The Log Outbuilding at Solitude: An Architectural and Archaeological Investigation of Virginia Tech's Second Oldest Building

by

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Abstract

Solitude is a National Register historic property that is today a central part of the Virginia Polytechnic Institute and State University campus. The property was purchased in 1872 to create the site of the land-grant college that later became VPI. The focus of this study is a log dependency associated with the extant nineteenth century mansion on the property. Both buildings have suffered extensively from deterioration in recent years, but are now receiving some attention. By substantially augmenting a historic structure report on the outbuilding filed in 1989, this thesis contributes to the building's documentation and accurate interpretation. As one of two early structures on the site that still retains a large percentage of its original fabric, it is an important artifact that should be preserved for posterity. Documentation through meticulous research is an important part of preservation. When the building is physically gone, knowledge of it will survive.

Little was known about the dependency prior to the completion of this research. The best guess on its age appears to have erred by thirty years. The building's original function has long been the subject of debate. If it was a dwelling, there are no historic documents by which to identify the occupants.

This study examines various aspects of the building, including its present condition, construction practices and materials, dimensions, form and function, location, age, historical context, and buried cultural deposits around the building. The biological agents that have attacked and caused severe deterioration of the building are identified, as well as the conditions that precipitated the attacks.

The methods employed or explored in this research include archaeological excavations, artifact analysis, relative dating methods, wood identification and pathology, dendrochronology, basic chemistry, database generated spatial imaging, library searches, measured drawing, and photography. Use of these methods has provided insightful information regarding construction materials and their properties, construction practices, date of construction, and the history of the building's use and maintenance. Information about the building's occupants has also come to light, such as their socio-economic status, their standard of living, i.e. the goods they consumed and the comfort of their quarters, and their refuse disposal practices. Considering all the information revealed, a strong case is made that the building was originally a domestic slave's dwelling, constructed in the early 1840s.

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Introduction

> "I went equipped only with the general idea that an understanding of history must depend on artifactual analysis, and that, of all classes of artifacts, architecture would be the most efficient guide to past culture because of its universality, tenacity, complexity, and fixedness …Artifacts are worth studying because they yield information about the ideas in the minds of people long dead. Culture is pattern in the mind, the ability to make things like sentences or houses. These things are all the analyst has to work with in his struggle to get back to the ideas that are culture." — Henry Glassie, *Folk Architecture in Middle Virginia.*

Solitude is a National Register historic property that is today a central part of the Virginia Polytechnic Institute and State University campus. The property was purchased in 1872 to create the site of the land-grant college that later became VPI. The focus of this study is a log dependency associated with the extant nineteenth century mansion on the property. This thesis is intended to describe, classify, and document as many physical aspects of the outbuilding as possible. It is an attempt to completely understand the building as an artifact, the property on which it is situated, and the historical contexts with which the building has been associated.

Fig. 1 View of the outbuilding from the south, photo taken in the late 1970s or early 1980s.

Much of the information contained herein was recovered during a window in time, which opened in the summer of 1988, when the initial phase of investigation began. Preliminary plans for a

restoration of the building were being made, following the nomination of the Solitude site to the National Register of Historic Places, and to the Virginia Historic Landmarks register. Local architect Gibson Worsham filed the Historic Structure Report in 1989 (see bibliography). Archaeological investigations, the results of which make up Part II of this study, were completed by 1990. Subsequently, a lengthy period of time elapsed. It was not until 1998 that new efforts were made to recover, or at this point, to salvage any remaining information. During the eight years or so that had lapsed, the old building suffered miserably. As plans for stabilization/ restoration were continually put off, physical deterioration was expedited by further neglect, as well as several ill-advised interventions. All of the exterior clapboard sheathing was removed, and the entire roof, including the framing, had to be removed and discarded. The small frame addition, probably attached to the north side of the log pen in the 1890s, and mid 19th century porch were removed. The chimney was lost. Barely covered by a makeshift shelter throughout most of the 1990s, the hewn log skeleton was still exposed to the elements, inviting further decay. However, it could now be observed and documented. Much of the documentation on the standing structure provided in Part I was collected during the second phase of investigation, from late 1998 through the summer of 1999, prompted by rekindled hopes for a restoration. Due to the dramatic change in the condition and appearance of the building during recent years, it is important that the chronology of these events are kept in mind when considering what has, or has not been documented here. The author took part in both phases of data recovery; in 1989 as a Bachelor of Science in Anthropology/ Sociology student at Radford University, and in 1998-99 as a Master of Science in Architecture student at Virginia Tech.

Fig. 2 1989 photograph of loft in the original log section of Solitude outbuilding.

The “log outbuilding at Solitude” could certainly use a better name. It is not the only extant log outbuilding at Solitude (fig. 36). It has simply been referred to in this way for lack of a better name. The problem is that because no historic documents have been found that refer to the outbuilding, its original use has not been determined with one hundred percent certainty. For instance, was it a slave’s cabin, a white servant’s cabin, a cook’s cabin, a summer kitchen, a washhouse, a guesthouse or a doctor’s office? All of these uses have been considered over the years by those within the university community who have had an interest in Solitude. Indeed, over time it may have been used for all of these things. This study will attempt to shed light on the dilemma. The present lack of a suitable name for the outbuilding is problematic because a proper restoration should rely on an interpretation based on consensus. Since the main house at Solitude is also a log pen that has been enveloped and enlarged, “the log building” will not suffice. It is for certain that it was always a dependency of the main house, therefore it is an outbuilding. Yet, when we hear the word “outbuilding,” we tend to think of outhouses, smokehouses, springhouses, and the like. With all of the information in hand, it can finally be said that the little log building was a dwelling, and therefore simply a house. Scholars have tried

to discern which log dwellings have traditionally been referred to as "log cabins" rather than "log houses." In historic times, some people referred only to two-story log dwellings as "houses." [1] Some based the distinction on whether or not the logs were hewn (a house), or left in the round (a cabin).[2] There does not appear to have been a consistent rule. Probably the most appropriate name for the building would be the "servant's house."

> "That building is nothing but an old pile of logs, and that's all it ever will be."

Disparaging remarks such as this one made by a practicing architectural historian are indicative of the mentality a preservationist must contend with when encountering the real world. All too often people overlook the aspects of a building, or even a ruin, that make it worth preserving.

Fig 3 1990 photograph of outbuilding prior to its dismantling in piecemeal fashion.

The results of this apathy are well illustrated in this study. At Solitude, the university community sadly witnessed the neglect and mismanagement responsible for making "a pile of logs" out of a historically significant edifice within two decades. The primary reason for thoroughly documenting the structure is that buildings of this type are rapidly disappearing, and will never be seen again. Never again will human conditions be the same as they were in antebellum southwestern Virginia. Buildings are made in response to such conditions, thus new buildings can only respond to new conditions. A well preserved pile of 160 year old logs, with intact window and door framing, in situ, still joined together and filled with original chinking, is still a

[1] Donald A. Hutslar, *Log Construction in the Ohio Country, 1750-1850* (Athens:University of Ohio Press, 1992), 79.

[2] Hutslar, 79.

valuable cultural resource.[3] If it is valuable now, it can only increase in value the older it becomes. Considering the possibility that it was built by the hands of slaves, and built very well, it seems unquestionable that a leading learning institution should find it within their means to preserve it as much as possible. Since this argument was not made loudly enough in a timely fashion to those in a position to accomplish this imperative, it is all the more desirable to document and develop as many aspects of the building as possible. In doing so, this paper will provide impetus for those who are charged with saving the building in the future. By virtue of the comprehensive nature of this study, and its large proportion of quantitative data, it will provide researchers with a useful, in-depth means of comparison, and hopefully, some new fodder for contemplation.

Fig. 4 September 1999 photograph of outbuilding under its extravagant new shelter. Note the substantial bracing (left, background) now required to prevent further slumping.

More specifically, this study will examine various aspects of the building including its present condition, construction practices and materials, dimensions, form and function, location, age, historical context, and buried cultural deposits around the building. The methods employed or explored in this research include archaeological excavations, artifact analysis, relative dating methods, wood identification and pathology, dendrochronology, basic chemistry, database generated spatial imaging, library searches, measured drawing, and photography. Considering all the information revealed, a strong case will be made that the building was originally a domestic slave's dwelling, constructed in the early 1840s.

[3] Rumors persist that a substantial amount of original materials such as weatherboarding, flooring and trim from the building survive in storage at VPI. In one known instance, an attempt was made to retrieve some materials from storage, but the items were never found.

The following maps (figs.3-6) show the location of the Solitude site.

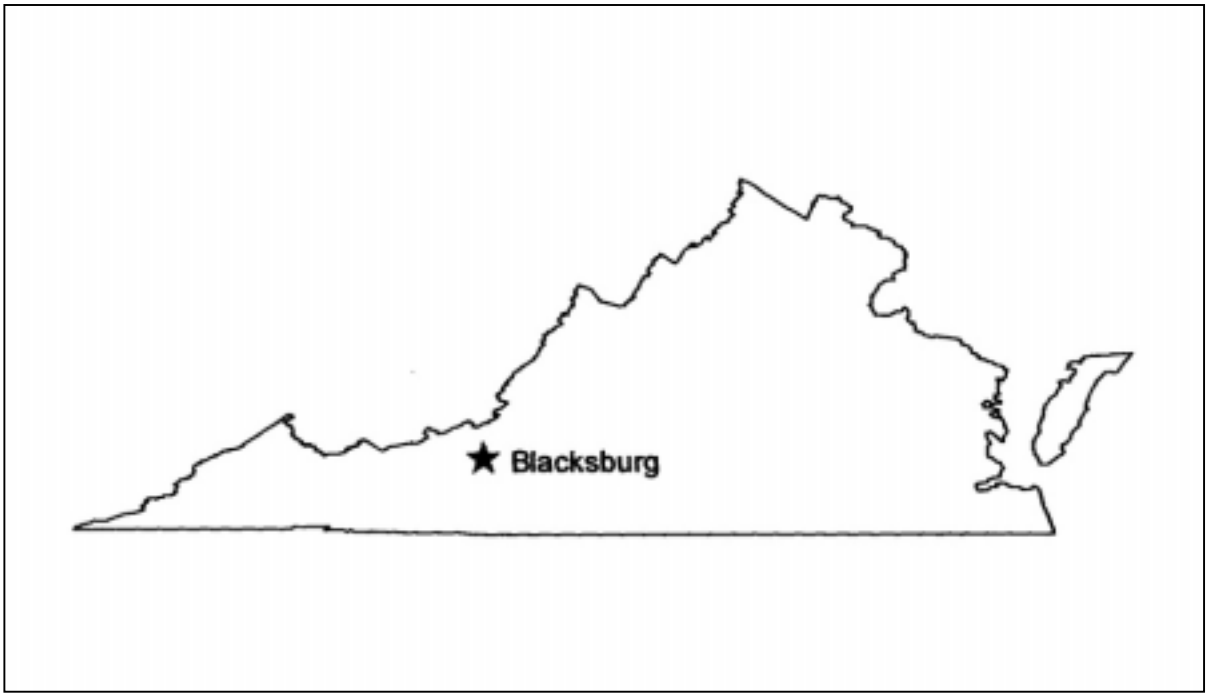

Fig. 5 Location of Blacksburg in Virginia.

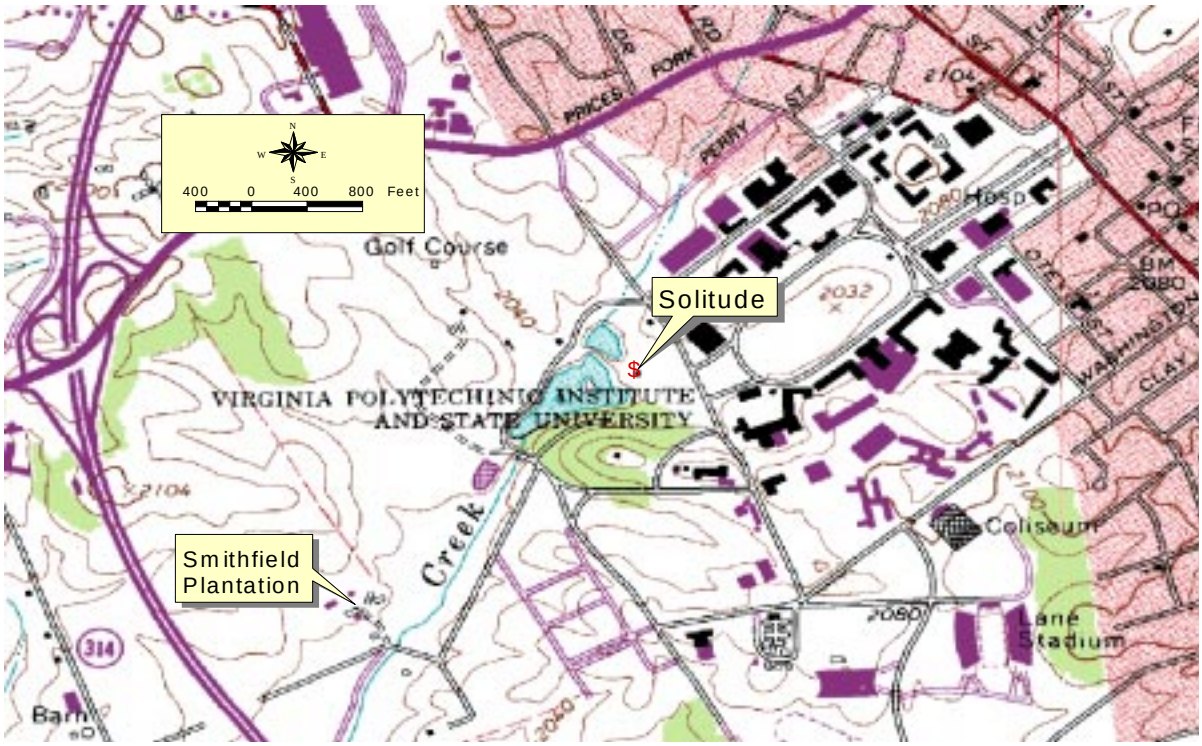

Fig. 6 Blacksburg topographic map. U.S. Geologic Survey. Revised 1983.

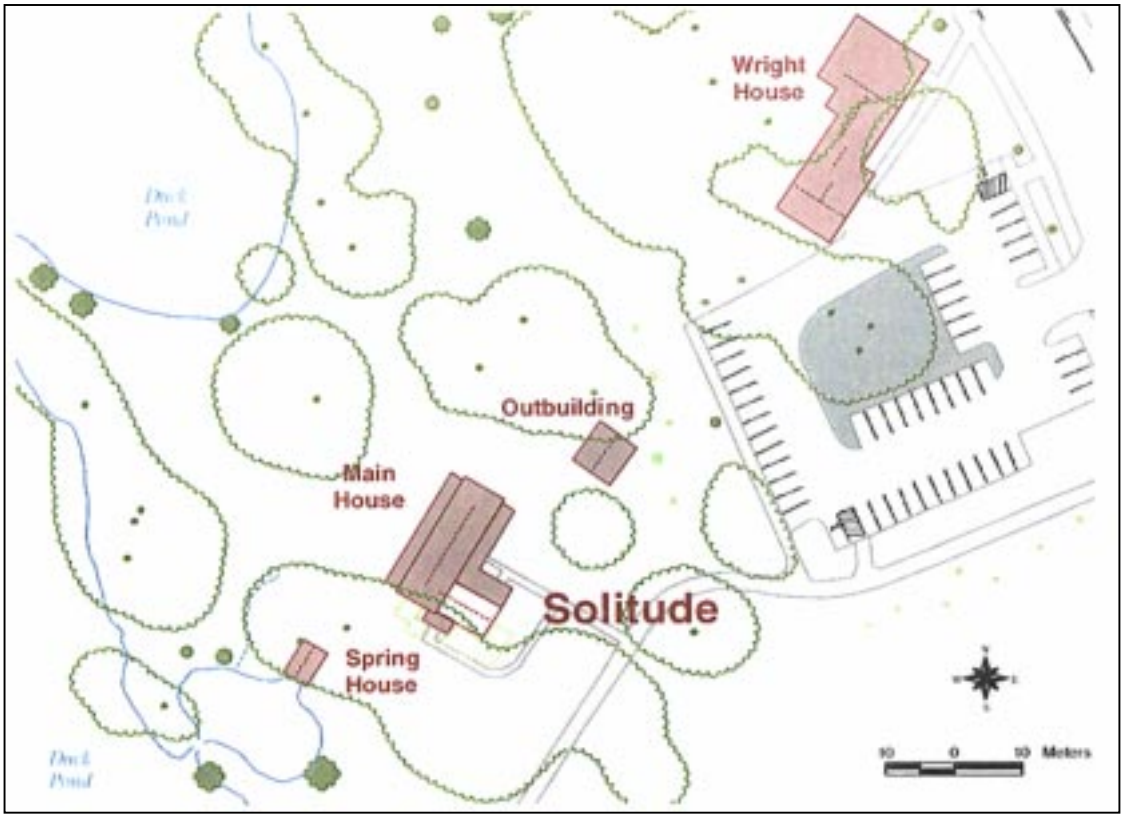

Fig. 7 Map showing Solitude site and environs in 1999.

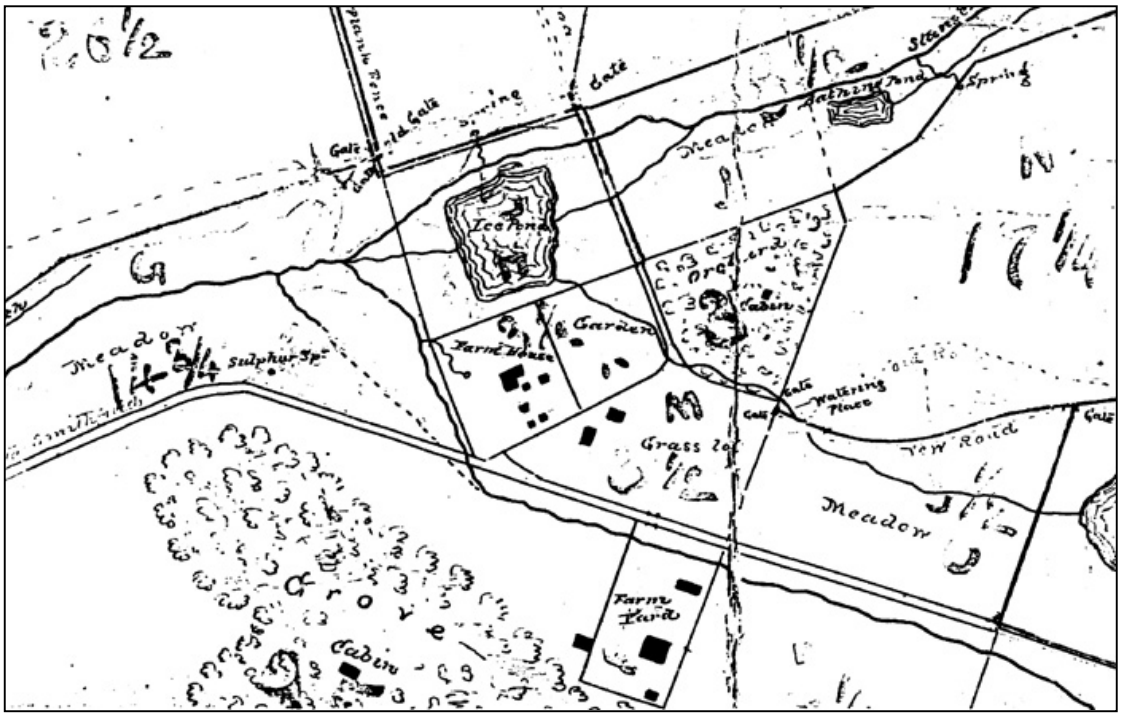

Fig. 8 The Virginia Agricultural and Mechanical College Farm and Grounds, by Col. Wm W. Blackford, 1882. Solitude is labeled "farmhouse," (center). This is the oldest known documentation of the existence of any of the dependencies. The "ice pond" is now the upper "duck pond." Newman Library Special Collections.

PART I History and Analysis of the Standing Structure

CHAPTER ONE Historical Summary of the Solitude Property

Fig. 9 The main house at Solitude as it appears today.

The historically significant property known as Solitude occupies a portion of a 7,500-acre tract of land that was once called Draper's Meadow. In 1745, the colonial government granted the land to an Irishman named James Patton, who established the first permanent English-speaking settlement west of the Allegheny Ridge there in 1746. The tract was named after George Draper, one of the first settlers in the area. The Ingles were another family who settled at Draper's Meadow around the same time. Both the Ingles and the Drapers suffered losses to a Shawnee war party in 1755, in an incident that would become known as the "Draper's Meadow Massacre." It occurred not far to the south of Solitude. Both families would abandon the area for fear of their lives. Around 1773 James Patton's nephew, William Preston, built a large frame house with a fort or stockade around it less than a mile south of present-day Solitude, on the land the Drapers and Ingles had left behind.[4] His estate became known as Smithfield Plantation, which is now maintained as a historic museum by the Association for the Preservation of Virginia Antiquities.

Fig. 10 Close-up of outbuilding that probably served as a servant's cabin. From a photograph hand-labeled "professor's house, 'Solitude' 189- ," in reference to the main house. Newman Library Special Collections

[4] Charles W Crush. ed., *The Montgomery County Story 1776-1957*. (Blacksburg: VPI, 1957), 51.

Fig. 11 1989 photo of outbuilding and main house from the north side.

William Preston's son, James Patton Preston, purchased the 200 adjacent acres on the north side of Smithfield, then owned by Philip Barger, Jr., in 1803.[5] It may have been Barger who built the first log structure on the property, thus establishing the locus of Solitude. A dendrochronology study on the original log pen, now part of the main house, has indicated that the logs were cut over a four-year period from 1798-1801.[6] A tenant or overseer may have occupied the house in its earliest years.

James Preston sold the 200-acre tract to his Uncle, Granville Smith, in 1807. It appears that it was Smith who named the property "Solitude." In 1808 he used the name in a letter he wrote while residing there.[7] After 1810, Smith resided in Richmond, but retained the property until his death in 1816. During the six-year interim, Dr. John Floyd and his wife Letitia, the daughter of William Preston of Smithfield, occupied the house. Floyd would later serve as Virginia's governor from 1830 to 1834. His son, John Buchanan Floyd was born at Solitude. He too would serve as governor, from 1849 to 1853. Upon Smith's death, Floyd moved his family south to present-day Pulaski County.[8] Smith's heirs finally sold Solitude back to James Patton Preston in 1822. Preston had been elected governor of Virginia himself in 1816, and continued to reside primarily in Richmond for many years thereafter.[9] He had three sons, William Ballard Preston (1805- 1862), James Francis Preston, and Robert Taylor Preston (1809-1880), and a daughter, Jane. William, being the eldest, inherited Smithfield and remained there his entire life.[10] James was given the farm known as Whitethorn on the New River, and an adjacent tract of 24 acres along Stroubles Creek, while Robert received Solitude, comprising approximately 218 acres, and an additional 100 acres that was part of Smithfield after his father died in 1843.[11] Robert Preston moved into the house at Solitude just after he married Mary Hart (1809-1881) in 1833. Dendrochronology has indicated that a log wing was added to the house after the growing season

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[5] Mary B.Kegley, *Early Adventurers on the Western Waters*. Vol. I. (Orange, VA: Green Publications, 1980), 253.

[6] Herman J. Heikkenen, *The Last Year of Tree Growth for Selected Timbers Within Solitude as Derived by Key-year Dendrochronology*. (Dendrochronology, Inc. 1990), 7.

[7] Landon McAlester, "Historic Landmarks." *Roanoke Times and World News*, New River Current section, Vol. 1, October 4, 1988, 2.

[8] W.R. Chitwood , "Governor John Floyd, Physician." Virginia Cavalcade, vol. XXVI, no. 2, Autumn 1976, 94.

[9] Kegley, 255.

[10] Peter Wallenstien, "Early Blacksburg 1740's to 1840's and Special Celebratory Years," in *A History of Blacksburg, Virginia*, Clara Cox ed., (Town of Blacksburg, 1998), 92.

[11] 1853 land tax records for Montgomery County, VA.

