Cc: 'Bill'; archsue@aol.com
Subject: FW: Possible Human Bone Fragments from a site in Sussex County Delaware
Importance: High

Dear David:

Below is Karen Rosenberg's assessment (dated today) of the bone from the Cedar Creek Site. As you see, she is not able to come to a firm conclusion. My feeling is that, unless it can be definitely shown to be human, it is legitimate to assume it is not, since human bone is generally much rarer than other faunal material. This material was not in a position that suggests it was in situ within the shaft feature. The fact that we had empty shafts at Elkins suggests this is a similar situation at Cedar Creek, if indeed our shaft was intended for a human burial.

I guess this is your call, but that's my advice.

Congratulations on the ACRA Award.

Ian

Ian Burrow, Ph.D. , Registered Professional Archaeologist Vice President,
Hunter Research Inc.
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Hunter Research: Over 25 Years of excellence in cultural resource management

Dear Ian, I took another look at the bone you sent me. Some (and perhaps all) of the material you sent me is certainly bone and while it COULD be human, there is nothing diagnostic that makes it definitely human. I"m sorry that I can't be more definitive about this -- there's
not much to work with! Let me know what else I should do. Best, Karen

From: Bill Liebeknecht [wbl@hunterresearch.com]
Sent: Monday, February 24, 2014 9:14 AM
To: IBurrow@hunterresearch.com
Subject: RE: Possible Grave

Possible Grave: Contexts 156, 270A, 270B

Three soil samples taken for chemical analysis came from contexts within a linear feature west of Structure 2, first thought to be part of a fence, but now interpreted as a possible human burial. The feature contained only a few small bone fragments, potentially but not definitively human, and two nails (Liebeknecht and Burrow 2012: 2-8). The soils from the possible grave do exhibit significantly elevated levels of phosphorus and potassium, as well as more moderately elevated every other element and soil characteristic when all three contexts averaged (see Figure 7). Phosphorus is a principle constituent of animal tissue, notably coupled with calcium in bone. The potassium could potentially be from the degraded wood of the coffin.

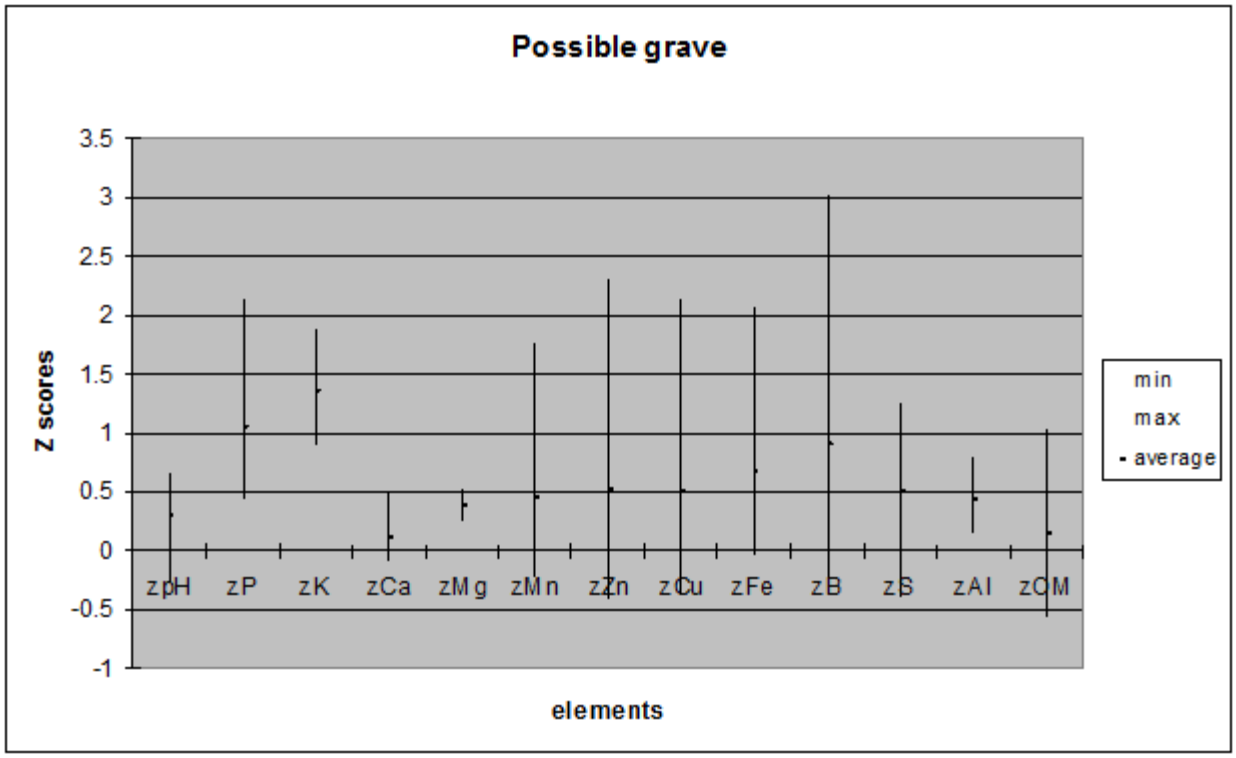

Figure 7: Min-max-average chart of soil elements and characteristics for possible grave feature.

The variation of values is considerable for most other elements, ranging from below 0 to over 2 for several elements such as zinc, copper, iron, and boron. When the individual contexts from the grave feature are compared, context 156 clearly stands out as distinct from the other two contexts (see Figure 8). Context 156 has significantly higher Z scores for phosphorus, calcium, and organic matter; all of which could be attributed to the presence of degraded bone and tissue, and fit well with the interpretation of buried animal or human remains. The other high

elements including manganese, zinc, copper, iron, boron and sulphur are all trace elements found in the human body, and have been shown to be at lower concentrations in the background levels of the control samples. Thus, context 156 appears to be most directly influenced by the decomposition of some kind of human or animal tissue. Interestingly, contexts 270 A and B exhibit higher concentrations of potassium; and may be more directly influenced by the decomposition of wood, possibly from a coffin. While these elemental signatures alone cannot distinguish between decomposed species of animals versus humans; it does appear that the soil elements of the possible grave feature do support the presence of decomposed organic tissues, particularly in context 156. Taken together with possibility of a head-marker feature (Liebeknecht and Burrow 2012: 2-8), and the potassium signature which could represent a decomposed coffin; the interpretation of the feature as a grave is viable. However, elemental concentrations alone cannot identify human remains, and therefore verification of the feature as a human burial, if possible, will necessitate detailed analysis of the individual bone fragments.