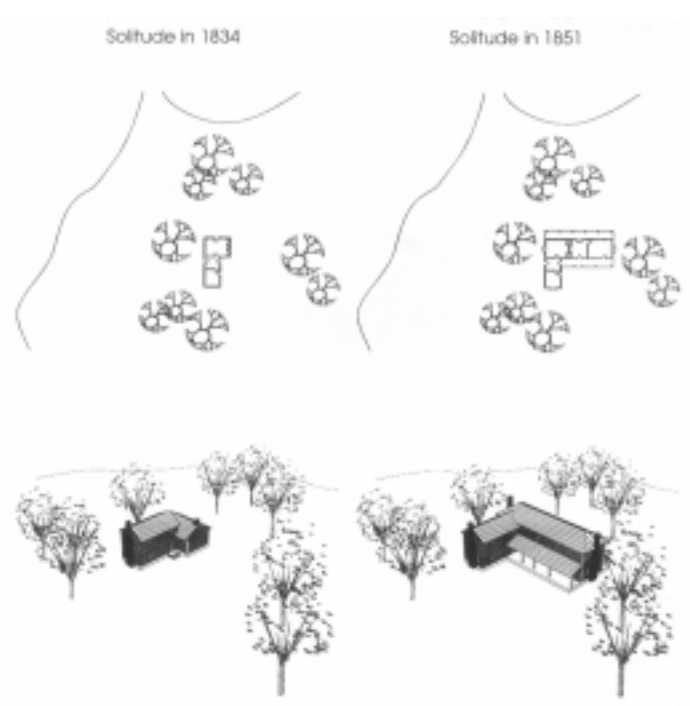

Fig. 12 Illustration showing the substantial enlargement and re-orientation of the Preston home at Solitude, which is thought to have occurred ca. 1851. Jun Zhu, *A Study for Preserving and Renovating the Main Building of Solitude*, 9.

of 1834.[12] A 1999 dendrochronology study has shown the surviving log outbuilding to have been constructed ca. 1843; at a time when Preston was busy making improvements to his estate.[13] It may be no coincidence that Robert's father James Patton, the owner of ninety-one slaves, died that same year.[14] Perhaps Robert inherited some slaves from him, and therefore built new housing for them behind his own house.

Robert Preston became a colonel in the Virginia militia in 1846.[15] He had three children listed in the 1850 census records for Montgomery County: Virginia (age 16), B. Hart (14), and James P. (12). His elderly relatives, John Preston from Ireland (age 84), and his wife Lucy (80), were also living at Solitude with them. Robert's occupation was given only as "farmer." Apparently he was quite a successful farmer. Around 1859 he expanded his house to the north, doubling its size.[16] His formerly modest house was now a mansion, with detailing reflecting the popular Greek revival style of the time. Indeed, many planters in Montgomery County prospered during the 1850s, as the region experienced unprecedented economic growth.[17] The boom had much to do with improved roads through the region, most notably the "southwest turnpike" which was macadamized by 1848.[18] The Virginia and Tennessee Railroad, which transversed the county by 1854, brought even greater prosperity that lasted until the outbreak of the Civil War. The large pond in front of the mansion, now called the "duck pond" (fig. 7) may have been created in the 1850s to serve the mill downstream at Smithfield.[19] The smaller pond is labeled "Ice Pond" on an 1882 map (fig. 8).

[12] Heikkenen, 1990, 7.

[13] Heikkenen, 1999, 1.

[14] Kegley, 255.

[15] Gibson Worsham, *Solitude (Main House) Historic Structure Report*, 1997, 14.

[16] Kegley, 253.

[17] Crush, 62.

[18] Patricia S. Neumann, "From Wagons to Jet Planes," in *A History of Blacksburg, Virginia*, Clara Cox ed., (Town of Blacksburg, 1998), 100.

[19] Kegley, 190, 253.

Robert Preston became a founding trustee of the Olin and Preston Institute, a nearby Methodist college, in 1854.[20] He went on to serve as a colonel in the Confederate Army during the Civil War. The war effectively brought the Preston family's era of prosperity to an end. Montgomery County, and indeed most of the south faced grave economic depression in the post war period. Preston was forced to sell the property in 1872, in order to satisfy long-standing debts.[21] The newly created Virginia Agricultural and Mechanical College, which was to become Virginia Polytechnic Institute, acquired the property that year. Preston and his wife continued to reside at Solitude until their deaths, both less than a decade later. The main house and outbuildings continued to be used and maintained by the college thereafter. Professors and their families occupied the property for decades. After World War II, a number of trailers were crowded around the outbuilding to house veterans on the G. I. Bill. The main house suffered a great deal from deferred maintenance and a number of "quick fixes," mostly in the latter part of the century. Most of Solitude's outbuildings survived into the twentieth century, but today all are gone except for a springhouse that has been rebuilt in large part, and the house servant's cabin, which is currently being rebuilt from near ruin.

Fig. 13 1998 photograph of slumping outbuilding (servant's cabin) remains.

A period of extensive research was prompted by Solitude's nomination to the Virginia Landmarks register, and to the National Register of Historic Places in the late 1980s. The property became listed as a Virginia Landmark in June 1988, and on the National Register in May 1989. During the nomination process, crucial issues concerning the preservation of the standing structures were brought to the attention of the Virginia Tech building maintenance department. More than ten years later, these issues are finally being dealt with in substantive fashion. Rehabilitation of the servant's cabin, involving a large degree of reconstruction, is now ongoing.

The servant's cabin was not specifically referred to in any known historic literature. Therefore, reconstructing its past necessarily involves some speculation based largely on architectural and archaeological clues.

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[20] Worsham, 14.

[21] Worsham,17.

CHAPTER TWO Antecedents: A Historical Perspective on Log Structures

> "Log cabins are traditional forms of material culture representative of man's ability to deal with the environment. These forms are truly folk, traditional, indigenous, and non-academic." –Whitwell and Winborne.[22]

In order to understand as fully as possible what we are looking at when we examine a historic structure, we must have some understanding of the history of its form, and of the culture(s) that produced it. Without academic comparisons of cultures and artifacts such as buildings, the study of a single culture or artifact is effectively meaningless. The following historical overview, based on such comparisons, is intended to enhance our understanding of the log outbuilding at Solitude.

2.1 Early European Log Construction in North America

Although remains of prehistoric horizontal log construction have been unearthed by archaeologists on the northwest Pacific coast, and in mounds of the midwest,[23] scholars generally agree that the first non-aboriginal log houses in North America were built at the colony of New Sweden in the year 1638.[24] The colony was located at present-day Wilmington, Delaware, and was apparently made up of nearly equal numbers of Swedes and Finns. These hard-working farmers and trappers came from the heavily forested regions of Northern Europe. They brought with them an expertise in building with logs that had endured for centuries. The techniques they used were traditional to their own culture.

Western Europe during the seventeenth century was rife with political, social, and religious turmoil. Large numbers immigrated to the New World in search of freedom from religious persecution and military regimes. They sought to own some land and farm peacefully. William Penn, through his prospectus of 1681 entitled *Some Account of the Province of Pennsylvania*, encouraged migrations to his colony, where people were free to live and worship as they chose to. While the Swedes and Finns expanded their settlements into eastern Maryland, southeastern Pennsylvania and New Jersey, Germanic-European religious sects, such as Mennonites, Moravian Brethren, Shwenkfelders, and Dunkards settled further to the west and north. These groups came from many different provinces in what are today Germany, Poland, Czechoslovakia, Switzerland and Austria, yet they became collectively known as "Pennsylvania Dutch," or simply "German."

Like the Swedes and Finns, these "Germans" were mostly poor farmers, adept at building with logs due to necessity; yet their dwellings were, in many ways, different from those of the

[22] Whitwell and Winborne, *The Architectural Heritage of the Roanoke Valley* (Charlottesville: University of Virginia Press, 1982), 15.

[23] Weslager, C.A. *The Log Cabin in America from Pioneer Days to Present*. Rutgers U. Press, 1969.

[24] Hutslar, 24.

Scandinavians. Their log buildings, a few of which survive from the early 18th century, are distinctive, since they were built according to their own cultural traditions. However, there were also many similarities. For instance, corner notching techniques such as the dovetail and V-notch were common in both Northern and Central Europe during the 17th century.[25] Bealer has cited evidence that Germanic cultures in Europe may have learned log building techniques from the Nordic peoples a millennium ago.[26] Several theories on the true origin of log building techniques have been advanced since Shurtleff's groundbreaking study of 1939, *The Log Cabin Myth*. Yet, the fact that Vitruvius, in his architectural treatise written in the first century B. C., mentioned having seen horizontal, corner notched log buildings in the area of the present day Republic of Georgia, tends to shed doubt on many of these theories.[27]

Another ongoing debate concerns the identification of the agents of diffusion of log building techniques here in America. Which groups were most responsible for the spread of forms and techniques across the frontier? Certainly the Scandinavian and Germanic groups were important, but how did immigrants of other ethnic backgrounds contribute to the diffusion? A careful analysis of all the available literature is required to gain a general understanding of how the history of log building in America unfolded. Because a great deal has been written on the subject, and the many points of contention among the authors, a reliance on the better-known authorities is inevitable.

2.2 Log Dwellings in Virginia

Beginning in the early 18th century, large waves of immigrants from Ireland made the journey to Pennsylvania. The majority of these immigrants were not true Irishmen, but of a group known as the Scots-Irish. These people had migrated first to Ireland from Scotland as much as three or four generations earlier, but had failed to find a better life there. It has been estimated that between 1717 and 1776, a quarter of a million Scots-Irishmen came to the colonies.[28] Although horizontal log construction was known in the British Isles, this group came mostly from treeless Irish lowlands, and apparently knew little of building with logs when they arrived.[29] Those who came to Pennsylvania, however, quickly learned how perfectly suited log dwellings were to the isolated, hostile, and heavily wooded environment. A common position among recent scholars is that the Scots-Irish immigrants learned log building techniques in the late 17th and early 18th centuries from the Germans in Pennsylvania, Delaware, and Maryland.

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[25] Terry G. Jordan, *American Log Buildings: An Old World Heritage* (Chapel Hill: University of N.Carolina Press, 1985), 13. See also Weslager, 150.

[26] Alex Bealer, *The Log Cabin: Homes of the American Wilderness* (Barre, Massachusetts:Barre Publishers, 1978), 17.

[27] Vitruvius(Marcus Vitruvius Pollio) *The Ten Books on Architecture*, trans. Morris Hicky Morgan. (1914 ed. New York, Dover Publications, 1960) book 2, chap 4, 39.

[28] Weslager, 81.

[29] Weslager, 224.

As for Virginia, Weslager has asserted that *no* log dwellings were built there until well into the 18th century.[30] By 1730, when lands in western Virginia began to open to settlement, many Scots-Irish were accomplished in building log structures. It was they who led the mass migrations to the southwest, into the great valley of Virginia, accompanied by various German groups, and a few Englishmen. By the time of the American Revolution, Augusta and Rockbridge Counties of western Virginia were said to have been inhabited by more Scots-Irish per mile than any other place in the country. Many continued on along the same route, to southwestern Virginia, Tennessee, and the Carolinas by the 1750s. The log dwellings that were built in southwestern Virginia by both Germans and Scots-Irish no longer clearly reflected cultural traditions. They were now generally more of a composite of German log-building technology and British Isles floorplans and fenestration.[31]

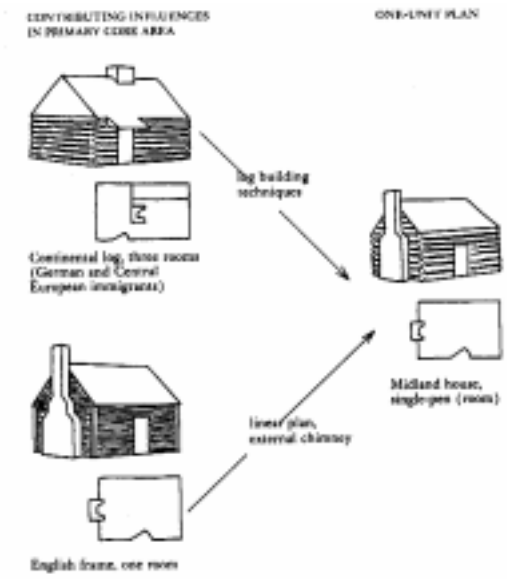


Fig. 14 Diagram illustrating the origin and development of the midland log house. McAlester, Virginia and Lee. *A Field Guide to American Houses*. (New York: Alfred A. Knopf, 1984), 83.

This new hybrid has been called the *midland log house* (fig.14). The logs were worked and joined in the German tradition, with logs hewn square on two sides and joined at the ends using a v-notch, half dovetail, or full dovetail; but instead of the German style single pen partitioned into two or three rooms with a central chimney, nearly all log houses in the region were built as in Scots-Irish fashion–a single pen of less than two stories, rectangular in plan, with a gable end hearth, and exterior chimney. [32] A boxed-in stair leading to the loft is typically placed in a corner opposite the hearth.[33] Over time, the houses became more nearly square than rectangular, a trend that Willis and others have attributed to an English-Tidewater influence.[34] The use of wood shingles or shakes, very common on early southwest Virginia dwellings, appears to have originated as a German trait, but was used by most nationalities in America.[35] Because there was very little Scandinavian influx into the state, there does not seem to be much evidence of direct Swedish-Finnish

[30] Weslager, 231.

[31] Virginia and Lee McAlester. *A Field Guide to American Houses*. (New York: Alfred A. Knopf, 1984), 83.

[32] Weslager, 99.

[33] Jordan,12; Bealer, 15; Whitwell and Winborne, 14.

[34] Stanley Willis, "Log Houses in Southwest Virginia: Tools Used in Their Construction," *Virginia Cavalcade*, Spring 1972, 37.

[35] Whitwell and Winborne, 16.

influence on building in Virginia.[36] The outbuilding at Solitude exemplifies the German-born construction techniques with the plan and dimensions derived from British Isles sources. As such, it is a very typical early nineteenth century southwestern Virginia log building.

Log structures were suited to early American settlement so perfectly that they became the mainstay for people of all ethnic backgrounds. They formed a highly protective barrier between people and the elements, wild animals, hostile Indians, and for a time, their French allies. They required few hands to build, relatively little time, and few tools. Nails and other hardware, rarely available on the frontier, were not needed for log buildings. Moreover, this form of construction required little money. All that was necessary was a small piece of land and a few good trees. The same construction techniques and materials were used for all buildings, regardless of the building's function. Houses, barns, and outbuildings were all built in a similar manner. They were usually built by the owner to suit his own needs, since they did not require a skilled housewright, or advanced framing techniques. The folk traditions of form and construction were simply handed down through the generations. Hutslar has pointed out that log structures continued to be built in rural areas into the late 19th century, even after other building materials were available, because they were inexpensive, practical, and durable.[37]

2.3 The Decline of the Log House Construction in Southwestern Virginia

In rural areas southwest of the Roanoke, VA, the log house tradition endured for over 150 years. They continued to be built, if only on the more remote farmsteads, through the turn of the 20th century. In Montgomery County, however, building practices began to gradually change prior to the Civil War. The Virginia and Tennessee Railroad line, from Lynchburg, Virginia to Bristol, Tennessee, was completed in 1857, but was operational through Montgomery County several years earlier.[38] Just before the railroad, the first hard surfaced, "macadamized" road in the country was constructed, under the supervision of the Scottish engineer, McAdam himself. The road crossed through Montgomery County from east to west, greatly facilitating the passage of horse-drawn vehicles through the area. The new modes of transportation brought a boom of construction, industry, and improvements to the county, which lasted until the outbreak of the Civil War.[39] Building materials suddenly became easily available and more affordable.

With this new affluence, the rustic log home became associated with meager times of the past, resulting in a social stigma toward them. Frame and brick housing came into favor among those with financial means, especially in the more developed areas.[40] Other important factors in the decline of log housing in the region include the new availability of sawn lumber, and innovations

[36] Willis, 37. See also Whitwell and Winborne, 4.

[37] Weslager, 238; Jordan, 59.

[38] Weslager, 111, 213; Willis, 37.

[39] Crush, 62. Weslager, 240.

[40] John Morgan, *The Log House in East Tennessee* (Knoxville:University of Tennessee Press, 1990), 2; See also Willis, 37.

in frame construction. Portable, steam-powered sawmills invaded populated areas by the 1850's, after which the number of sawmills steadily increased for several decades.[41] The price of nails fell from 25 cents a pound for imported wrought nails in 1800, to 3 cents a pound for domestic machine-cut nails in 1842.[42] Frame construction became easier and more economical with the advent of light construction techniques, such as the balloon-frame, in use by the mid-1800s. The balloon framing system was composed entirely with milled lumber not more than two inches thick, joined primarily with nails. Before that time, most frame structures were built of heavy timber, joined by mortise and tenon, and wooden pegs called *treenails* (*trunnels)*. A timber frame required more time, effort and skill to construct than a light frame.[43]

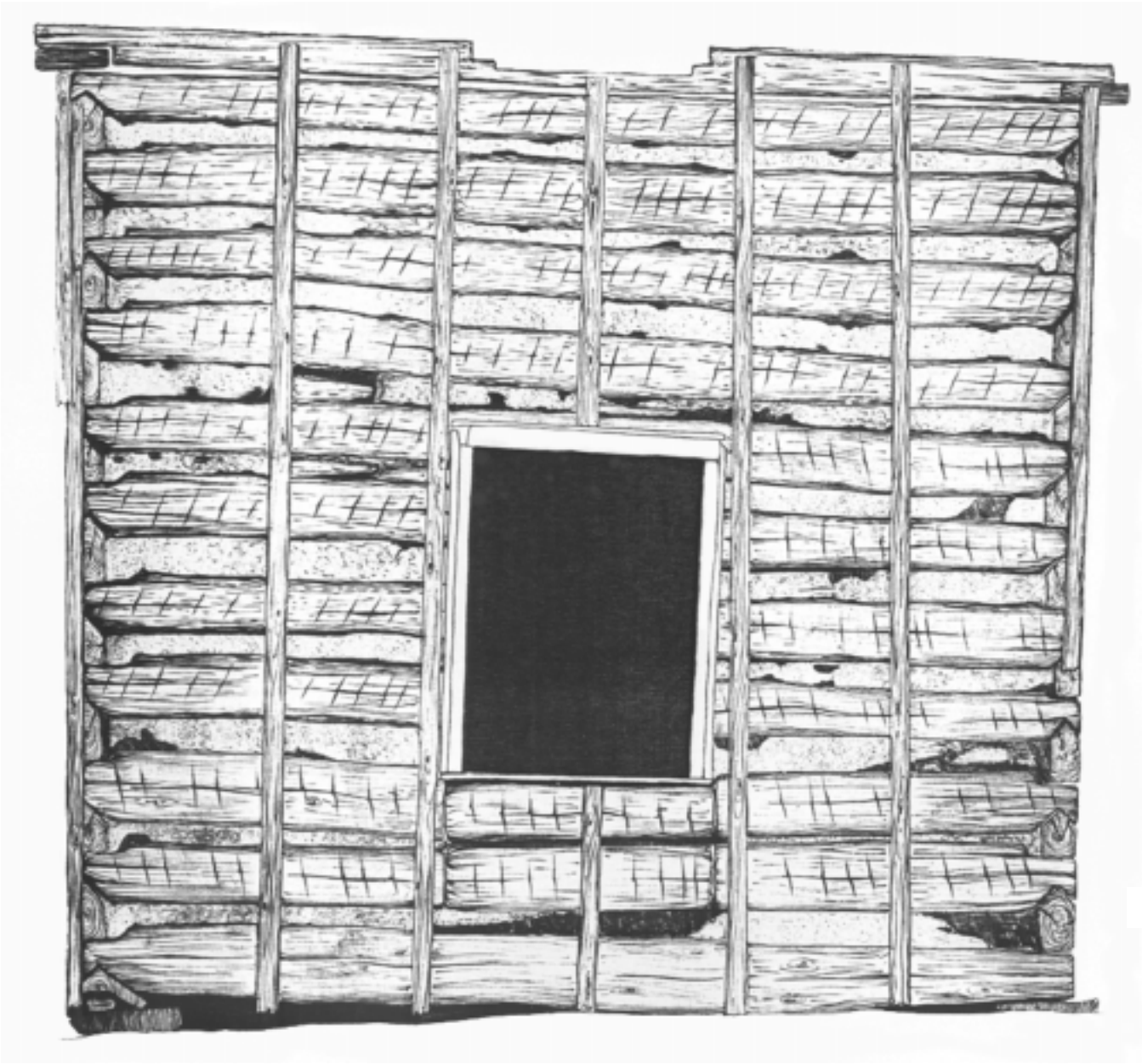
Another new innovation was box construction, also known as board and batten or single wall construction. Morgan asserts that box construction, which was comparatively simple and inexpensive, had replaced the traditional log dwelling and the timber-frame on the rural landscape by the 1890s.[44] There are perhaps many other reasons for the decline of log buildings. In any case, after the 1880s, few were built in Montgomery County.

[41] Brooke Hindle ed. *America's Wooden Age: Aspects of its Early Technology*. (Tarrytown, NY: Sleepy Hollow Restorations, 1975), 56-62, 76.

[42] Hindle, 43.

[43] Morgan, 109.

[44] Morgan, 2, 109.



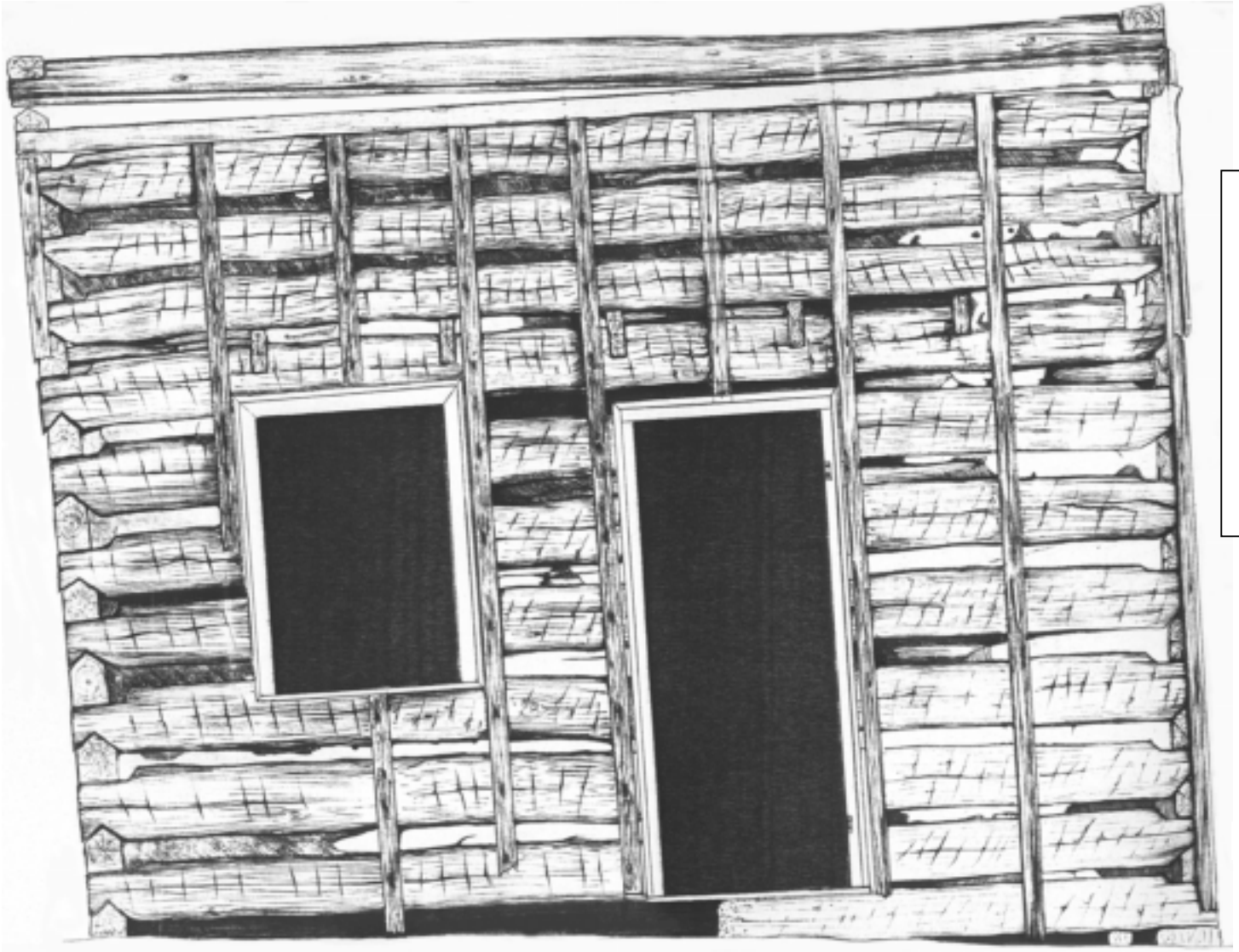
Solitude Outbuilding
South Elevation

Site 44MY159
Standing Structure
150-100-3

24 November 1998
Michael J. Pulice

One Foot

Fig. 15



Solitude Outbuilding
West Elevation

Site 44MY159
Standing Structure
150-100-3

24 November 1998
Michael J. Pulice

One Foot

Fig. 16

CHAPTER THREE Physical Description of the Outbuilding at Solitude

The following description of the structure is based on observations and drawings made from autumn, 1998, through summer, 1999. Much of the structure was no longer there to document. The log pen had been stripped bare of its porch, yellow poplar siding, oak roofing members, log floor joists, and pine flooring. The frame addition and the chimney had also been removed. The log walls were already slumping badly, as shown in the rendered drawings (figs. 15 and 16). This section focuses on describing and documenting the remnants of the building, as in an archaeological perspective. Some effort has been made to relate physical aspects of the building to its locus, its cultural past, and to the history of log housing forms in America. Comments on techniques and materials are also provided. Additional information about the structure, recorded when it was still intact, can be found in the historic structure report filed in 1989 by local architect, Gibson Worsham. Reiteration of that study's findings has been avoided here for the most part. Instead, the aim is to provide additional documentation.

3.1 General Information

The main house at Solitude is situated on the "duck pond," at the south end of the drill field, on the Virginia Tech campus (figs. 6 and 7) The original log pen of the outbuilding is located approximately fifty-five feet to the north of the main house. Its long axis runs southeast to northwest, with the front facing northwest. The pen measures 13' 3"x 15' 9 in plan, and 13' in height at the top of the sill logs. The first story makes up the lower 9 feet or so, while the ½-story *kneewall* of the loft makes up the remaining 4 feet. When the roof was still intact, the building was substantially taller.

The log pen is pierced by two windows, both measuring approximately 3'x 4'. One is centered on the south wall, the other to the left of the door, on the west wall. The doorway measures approximately 2½' x 6½'(figs.15, 16).

A boxed-in stairway in the southwest corner led to the loft (fig. 22). The small space below the stairs was used for storage, and was equipped with a door. The lack of whitewash on the logs in the space under the stairs indicates that the stairs were installed immediately after the log pen was constructed. The loft had pine tongue-and-groove flooring supported by joists that were replaced sometime in the latter half of the twentieth century. The loft has one window in the south gable wall, and one on each side of the chimney, in the north gable wall. The loft was heated by a hearth (now gone) consisting of one course of bricks, supported by sawn lumber notched into ledgers along the east and west walls.

Fig. 17 Edge of hole dug for footer placement is clearly defined by difference in soil color.

The original chimney was located on the north gable end. It was constructed of handmade brick, supported underneath by two massive limestone footers. It was quite large,

accommodating hearths on both floors, but was replaced with a smaller chimney in the 1890s when the frame addition was built. The new chimney (now also gone), was built to accommodate the flue of a coal-burning stove, and was constructed with mass-produced brick. Particles of bricks from both chimneys were recovered during the archaeological excavations. Large quantities of coal were also encountered throughout the excavation area.

3.2 Log Walls

The cabin was built with oak logs, set on cut stone piers placed below the corners and door. A hole dug deep into the subsoil was prepared for footers below each pier. Dark soil marking the exact edge of each hole was uncovered during archeological excavations (fig.17). The stones do not appear to have subsided. Instead, the ground surface around the building has gradually built up. However, it is doubtful that the first course of logs were ever more than one foot above the ground surface. Had the piers been built to two feet above the ground surface, the lower logs and floor joists would have stayed drier, and thus would have suffered far less deterioration.

Fig. 18 Late 19th century photograph showing how log pens similar to the one at Solitude were typically constructed. Each log was pushed up on skids, using long poles. Notice that a window has already been cut so the builders could enter the pen's interior. Notice also the large gaps caused by bowed logs. Hutslar, Donald A. *Log Construction in the Ohio Country, 1750-1850*. (Athens: University of Ohio Press, 1992), frontispiece.

The white oak (*Quercus alba*) trees that the builders selected were remarkably straight and uniform in size, averaging about one-foot in diameter.[45] The.wall logs were laid in courses, supported primarily at each end, where they are notched into other logs. Only the wood chinkers, wedged into the gaps above and below each log, and large rocks wedged below the sill logs provide a small amount of additional support. The logs were almost certainly hewn and notched immediately after being felled, since white oak is reasonably easy to work with hand tools only when it is still green. The largest logs used in the cabin are the four sill logs, which bear the heaviest loads, and those logs making up the east wall.[46] The east wall has no piercings, therefore each log spans the entire 16 feet, and must support the weight of massive logs above it. The three other walls have windows, a door, or a chimney, reducing the total weight of the walls, and the

[45] White oak was considered to be one of the better, if not the best, local species for log buildings. However, pine, chestnut, and poplar were also quite commonly used in southwest Virginia. Although oak is more difficult to work than the others, it is also the strongest, and therefore was a natural choice for long spans without intermediate supports.

[46] Oak sill logs were often employed in structures which were built mostly with other species, because oak was better suited to bear the weight of the entire structure.

spans of most of the logs. The top plate logs are large enough to overhang the rest of the wall below them. Unlike the other logs, the top plates were laid on their sides, joined with square notches and pegged where they overlap at the corners (see oak treenail, fig. 27). They are also the only logs that were hewn on all four sides, in order to accept the rafters more easily. All of the other wall logs have been hewn only on two sides. The top and bottom sides were left round, which was thought to help keep water from pooling on flat surfaces. Hewing the sides was apparently meant to expose the heartwood, which is more decay resistant and absorbs less moisture than the outer layers (sapwood). A count of the growth rings of 14 logs showed that all were remarkably close in age when they were cut. That is to say that all the trees had lived 110 seasons (+/- 6 or so years) when they were felled. This suggests that the builders were very selective about the size of tree they wanted. Clearly they wanted logs of a minimum size, but not so large that excess stock needed to be removed during the hewing process.

Tool marks reveal how the logs were worked and which tools were employed. Many of the logs, especially the smaller ones, appear to have been worked with only a felling axe and a hatchet. The felling axe was suitable for hewing the smaller logs because only a small amount of stock had to be removed to reach the desired thickness, with straight sides. The hatchet was used mainly for cutting and retouching the corner notches for a secure fit. The larger logs required more work. Because all the logs were hewn to about the same thickness, (5½ -7 inches), a considerable amount of stock had to be removed. In this case, the builders used a felling axe to cut deep notches perpendicular to the grain, at 1-2 foot intervals. Indistinct markings indicate they may have used a broadaxe to cleanly and easily remove the bulk of the stock between notches.[47] The log surfaces were smoothed with a foot adz. Adz marks, although quite subtle, can clearly be seen on many of the logs. Again it is mainly the larger logs that bear the adz marks; because they had been reduced more, they needed additional work for smooth, flat surfaces. It was important that the logs were square and flush when it came to applying the weatherboards on the exterior and lath on the interior. The well-hewn logs and tightly fitted notches are evidence that the builders were indeed skilled in log construction.

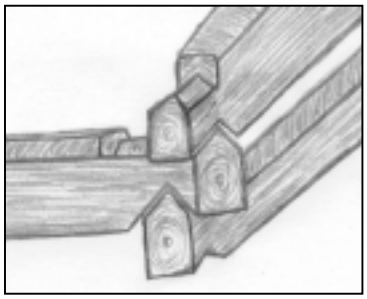


Fig. 19a Indented V-notch

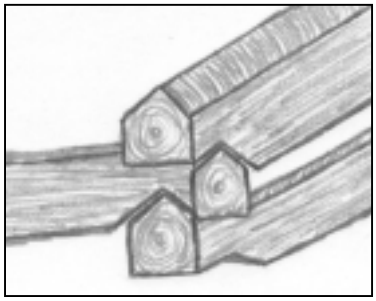


Fig. 19b Regular V-notch

Unlike the logs of many earlier cabins, all of the bark was removed. This expedited the drying of the wood and reduced the number of crevices that can attract termites. Each log is held in place with an indented V-notch, a variation on the ancient saddle notch, which is round rather than V-shaped. By indenting the ends of the logs before notching, the interstices between logs are

[47] Although the broadaxe was the traditional tool for hewing, it was not truly necessary for building modest structures of relatively small logs.

reduced, requiring less chinking (figs. 19a, 19b). The structural stability is also improved somewhat.[48] As the logs were assembled, the door and windows were cut out with a saw and the ends of the logs were sawn flush, producing a straight vertical corner (fig. 18).

3.3 Chinking

The horizontal gaps, *chinks*, or *interstices* between logs had to be filled in order to keep the interior warm and dry. To accomplish this, the builders used wood pieces in two sizes. Small chips of oak were riven from the sawed-off endgrain of the wall logs (fig. 25). These chips were then wedged into gaps between large chestnut "chinkers." Most of the chestnut pieces were sawn at sharp angles on both ends so they fit together forming a *scarf joint,* with the pieces meeting at their diagonal surfaces (fig. 28). However there were also several pieces cut perpendicular to the grain. Why the builders chose chestnut for this purpose is unclear.[49] Once the interstices were closed up tightly with the wood, a mortar of clay, lime, sand and livestock hair was daubed onto the wood pieces, which served as a backing for the mortar.[50] The gaps were then filled in flush with the inside and outside edges of the logs, creating relatively flat wall surfaces. On the exterior of the building only the chinking, rather than the entire wall, was coated with a thick shell of lime whitewash for protection from the weather.[51] On the interior, each wall was fully coated with the wash.

3.4 Flooring and Roofing

Until recently, most of the original flooring of the cabin remained intact, although badly damaged by decay organisms. The floor boards had been removed and probably discarded by the time this study was begun. However, the log floor joists were still lying next to the building. They consisted of seven to nine-inch round white oak logs, which were worked with a foot adze on the top only, to provide a flat surface for the floor boards. Each end of the joists were cut with hatchet and chisel down to about a four inch square. The squared ends fit neatly into notches cut into the log sills. As would be expected, the joists were laid across, rather than with the length of the building, at intervals of no more than sixteen inches on-center.

The roof structure consisted of a rafter and ridgeboard system with cross-ties or *collar beams*, all of which was comprised of hewn oak members. The rafters were nailed to the ridgeboard, but the cross-ties were lapped and pegged into each pair of rafters.[52] The roof was covered with American chestnut (*Casteneda dentata*) shingles, two of which were recovered during the recent rehabilitation of the building. The shingled roof is visible in an early photograph (fig. 10).

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[48] The V-notch seems to have been the most prevalent notching technique for homes, outbuildings and barns in Montgomery County during the 19th century.

[49] Although it is a very durable wood, chestnut was not used elsewhere on the building.

[50] For a detailed analysis of the mortar, see section on chinking analysis.

[51] The log surfaces were not whitewashed on the exterior. The builders probably intended on siding the house with weatherboards within a few years of construction, as it appears they did.

[52] Worsham, 1989, 6.

3.5 Interior Treatment

Fig. 20 1999 photograph showing some of the surviving original lath, nailed directly into the wall logs (NE corner of log pen). Some whitewash can be seen on the logs also.

All that remained of the interior treatment at the time of this study was some lath and small areas of intact plaster. The lath was split or *riven* with a fro and then shaved with a drawknife into markedly uniform pieces. Each piece was nailed with tiny, specialized, machine-cut lath nails, directly into the logs without the use of vertical nailers (fig. 20).[53] The fact that this method left little space for adequate *keying* behind the lath may have contributed to the plaster's lack of adhesion, hence the dramatic loss of plaster as the building aged (fig. 21).[54] The plaster was applied in three coats with varying proportions of ingredients.[55] The base coat or scratch coat, varying between 1/4" and 3/8", formed a mechanical bond with the lath as it was pushed through the gaps between pieces of lath, forming curls or *keys* that held the plaster to the lath.

Fig. 21 1989 photo of lower floor of original log section, looking into the frame addition through the doorway. Note the severe loss of plaster. Arrow points to the same corner as the arrow in Figure 20.

Analysis of the plaster revealed a substantial variance in lime content between two scratch coat samples.[56] After application, the surface of the scratch coat was scratched or *scarified* while still soft, to form a rough surface. The second coat or *brown coat* adhered readily to the scratched surface. The thickness of the brown coat varied somewhat but was generally about 1/4" thick A *finish coat*, high in lime content and white in color, was then applied

[53] The logs had been whitewashed previously on the interior.

[54] Settling of the building and moisture infiltration certainly expedited the plaster loss. Shrinking and swelling of wooden lath due to excessive changes in moisture are a common factor in the loss of plaster in historic buildings.

[55] For a thorough breakdown of ingredients, see section on plaster analysis.

[56] This may suggest that the plaster was poorly mixed, thereby reducing its strength, and thus further reducing its adherence to the lath. The high proportion of aggregates in the mix may have also been a factor.

approximately 1/16" thick. Lime was used in plaster finishes until being replaced by gypsum in the late nineteenth century. [57]

3.6 Synopsis of Modifications to the Outbuilding Over Time

The original log pen appears to have been built in the early 1840s (indications of this date will be discussed in greater detail in the following chapters). The large frame wing and long front porch of the main house are thought to have been added around 1851.[58] Given the prosperity the Prestons enjoyed during the 1850s, as well as the decreasing cost and increasing availability of milled lumber and machine-made nails during the period, it seems unlikely that a *log* dependency would postdate the *frame* addition to the main house. As noted previously, the availability of new construction materials effectively brought an end to log construction in southwestern Virginia, beginning in the 1850s.

However, improvements to the outbuilding, including the porch, built of framing lumber, milled yellow poplar weatherboards, loft windows, and interior plaster appear to have been added several years after the log pen was first occupied. Due to the outbuilding's conspicuous location and its function as a dwelling, its appearance was probably modified in correspondence with each modification to the appearance of the main house. Therefore, it seems quite likely that the improvements made to the outbuilding coincided with the improvements made to the main house, possibly in 1851. The outbuilding's original form included two glazed windows, a large brick chimney on the north gable-end –with hearths both upstairs and downstairs, the boxed stairs in the southwest corner, pine tongue-and-groove flooring and wood roofing shingles, probably made of chestnut.[59]

Late nineteenth century maps and photographs suggest that the board-and-batten clad frame addition on the north side of the log pen, removed in the early 1990s, was not constructed until the 1890s (figs. 8, 10). It appears that the original brick chimney was demolished when the addition was built, and replaced with a smaller brick chimney containing a flue for a coal furnace. The addition had a door at the rear and a window centered on the front side (fig. 22).

[57] David Flaharty. "Plaster," in *Caring for Your Historic House*. ed. Charles Fisher and Hugh C. Miller. Heritage Preservation and National Park Service. (New York: Harry N. Adams, 1998), 106.

[58] Jun Zhu, A Study for Preserving and Renovating the Main Building of Solitude, (1995), 8.

[59] Chestnut shingles were found at the site, but it is impossible to discern whether or not they were the original shingles.

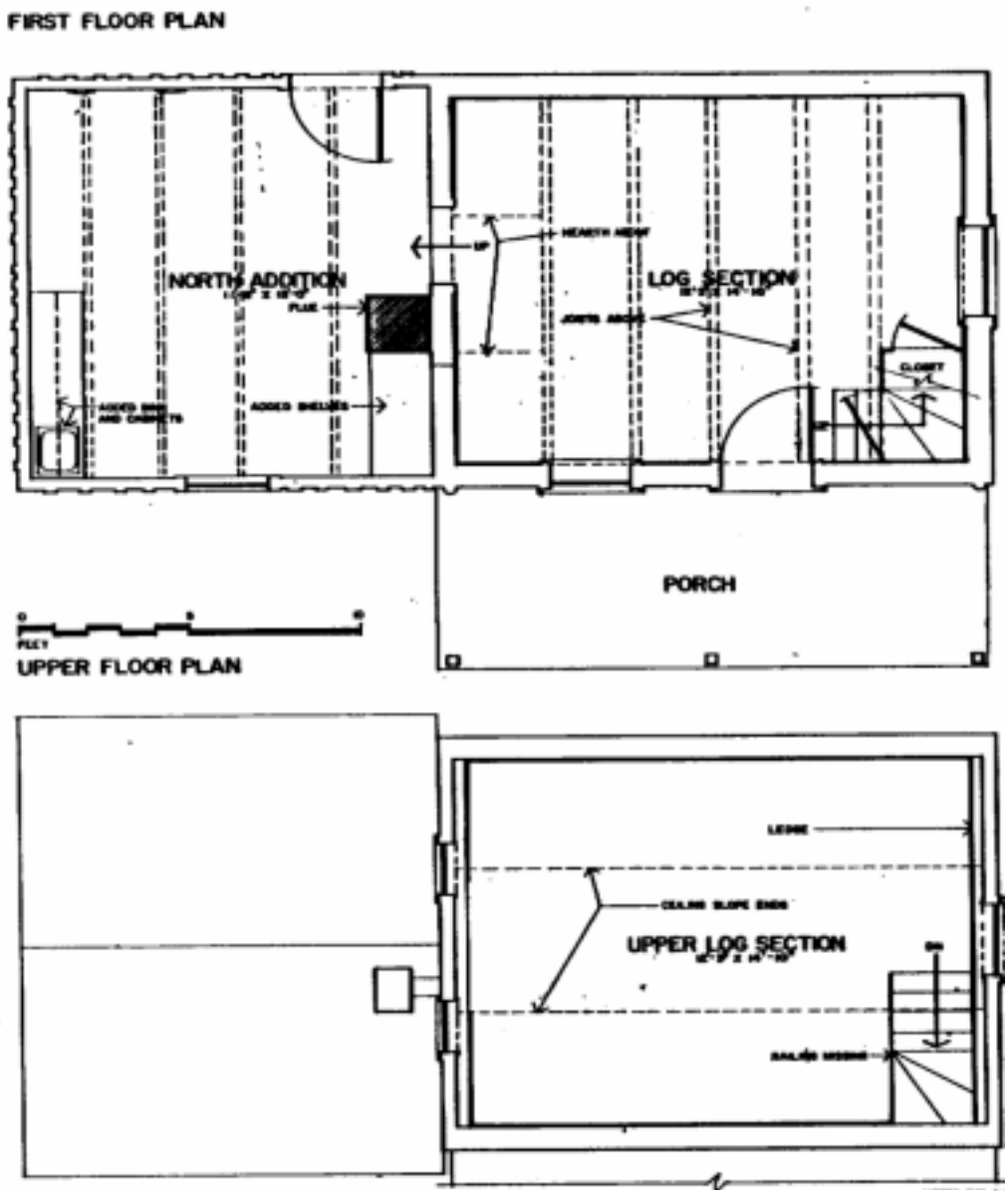


Fig. 22 Plans of Solitude outbuliding by Gibson Worsham, from *Historic Structure Report*, 1989.

CHAPTER FOUR Analysis of Wood Found in the Original Log Structure

The wood sample summary, shown in table 1, lists thirteen pieces of wood from the original log portion of the outbuilding that were closely inspected for this study. The location where each piece was found is also listed. No two wood samples were alike. Every attempt was made to recover a representative sample of each type and function of wood used in construction. The major exceptions to this would be the roof structure, the porch elements, and the exterior siding, all of which had long been removed from the building by the time this study was undertaken. The frame addition had also been demolished previously.

Fig. 23 Remains of log below door

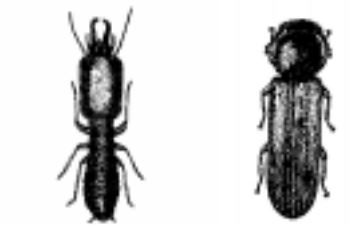


Fig. 24 E. subterranean termite (left) Powder post beetle (right)

Martin E. Weaver *Conserving Buildings*, p.31

For documentation purposes, the author inspected most of the building's wood during the summer of 1999, in order to provide for a general statement concerning the building's overall condition. In doing so, a moisture meter was employed to find where conditions were conducive to further deterioration. It was found that on a dry summer day moisture readings were still dangerously high, in spite of the extravagant temporary roof that had been assembled over the building a few months earlier. Logs within one foot of the ground surface had a moisture content of eighteen to thirty percent, inviting wood boring insects and decay fungi. The extent of the deterioration caused by these organisms over the last decade was extensive, due to high moisture levels caused principally by poor site drainage and a failed roof, and further exacerbated by deferred maintenance of the building (see figs. 2, 3, 4, 15, 16, 20, 21, 23, 26).

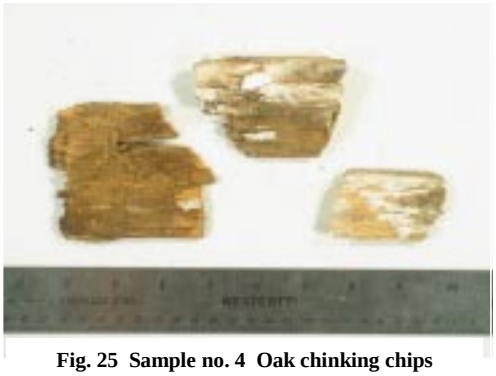


Fig. 25 Sample no. 4 Oak chinking chips

Fig. 26 Termite damaged log floor joist

Investigations have shown the eastern subterranean termite (*Reticulitermes flavipes*) and powder post beetles (*Lyctur brunneus*) to have been the most active insects (Fig. 24). Of the two, the termites were by far the most destructive, in some cases almost completely devouring the log. Decay fungi have also been found throughout the building, with brown rot fungi overwhelmingly the most prevalent, and thus causing the most damage. White rot fungi were also notably present however. The extent of fungal growth suggests that in the recent past, the moisture content of the wood elements exceeded the fiber

saturation point, or about twenty-five percent.[60] It is likely that the most deteriorated logs have reached as high as thirty-five to fifty percent moisture content, given their present condition. This level of moisture combined with summertime temperatures is most conducive to fungal growth.[61] It should be noted, however, that a chemical treatment would have been effective in retarding its growth, had it been applied.

Fig.28 Sample no. 3 Large chestnut chinker

Fig. 27 Sample no. 8 Oak treenail

The wood enduring a continuous cycle of absorbing moisture and then drying to equilibrium not only invited unwanted organisms, but also brought gradual loss of structural strength due to shrinking and swelling of the wood members. Massive drying checks in most of the logs are evidence of this. Shrinking and swelling has without doubt contributed to the loosening of joints, and the loss of much of the cabin's original chinking. Some shrinking and swelling is of course expected in the area's humid climate, but the exposure to excess moisture in the form of liquid water has allowed for swelling far in excess of what this type of construction is designed to sustain.

The unfortunate effects of these moisture related problems have been well documented at Solitude (figs. 23, 26, 29-31). The stately main house has suffered tremendously, while the outbuilding was reduced to ruins in only a few short years. During the ongoing rehabilitation, many of the original oak logs from both buildings have had to be removed and discarded. In some cases, i.e. the outbuilding's lowest course of logs, there was little or nothing left to remove. Furthermore, the attenuated strength of the remaining logs has necessitated substantial additional support in order to stabilize the structure (fig. 4).

[60] Martin E Weaver. *Conserving Buildings*, 24.

[61] Weaver, 24.