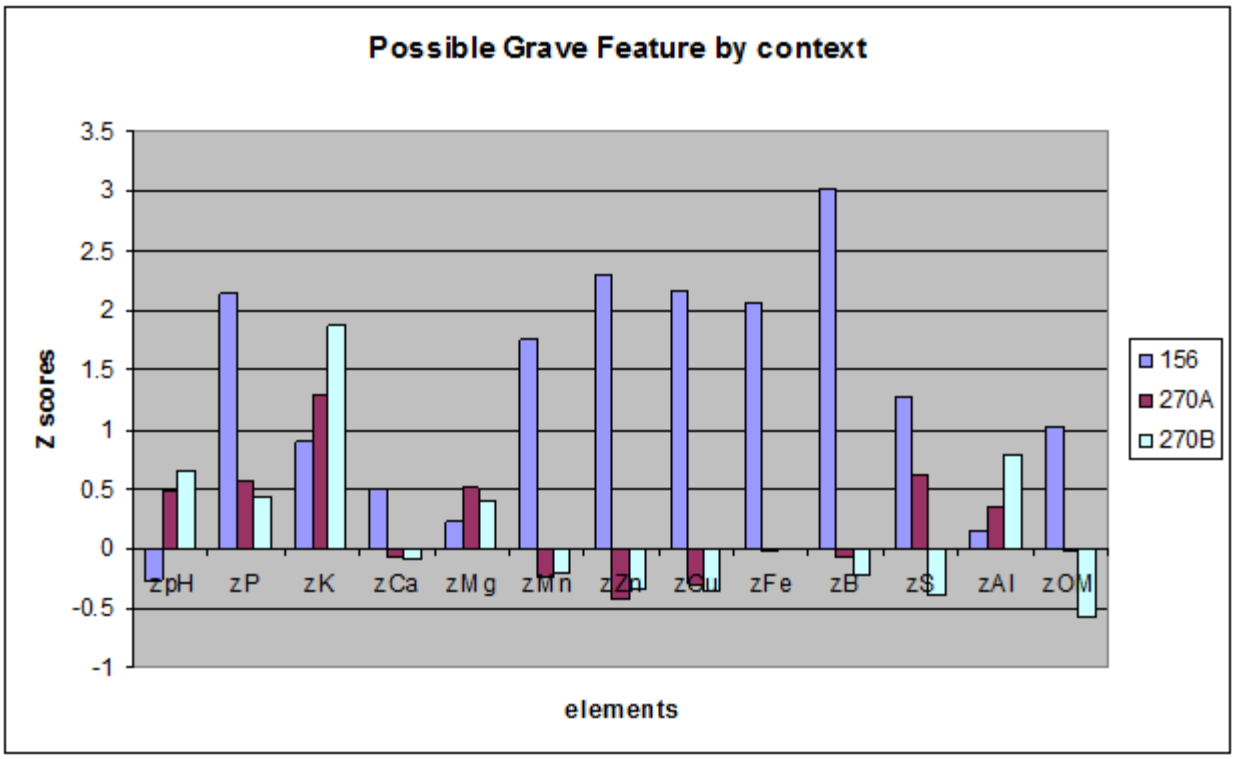

Figure 8: Bar chart comparing soil elements and characteristics by context of the grave feature.

Appendix I

RESUMES

WILLIAM B. LIEBEKNECHT
Principal Investigator, M.A., RPA

EDUCATION

M.A., Public History, Rutgers University, Camden, New Jersey, 1993
B.A., Anthropology, Beloit College, Beloit, Wisconsin, 1984

EXPERIENCE

1993-present — Principal Investigator
Hunter Research, Inc., Trenton, NJ

Technical and managerial responsibilities for survey, evaluation and mitigation of selected archaeological projects. Participation in:

- Overall site direction and day-to-day management
- Development and implementation of research, excavation and analysis strategies for prehistoric and historic archaeological sites
- Report and proposal preparation
- Hiring and supervision of personnel

2005 — Adjunct Instructor
Burlington County College, New Jersey
Teaching the Archaeology of New Jersey

1991-1993 — Senior Archaeologist
Hunter Research, Inc., Trenton, NJ

Technical and managerial responsibilities for selected field and laboratory components of archaeological projects. Participation in:

- Survey, excavation, analysis, and reports
- Project supervision and on-site management
- Management of laboratory operations and graphics production

1988-1991 — Laboratory and Drafting Supervisor
Hunter Research, Inc., Trenton, NJ

Supervision of laboratory personnel and management of all laboratory operations. Participation in all aspects of report graphics production.

1988 (June-Aug.) — Field Supervisor
University of Delaware Center for Archaeological Research, Newark, DE

Technical and supervisory responsibilities for field crew personnel.

1985-1988 — Laboratory and Field Supervisor
Research & Archaeological Management, Inc. (RAM), Highland Park, NJ

1984-1985 — Research and Field Assistant, Historic Sites Research, Princeton, NJ

SPECIAL SKILLS AND INTERESTS

- New Jersey ceramic and early glass manufacturing
- American Stoneware and Yellow ware
- Delaware Valley prehistory
- British ceramics

PUBLICATIONS

"The Meadowood Culture in Delaware" *Bulletin of the Archaeological Society of Delaware*, forthcoming.

"Archeaological Investigations at Wistarburgh" in *Archaeology in the Delaware Valley: Past, Present, and Promising* edited by Richard Veit and David Orr, 2014.