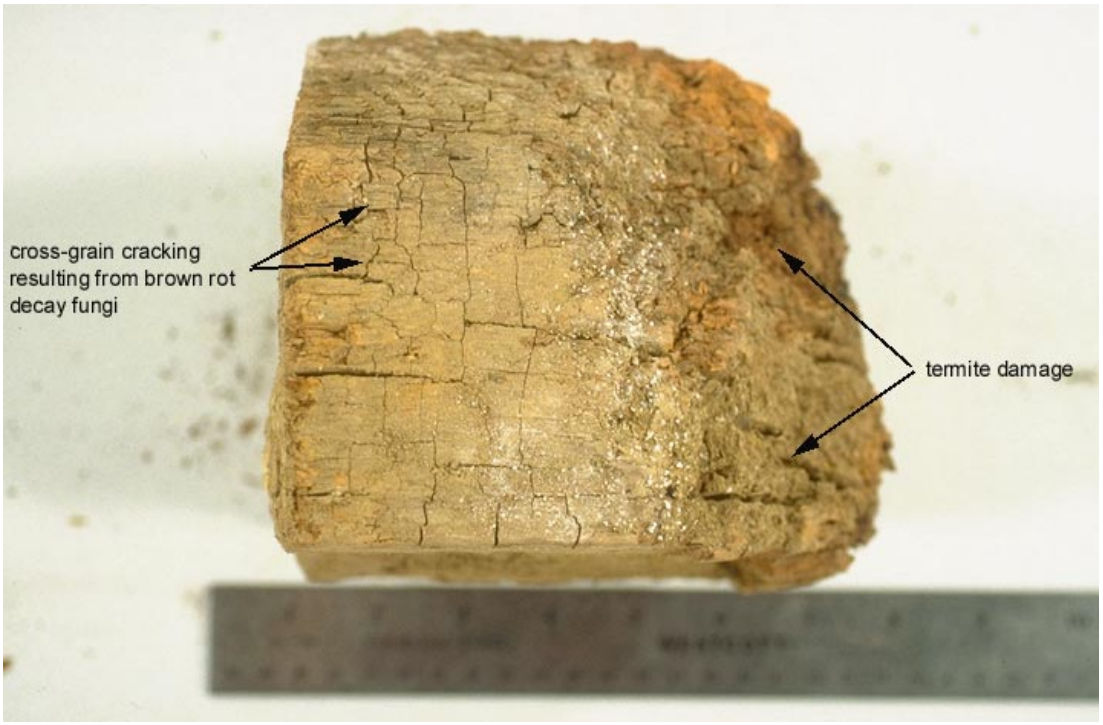


Fig. 29 Severely deteriorated lower floor joist. Listed as Sample 11 in Table 1.

The study of wood deterioration processes can be a valuable tool for those individuals who are charged with preserving these specific buildings, as well as other wood structures. It is clear that wood structures that are allowed to slump or subside will absorb excess moisture from ground contact. Moreover, roof failure and even chimney failure will allow rainwater infiltration, which is effectively a prescription for rapid deterioration of the building. The pattern of rainwater entering through a leaky roof and running down the rafters onto the top plate logs is certainly common in such buildings. In the case of the outbuilding at Solitude, this pattern and the resulting decay is now clearly visible. Understanding the processes, patterns and consequences of these problems is fundamental to the preservation of wood structures. The small cost of maintaining and protecting a building will save the potentially enormous cost of restoring it.

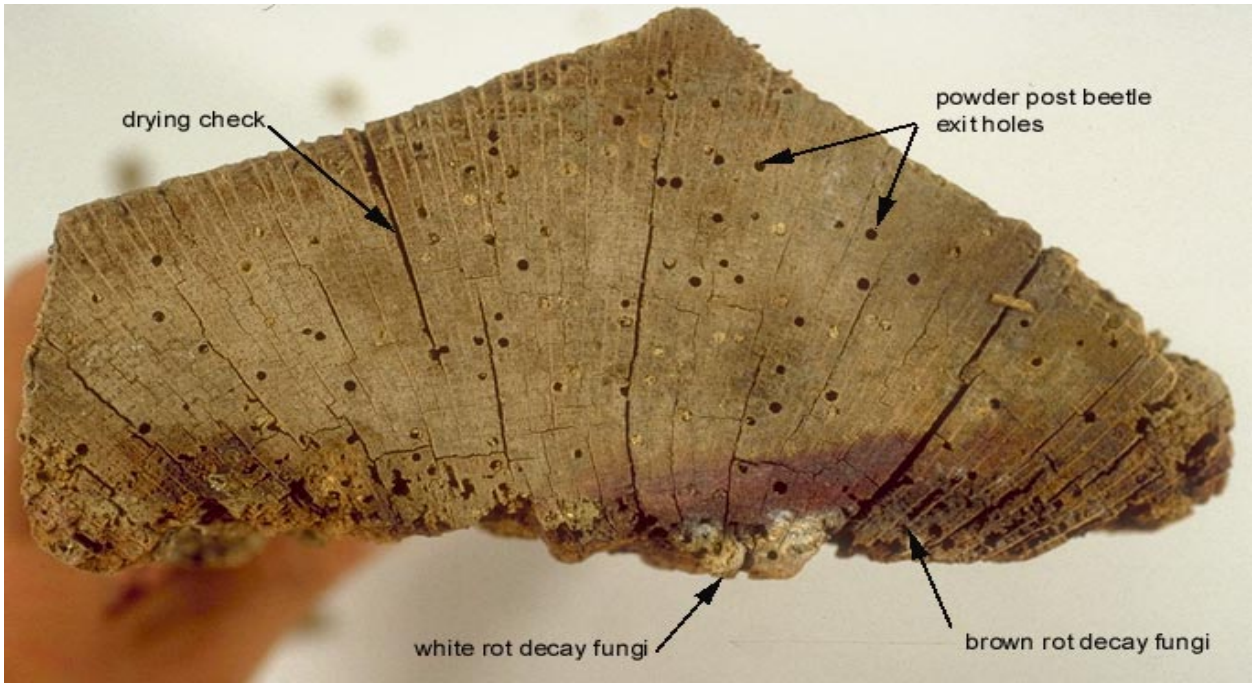


Fig. 30 Severely decayed lower course wall log. Listed as Sample 10 in Table 1.

Fig. 31 Severely deteriorated lower course wall log (not included in Table 1).

Table 1 Solitude Outbuilding: Wood Sample Summary

Sample No.	Location	Description	Finish	Species	Cutting Method	Deterioration Present	Condition
1	below floor	piece of lap-jointed window frame	white paint	Eastern white pine Pinus strobus	hand sawn	none	(Good) 1 **2** 3 4 5 (Poor)
2	found discarded	large chinker	none	American Chestnut Castanea dentata	hand sawn perpendicular to grain	brown rot fungi, powder post beetle damage	(Good) 1 2 **3** 4 5 (Poor)
3	found discarded	large chinker	none	American Chestnut Castanea dentata	hand sawn diagonal to grain	brown rot fungi	(Good) 1 **2** 3 4 5 (Poor)
4	west wall	small chinking "chip"	none	White Oak Quercus alba	quartered with wedge, riven with fro	brown rot fungi	(Good) 1 **2** 3 4 5 (Poor)
5	below floor	shingle	none	American Chestnut Castanea dentata	quartered with wedge, riven with fro, shaved with drawknife	none	(Good) **1** 2 3 4 5 (Poor)
6	below floor	molding strip	white paint	southern yellow pine Pinus spp.	machine milled	brown rot fungi, powder post beetle damage	(Good) 1 2 3 **4** 5 (Poor)
7	found discarded	tongue & groove floor board	grey paint	southern yellow pine Pinus spp.	machine milled, rotary planed	none	(Good) **1** 2 3 4 5 (Poor)
8	found discarded	peg (aka. trunnel or treenail)	none	White Oak Quercus alba	squared with fro, shaved with hatchet	minor surface termite damage	(Good) 1 **2** 3 4 5 (Poor)
9	east wall	interior lath	plastered	White Oak Quercus alba	riven with fro, shaved with drawknife	brown rot fungi	(Good) 1 2 **3** 4 5 (Poor)
10	below floor	wall log	white washed on two sides	White Oak Quercus alba	broad axe, felling axe, hatchet and foot adze	brown & white rot fungi, powder post beetle & termite damage, molds/ mildews	(Good) 1 2 3 4 **5** (Poor)
11	found discarded	log floor joist	none	White Oak Quercus alba	felling axe, hatchet, and foot adze	brown & white rot fungi, powder post beetle & termite damage, molds/ mildews	(Good) 1 2 3 4 **5** (Poor)
12	still intact	stair treads & stringers	grey paint	southern yellow pine Pinus spp.	rotary planed	minor brown rot, powder post beetle damage	(Good) 1 **2** 3 4 5 (Poor)
13	still intact	garret floor joists	none	White Oak Quercus alba	radial sawn	minor brown rot, powder post beetle damage, light mold/ mildew	(Good) 1 2 **3** 4 5 (Poor)

CHAPTER FIVE Dendrochronology

While in the course of research for this thesis, it became apparent that a dendrochronology study on the outbuilding had never been done, nor had samples of its logs ever been taken.[62] Dendrochronologist Herman Jack Heikkenen was then contracted by the university to do the study. At this time, the building's rehabilitation had just begun, so it was arranged that any logs that were to be replaced be saved for sampling. Twelve good samples were taken from those logs, and two more from the ends of in situ logs. Wall logs, top plate logs, sill logs and floor joists were all represented among the samples (fig. 32). The samples were approximately one-inch thick cross sections, cut with a saw (fig. 33, 34). The sampling procedure did not impair either the structural strength, or the historic character of the logs.

Fig. 32 Dr. Heikkenen saws a sample from log sill. The sill had already been replaced due to its badly deteriorated condition.

The method employed in the study involves the precise measuring of the intervals between growth rings, visible in the cross section of a log, and comparing the intervals with those from other logs for which a felling date has been established. The *key-year* alignment technique is Heikkenen's patented dendrochronological method for studying annual growing seasons according to tree species over a lengthy time period. This method works particularly well for accurately determining the year of construction of historic buildings or the authenticity of logs within buildings.[63]

Fig. 33 Photograph showing thickness of sample taken from a floor joist.

The development of the area's tree-ring pattern for white oak is based on a computerized analysis of a number of trees from a site that show relative growth differences in a given year. In key-years, the relative growth of a significant number of trees coincides. Since Dr. Heikkenen has established an area key-year pattern for oak, he was able to align the tree-ring patterns from the outbuilding samples with the area pattern, thus deriving the date in which the

[62] Gibson Worsham's 1997 HSR on the main house (page 16), states that an unpublished study had been done, and even provides a construction date of 1859 —said to have been determined from such a study.

[63] Herman J. Heikkenen *The Year of Construction of Solitude Dependency, as Derived by Key-year Dendrochronology.* (Dendrochronology, Inc. 22 December 1999), 2.

trees were felled. He found that the year of best fit was 1843, having highly significant statistical values.[64]

Fig. 34 Photograph showing dendrochronology sample taken from a discarded wall log.

[64] Heikkenen, 1995, 5.

CHAPTER SIX Plaster and Chinking Analysis

A thorough breakdown of the materials making up the outbuilding's mid-nineteenth century interior plaster and original chinking mortar is provided in this section. For the purposes of this analysis, a makeshift laboratory was set up in the kitchen in the main house at Solitude. All of the necessary materials and equipment, such as digital scales, beakers, filters and sieves were generously loaned or donated by faculty and staff members in the Departments of Biology and Soil Science at Virginia Tech.

6.1 Methodology used in Plaster Analysis

Three samples were collected from some of the few remaining patches of intact plaster in the building. In addition to a scratch coat sample from the west wall, a scratch coat sample and a brown coat sample were collected from the same location on the ceiling. The two coats were then separated with a chisel. The color of each sample was then documented using a Munsell Color Chart, and relative hardness was estimated for comparison. Each sample was crushed with a mortar and pestle, then heated to release any moisture content before they were weighed. Samples of at least ten grams were required for an accurate analysis.

Each sample was then combined with a hydrochloric acid solution and agitated. The lime present in the samples reacted with the acid, and dissolved into the solution. The solution, now containing the dissolved lime and the impurities or *fines*, was then poured through filter paper, capturing only the fines. The fines are essentially clay particles that are so small in mass that they become suspended in the solution, but are too large to pass through the filter paper. The remaining sediments were rinsed and allowed at least 24 hours to dry, while the fines were allowed to dry on the filter paper they were collected in. The filter paper was weighed, and the weight of the paper itself subtracted, in order to determine the weight of the fines. The weight of the fines and remaining sediments combined, subtracted from the weight of the original sample, supplied the weight of the lime that had been poured off in the solution. The Munsell colors of the fines and the coarse sediments (sands) were recorded separately. The sands were then passed through a series of sieves (USA standard testing sieves with A.S.T.M.E.-11 specifications) graduated from coarse (#18) to fine (#140). Each sieve collected a certain size-range of particles, so the contents of each sieve could be weighed separately. All weight measurements were taken with a digital scale, accurate to .1 gram.

Because each component of the plaster was isolated and precisely weighed, it was possible to determine the exact percentage of each component in the plaster. The results of the analyses were recorded on forms and tabulated in spreadsheets.

6.2 Results

All of the original plaster in the building was composed of roughly similar proportions of the same ingredients. Sharply angular sand was mixed with hydrated lime, clean water, and a small proportion of livestock hair—presumably horsehair.[65] Significant differences between the three

[65] Both the sand and the hair would have been washed and dried before use.

samples are illustrated by the results, as seen in Table 2. Whereas the scratch coat samples were very close in color, the brown coat sample was indeed browner in color. The differences in hardness can be easily attributed to varying degrees of exposure to moisture as the building deteriorated. However, the north wall scratch coat was found to contain a good deal more lime (soluble fraction) than the ceiling scratch coat. The ceiling brown coat had by far the highest proportion of sand, and by far the lowest proportion of fines. This indicates that a coarse mix was desired, thus the sand was very well washed before use. The sand grain sizes of each sample vary randomly, yet there is no substantial level of variance between samples. This is perhaps evidence that the sand in each sample was obtained from the same location. The fact that the sand from all three samples was precisely the same Munsell color supports this hypothesis. The considerable proportional difference between the soluble fractions of both scratch coat samples is not as easily explained. It is possible that the plaster was mixed at different times by different people, or that the plasterers spared little effort in measuring their ingredients. Measuring a "half-pail" of lime by eye could result in substantial variance between mixes. It is also possible that poor consistency due to inadequate mixing resulted in the north wall sample containing more and/or larger particles of lime. Lime that has not been burned and hydrated or "slaked" properly does not incorporate as easily as lime that has been well processed. The results of the plaster analysis are summarized in Table 2.

6.3 Chinking Analysis

The chinks, or interstices, between the logs of a V-notched structure tend to be rather large, and therefore must be filled in with some available material in order to weatherproof the building. Wood, stone and clay are the most common chinking materials. In the case of the log outbuilding at Solitude, the builders used fairly large diagonally cut pieces of chestnut, small chips of oak, and a lime mortar. The chestnut pieces were large enough to fill much of the space between logs, reducing the amount of mortar needed. They were wedged in along with the oak chips, not only to fill the voids, but also to provide a backing for the mortar. The mortar was pushed into the gaps between pieces of wood, and thus was held in place until it dried. After the mortar dried, it was coated with a heavy limewash for protection.

The mortar was analyzed using the same process that was used with the plaster. The key difference between the processes is that no separation of layers was necessary, because the mortar was applied in a single coat. However, the exterior limewash was carefully removed from the samples prepared for testing. Six mortar samples were taken from different locations. Samples were collected only from areas where the chinking was in poor condition and could not be salvaged.

Oddly enough, the testing revealed close similarities between the plaster and the mortar, although they appeared clearly different to the eye. The mortar is much coarser in texture and reddish in color, with larger unburned lime particles. The percentage of animal hair, although difficult to quantify, was certainly higher in the mortar. On average, the mortar, with a mean lime percentage of 12.4, contained less lime than did the plaster, with a mean percentage of 15.3. However, the mortar samples varied widely in lime (soluble) content. As with the plaster, this is most likely the result inconsistent measuring and/or inadequate mixing by the builders. Apparently they were not overly concerned with mixing the materials thoroughly or measuring

carefully. The moderate variance in colors among both plaster and mortar samples was only slightly perceptible when using the Munsell Chart, again possibly indicating a common source for all of the materials. The colors range from very pale brown to brownish yellow.
Results of the chinking mortar analysis are summarized in Table 3.

Table 2 Plaster Analysis

Sample Location	Mid 1st floor ceiling	N. wall interior	Mid 1st floor ceiling
Coat	scratch	scratch	brown
Sample Weight	17.4g	11.2g	15.0g
Sample Color	10YR 7.5/2	10YR 7.5/3	10YR6/3
Hardness	med-hard	med-friable	med-friable
% Soluble	13.2	18.75	14
% Sand	72.4	66.96	76.6
% Fines	14.36	14.28	9.3
%Fines in Sand	19.84	21.3	12.17
Fines Color	2.5Y 7/4	10YR 7/3	10YR 6/3
Sand Color	10YR 7/4	10YR 7/4	10YR 7/4
Sieve #18	4.7	1.3	4.3
Sieve #35	5.5	9.3	6
Sieve #60	42.9	38.6	40
Sieve #80	15.9	17.3	16.5
Sieve #100	8.7	8	9.5
Sieve #140	8.7	10.6	7.8
Pass	11.9	24	15.65

Table 3 Chinking Mortar Analysis

Sample Location	W. wall interior	S. wall interior	E. wall interior	W. wall exterior	S. wall exterior	W. wall exterior
Sample Weight	15.2g	13.3g	13.6g	13.0g	18.8g	14.8g
Munsell Color	10YR 7/4	10YR 7/4	10YR 6.5/6	10YR 6.5/6	10YR 7/4	10YR 7/4.6
Hardness	med-hard	very hard	med-hard	med-hard	friable	friable
% Soluble	15.13	16.54	8.82	8.46	10.63	14.86
% Sand	75.65	75.18	72.79	78.46	71.27	72.29
% Fines	9.21	8.27	18.38	13.07	18.08	12.83
%Fines in Sand	12.17	11	25.25	16.65	25.36	17.75
Fines Color	10YR 7/4	10YR 7/4.6	10 YR 7/4	10 YR 7/4	10 YR 6/6	10 YR 6/6
Sand Color	10 YR 8/3	10 YR 8/4.6	10 YR 8/4.6	10 YR 8/4.6	10 YR 5/6	10 YR 5.5/6
#18	2.6	3	17.1	7.84	8.95	5.6
#35	6.9	8	5.05	7.84	14.18	14.95
#60	42.6	42	31.31	35.29	27.6	29.9
#80	20.8	14	19.19	16.6	13.43	14
#100	10.43	10	9.09	8.8	8.2	6.54
#140	8.7	9	9.09	10.8	8.95	13.08
Pass	7.8	11	8.08	11.76	16.4	15.89

PART II Archaeological Investigations at Solitude

Excavations around the outbuilding at Solitude were undertaken by Radford University archaeology students, under the direction of Professor Cliff Boyd, in 1988 and 1989.[66] The excavations were aimed at revealing as much as possible about the outbuilding. However, specific questions concerning the building's original function and date of construction were hoped to be answered so that its restoration would reflect an accurate interpretation. Analysis of the recovered artifacts and their spatial distribution has, in fact, yielded some important information. Moreover, the combined information from the architectural analysis and the archaeological investigations has been used to provide reasonably sound conclusions regarding the outbuilding and its history.

[66] The outbuilding was designated standing structure no.150-100-3 by the Virginia Department of Historic Resources. The archaeological site number is 44MY159.

CHAPTER SEVEN Field Methodology

7.1 Excavation Units

Fig. 35 1989 Radford University Fieldschool at Solitude.

Based on a grid system, thirty-one 1-meter square excavation units were laid in strategically around the outbuilding (figs. 36, 37), working under the assumption that artifacts associated with the outbuilding should be found in close proximity to it, and that the probability of contamination with artifacts associated with other nearby buildings or yard activities increases with distance from the building. In addition, trenches, or in this case holes dug to accommodate footers supporting the building, are often found to have been receptacles of debris associated with building construction. Unit coordinates were shot in with a transit, and tied in with an established Virginia Tech benchmark.

Although the English foot is the unit of measurement typically used by archaeologists excavating historic sites, this excavation was a learning exercise as well as a legitimate investigation. For most, if not all of the students, it was their first real practice using the metric system. This was a valuable experience, since knowledge of the metric system is required of those who go on to work in the field of archaeology.

Unit 1 was the original test unit, excavated early in the 1988 field season. Units 2-5 were opened later that year. Anticipating future excavations on the Solitude property, the 1989 grid (units 6-31) was aligned with the long axis of the main house, which seemed much more likely than the outbuilding to survive in the long term.[67] Therefore, the 1989 units are oriented at oblique angles to the outbuilding walls, in many cases affecting the surface area of a unit. Therefore the volume of earth that was actually excavated varied a great deal between units. Excavation could not be carried out on the grid south side of the building due to the presence of a gravel driveway that has since been removed. Excavation on the grid west side of the original log pen was at that time impeded by a porch. Units 30 and 31 only could be laid in on that side, after part of the porch was removed late in the field session. Unit 17 was placed inside the frame addition after the rotted floorboards had been removed. The floor in the log pen was still intact at that time.

7.2 Excavation Levels Within Units

Because nineteenth century artifacts are usually found to have been deposited in heavy concentrations over relatively short periods of time, clearly distinct stratigraphy is rarely

[67] As of May 2000, no other excavations have taken place on the property.

encountered. It is far more common to find a gradual but continuous deposition of artifacts in a more or less homogenous soil matrix. Therefore it is useful to excavate with tight vertical control. Doing so can allow for a depositional chronology to be determined based on the average age of the artifacts from each level. Of course if the deposits have been disturbed, upsetting the superposition of the artifacts as they were buried, this too can usually be determined when using tight vertical controls. The work at Solitude proceeded accordingly. After the roughly ten centimeters of sod had been removed as a single layer, the excavations progressed in arbitrary five-centimeter levels until a natural soil-break was reached at the subsoil interface. In some cases, an additional level was excavated, penetrating the subsoil. Level elevations were measured with level lines from ground surface. Ground surface elevations were measured with a transit.

7.3 Equipment Used

Levels were excavated primarily with trowel and brush, due to generally high artifact density throughout the site. Five-centimeter levels notwithstanding, the large quantities of glass and ceramics precluded regular use of a shovel. All soil was passed through ¼" mesh screen, the contents of which were recorded and bagged by unit and level. A Munsell Soil Color Chart was employed in describing the soils for each level.

7.4 Notes on Site Integrity

Cultural stratigraphy refers to distinct layers of soil, each deposited within a separate time frame or episode so that each layer can be identified by its artifactual content, relative to overlying and underlying layers. In an undisturbed context, each stratum was deposited more recently than the stratum beneath it. Artifacts contained within intact stratigraphy have the potential to yield a great deal more information than those contained in an unstratified or disturbed matrix. Integrity refers to the degree of disturbance the stratigraphy has sustained since the artifacts were first buried.

Because the excavations were limited to the immediate area around the outbuilding, we still know little about the overall integrity of the site. More investigations are needed on the Solitude property in order to determine the nature and extent of post-depositional disturbances on this landmark property. However, within the context of the immediate environs of the outbuilding, some undisturbed, artifact-bearing soil layers have been identified and partially excavated (fig. 34). The least disturbed areas were confined to the grid north and east limits of the excavation area, units 6-12 and 19-22, along the north and east walls of the structure. The general soil profile in these units consisted of roughly twenty-five centimeters of accumulated topsoil overlying ten centimeters of a mottled cultural stratum. Below that is a 5-10 centimeter prehistoric mottled transitional stratum overlying an undisturbed, culturally sterile subsoil. These layers were found to be thickest in units 6-12 and 19. In contrast, on the west side of the structure, the layers were found to have been truncated, mixed, scattered or redeposited, most notably in units 1-5. Fragmented remains of a brick walkway leading to the front door of the outbuilding were encountered in unit 1, suggesting that dramatic disturbances have occurred in that area. It appears that in general, the soils closest to the structure were the best protected from post-depositional disturbances. However, posthole tests did reveal what appears to have been an ash pit, at least partially undisturbed, extending several meters from the northeast corner of the

outbuilding. Unfortunately, lack of time and resources prevented further investigation of that feature. There were no other intact subsurface features encountered during the excavations. Common post-depositional artifact dispersal agents, such as domestic animals scavenging through garbage or humans displacing the accumulated refuse in landscaping efforts, have affected areas of the site away from the building much more so than those areas within 1-meter of the building.

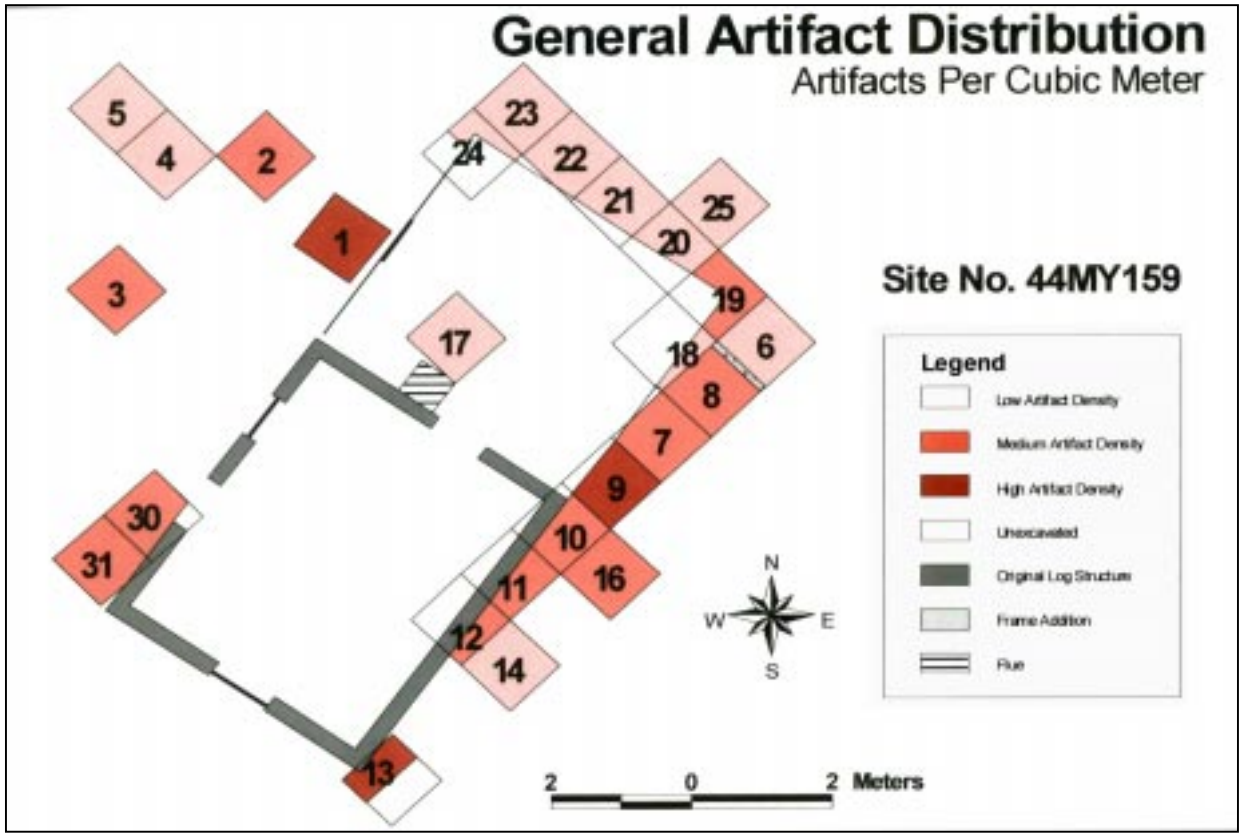


Fig. 36 Shows general artifact density by unit. Densities have been adjusted for variations in the volume of earth removed from each unit.

CHAPTER EIGHT Artifact Assemblage

8.1 Temporal Analyses

In order to determine a general depositional chronology for the site, certain artifacts were closely studied, including ceramics, flat glass, and nails. The initial quantifications, descriptions and analyses of the ceramics were carried out by Radford University students from 1990 to 1992. During that period, students calculated the mean ceramic dates shown in Table 4.

The mean dates ranged from 1850 to 1880, with the modal values (56 out of 66 dates) ranging over the twenty-year period from 1850-1870. An overall mean date of 1862 was found for the 66 dates in Table 4. These dates indicate that the most intensive period of site usage was from roughly 1850 to 1870. The mean ceramic dates also support an early 1840s date for the earliest domestic use of the building (i.e. housing), and light or sporadic domestic usage after the turn of the century.

Table 4 Mean Ceramic Dates for Solitude Site

	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
Square 6	1860	1860	1856	1870			
Square 7	1864.3	1862.5	1860	1860	1880	1880	
Square 8	1855	1863.4	1862.5	1849.3	1867.5		
Square 9	1875	1868.57	NCAF	1865	1860		
Square 10	NCAF	1864.3	NCAF	1861.25	1863.88	1850.7	
Square 11	NCAF	1850	NCAF	1867.5	1857.5		
Square 12	NCAF	1860	1861.9	1860	1880	1880	
Square 13	1860	1867.5	1865.7	1887.8	1880	1863.4	
Square 14	1867.5	1860	1859.4				
Square 16	NCAF	1865	1852.5	1857.7	1859	1850	1860
Square 19	1852.5						
Square 20	1865	1855	NCAF	1862.5			
Square 21	NCAF	NCAF	1856	1860	1860	1850	1860
Square 22	1860	1860	1854	1860	1850		
Square 23	1861	1865.25	1860	1860	1853		
Square 24	1860						

NCAF= No Ceramic Artifacts Found

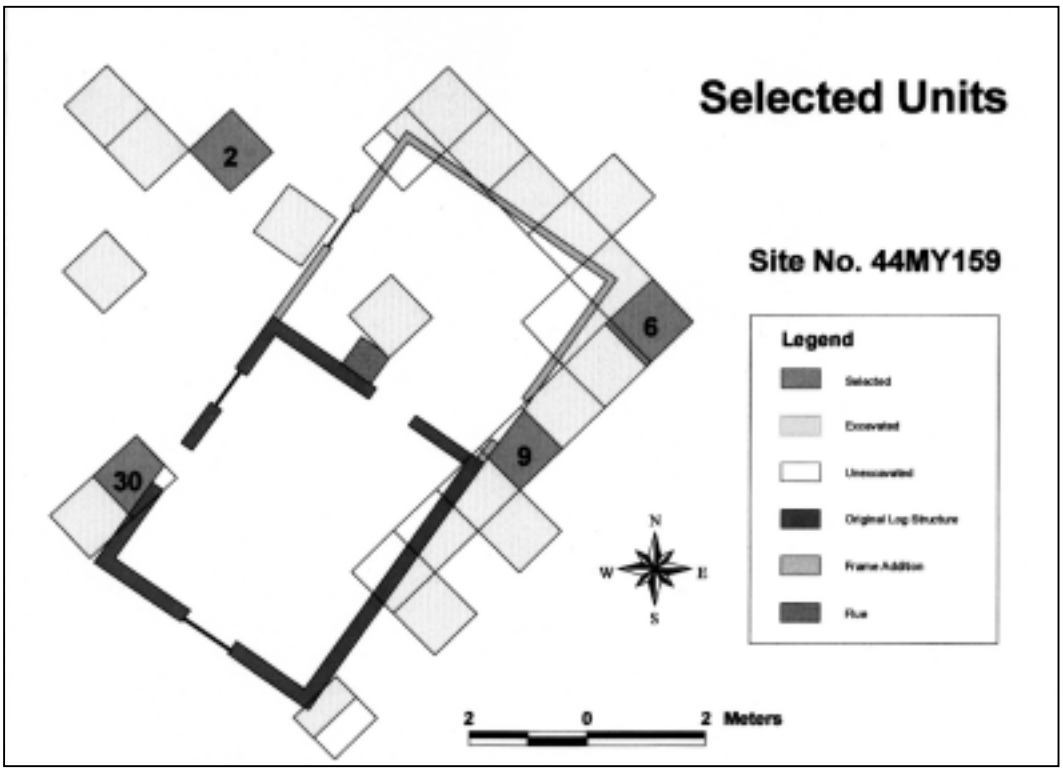


Fig. 37 Schematic highlighting the four units that were selected for nail and window glass analysis. Selection was based on location and artifact content.

Table 5 Nails from Selected Excavation Units

Unid. = Unidentifiable

		# Cut	% Cut	#Wire	% Wire	#Unid.	% Unid.
Unit 2	**Level 1**	7	23.33	9	30.0	14	46.6
	Level 2	3	37.5	2	25	3	37.5
Unit 6	**Level 1**	12	54.54	10	45.46	0	0
	Level 2	27	61.36	4	9.09	13	29.54
	Level 3	7	100.0	none identified	0	0	
	Level 4	3	75.0	none identified	0	1	25.0
Unit 9	**Level 1**	11	10.78	28	27.45	63	61.76
	Level 2	7	15.9	3	6.81	34	77.27
	Level 3	2	2.89	3	4.34	64	92.75
	Level 4	none identified	0	2	2.17	90	97.82
Unit 30	**Level 1**	1	25.0	3	75.0	0	0
	Level 2	9	56.25	5	31.25	2	12.5
	Level 3	1	50.0	1	50.0	0	0

8.1.1 Nail Analysis

Fig. 38 Log floor joist bearing carpenter's mark.

Analysis of the nails recovered from the selected excavation units (see fig. 37 for unit locations) was not as successful as was hoped for, due to very poor preservation. High soil moisture content around the cabin had caused metal objects to oxidize rapidly, in many cases beyond recognition. Because time, personnel, and funding did not permit adequate cleaning and conservation when the artifacts were first recovered, further oxidation has occurred while the artifacts were in storage. Unfortunately, few characteristics of the nails could be discerned during a recent examination. In any event, it is unlikely that further information could have been obtained from the analysis of nails found in the subsurface context, given their already poor condition. Table 5, above, lists the numbers and percentages of cut and wire nails that could be identified, as well as for those that could not be identified.

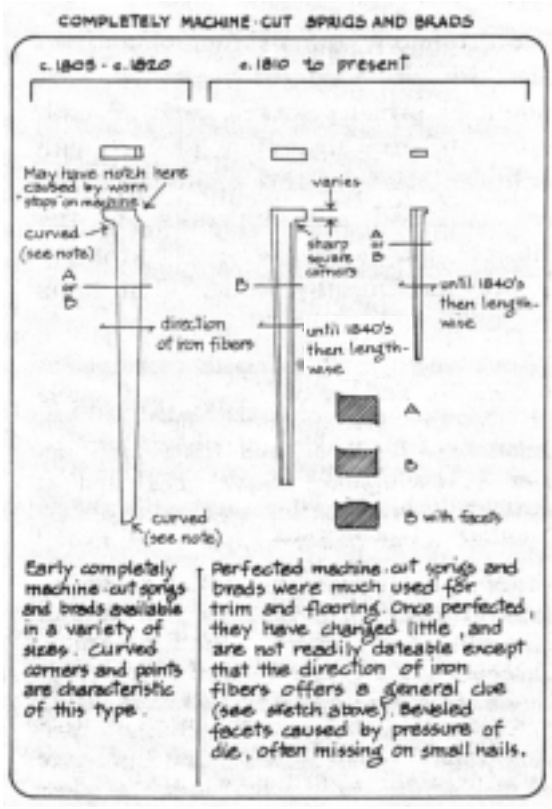


Fig. 39 Reprinted from Nelson, Lee H. *Nail Chronology*, 1968, p.6.

Because the cabin was built primarily with logs joined with notches and the occasional peg, nails were not needed in large quantities. Specialized nails were used for roofing, flooring, siding and for lath on the interior. Flooring nails were relatively large and were unlikely to be lost by the carpenter while nailing down a floor. It is probably for this reason that they were not well represented in the recovered nail assemblage. The other types of nails used were generally small in size; thus they were more easily reduced by oxidation into tiny bits, or unrecognizable orbs.

The discovery of some well-preserved nails, however, has allowed for further study. A flooring "brad," or large L-headed nail, and two smaller flooring "sprigs" were recovered from the standing structure. They were pulled by the author from a ground-floor log joist that had been removed and discarded during the building's rehabilitation in 1999 (see fig. 38). There is little doubt that the joist or the nails are original to the building.[68] The sprigs were used to secure the floor boards to the log joist,

[68] Note the Roman numerals chiseled into the log joist in figure 38. The original builders would have numbered each log for the sake of organization and/or proper fit

then brads were driven in at intervals between the tongue-and-groove floorboards in order to force them tightly together. Because the boards were shifted somewhat when the brads were driven in, the sprigs were found bent. Although they make up a very small sample, the brad and nails were all identically manufactured, bearing no significant variation other than size. Therefore, results from their analysis should be reliable.

The two sprigs and the brad are each made of iron, and are L-shaped, machine-cut, and machine-headed. They exhibit curved transitions from the head to the shaft, rounded points, and uniform, rectangular shaft sections. They were "face pinched" rather than "side pinched" by the header clamp during manufacture, and have both burrs on the same side of the nail. Above all, the most telling detail is the orientation of the iron grains that make up the nail shaft. That is, in these three examples the grain is perpendicular to the length of the nail, or "cross-grained," rather than parallel, or "in-line." Because of changes in nail manufacture during the early to mid-nineteenth centuries, it is possible to date cross-grained nails, sprigs and brads to before 1850 (fig. 39). The improved, in-line grained nails were introduced during the 1840s, and quickly replaced the cross-grained nail which had inferior bending properties.[69] Until in-line grained nails became available, carpenters continued to use old-fashioned hand-wrought nails for clenching, because cross-grained nails would fracture easily if bent to a sharp angle. Cross-grained nails would tolerate a certain amount of bending however, as the sprigs in this sample illustrate.

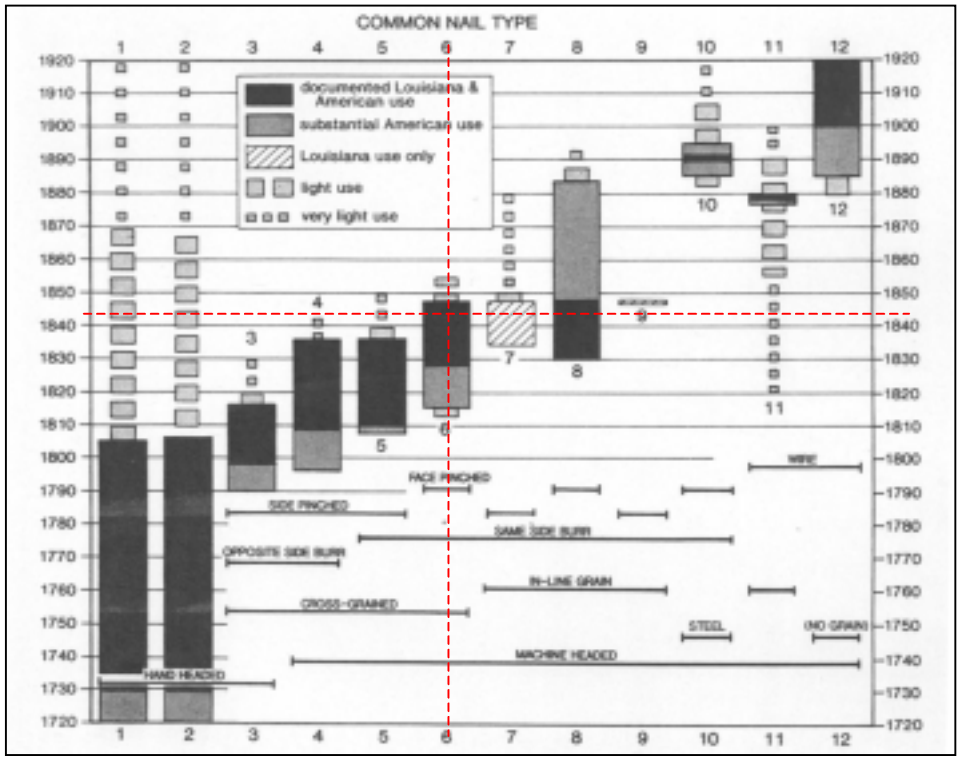


Fig. 40 Time Line Chart. A Summary of the Evolution of 12 nail types. The flooring brad and sprigs recovered from Solitude outbuilding correspond to type 6. Reprinted from Edwards, Jay D. and Wells, Tom, *Historic Louisiana Nails*, 1993, p.63.

[69] Lee Nelson, *Nail Chronology as an Aid to Dating Old Buildings* (1968), 6.

Because much has been documented on the changes in the nail manufacturing industry over time, nails themselves can provide the researcher with a reliable relative dating technique.[70] Given the characteristics of these three well-preserved examples, a date of ca. 1840 for the Solitude outbuilding does not appear to be out of line (fig.40).

[70] See Nelson, Lee. *Nail Chronology, 1968*; also Mercer, Henry C. *Dating Old Buildings, 1926*; or the most thorough, Edwards, Jay D. and Wells, Tom, *Historic Louisiana Nails*, 1993.

8.1.2 Flat Glass Analysis

For more than two decades, researchers in the western United States have used window glass thickness as an important dating tool for historic sites. In the meantime, it has also proven to be a reliable socioeconomic indicator.[71] Its usefulness has generally been overlooked elsewhere, especially in the eastern coastal states. Many archaeologists in the east specialize in ceramic analysis; hence ceramics continue to be used as the primary relative dating tool and socioeconomic indicator.

For the purposes of studying the archaeological finds at Solitude, both ceramics and window glass were used to help establish an accurate original construction date for the outbuilding. The results show that window glass thickness can in fact provide a reasonably accurate date. Although the success of the technique in this study cannot be presumed for other such studies, it certainly has the potential to be more accurate, and less time consuming than techniques using ceramics. Moreover, little knowledge is required from the analyst since judgmental error is hardly an issue with window glass.

Roenke's 1978 study of window glass and its use as a dating tool seems to have established one of the first reasonably accurate chronologies corresponding to the thickness of glass sherds found in archaeology sites, although others before him recognized that window glass was manufactured in increasingly thicker sheets throughout the nineteenth century.[72] His proposed chronology, used in this study, is as follows:

Dates	Thickness in Use (inches)
1810-1825	.055
1820-1835	.055
1830-1840	.045
1835-1845	.045-.055
1845-1855	.065
1850-1865	.075
1855-1885	.085
1870-1900	.095
1900-1915	.105

For the Solitude study, four units were selected based on their locations and contents (see fig. 37). All of the window glass sherds from each level were carefully measured with calipers. The measured thickness of each sherd was then tabulated (appendix B) and matched up with Roenke's chronology (above). Sherds measuring less than .043 inches thick were removed from the sample being studied due to the possibility that they were part of some type of vessel rather than a window. The results are summarized in the following tables.

[71] Moir, Randall W. *Socioeconomic and Chronometric Patterning of Window Glass*, 1987.

[72] Roenke, Karl G. *Flat Glass: ItsUse as a Dating Tool for19th C. Sites in the Pacific NW and Elsewhere*, 1978.

8.1.3 Window Glass Summary

Table 6a Mean Thicknesses of Window Glass Sherds

	Unit 2		Unit 6		Unit 9		Unit 30	
	In.	mm	In.	mm	In.	mm	In.	mm
Level 1	.085	2.16	.078	1.98	.093	2.36	.085	2.15
Level 2	.062	1.58	.075	1.90	.083	2.10	.076	1.92
Level 3					.084	2.14		
Level 4			.075	1.89				

Table shows the mean thickness of glass sherds by excavation level, in inches and millimeters.

Table 6b Median Date of Production

	Unit 2	Unit 6	Unit 9	Unit 30
Level 1	1870	1860	1885	1870
Level 2	1850	1860	1870	1860
Level 3			1870	
Level 4		1860		

Note: The median date of production was found by splitting a given range of dates provided by Roenke, i.e. the range of 1855-1885 is given as a median of 1870.

Table 6c Earliest Mean Dates

	Unit 2	Unit 6	Unit 9	Unit 30
Level 1	1840	1840	1840	1840
Level 2	1840	1840	1840	1840
Level 3			1840	
Level 4		1850*****		

Note: The earliest median dates were calculated by finding the earliest glass, according to its thickness, from each level and finding the median date of production for that thickness provided by Roenke, as in Table 6b, above. *Anomalous date for Unit 6, Level 4 is most likely due to an inadequate sample size of only three sherds.

The results shown in Table 6c strongly support a date of ca. 1840 for the original construction of the building. Earliest median dates were remarkably consistent across the four selected units. The earliest windows in the building were all manufactured no later than 1845, with a median date of production of 1840, provided Roenke's chronology is accurate. The overall mean date of window glass sherds for all four selected units is 1866, differing from the overall mean ceramic date of 1862 by only four years. Four years is well within the margin of error for these dating techniques.

The results shown in Table 6b strongly corroborate the evidence provided by the ceramic dates in listed in Table 4, which indicate that domestic use of the outbuilding tapered off towards the end of the nineteenth century. However, the window glass dates probably reflect the period of intensive *general* use, rather than domestic use alone. In other words, the window glass was

continually replaced if broken, regardless of whether or not the building was used for housing. Therefore, it appears that after the building was occupied by tenants, beginning in the 1880s or early 1890s; and that during the twentieth century it was used much less intensively in general.

Considering what is known about the building, and the indications of the other dating techniques that have been applied, the results of the glass study are perfectly consistent. It appears that the earliest window panes installed in the building were shattered and discarded over a period of many years, and were replaced individually as needed. Therefore, fragments of the early glass were encountered as they were distributed, in all four selected units and virtually every excavation level within those units. Subsequent ground disturbances may have contributed to an even wider and more diffuse distribution.

8.2 Artifact Distribution

Artifacts were found to be most heavily concentrated around the building's two doors, one on the northwest (front) side of the building, and one on the rear of the building. The disposal pattern is likely the result of household refuse being simply swept or tossed from the doorways. American archaeologist Stan South has referred to this pattern as the *Brunswick refuse disposal pattern*, which he encountered on sites in the eighteenth century town of Brunswick, North Carolina.[73] He found that concentrations of *secondary adjacent refuse* (debris that was deliberately discarded very close to the building) are good indicators of the locations of points of entrance and exit. Although Solitude is a nineteenth century site, a similar disposal pattern is evident. On this site, however, a change in the disposal pattern occurred after the frame wing was added to the original log pen, probably in the 1890s. The log pen did not have a back door. Therefore, for the first fifty or so years that a dependency existed in this location, refuse was more likely to accumulate in front of the house, rather than behind it. High artifact densities in unit 30 suggests that much of the refuse ended up beneath the porch, which was probably added within ten years of the log pen's construction (figs. 36, 42-45).

Artifact Classification Format

Type	Ware	Material	Class	Group
Blue painted pearlware Polychrome painted pearlware Annular pearlware Edge decorated pearlware etc.	Pearlware	Earthenware	Ceramics	Kitchen
	Creamware Whiteware etc.			
		Stoneware	Wine Bottle Case Bottle Tumbler Pharmaceutical Bottle	
		Porcelain	Glassware Tableware Kitchenware	
		Tinware Woodenware (treen) Pewterware etc.	etc.	Bone *Architecture* *Furniture* *Arms* *Clothing* *Personal* *Tobacco Pipe* *Activities*

Table 7 **South's classification format illustrates the increasingly generalized type-ware-class-group classification used in this study. Stanley South, *Method and Theory in Historical Archaeology*, 93.**

It does appear that a certain amount of debris was carried around to the rear of the building, where substantial midden deposits, including an ash/ charcoal pit were encountered. It seems logical, given the early site plan, that the

[73] South, Stanley. *Method and Theory in Historical Archaeology*. (New York: Academic Press, 1977), 47-80.

yard north and northeast of the log pen (i.e. units 6-16, and 18-21), was best hidden from public view; hence the best place for a trash pile. Literature addressing agricultural reforms during the mid-nineteenth century strongly advocated that plantations should be kept neat for appearance sake and sanitary for good health. Indeed, well-to-do families such as the Prestons would have been expected to possess a certain level of aesthetic awareness. Nevertheless, sanitation standards had not yet reached those of the average twentieth century affluent family estate. Fairly high artifact densities were encountered in all parts of the excavation area, indicating that a large percentage of debris was disposed of in a haphazard manner, such as the Brunswick pattern (figs. 36, 42-45). Architectural debris generally was not deliberately disposed of, but rather was left where it fell. Sherds of window glass and nails were distributed in a fairly even sheet around the building.

8.3 Functional Analysis

Since questions concerning the building's original function have persisted for many years, a functional analysis of the site and building based on the artifact assemblage was undertaken as part of this study. Stan South's artifact classification format (Tables 7 and 9), aside from being a good standard format by which to classify and describe artifacts, is well suited toward aiding a determination of a site's function. While the classes are based more on form than on function, they are grouped together under broader headings based on function. At Solitude, 9735 historic period artifacts were each assigned to one of the groups, i.e. kitchen, bone, architecture, etc. The totals for each group according to excavation level can be found in appendix A. A summary of these totals can be found in Table 8.