"Flow Blue Kiln Wasters from the International Pottery Company" *Trenton Potteries, Newsletter of the Potteries of Trenton Society*, June 2009, 1:2.

"Eighteenth Century Stoneware Potters in America" an appendix in *Salt-Glazed Stoneware In Early America* by Janine E. Skerry and Suzanne Findlen Hood, published by Colonial Williamsburg Foundation 2009.

"Archaeological Investigations at the Hilltown Glasshouse Site, Bucks County, Pennsylvania" Co-authored with David Long and Damon Tvaryanas *Glass Club Bulletin of the National American Glass Club* No. 213 Spring 2009:12-18.

"Thousands of Artifacts Recovered at Wistarburgh Glassworks Site" Co-authored with Damon Tvaryanas *Journal of Glass Studies* 2008.

"Survey at Pennsylvania Glass Factory Site Yields Thousands of Fragments" Co-authored with David Long and Damon Tvaryanas *Journal of Glass Studies* 2008.

"Golding & Company Flint and Spar Mills, Trenton, New Jersey." Trenton Potteries, *Newsletter of the Potteries of Trenton Society*, March 2008, 1:5.

"Salavage Excavations at the Crawford – Young's Nursery Site" scheduled to appear in *Bulletin of the Archaeological Society of New Jersey*, No. 63 2008.

"The Smith-Fulper Stoneware Pottery Site, Flemington, New Jersey" Co-authored with Nadine Sergejeff and Rebecca White *Ceramics in America,* 2008: 316-322.

"Ligowsky's Red Clay Mud Saucers" *Ceramics in America*, 2008: 326-328.

"*Locating Early Colonial Sites In the Delmarva Peninsula" Bulletin of the Archaeological Society of Delaware*, Number 44, New series, 2007.

"A Whale of a Tale: Fish imagery and its possible significance to Native Americans", *Bulletin of the Archaeological Society of New Jersey*, No. 62 2007. Co-authored with Greg Lattanzi and Tom Willert.

"Archaeology in The Tidal Zone: Phase II Cultural Resources Investigations Along The Delaware Bay in Cape May County, New Jersey", *Bulletin of the Archaeological Society of New Jersey*, No. 61 2006.

"Fancy Rockingham Pottery: The Modeller and Ceramics in Nineteenth-Century America" Exhibition guide for the University of Richmond Museums, 2005.

"Early History" in Borough of Audubon Camden County, NJ: Centennial Celebration 1905-2005 contributing author presented by the News Wave 2005.

"Jar or Jug? A handled Stoneware Storage Vessel from the Delaware Valley**"** *Ceramics in America*, 2004: 264-265.

"The Richards Face – Shades of an Eighteenth-Century American Bellarmine" *Ceramics in America*, 2003: 259-261, co-authored with Richard Hunter.

"A Coxon Waster Deposit of the Mid-1860s Sampled in Trenton, New Jersey." *Ceramics in America*, 2003: 241-244, co-authored with Rebecca White and Richard Hunter.

"Rebekah at the Marriott: Marriott Site Yellow Ware Waster Dump, Circa 1863-1868, Trenton, New Jersey." *Trenton Potteries, Newsletter of the Potteries of Trenton Society*, March 2002: 3:1. Co-authored with Rebecca White.

"Joseph Mayer's Arsenal Pottery Dump Part 3: Cut Sponge Decorated Ironstone China." *Trenton Potteries, Newsletter of the Potteries of Trenton Society*, December 2001, 2:3/4.

"William Richards' Sugar Processing Pottery 1760-1786." *Trenton Potteries, Newsletter of the Potteries of Trenton Society*, December 2000: 1:4.

"Joseph Mayer's Arsenal Pottery Dump Part 2: Majolica." *Trenton Potteries, Newsletter of the Potteries of Trenton Society*, August/September 2000: 1:3.

"Joseph Mayer's Arsenal Pottery Dump Part 1: Yellowware." *Trenton Potteries, Newsletter of the Potteries of Trenton Society*, April/May 2000: 1:2.