Table 8 Functional Group Summary for Solitude Site

FUNCT. GROUP	COUNT	PERCENTAGE
arch	4587	47.1
kitchen	2208	22.7
activities	2138	22.0
bone	689	7.1
clothing	42	0.43
personal	26	0.26
furniture	24	0.24
arms	19	0.2
tobacco	2	.02
Total	**9735**	**100**

Because of the high proportion of kitchen group artifacts, and a relatively high proportion of bone, there is little doubt that meals were prepared and consumed in the outbuilding. Although a fairly large percentage of the bone group was made up of the skeletons of rodents that may have found shelter beneath the structure, butchered livestock bones were present in large quantities.
The presence of many other everyday household items and fragments of miscellaneous activity group artifacts suggest that the building and grounds were used extensively for more than a century. The activities group is somewhat of a catchall category that includes tiny, unidentifiable bits of metal. While the artifact assemblage supports the theory that the building was used as a dwelling, it cannot be said with certainty that it was; yet clearly its function was domestic in nature. The high percentage of architectural group artifacts is typical on nineteenth century historic sites where there was greater access to construction materials due to better roads and railways.

8.4 Prehistoric Artifacts

Artifacts deposited around the outbuilding during successive short-term occupations by small groups of native Americans were recovered during the 1988-1989 excavations. The assemblage consisted of 11 projectile points, 325 pieces of *lithic debitage* (byproduct of stone tool manufacture), and 5 Woodland Period ceramic pot sherds. 59.5% of prehistoric artifacts came from excavation levels 6-8, at or near the subsoil interface, 25-40 centimeters below ground surface.

Based on their size and form, the projectile points all appear to date from the Late Archaic Period (3000 –1000 B. C.), or the Eastern Woodland Period (1000 B. C. to ca. 1600 A. D.). The small size of the debitage particles suggests that stone tools were not manufactured here, but were reworked or sharpened. Tools would have been made primarily at more permanent sites. The ceramic sherds consist of very small fragments of crudely made utilitarian vessels.

Although the site may have been used more than once during the Late Archaic Period, the small number of sherds recovered is evidence that the site may have been used only once during the Woodland Period, and for a very short period of time. Ceramic technology first came into widespread use among indigenous peoples during the Woodland Period. In the southeastern United States, the duration and intensity of a Woodland site's occupation typically correlates directly with the volume of ceramic artifacts recovered. The correlation is not as strong with *lithic* (stone) artifacts, since hundreds of debitage can result from simply modifying or sharpening a stone tool. Therefore a high number of lithic artifacts does not necessarily imply intensive or long-term site usage. However, a low number, i.e. 325, does indicate very ephemeral site use. The site was used only occasionally, probably as a temporary camp for hunting or foraging excursions. Close proximity to Stroubles Creek and the nearby springs would have made the site desirable for such purposes. Future excavations on other parts of the Solitude property may reveal areas of more intensive and/or longer term site usage.

Fig. 41 Base of excavation plan view. Bottom course wall log is visible at top of photograph.

Table 9 South's Artifact Classes and Groups, used in this study.

Class no.	Class name	
	Kitchen Artifact group	
1.	Ceramics	(over 100 types)
2.	Wine Bottle	(several types)
3.	Case Bottle	(several types)
4.	Tumbler	(plain, engraved, enamelled)
5.	Pharmaceutical Type Bottle	(several types)
6.	Glassware	(stemmed, decanter, dishes, misc.)
7.	Tableware	(cutlery, knives, forks, spoons)
8.	Kitchenware	(pots, pans, pothooks, gridiron, trivets, metal teapots, water kettles, coffee pots, buckets, handles, kettles, etc.)
	Bone group	
9.	Bone Fragments	
	Architectural group	
10.	Window Glass	
11.	Nails	(many types)
12.	Spikes	
13.	Construction Hardware	(hinges, pintles, shutter hooks and dogs, staples, fireplace backing plates, lead window cames, etc.)
14.	Door Lock Parts	(doorknobs, case lock parts, keyhole escutcheons, locking bolts and brackets)
	Furniture group	
15.	Furniture Hardware	(hinges, knobs, drawer pulls and locks, escutcheon plates, keyhole surrounds, handles, rollers, brass tacks, etc.)
	Arms group	
16.	Musket Balls, Shot, Sprue	
17.	Gunflints, Gunspalls	
18.	Gun Parts, Bullet Molds	
	Clothing group	
19.	Buckles	(many types, shoe, pants, belt)
20.	Thimbles	(several types)
21.	Buttons	(many types)
22.	Scissors	
23.	Straight Pins	
24.	Hook and Eye Fasteners	
25.	Bale Seals	(from bales of cloth)
26.	Glass Beads	(many types for wearing or sewing onto clothing)
	Personal group	
27.	Coins	
28.	Keys	
29.	Personal Items	(wig curlers, bone brushes, mirrors, rings, signet sets, watch fobs, fob compass, bone fan, slate pencils, spectacle lens, tweezers, watch key, and other "personables")
	Tobacco Pipe group	
30.	Tobacco Pipes	(ball clay pipes, many types)
	Activities group	
31.	Construction Tools	(plane bit, files, augers, gimlets, axe head, saws, chisels, rives, punch, hammers, etc.)
32.	Farm Tools	(hoes, rake, sickle, spade, etc.)
33.	Toys	(marbles, jew's-harp, doll parts, etc.)
34.	Fishing Gear	(fishhooks, sinkers, gigs, harpoons)
35.	Stub-stemmed Pipes	(red clay, short stemmed tobacco pipes)
36.	Colono-Indian Pottery	(or types clearly associated with the historic occupation)
37.	Storage Items	(barrel bands, brass cock, etc.)
38.	Ethnobotannical	(nuts, seeds, hulls, melon seeds)
39.	Stable and Barn	(stirrup, bit, harness boss, horseshoes, wagon and buggy parts, rein eyes, etc.)
40.	Miscellaneous Hardware	(rope eye thimble, bolts, nuts, chain, andiron, tongs, case knife, flatiron, wick trimmer, washers, etc.)
41.	Other	(button manufacturing blanks, kiln waster furniture, silversmithing debris, etc., reflecting specialized activities)
42.	Military Objects	(swords, insigna, bayonets, artillery shot and shell, etc.)

Classes are based on form and sometimes function. The groups are based on "functional activities related to the systematic context reflected by the archaeological record." *Method and Theory in Historical Archaeology*, 95-96.

Summary Statistics for Solitude Outbuilding Excavations 1988-89

Total 1x1-meter units excavated: 26

General Soil Stratigraphy:
0-25 centimeters below surface— dark brown loam topsoil
25-35 centimeters below surface– dark brown loam mottled w/ reddish yellow clay loam.
35+ centimeters below surface— yellowish red clay loam subsoil

Excavation Levels 1-5 generally removed the topsoil layer.
Excavation Levels 6-7 consisted of the mottled zone.
Excavation Level 8 (in units 16 and 20 only) penetrated the subsoil.

Prehistoric Artifacts: 11 Late Archaic-Woodland Period projectile points
325 lithic debitage
5 Woodland Period ceramic pot sherds

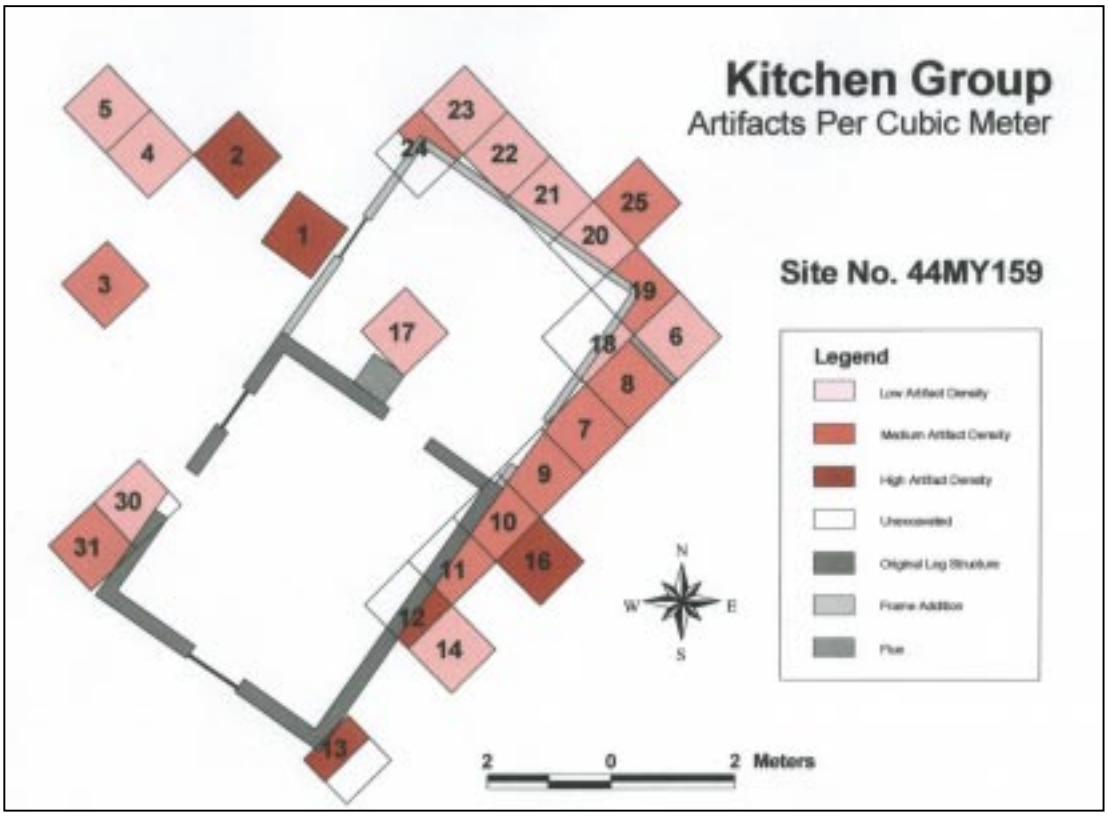
59.5% of prehistoric artifacts came from excavation levels 6-8, at or near the subsoil interface, 25-40 centimeters below surface.

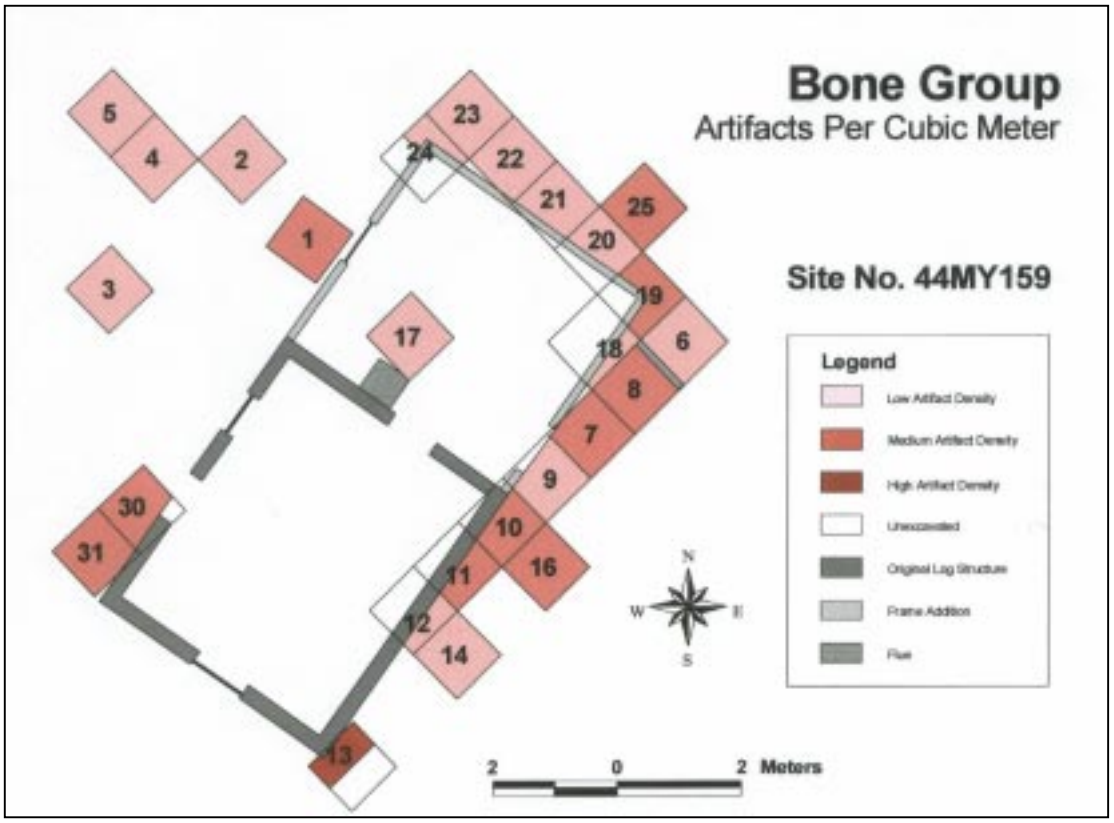
Historic Artifacts: 9,722 total (does not include small brick or coal fragments)
High frequencies of artifacts encountered in Units 1, 7, 9, and 16. All of these units were in close proximity to a doorway or window of the building's post-1880's addition.
Most artifacts can be categorized under the following four groups:

Functional Group	**Freq. Units 1-5**		**Freq. Units 6-31**	
	#	**%**	**#**	**%**
Architecture	1210	69.7	3206	40.3
Kitchen	331	19.1	1944	24.4
Activities	128	7.4	2142	26.9
Bone	61	3.5	601	7.6

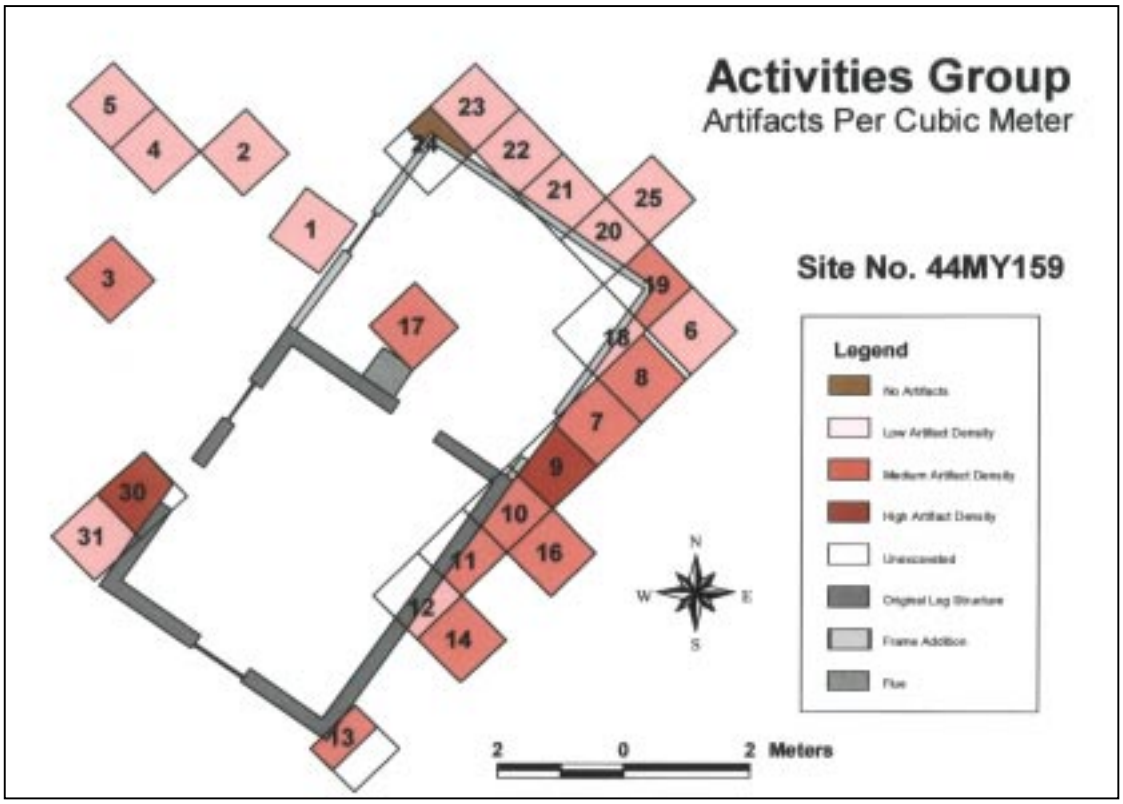
Artifacts categorized under other groups, i.e. *clothing, personal, tobacco, arms*, and *furniture*, represented of less than 1% each of the total artifact assemblage.

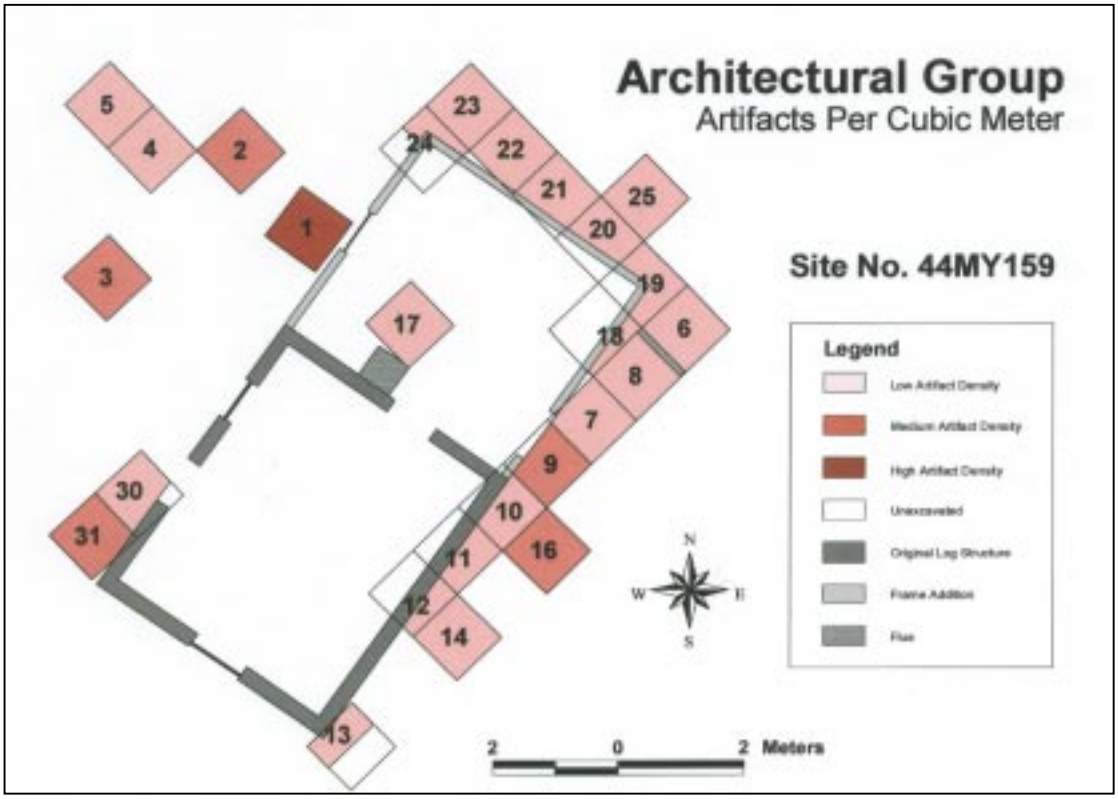
Artifact frequencies decreased steadily with depth below surface as expected, considering gradual topsoil development and increased site use over time.





Figs. 42 and 43





Figs. 44 and 45

PART III Interpretation

CHAPTER NINE The Outbuilding's Original Function

9.1 Why the Outbuilding was not a Summer Kitchen

When archaeological investigations around the outbuilding took place in the late 1980's, it was known to most people involved as the "summer kitchen," due to a lack of a better interpretation. The idea was that detached kitchens, often seen on nineteenth century estates, kept the main house from overheating in the summer, and also decreased the danger of fire to the main house. Although a kitchen is a good guess as to the structure's original function, recent evidence does

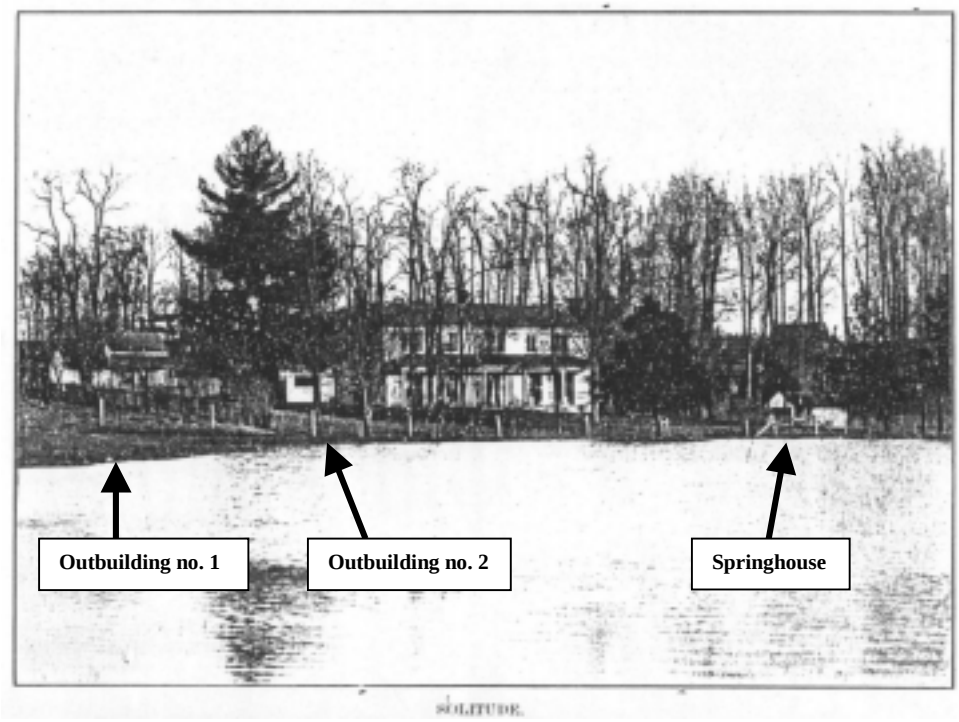


Fig. 46 Photograph showing small outbuilding that probably served as a kitchen. *Grey Jacket*, 1904. Newman Library Special Collections.

not support it. While the occupants certainly did prepare their own meals in it, meals for the Preston Family were prepared elsewhere. There are some compelling clues that the humble log building (here denoted as outbuilding no. 1) did not function primarily as a kitchen.

First, a nineteenth century map shows a slightly smaller outbuilding (here denoted as outbuilding no. 2) that stood even closer to the main house, in a more logical placement for a detached kitchen (fig. 48). In fact, two early photographs of outbuilding no. 2, dated 1901 and 1904, also exist. (fig. 46, 47). Although the pictures are quite grainy, it appears that outbuilding no. 2 had a larger chimney than its surviving neighbor did. This chimney, located on the north gable end, was sized for a very large hearth suitable for cooking for a well-to-do family and guests. Although outbuilding no. 1 had a sizable chimney, it is known that it contained two flues, since the loft had its own hearth. This, of course, indicates that the loft was intended for use as a bedroom. The entrance to outbuilding no. 2 was either on the east wall or the south gable end, closest to the rear door of the main house. A picket fence ran from the southwest corner of outbuilding no. 1 to the northwest corner of outbuilding no. 2. This may suggest that both buildings were in the domain of the house servant(s) who lived in outbuilding 1. The Prestons themselves would have little reason to enter this domain, where the mundane chores such as cooking and washing were undertaken. The type and placement of the windows, lack of curtains

Fig. 47 Enlarged photograph from 1901 provides a slightly better view of outbuilding no. 2. Outline of chimney is just visible behind far left tree. Newman Library Special Collections.

in the photograph, and lack of a porch all suggest a utilitarian function for outbuilding no.1, such as a kitchen or washhouse, rather than a dwelling. They appear to possibly be casement windows, which when opened, would allow for more heat to escape than would sash windows.