"Archaeological Data Recovery Investigations at the Derewal Prehistoric site, Hunterdon County, New Jersey." *Bulletin of the Archaeological Society of New Jersey*, 1999, No. 54, 12-43. Co-authored with Ian Burrow, Donald Thieme, and Joseph Schuldenrein.

"Ceramic Production at the Hickory Bluff Prehistoric Site [7K-C-411]." *Bulletin of the Archaeological Society of Delaware*, 1999, No. 36, New Series, 3-11.

"An Effigy Head from Cumberland County." *Bulletin of the Archaeological Society of New Jersey*, 1998, No. 53, 118-119.

"Early Sorrow Pattern." *Victorian Ceramics Group Newsletter*, November 1997, 3:1, p. 3.

"A Token Find." *Bulletin of the Archaeological Society of New Jersey*, 1995, No. 50. Co-authored with Harriet Kronick.

"British Registry Marks." *Bulletin of the Archaeological Society of New Jersey*, 1993, No. 48, 69-70.

"Further Evidence: Clam Shell Fracturing Patterns From a Site in Monmouth County, New Jersey." The Archaeology and Ethnohistory of the Lower Hudson Valley and Neighboring Regions: Essays in Honor of Louis Brennan, 1991, *Occasional Publications in Northeastern Anthropology*, No. 11.

"The Fort Elfsborg Spoon." *Bulletin of the Archaeological Society of New Jersey,* 1986, No. 40, 45-46.

BOOK REVIEWS

Reviewer for *Technical Briefs in Historical Archaeology* for the Society *for* Historical Archaeology
Salt-Glazed Stoneware In Early America by Janine E. Skerry and Suzanne Findlen Hood, For CNEHA
The Herculaneum Pottery: Liverpool's Forgotten Glory by Peter Hyland for The Society For Historical Archaeology
John Dwight's Fulham Pottery: Excavations 1971-79 by Chris Green for The Society *for* Historical Archaeology

Ceramics In America 2004 Edited by Robert Hunter for The Society *for* Historical Archaeology
Brotherton: New Jersey's First and Only Indian Reservation by George D. Flemming
The Hare Pottery for the State of Delaware Historical and Cultural Affairs 2007

PROFESSIONAL AFFILIATIONS
Register of Professional Archaeologists (RPA)
Middle Atlantic Archaeological Conference (2005 Program Chairman)
Archaeological Society of New Jersey, (**President 2004-2008**, Third Vice President 1989-91, 1998-2000; Board Member at Large 2002-2003, Life Member and member of the Lower Delaware Valley Chapter)
Eastern States Archaeological Federation
Archaeological Society of New York
Archaeological Society of Delaware
Society for Pennsylvania Archaeology
Council of Northeast Historical Archaeology
Potteries of Trenton Society, (Board Member 1998-present)
Philadelphia Archaeological Forum

AWARDS
NJ Historic Sites Council Historic Preservation Commendation for Archaeological Studies, 1989
Archaeological Society of New Jersey Award of Appreciation, 1990
Delaware Department of State, Certificate of Appreciation, 1999
US Army Corps of Engineers Philadelphia District External Partnering Team Award 2003
Archaeological Society of New Jersey Achievement Award, 2004

CERTIFICATIONS
OSHA 40-hour Initial Training, Spring 1994-Present
Hazardous Materials Supervisory Training, September 1994
Delaware Sediment and Stormwater Management Certification, 1994

TEACHING EXPERIENCE
Burlington County Community College spring 2009 – Instructor for The Archaeology of New Jersey
Burlington County Community College Fall 2007 guest lecturer
Burlington County Community College spring 2005 – Instructor for The Archaeology of New Jersey
Montclair State University Fall 2005 guest lecturer
Boy Scouts of America - Archaeology Merit Badge Instructor 2008

PATRICK HARSHBARGER
Principal Historian/Architectural Historian, M.A., M.P.A.