There are no known physical remains of outbuilding no. 2. Archaeological investigations have not yet been carried out in the location where it stood. Test probes in the area have revealed a high level of late 20th century human disturbance. A thick layer of extremely compact, recent fill overlies any undisturbed soils that may be below. It is possible that machine-stripping of the overburden could reveal intact archaeological deposits that might tell us more about the vanished structure. Although the knowledge that outbuilding no. 2 existed and the clues provided by photographs of it clearly make it the more likely candidate for a "summer kitchen," it is the evidence that outbuilding no. 1 was a dwelling that completes the argument. Much of this evidence is cited in the following section, in which the argument is made that the building was built for, and occupied by African-American slaves during the antebellum era. The location,

form, construction, and finished quality of the structure, corroborated by recovered artifactual data, all lead us to the conclusion that it was originally, and for perhaps a century continued to be a dwelling for one or more persons. Although proof that the early occupants were slaves has not yet been found, there are indeed many reasons to consider that this was the case. Moreover, there are few if any acceptable reasons why this notion is implausible.

9.2 Why the Outbuilding was not a Doctor's Office

It has often been said that a physician once resided at Solitude. Efforts to find the correct interpretation of the building's original function have led some to wonder if it was actually the physician's office. Again, this is not a bad guess, since some nineteenth century doctors kept their offices in small outbuildings near their residence. A situation such as this can still be seen at the Crump Park Meadow Farm Museum, the mid-nineteenth century residence of a Dr. Crump, near Richmond. The doctor would see his patients in a small log building that sat adjacent to his mansion house. The idea was that this arrangement kept the doctor's household from being exposed to sick patients. However, research has provided us with an answer to the dilemma at Solitude. The fact is, the only doctor who actually resided at Solitude prior to 1872 was Dr. John Floyd, son-in-law of Colonel William Preston of Smithfield and Governor of Virginia from 1830 to 1834. Floyd never actually practiced medicine at Solitude. In fact, he moved to Thorn Spring, a nine-hundred-acre estate near Newbern, in Pulaski County and began practicing there in 1816, long before the outbuilding at Solitude could have been erected.[74] If further evidence is needed in order to dismiss the notion of a doctor's office at Solitude, it should be noted that out of nearly ten thousand artifacts recovered from around the outbuilding, none can be necessarily associated with a clinical practice.

9.3 Evidence for a Slave Dwelling

Although no historic documents have been found that identify who the original occupants of the outbuilding were, it is most likely that they were enslaved African-Americans. Proof positive of this cannot be provided, but examination of the location, dimensions, form, and construction of the structure, as well as comparisons with many other documented slave dwellings all tend to support this conclusion. Moreover, archaeological deposits associated with the structure are consistent with those that have been excavated at slave quarters elsewhere. The date of construction, ca. 1843, lends substantial credibility

Fig. 48 The Virginia Agricultural and Mechanical College Farm and Grounds, by Col. Wm W. Blackford, 1882. Newman Library Special Collections. Blue arrow denotes Solitude site. Red arrow denotes extant Solitude outbuilding. Green arrow denotes possible slave quarter.

[74] Chitwood, 94.

to the argument, and helps to explain why the little house was, at least to our modern-day perceptions, rather handsomely finished for a slave dwelling. As noted previously, James Patton Preston, who gave Solitude to his son Robert, died that same year. At the time he owned 91 slaves, worth over twenty-six thousand dollars. Like his other properties, the slaves would probably have been divided up among his four children. This could explain why Robert Preston built new slave housing that year.

Although non-slaves also lived in such edifices, it does not seem likely that this cabin was built for white individuals. The census of 1850 bears no record of white Solitude residents who may have lived in a dependency, such as someone outside of Robert Preston's immediate family. While the Prestons were well-to-do, it does not appear that they could afford the luxury of a guesthouse, nor were guesthouses commonly found on estates of the time. Guests of the Prestons would have found ample room in the main house. The outbuilding may have been home to a slave couple with children. Perhaps the woman was a servant who did cooking and cleaning, and the man was a skilled tradesman or carpenter. It may well have been he who built the little cabin. Slave carpenters elsewhere were known to have customarily built homes for themselves, as well as for their fellow slaves.[75]

9.3.1 Location

The outbuilding was built on a large farm of more than 200 acres, in southwestern Virginia, west of the Blue Ridge. Although the vast majority of slaves in Virginia lived in the eastern or central parts of the state, some thirteen percent or 65,000 slaves lived west of the Blue Ridge in 1860.[76] According to the 1860 census, Montgomery County was home to 2219 slaves, up from 2029 in 1830.[77] By the 1840's Robert Preston, the owner of Solitude, had become quite prosperous, and thus began enlarging his house. In 1850 he was listed as owning 24 slaves. By 1860, this number had grown to 33.[78] With over 200-acres to farm and a large house with numerous dependencies, it would have been atypical for Preston not to own a number of slaves.

Fig. 49 Home of slave house servants, Anne Arundel Co. Maryland. Located approximately 100 yds. behind the main house. McDaniel, *Hearth and Home*, 93.

[75] McDaniel, George, W. *Hearth and Home: Preserving a People's Culture*, Philadelphia: Temple University Press, 1982, 48. See also Vlach, John *Michael By the Work of Their Hands: Studies in Afro-American Folklife*. Ann Arbor: UMI Research Press,, 1991, 221

[76] Morgan, Lynda J *Emancipation in Virginia's Tobacco Belt, 1850-1870*, Athens: University of Georgia Press, 1992, 19.

[77] Wallenstien, Peter, "Early Blacksburg 1740's to 1840's and Special Celebratory Years," in *A History of Blacksburg, Virginia*, Clara Cox ed., Town of Blacksburg, 1998, 91.

[78] Slave schedules from 1850 and 1860 manuscript census returns for Virginia, found in Newman Library. In 1850 he owned a slave couple, ages 46 (male) and 44 (female), who were much older than his other slaves. In 1860 he owned a 100 year-old female, a 71 year-old male, a 56 year-old male, and a 40 year-old female. That same year he had 13 slave children below the age of 10. Robert Preston's brothers also owned many slaves.

Fig. 50 Slave or servant house built ca.1860. Anne Arundel Co. MD. McDaniel, *Hearth and Home,* 92.

In relation to the main house at Solitude, the outbuilding is situated adjacent to, and just behind the main house, with the long axis of both buildings running roughly north-south, fronts facing west. The outbuilding's subordinate position ensured that it did not contend visually with the main house. Although the outbuilding sits just 54 feet from the northeast corner of the main house today, the northeast corner is that of a very large wing built in the 1850s.[79] Therefore, when the outbuilding was erected in 1843, it was nearly 100 feet from the main house. It is not, by any means, too close to the main house to have been a slave dwelling. There are many examples of slave dwellings, particularly those of house servants, which were built in close proximity to the landowner's house. In fact, in the eighteenth century it was not uncommon for enslaved house servants to live *in* the main house, often in attic lofts or basements.[80] House servants may have been responsible for stoking the hearth at night, or tending to the young or elderly members of the gentry's family. Therefore, their quarters were usually conveniently located. Robert and Mary Preston had three children at home in 1850, as well as their elderly relatives, John and Lucy, Preston.[81]

Furthermore, before the 1850's wing was added, the main house faced south rather than west.[82] This means that the outbuilding was then truly behind the main house, and would not have been visible when approaching Solitude from the south, on the old road from Blacksburg to Smithfield (see figs. 12, 48).

Fig. 51 Row of single-pen slave houses, built ca. 1850. Roseberry Plantation, Dinwiddie Co. Virginia. Vlach, "Snug Li'l House" in *Gender, Class and Shelter*, 119.

9.3.2 Dimensions, Form and Construction

By the early nineteenth century, the single-pen log house was overwhelmingly the most common form of slave housing throughout the United States.[83] At fourteen by sixteen feet, one-and-a-half stories, with a boxed stair leading to the loft in a corner opposite the chimney, the outbuilding at Solitude would indeed be very typical a slave cabin. Even the type of

[79] Jun Zhu, 8.

[80] McDaniel, 96.

[81] Manuscript census returns for Montgomery Co. , 1850.

[82] Jun Zhu, 8.

[83] McDaniel, 43.

corner notching, the V-notch, appears to have been standard, at least in the southern states.[84] This type of structure was erected quickly and easily, at virtually no cost, and could be disassembled and moved if necessary. Figures 49-52 provide examples of known slave dwellings that were similar in dimensions, form and/or construction. The slave house at Bremo Plantation (fig. 52), was practically identical, complete with a hearth upstairs in the loft. Considering the location and date of the building, two windows, a brick chimney, a wood shingled roof, plank floors and a porch across the front all fit well within the norm. Like the Solitude quarters, the house servant's house in figure 49 is known to have been lathed and plastered on the interior during slave occupation. In many cases, the dwellings were built by slave carpenters, with the design and materials dictated by their master.

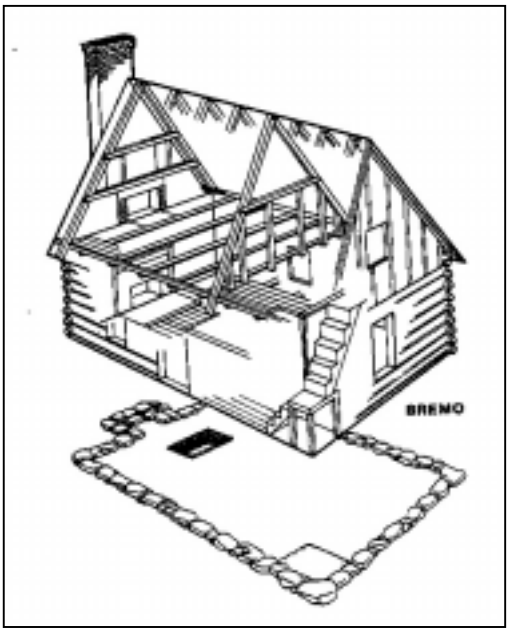


Fig. 52 Slave house at Bremo Recess Plantation, Fluvanna Co. VA. Kelso, "A Wolf by the Ears," *Journal of New World Archaeology*, v. 6, no. 4, 1986.

Both Vlach and McDaniel have shown that there was a broad range of housing quality among slaves, and that at least some were exceptionally well built. Unfortunately, literature concerning the housing and life in general of domestic slaves or house servants is scant. Furthermore, literature concerning slave life in southwestern Virginia is seemingly nonexistent. In contrast, there has been a great deal written about most aspects of slave life in central and eastern Virginia, where large plantations required greater numbers of slaves. On plantations, slaves were typically housed together on a small tract of land known as the slave quarter. For a house servant on a farm in southwestern Virginia, life may have been quite different from the life of a field slave on a large tobacco plantation in central Virginia.

George McDaniel, in his book *Hearth and Home*, provided a good look at house servant's quarters on antebellum Maryland plantations (fig 49, 50). He duly noted that house servant's quarters were typically in close proximity to the planter's house, separate from the other slaves. Living and working apart from the other slaves, and privileged above them, they were considered more trustworthy and loyal than the other slaves. Generally they occupied sturdier, more permanent structures that would have also been more comfortable.[85] Because it was part of the mansion house's immediate surroundings, the servant's house was often finished or decorated in like fashion, and kept in good condition. Household hygiene would have been subject to the watchful eye of the planter, thus a servant's house and its surroundings was more likely to have been kept clean and orderly than the house of a field slave.

[84] McDaniel, 55, 64.

[85] Vlach, 1991, 218.

Vlach and others have strongly supported the notion that living conditions for most slaves in the United States were improved dramatically in the decades prior to the Civil War. Successful planters of the period were interested in agricultural reform, and hence were deeply concerned with issues of order, control and sanitation in the slave quarters, as well as the overall appearance of their estates.[86] They strongly encouraged their peers to improve living conditions in order to pacify their slaves, cut down on the loss of labor due to sickness and disease, and increase their own social status through the appearance of higher moral standards, and greater wealth. A coat of whitewash was said by a planter to have "a cleansing, purifying effect… at a cost that is almost nothing." [87] Certainly it was in the landowner's best interest to consider these things, and both the architectural and archaeological record clearly reflect such changes over time.

Although we do not know Robert Preston's stance on the moral issues of the day, we do know that his older brother, William Ballard Preston of Smithfield, advocated bringing an end to the institution of slavery in Virginia as early as 1832. He pleaded his case that year in a speech on the floor of the Virginia House of Delegates, in which he called for "an investigation into the rights, and an exposure of the wrongs on which (the institution) has been sustained." [88] In 1849, he gave another speech on the floor of the United States House of Representatives opposing the expansion of slavery into territories west of the Mississippi River.[89] His ideas received a good deal of support throughout western Virginia. In spite of his rhetoric however, William Preston still held forty-nine slaves in 1860.[90] Although it is a leap to make the assumption that Robert Preston would have followed his brother's moral reasoning, William was older, wealthier, and more influential than Robert. Thus we can at least speculate that like many other landholders in the region, Robert may have followed his brother's leanings. While all of this may seem esoteric to the analysis of a tiny log structure, it provides additional sustenance for reconstructing domestic conditions at Solitude during the antebellum era. Furthermore, it can affect our interpretation of the slave dwelling. Perhaps it is very rare example among extant slave houses, a reflection of a southern slave owner's moral opposition to the institution of slavery, built and occupied at a time of widespread reforms in the treatment of slaves, in a region where the economy was far less dependent on slave labor than in other regions of the south.

[86] McKee, Larry "The Ideals and Realities Behind the Design and Use of 19th Century Virginia Slave Cabins," in *The Art and Mystery of Historical Archaeology: Essays in Honor of James Deetz,* ed., By Anne E. Yentsch and Mary C. Beaudry. Boca Raton: CRC Press 1992, 200.

[87] Vlach, John Michael "Snug Li'l House with Flue and Oven: Nineteenth-Century Reforms in Plantation Slave Housing," in *Gender, Class, and Shelter: Perspectives in Vernacular Architecture, V,* Elizabeth C. Cromely and Carter L. Hudgins ed., Knoxville: University of Tennessee Press, 1995, 121.

[88] Wallenstien, 65.

[89] Wallenstien, 65.

[90] Montgomery County Census Manuscripts, 1850.

9.4 Archaeological Evidence

9.4.1 Ceramics

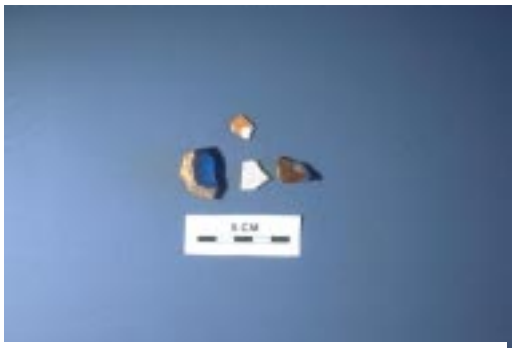


Fig. 53 19th century whitewares and brown-glazed stoneware from the Solitude outbuilding excavations, 1989.

In historic archaeology, fragments of ceramic vessels are often studied to find important clues about a site. The 1988-9 excavations around the outbuilding at Solitude yielded 805 such fragments, each of which was identified and catalogued by Radford University students. Each fragment was then classified by vessel type (if possible), ware type, decoration, type of glaze, and color. The ceramic assemblage strongly suggests that the outbuilding was used as a dwelling, and provides us with some idea of the socio-economic status of its early occupants. In the first half of the nineteenth century, virtually all refined earthenware ceramics, such as creamware, pearlware, or whiteware, in the United States were imported from England.[91] English-made refined earthenwares were generally of a high quality, but the way in which a piece was decorated would have significantly affected its price at the market. For example, transfer printed and flow printed refined earthenwares were very popular during the period and more expensive to produce, thus bringing a higher price than shell-edged, sponged, mocha or annular wares.[92] Plain, undecorated vessels were the least expensive type available.[93] Although fragments of the more expensive wares are sometimes found in large quantities on slave quarter sites, this can be easily explained. Chipped, cracked, or no longer fashionable vessels would have been handed down to whomever could use them.[94] Domestic servants would have been the likeliest recipients of such charity. At Solitude, however, transfer printed wares made up only a small percentage of the fragments recovered. Only 10 pieces of transfer-printed wares, or 1.2% of the ceramic assemblage, were recovered (figs. 54, 55). Shell-edged and annular wares were not well represented, but even less expensive wares, such as plain or "common" whiteware, brown glazed and lead glazed refined earthenwares, as well as unrefined earthenwares such as glazed redware, many types of stoneware, and terra cotta made up the bulk of the assemblage (fig. 53, appendix C). These types represent basic, utilitarian wares that

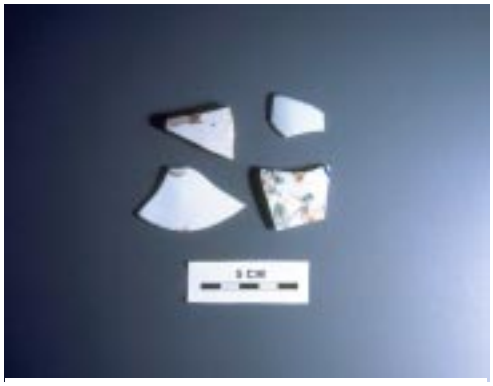


Fig. 54 Transfer-printed and plain whiteware, and two porcelain sherds from the Solitude outbuilding excavations, 1989.

[91] Miller, George L. "Classification and Economic Scaling of 19th Century Ceramics," *Historical Archaeology* 14, 1980, 3.

[92] Miller, 14.

[93] Miller, 14.

[94] Kelso, William M. "The Archaeology of Slave Life at Thomas Jefferson's Monticello: A Wolf by the Ears," *Journal of New World Archaeology*, v. 6, no. 4, 1986, 7.

were by far the most typical of a slave household. Unrefined wares were mass-produced domestically, hence they were inexpensive and easy to obtain. The vessels were coarse and heavy, unlike the more delicate and elegant vessels the Prestons were likely to have used in the main house. If future excavations are undertaken around the main house, it is probable that the higher priced, more formal wares will be found there in greater abundance.

Fig. 55 Assorted whitewares and brown-glazed redware.

Perhaps the best evidence that the archaeological investigations have provided that the original occupants of the structure may have been slaves, is the lack of evidence to the contrary. Although objects of high value were far less likely to become lost, and thus less likely to have been recovered from an archaeological context, the vast majority of the artifacts that appear to date to the antebellum occupation are utilitarian in nature. Little was found to suggest the presence of expendable income. Artifacts associated with the consumption of tobacco, for example, are notably absent. Personal items were rarely encountered. The clothing items consisted of basic, unstylized buttons and buckles. The peculiar lack of artifacts relating to leisure activities again suggests impoverished conditions as well as, one could argue, the strictly limited freedom that slaves endured.

9.4.2 Additional Support

The identification of the long-vanished and forgotten dependency (outbuilding 2) as the likely summer kitchen helps support the conclusion that its surviving counterpart (outbuilding 1) was a servant's residence. Besides eliminating the kitchen/washhouse versus dwelling dilemma, the very presence of such a workspace strongly suggests that there were servants present at Solitude who would have occupied the extant structure. Vlach has advanced the idea that an important reason for building a detached kitchen was to establish a clearer separation between those who were served, and those who served. Moving the mundane chores out of the big house provided both a physical and symbolic separation.[95] Of course, the presence of servants was also consistent with the Preston's economic status.

[95] Vlach, John Michael *Back of the Big House: The Architecture of Plantation Slavery*, . Chapel Hill: University of North Carolina Press, 1993, 43.

CHAPTER TEN Conclusions

10.1 Summary of Findings

It has been demonstrated in this study that the log outbuilding is an important artifact, as part and parcel of a landmark property that was home to two Virginia governors and a Confederate Army colonel who was founder of the institution that became Virginia Tech. It was built as a dependency of the mansion, and remains as such today, yet in a different way. The outbuilding's relevance and meaning is now dependent on the mansion's survival. Likewise, cultural interpretation of the mansion and the legitimate preservation of the property as a whole is dependent on the outbuilding's survival. The remaining buildings at Solitude collectively provide a reflection of conditions in antebellum southwestern Virginia; a time when sweeping social and economic changes brought great challenges, and impending conflict.

The outbuilding has been shown to be an excellent representative example of the *midland log house* type of the early to mid-nineteenth century, a hybrid of German-borne construction techniques and a floor plan adopted from British Isles tradition. Technological improvements in the building materials industry, as well as the increase in availability and decrease in cost of materials, led to new, widely adopted building practices in the years following the outbuilding's construction. In the 1850s log construction began to be replaced with frame construction, consisting of milled lumber joined primarily with nails. The outbuilding's materials and construction have been described here in detail, in an effort to document the structure in quantifiable terms. In doing so, the poor condition of the building's historic fabric, and the agents of deterioration responsible for its condition have been thoroughly illustrated. A dendrochronology study of the structure's logs was engendered by inquiries made in the course of this research. The methodology involved was documented here, and the results of the study have been recounted.

A report on the archaeological investigation has provided ample support for interpretations that had been based primarily on the building's form and construction, and historic evidence. More specifically, temporal analyses of artifacts such as window glass, ceramics, and nails firmly support a construction date of ca. 1843, corroborated by the dendrochronology study. Functional analysis of the artifacts, using South's classification system, confirms the notion that the building served as a dwelling during the antebellum era, based on the high proportions of kitchen and bone group artifacts. Economic indications of the artifact assemblage clearly suggest that the building's early inhabitants lived in poverty. The spatial distribution of artifacts distinctly reflects a common mid-nineteenth century disposal pattern, as well as change in the pattern over time; the most significant change having been in response to the frame wing being added in the 1890s.

Questions regarding the possibility of the outbuilding having originally functioned as a doctor's office or detached kitchen should finally be laid to rest. It has been demonstrated that the owner of Solitude from 1832 to 1872, Robert Taylor Preston, was a successful planter who owned many slaves. Evidence that he may have inherited some of those slaves from his father in 1843, the year the outbuilding appears to have been built, has been referred to. The fact that the log pen is very typical of nineteenth century slave housing in the region has been highlighted. In light of the body of circumstantial evidence cited, it appears almost certain that the outbuilding at Solitude was built to house enslaved domestic servant(s) and perhaps their children. The university's official interpretation should certainly reflect this evidence. Only absolute proof to the contrary should affect this interpretation in the future. Such insight should serve to enhance the university community's perception of the log structure's historical and cultural importance, and thus, by all means, it should be preserved and maintained accordingly. Furthermore, the findings of this study should become an integral part of any future investigation of the history of Solitude and its extant buildings.

10.2 Recommendations for Future Research

Further archaeological investigations on the Solitude property are vital to the protection of any existing historically significant buried deposits from future adverse disturbances. It has been, and continues to be standard practice for the Virginia Tech Physical Plant to make modifications to the site without any regard for such considerations. In the past, such "improvements" as an asphalt-surfaced parking lot were placed in close proximity to the main house and outbuilding. Not only was there a high potential for buried cultural deposits in the area, there was also the risk of redirecting rainwater towards the historic buildings, and the inevitable damage to the aesthetic environment of the site. As it happened, no thought was given to subsurface deposits or the grading, and for many years the rainwater was redirected toward the buildings, with severe consequences. Further investigations would also help establish a true site boundary for Solitude. Presently, the extent of buried cultural deposits on the property is not known. Establishing a site boundary would be an important step in protecting the property.

There is a great deal left to be learned about slave life in southwestern Virginia. Remains of the field slave quarters or other dependencies at Solitude have not yet been discovered, but the potential for finding some of them still clearly exists. A high potential for finding additional prehistoric remains also exists.

Little is known about Robert T. Preston, the longtime owner of Solitude, who made a living for himself and his family by farming the fields around his home. Yet he was an important man in his time, and part of the area's most prominent family. It is quite probable that much would be learned about the daily life of Solitude's residents in antebellum times if archaeological excavations were undertaken around the main house. It is even possible that the earliest date for Solitude could be pushed back well into the 18th century. An earlier structure may have existed when the log pen, now enveloped in the main house, was first built, ca. 1801.

Finally, a survey of extant early log structures in the region is needed. The subtle variations in craftsmanship within the region could be documented and compared to other regions with different ethnic components, socio-economic conditions, or degrees of access to building materials. An understanding of the variations among structures and the factors that brought them about can be helpful when attempting to accurately interpret and restore such structures. Inquiries of this kind about folk architecture can help historians piece together the past, by providing detailed information that ordinarily can come only from the artifacts themselves.