EDUCATION

M.A., History, University of Delaware, Newark, Delaware, 1990

M.P.A., Public Administration, Florida International University, Miami, Florida, 1988

B.A. *magna cum laude*, American History, Brown University, Providence, Rhode Island, 1984

EXPERIENCE

2010-present Principal Historian/Architectural Historian
Hunter Research, Inc., Trenton, NJ

Technical and day-to-day managerial responsibilities for historic and archival research in support or historic architecture and archaeology. Participation in:

- historic architectural survey, evaluation and recording of buildings and structures
- historic preservation planning
- public outreach
- historic exhibits and signage
- interpretive planning and development;
- report preparation
- proposal preparation

1996-present National Editor, *Society for Industrial Archeology Newsletter*
(www.sia-web.org/siapubs/publications.html)

1991-2010 Senior Historian/Preservation Planner
TranSystems Corp. (formerly Lichtenstein Consulting Engineers)
Langhorne, PA and Paramus, NJ

1991-2009 Historian/Editor
McKelvey Museum Services, Wilmington, DE

1990 Historian, National Park Service
Historic American Engineering Record, Boston, MA

1989 Architectural Historian Intern
Bucks County Conservancy, Doylestown, PA

1986-88 Special Assistant/Editor
Office of the Vice President, Florida International University, Miami, FL

1984-1986 Deputy Director
Slater Mill Historic Site, Pawtucket, RI

CONTINUING EDUCATION

Iron and Steel Preservation Workshop, Lansing, MI, 2010, 2012
Ohio Department of Transportation, Section 106 Workshop, Columbus, OH 2010
HAZWOPER 24-hr. Training, Philadelphia, PA, 2009
Pennsylvania Department of Transportation, Section 106 Training, Allentown, PA, 2009
Museum Studies Certificate, University of Delaware, Newark, DE, 1990
Hagley Museum and Library, Fellow in the History of Industrialization and Technology, Wilmington, DE, 1988-1992

SPECIAL SKILLS AND INTERESTS

- historic bridges
- historic transportation systems (roads, canals, railroads)
- preservation of historic machinery and tools
- industrial and commercial architecture
- engineering heritage
- industrial archaeology
- public history and heritage tourism
- photography
- historic survey digital databases

PROFESSIONAL AFFILIATIONS

Association for Industrial Archaeology (U.K.)
Association for Preservation Technology International
National Railway Historical Society
National Society for the Preservation of Covered Bridges
National Trust for Historic Preservation
Newlin Foundation, Board of Directors
Society for Commercial Archeology
Society for the History of Technology
Society for Industrial Archeology
Society for the Preservation of Old Mills
Vernacular Architecture Forum

SELECTED PUBLICATIONS

"Two Pioneering American Roadways." *Proceedings of the Institution of Civil Engineers – Engineering History and Heritage*. London, England, May 2010.

Editor. *Abstracts of American Truss Bridge Patents, 1817-1900*. Society for Industrial Archeology, Houghton, Mich., 2009.

Robert John Prowse, New Hampshire State Bridge Engineer. New Hampshire State Historic Preservation Monograph Series. Concord, N.H., 2009.

Co-author. *National Guidelines for Historic Bridge Rehabilitation and Replacement*. Washington, D.C.: American Association of State Highway and Transportation Officials, 2008.

"Defining Historic Roads." *Proceedings of the 6th Preserving the Historic Road in America Conference*. Albuquerque, N.M., 2008.

"Historic Bridge Basics." South Carolina Department of Transportation, Columbia, S.C., 2004.

"Strategies for Historic Evaluation of Standard Highway Bridges, 1920-1960." *Proceedings of the Preserving the Recent Past 2 Conference*, Philadelphia, October 2000.

"So Your Dualized Highway is 50 Years Old? Is It Historic?" *Proceedings of the Preserving the Historic Road in America Conference*. Morristown, New Jersey, April 2000.

Editor and Co-author. *Delaware's Historic Bridges: Survey and Evaluation of Historic Bridges with Historic Contexts for Highways and Railroads*. 2nd Edition Revised. Dover: Delaware Department of Transportation, 2000.

"Metal Truss Bridges and Their Builders in Historical Perspective: Some Thoughts from A Case Study of the Phoenix Bridge Company." *Spans of Time*. Ithaca, New York: Historic Ithaca, 1999.

"The Providence School Board Reform Movement, 1898-1924." *Rhode Island History*, Volume 44, Number 2 (May 1985).

ALISON K. HALEY
Historian, MS

EDUCATION

M.S., Historic Preservation, University of Pennsylvania School of Design, Philadelphia, PA 2010
B.A., History, Wake Forest University, Winston-Salem, NC, 2006

EXPERIENCE

2010-present — Historian,
Hunter Research, Inc., Trenton, New Jersey

Execution of research in support of historic, historic architectural and archaeological studies including:

- review of primary and secondary source materials
- title research
- genealogical investigation
- review of historic cartographic material
- selected contribution to reports

2009 — Conservation Technician
Philadelphia Museum of Art, Philadelphia, PA

- documented existing conditions of a severely weathered 18th-century wooden cornice
- determined historically accurate paint color via cross-section analysis
- prepared surface for finishing, primed and painted surface

2007-2008 — Sales and Marketing Coordinator
Ascend Media/Michael J. Hennessey & Associates, Princeton/Plainsboro, NJ

- assisted publisher with budget and marketing plans
- coordinated advertising sales for *Pharmacy Times* magazine

2006-2007 — Research Assistant and Surveyor
Richard Grubb & Associates, Cranbury, NJ

- recorded architectural features of over 5,000 buildings in 20 historic districts in Camden, NJ

2002-2006 — Student Assistant
Z. Smith Reynolds Library, Winston-Salem, NC

- operated Readex and microfilm/fiche machines
- learned department-specific filing systems
- assisted patrons with periodical searches and original source research

FOREIGN STUDY

Summer 2009 — International Conservation, Cornwall, England
Produced design development drawings for the restoration and adaptive reuse of The English Garden House and Mount Edgcombe House and Country Park

Fall 2003 — Flow House, Vienna, Austria
Coursework: History, Architectural History and Literature

IAN C. BURROW
Vice President/Principal Archaeologist, Ph.D., RPA

EDUCATION

Ph.D., History and Archaeology, University of Birmingham, England, 1979

B.A., History and Archaeology, University of Exeter, England, 1971

EXPERIENCE

1988-present Principal Archaeologist
Hunter Research, Inc., Trenton, NJ

Vice President and stockholder of firm providing archaeological and historical research, survey, excavation, evaluation, report preparation and public outreach services in the Northeastern United States. Responsible for:

- Project management, budgeting and scheduling
- Technical and synthetic writing
- Proposal preparation, contract negotiation and management
- Hiring and supervision of personnel
- Supervision of research, fieldwork, analysis and report preparation
- Development of public outreach initiatives
- Company safety policy as Company Safety Officer, including oversight of HAZWOPER certification

2010-2012 President, Register of Professional Archaeologists

2004-2005 President, American Cultural Resources Association

1995-present Consultant Archaeological Reviewer for Township of Evesham, New Jersey, Planning and Zoning boards

2010-present Adjunct Professor
Rutgers University
Teaching in Cultural Heritage and Preservation Studies (CHAPS)

2006-present Adjunct Professor
Drew University, New Jersey
Teaching in Historic Preservation Certificate Program, School of Continuing Education

2008-present Adjunct Professor
Rider University, New Jersey
Teaching World History and developing archaeology program, Department of History,
Introduction to Historical Archaeology, Department of Continuing Education

1986-1988 Director
Oxford Archaeological Unit, Oxford, England
Principal in charge of non-profit organization undertaking archaeological projects.

1975-1986 County Archaeologist for counties of
Somerset (1979-86) and Shropshire (1975-79), England

1974-1988 Adult Education Tutor
Universities of Birmingham and Bristol, England, and Department of External Studies, University of Oxford, England

SPECIAL SKILLS AND INTERESTS

- 18th -century military sites
- archaeology and standing buildings
- urban archaeology
- archaeological education and public outreach
- National Historic Preservation Policy
- Master planning for historic sites
- National Register of Historic Places Nominations

SELECTED PUBLICATIONS

Peer reviewer for *Antiquity* Magazine (UK) 2008-

"Historical Archaeology in Trenton: A Quarter-Century Retrospective (with Richard W. Hunter). In Archaeology in the Delaware Valley: Past, Present, and Promising, edited by Richard Veit and David Orr. University of Tennessee Press, forthcoming 2013.

"Steel Away: the Trenton Steel Works and the Struggle for American Manufacturing Independence" (with Richard W. Hunter). In Footprints of Industry: Papers from the 300th Anniversary Conference at Coalbrookdale, 3-7 June 2009. BAR British Series 523 [2010]: 69-88.

Review of Paul Everill: "The Invisible Diggers: a study of British Commercial Archeology". *Antiquity 84 (2010): 256-257*

"The Historical Geography and Archaeology of the Revolutionary War in New Jersey." In *New Jersey in the American Revolution*, edited by Barbara J. Mitnick, pp.165-193. Rutgers University Press [2005] (with Richard W. Hunter).

Ancient Ways: Native Americans in South Trenton, 10,000 B.C. to A.D. 1700. New Jersey Department of Transportation and Federal Highway Administration [2005] (24-page booklet).

A Tale of Two Houses: The Lambert Douglas House and the Rosey Hill Mansion, 1700-1850. New Jersey Department of Transportation and Federal Highway Administration [2005] (24-page booklet).

"Archaeological Data Recovery Investigations at the Derewal Prehistoric Site, Hunterdon County, New Jersey." *Bulletin of the Archaeological Society of New Jersey,* No. 54, 12-42, 1999, co-authored with Donald Thieme, William Liebeknecht and Joseph Schuldenrein.

"The Savich Farm Site: An Archaeological Survey for Phase I of the Long-Term Management Plan." *Bulletin of the Archaeological Society of New Jersey,* No. 52, 35-50, 1997.

"We've Got Thousands of These Here Too! Significance Assessment and Farm Archaeology in New Jersey." Paper presented at the Middle Atlantic Archaeology Conference, Ocean City, Maryland, March 1996. Published in *Bulletin of the Archaeological Society of New Jersey,* No. 52, 35-50, 1997.

"Pretty Village to Urban Place: 18th Century Trenton and Its Archaeology." *New Jersey History,* Volume 14, Numbers 3-4, 32-52, Fall/Winter 1996, co-authored with Richard W. Hunter.

"Contracting Archaeology? Cultural Resource Management in New Jersey, U.S.A." *The Field Archaeologist* (Journal of the Institute of Field Archaeologists) 12, 194-200, March 1990, co-authored with Richard W. Hunter.

PRESENTATIONS

Frequent presenter at local, regional and national meetings and conferences. Numerous presentations to local societies and community groups.

PROFESSIONAL AFFILIATIONS

Friends of the New Jersey State Museum (Trustee 2002-2011)
Friends of the New Jersey State Museum (Vice President 2009-2011)
American Cultural Resources Association (Board member 2003-2008)
New Jersey Council for the Humanities Speakers' Bureau Member since 1998
Registered Professional Archaeologist since 1999
Fellow of the Society of Antiquaries of London
Institute of Field Archaeologists (UK: Charter Member)
Society for Historical Archaeology
Society for American Archaeology
Archaeological Society of New Jersey

CERTIFICATIONS

Current 40-hour HAZWOPER and 8-hour HAZWOPER Supervisory certification
HAZWOPER Confined Space Entry Certification

ELECTED AND INVITED POSITIONS

Register of Professional Archaeologists (President, 2010-2012)
American Cultural Resources Association (President, 2004-2005)
Association of County Archaeological Officers, UK (Chair 1984-1986)
White House Preserve America Summit, New Orleans 2007, Panel Member
New Jersey Historical Commission Grants Review Panel Member 2002-2005