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Appendix A Functional Groups of Artifacts

UNIT	LEVEL	FUNCT. GROUP	COUNT
1	1	arch	488
1	1	kitchen	94
1	1	bone	21
1	1	activities	26
1	1	personal	1
1	2	arch	295
1	2	kitchen	25
1	2	bone	14
1	2	activities	1
1	3	kitchen	5
2	1	kitchen	30
2	1	arch	123
2	1	bone	7
2	1	activities	18
2	2	kitchen	86
2	2	arch	110
2	2	bone	3
2	2	activities	12
2	3	N/A	0
2	4	arch	2
3	1	kitchen	54
3	1	arch	112
3	1	bone	1
3	1	activities	52
3	1	clothing	2
4	1	kitchen	10
4	1	arch	23
4	1	activities	6
4	1	clothing	1
4	1	bone	1
5	1	kitchen	16
5	1	arch	29
5	1	activities	4
5	1	bone	14
6	1	kitchen	41
6	1	arch	58
6	1	activities	13
6	1	bone	5
6	1	furniture	1
6	2	arch	73
6	2	bone	16
6	2	activities	32
6	2	clothing	1
6	3	kitchen	18
6	3	arch	9
6	3	bone	3
6	3	activities	2
6	4	arch	4
6	5	clothing	1
6	E.wall	bone	2
7	1	kitchen	62
7	1	arch	154
7	1	activities	82
7	1	bone	16
7	1	personal	1
7	1	clothing	1
7	1	kitchen	10
7	1	arch	27
7	2	kitchen	32
7	2	activities	6
7	2	arch	49
7	2	bone	25
7	2	arms	1
7	2	personal	6
7	2	clothing	2
7	2	furniture	1
7	3	arch	61
7	3	kitchen	52
7	3	bone	6
7	3	activities	40
7	4	kitchen	16
7	4	activities	10
7	4	arch	15
7	4	bone	9
7	5	arch	2
7	5	bone	1
7	6	arch	7
7	6	bone	1
7	6	arms	1
7	6	activities	8
7	6	kitchen	1
7	6	personal	1
7	6	kitchen	1
7	6	activities	1
7	6	arch	2
7	6	bone	1
7	7	kitchen	1
7	7	arch	8
8	1	arch	71
8	1	bone	2
8	1	activities	14
8	1	kitchen	12
8	1	personal	1
8	2	kitchen	13
8	2	bone	9
8	2	arch	19
8	2	activities	15
8	2	personal	3
8	3	kitchen	44

8	3	arch	23
8	3	bone	24
8	3	activities	64
8	3	tobacco	1
8	3	clothing	1
8	4	kitchen	34
8	4	arch	38
8	4	bone	16
8	4	activities	28
8	4	personal	1
8	5	clothing	1
8	5	kitchen	15
8	5	arch	16
8	5	bone	6
8	5	activities	45
8	6	activities	15
8	6	kitchen	7
8	6	arch	10
9	1	kitchen	41
9	1	arch	142
9	1	bone	2
9	1	activities	94
9	2	kitchen	27
9	2	arch	52
9	2	clothing	1
9	3	kitchen	48
9	3	arch	85
9	3	activities	154
9	3	bone	2
9	3	clothing	2
9	3	personal	1
9	4	kitchen	17
9	4	activities	45
9	4	bone	3
9	4	arch	147
9	4	personal	1
9	5	kitchen	5
9	5	arch	15
9	5	activities	60
9	5	bone	3
9	6	kitchen	2
9	6	activities	19
9	6	bone	2
9	6	arch	6
9	7	N/A	0
10	1	kitchen	10
10	1	arch	41
10	1	activities	11
10	1	clothing	1
10	2	bone	2
10	2	activities	1
10	2	arch	13
10	2	kitchen	1
10	3	kitchen	16
10	3	arch	11
10	3	activities	16
10	3	clothing	1
10	4	kitchen	44
10	4	arch	14
10	4	activities	21
10	4	bone	53
10	4	clothing	1
10	5	arch	22
10	5	bone	1
10	5	activities	46
10	5	kitchen	13
10	5	arms	1
10	6	arch	9
10	6	kitchen	8
10	7	kitchen	1
10	7	arch	8
10	7	activities	5
11	1	kitchen	18
11	1	arch	32
11	1	bone	3
11	1	activities	8
11	1	arms	2
11	2	kitchen	15
11	2	arch	129
11	2	bone	15
11	2	activities	10
11	2	arms	1
11	3	arch	19
11	3	kitchen	9
11	3	clothing	1
11	4	kitchen	20
11	4	bone	7
11	4	arch	5
11	4	activities	3
11	5	kitchen	16
11	5	bone	5
11	5	arch	15
11	5	activities	34
11	5	clothing	1
11	6	kitchen	2
11	6	arch	1
11	6	activities	9
12	1	N/A	0
12	2	kitchen	5
12	2	arch	28
12	2	bone	4
12	2	activities	5

12	3	kitchen	31
12	3	activities	1
12	3	arch	31
12	4	kitchen	52
12	4	arch	28
12	4	activities	9
12	5	kitchen	3
12	6	N/A	
12	7	N/A	
13	1	kitchen	4
13	1	arch	77
13	2	kitchen	1
13	2	arch	7
13	2	bone	3
13	3	kitchen	68
13	3	arch	55
13	3	activities	1
13	3	bone	25
13	4	kitchen	31
13	4	arch	21
13	4	bone	3
13	4	activities	3
13	4	personal	1
13	5	kitchen	27
13	5	arch	3
13	5	bone	61
13	5	clothing	1
13	5	activities	33
13	6	kitchen	21
13	6	personal	1
13	6	arch	9
13	6	activities	23
13	Extens.	kitchen	10
13	Extens.	arch	30
13	Extens.	bone	2
13	Extens.	activities	2
14	1	kitchen	3
14	1	arch	24
14	1	activities	15
14	1	arms	1
14	2	kitchen	12
14	2	arch	23
14	2	bone	5
14	2	activities	158
14	3	kitchen	25
14	3	arch	53
14	3	bone	10
14	3	activities	80
14	3	personal	1
14	4	kitchen	2
14	4	arch	4
14	4	bone	1
14	4	kitchen	1
14	4	bone	1
14	4	activities	3
14	5	arch	3
14	5	kitchen	1
14	5	activities	5
14	6	arch	1
14	6	kitchen	2
16	?	bone	1
16	2	kitchen	4
16	2	arch	36
16	2	bone	5
16	2	activities	43
16	3	kitchen	10
16	3	arch	13
16	3	bone	1
16	3	activities	38
16	3	personal	1
16	3	kitchen	17
16	3	arch	27
16	3	bone	5
16	3	activities	1
16	4	kitchen	153
16	4	arch	173
16	4	bone	43
16	4	activities	59
16	4	clothing	1
16	4	arms	1
16	5	activities	2
16	5	bone	9
16	5	kitchen	59
16	5	arch	39
16	6	kitchen	12
16	6	arch	28
16	6	activities	6
16	6	bone	7
16	7	kitchen	3
16	7	activities	7
16	8	N/A	0
16	?	kitchen	6
16	?	arch	12
16	1	bone	2
16	?	activities	1
17	1	kitchen	5
17	1	arch	46
17	1	activities	134
17	1	bone	7
17	1	clothing	1
17	1	arms	1
17	2	arch	38

17	2	activities	9
17	2	bone	3
17	2	kitchen	60
17	2	clothing	2
17	3	kitchen	22
17	3	bone	4
17	3	activities	13
17	3	arch	41
17	3	personal	1
17	4	arch	4
17	4	kitchen	1
17	5	kitchen	6
17	5	arch	3
17	5	activities	1
17	6	kitchen	2
17	6	bone	5
17	6	activities	5
17	6	arch	10
17	7	N/A	0
18	1	kitchen	19
18	1	activities	3
18	1	arch	17
18	1	bone	3
19	1	kitchen	19
19	1	arch	73
19	1	bone	18
19	1	activities	36
19	2	kitchen	33
19	2	arch	56
19	2	bone	21
19	2	activities	17
19	2	furniture	1
19	3	kitchen	16
19	3	arch	35
19	3	bone	6
19	3	activities	40
19	3	clothing	1
19	4	kitchen	3
19	4	arch	6
19	4	activities	9
19	4	bone	1
19	5	kitchen	4
19	5	arch	9
19	5	bone	2
19	5	activities	7
19	5	kitchen	4
19	6	activities	2
19	6	arch	2
19	6	kitchen	1
19	6	bone	1
20	1	kitchen	3
20	1	arch	1
20	2	kitchen	5
20	2	arch	7
20	2	bone	1
20	2	activities	1
20	3	N/A	0
20	4	kitchen	5
20	4	activities	2
20	5	arch	1
20	6	kitchen	3
20	6	arch	2
20	6	bone	1
20	6	activities	3
20	7	kitchen	2
20	7	arch	2
20	7	bone	1
21	1	kitchen	36
21	1	clothing	1
21	1	activities	5
21	1	arch	55
21	2	kitchen	5
21	2	bone	1
21	2	activities	4
21	2	arch	6
21	3	arch	30
21	3	activities	2
21	3	kitchen	17
21	3	bone	4
21	4	kitchen	8
21	4	arch	11
21	4	activities	3
21	4	clothing	1
21	5	kitchen	8
21	5	bone	2
21	5	activities	6
21	5	arch	17
21	6	N/A	0
21	7	kitchen	1
21	7	arch	1
22	surface	N/A	0
22	1	kitchen	13
22	1	arch	5
22	1	activities	3
22	2	kitchen	3
22	2	activities	1
22	2	personal	1
22	3	bone	1
22	4	arch	8
22	4	kitchen	19
22	4	bone	3
22	4	bone	1

22	4	activities	3
22	5	kitchen	22
22	5	arch	10
22	5	activities	7
22	5	clothing	1
22	5	arch	2
22	6	arch	3
22	6	activities	5
23	1	kitchen	20
23	1	arch	41
23	1	activities	14
23	1	bone	4
23	1	clothing	1
23	2	kitchen	11
23	2	arch	8
23	2	activities	21
23	2	bone	1
23	3	kitchen	10
23	3	arch	10
23	3	activities	6
23	4	kitchen	22
23	4	arch	23
23	4	activities	29
23	4	bone	1
23	4	tobacco	1
23	5	kitchen	5
23	5	arch	10
23	5	clothing	1
23	W. wall	kitchen	2
23	W. wall	arch	1
24	1	kitchen	20
24	1	arch	30
24	1	bone	1
25	1	kitchen	24
25	1	arch	25
25	1	activities	2
25	2	kitchen	40
25	2	arch	16
25	2	activities	4
25	2	bone	17
25	3	kitchen	1
25	3	arch	4
25	4	arch	25
25	4	kitchen	31
25	4	bone	11
25	4	activities	14
25	5	kitchen	12
25	5	arch	31
25	5	activities	3
25	5	bone	7
31	4	kitchen	7
25	6	arch	1
25	6	activities	1
25		kitchen	5
25		arch	4
25		activities	4
30	surface	arch	3
30	surface	furniture	4
30	surface	activities	1
30	1	kitchen	12
30	1	arch	80
30	1	furniture	15
30	1	activities	118
30	1	bone	17
30	1	arms	1
30	1	personal	1
30	2	activities	16
30	2	arch	60
30	2	kitchen	13
30	2	bone	19
30	2	personal	1
30	2	clothing	2
30	2	arms	3
30	3	arch	7
30	3	arms	1
30	3	activities	8
31	surface	kitchen	28
31	surface	arch	185
31	surface	activities	7
31	surface	bone	11
31	surface	clothing	5
31	surface	arms	1
31	surface	personal	1
31	surface	furniture	2
31	1	arch	49
31	1	bone	10
31	1	activities	5
31	1	clothing	2
31	2	kitchen	36
31	2	arch	69
31	2	activities	14
31	2	bone	6
31	2	clothing	2
31	2	arms	3
31	3	kitchen	4
31	3	arch	21
31	3	activities	7
31	3	bone	1
31	3	arms	1
31	4	arch	22
31	4	activities	4
31	4	bone	4

31	4	clothing	1
31	5	kitchen	3
31	5	arch	24
31	5	activities	9
31	5	bone	2
31	5	clothing	1
31	5	personal	1
31	SW wall	kitchen	2
31	SW wall	arch	18
31	SW wall	bone	2
31	SW wall	activities	5

Appendix B Window Glass Dates and Corresponding Thicknesses (from Selected Units)

	Unit 2	Level 1	(10 cm)			
Median Date	**Thickness (in.)**	**Thickness (mm)**	**>1"**	**>2"**	**>3"**	**Tint**
1840	0.047	1.20				X
	0.054	1.37				
	0.055	1.40				
	0.060	1.52				
	0.060	1.53				
	0.062	1.58				
	0.063	1.60				
	0.063	1.60				
	0.063	1.60				
	0.064	1.62				
1850	0.065	1.66				
	0.067	1.70				
	0.067	1.70	X			X
	0.067	1.70				
	0.067	1.70				
	0.067	1.70				
	0.067	1.70				
	0.069	1.74	X			X
	0.069	1.74				
	0.069	1.76				
	0.069	1.76				
	0.069	1.76				
	0.070	1.78				
	0.071	1.80				
	0.071	1.80				
	0.071	1.80				
	0.071	1.80				
	0.071	1.80				
	0.071	1.80				
	0.071	1.80				
	0.073	1.86				
1860	0.076	1.94				X
	0.079	2.00	X			X
	0.079	2.00				X
	0.079	2.00				X
	0.079	2.00				
	0.080	2.04				X
	0.083	2.10	X			X
	0.083	2.10	X			X
	0.083	2.10				X
	0.084	2.13				
1885	0.087	2.20				
	0.087	2.20	X			X
	0.091	2.30	X			X
	0.091	2.30	X			X
	0.091	2.30				X
	0.091	2.30				

	Unit 2	Level 1	(10 cm)	cont'd		
	0.091	2.30				
	0.092	2.34	X			X
	0.092	2.34				X
	0.092	2.34				X
	0.094	2.40	X			X
	0.094	2.40				X
	0.094	2.40	X			X
	0.094	2.40	X			X
	0.094	2.40	X			X
	0.094	2.40				X
	0.094	2.40				X
	0.094	2.40				X
	0.094	2.40				X
	0.094	2.40				X
	0.094	2.40				
	0.094	2.40				
1900	0.098	2.48				X
	0.098	2.50				X
	0.101	2.56				
	0.105	2.66	X			X
	0.105	2.66	X			X
1915	0.105	2.67		X		X
	0.106	2.70	X			X
	0.106	2.70	X			X
	0.108	2.74				X
	0.109	2.76	X			X
	0.110	2.80	X			X
	0.110	2.80	X			X
	0.110	2.80				X
	0.114	2.90				X
	0.115	2.93	X			X
	0.124	3.14				X
	0.127	3.22				
Mean:	**0.085**	**2.16**				
1870						

	Unit 2	Level 2	(10 cm)			
Median Date	**Thickness (in.)**	**Thickness (mm)**	**>1"**	**>2"**	**>3"**	**Tint**
1840	0.048	1.22				
	0.048	1.23				X
	0.050	1.28				
1855	0.063	1.60				
	0.063	1.60				
	0.068	1.73				
1865	0.078	1.98				
	0.079	2.00				
Mean:	**0.062**	**1.58**				
1855						

Unit 6 **Level 1** **(20 cm)**

Median Date	Thickness (in.)	Thickness (mm)	>1"	>2"	>3"	Tint
1840	0.043	1.08				X
	0.054	1.36				X
1885	0.093	2.36				X
	0.122	3.10		X		X
Mean:	**0.078**	**1.98**				
1865						

Unit 6 **Level 2** **(10 cm)**

Median Date	Thickness (in.)	Thickness (mm)	>1"	>2"	>3"	Tint
1840	0.051	1.30				X
	0.059	1.50				X
	0.059	1.50				
	0.063	1.60				X
	0.071	1.80				X
1860	0.076	1.92				
	0.076	1.92				X
	0.079	2.00				X
	0.080	2.04				
1870	0.086	2.18				X
	0.087	2.20				
	0.089	2.26				
1885	0.094	2.38				X
	0.094	2.40				X
	0.094	2.40				X
Mean:	**0.077**	**1.96**				
1860						

Unit 6 **Level 3** **no flat** **glass** **recovered**

Unit 6 **Level 4** **(5 cm)**

Median Date	Thickness (in.)	Thickness (mm)	>1"	>2"	>3"	Tint
	0.066	1.68				X
	0.066	1.68				X
	0.087	2.20				X
Mean:	**0.073**	**1.85**				
1860						

Mean, units 2&6:	**0.075**	**1.89**

Overall Mean date, units 2 & 6= 1858, (Roenke)

	Unit 9	Level 1	(5 cm)			
Median Date	**Thickness (in.)**	**Thickness (mm)**	**>1"**	**>2"**	**>3"**	**Tint**
1840	0.053	1.34				
	0.059	1.5				
	0.061	1.54				
	0.071	1.8	X			
1858	0.075	1.9				X
	0.077	1.96	X			X
	0.079	2.0				
	0.079	2.0				
	0.080	2.02	X			X
	0.080	2.03	X			
	0.080	2.04				X
	0.082	2.08				
	0.083	2.1	X			X
	0.083	2.1	X			X
1870	0.087	2.2	X			
	0.087	2.2	X			X
	0.087	2.2				X
	0.087	2.2				
	0.087	2.22				
	0.088	2.24	X			
	0.088	2.24	X			
	0.088	2.24	X			
	0.088	2.24		X		
	0.089	2.26	X			X
	0.089	2.26		X		
	0.089	2.26		X		
	0.090	2.28				
	0.090	2.28				
	0.091	2.3	X			X
	0.091	2.3	X			X
	0.091	2.3	X			X
	0.091	2.3	X			
	0.091	2.3	X			
	0.091	2.3	X			
	0.091	2.3	X			
	0.091	2.3	X			
	0.091	2.3	X			
	0.091	2.3	X			
	0.091	2.3	X			
	0.091	2.3	X			X
	0.091	2.3				
	0.091	2.3				
	0.091	2.3				
	0.091	2.3				
	0.091	2.3				
	0.091	2.3				
	0.091	2.3				
	0.091	2.3				
	0.091	2.3				

	Unit 9	Level 1	(5 cm)	cont'd		
	0.091	2.3				
	0.091	2.3				
	0.091	2.3				
	0.091	2.32	X			
1885	0.091	2.32		X		
	0.109	2.78				X
	0.119	3.02	X			
	0.120	3.04	X			
	0.120	3.04				X
	0.120	3.06	X			X
	0.120	3.06	X			
	0.122	3.1	X			
	0.122	3.1	X			
	0.122	3.1		X		X
	0.122	3.1				X
	0.122	3.1				
	0.122	3.1				
	0.123	3.12	X			
	0.123	3.12				X
Mean: 1885	**0.093**	**2.36**				

	Unit 9	Level 2	(5 cm)			
Median Date	**Thickness (in.)**	**Thickness (mm)**	**>1"**	**>2"**	**>3"**	**Tint**
1840	0.054	1.36	X			X
	0.057	1.45				
	0.059	1.5	X			X
	0.063	1.6	X			X
1850	0.067	1.7	X			X
	0.070	1.78				X
	0.072	1.84				
1858	0.075	1.9				
	0.076	1.92				X
	0.076	1.94				X
	0.079	2.0				X
	0.079	2.0	X			X
	0.081	2.06	X			X
	0.083	2.1				X
	0.083	2.1				X
	0.084	2.14	X			X
	0.084	2.14				X
1870	0.085	2.16				X
	0.087	2.2	X			X
	0.087	2.2				
	0.087	2.2				X
	0.087	2.2				X
	0.087	2.2				X
	0.087	2.2				X
	0.087	2.2				X

	Unit 9	Level 2	(5 cm)	cont'd		
	0.087	2.22				X
	0.089	2.26	X			X
	0.089	2.26				X
	0.089	2.26				
	0.091	2.3				X
	0.091	2.3				X
	0.091	2.3				
	0.091	2.3				
	0.091	2.3				
1885	0.096	2.45				X
	0.100	2.54				
	0.117	2.96		X		X
Mean: 1870	**0.083**	**2.10**				

Median Date	Unit 9 Thickness (in.)	Level 3 Thickness (mm)	(5 cm) >1"	>2"	>3"	Tint
1840	0.053	1.34	X			X
	0.059	1.5	X			X
	0.061	1.55				X
	0.061	1.56				X
	0.061	1.56				X
	0.063	1.6	X			X
	0.063	1.6				X
1850	0.067	1.7	X			X
	0.067	1.7				X
	0.067	1.7				X
	0.067	1.7				X
	0.071	1.8				X
1858	0.076	1.94				X
	0.079	2.0				X
	0.079	2.0				X
	0.079	2.0				X
	0.080	2.04	X			X
	0.083	2.1	X			
	0.083	2.1				X
1870	0.086	2.18	X			X
	0.086	2.18				X
	0.087	2.2	X			X
	0.087	2.2				X
	0.087	2.2				X
	0.087	2.2				
	0.087	2.2				X
	0.087	2.2				X
	0.087	2.2				X
	0.087	2.2				X
	0.087	2.2				X
	0.088	2.23				X
	0.088	2.24	X			X
	0.088	2.24	X			X

	Unit 9	Level 3	(5 cm)	cont'd		
	0.088	2.24	X			X
	0.088	2.24				X
	0.091	2.3				X
	0.091	2.3				X
	0.091	2.3				
	0.091	2.3				X
	0.091	2.3				X
	0.091	2.3				
	0.091	2.3				
	0.091	2.3				
	0.091	2.3				
	0.094	2.4				X
	0.094	2.4				X
1885	0.094	2.4				X
	0.110	2.8				
	0.114	2.9		X		X
	0.114	2.9				X
	0.126	3.2				X
Mean:	**0.084**	**2.14**				
1870						

	Unit 30	Level 1	(10 cm)			
Median Date	**Thickness (in.)**	**Thickness (mm)**	**>1"**	**>2"**	**>3"**	**Tint**
1840	0.055	1.4				X
1850	0.067	1.7	X			X
	0.067	1.7	X			X
	0.067	1.7				X
	0.071	1.8	X			X
	0.071	1.8				X
	0.072	1.82			X	X
	0.073	1.85			X	X
	0.073	1.86		X		X
	0.073	1.86		X		X
1858	0.075	1.9	X			X
	0.076	1.94		X		X
	0.077	1.96			X	X
1870	0.088	2.24				
	0.118	3.0			X	X
	0.118	3.0			X	X
	0.118	3.0			X	X
	0.118	3.0			X	X
	0.118	3.0			X	X
	0.119	3.02			X	X
	0.120	3.04			X	X
	0.120	3.04			X	X
	0.122	3.1			X	X
	0.125	3.18			X	X
Mean:	**0.085**	**2.15**				
1870						

	Unit 30	Level 2	(7 cm)			
Median Date	**Thickness (in.)**	**Thickness (mm)**	**>1"**	**>2"**	**>3"**	**Tint**
1840	0.055	1.4				X
	0.055	1.4				X
	0.058	1.48				X
	0.061	1.54				
	0.063	1.6			X	
1850	0.065	1.66	X			X
	0.065	1.66				X
	0.067	1.7				X
	0.067	1.7				X
	0.067	1.7				X
	0.068	1.72	X			X
	0.068	1.72	X			X
	0.068	1.72		X		X
	0.068	1.72				X
	0.070	1.78				X
	0.071	1.8	X			X
	0.073	1.86				
	0.074	1.87		X		X
1860	0.074	1.87		X		X
	0.076	1.92				
	0.076	1.93	X			X
	0.082	2.08				X
	0.087	2.2				
	0.087	2.2				X
	0.087	2.22				
	0.089	2.26	X			
	0.101	2.56			X	X
	0.103	2.62				X
1908	0.106	2.7				
	0.122	3.1	X			X
Mean: 1858	**0.076**	**1.92**				
Combined Mean: (units 9 & 30)	**0.084**	**2.134**				

Overall Mean date, units 9 & 30= 1870, (Roenke)

Appendix C Summary of Ceramic Sherd Attributes and Ware Types

Attribute	Count*	Attribute	Count*
blue	2	lead-glazed interior	1
blue glazed	3	orange/brown	1
blue hand-painted	10	plain	161
blue shell edge	5	plain cup fragments	13
blue sponge	1	plate fragments	2
blue transfer print	3	purple transfer print	1
blue-edge	1	red	1
blue-painted	1	red glazed	1
blue/black annular	1	red transfer print	1
blue/green	1	red/white print	1
blue/gray salt glazed	1	salt & mocha glazed	1
blue/white	1	salt glazed	10
blue/white print	1	salt glazed cobalt	1
bristol glazed	1	salt-glazed cobalt	1
brown ext. /white int.	1	sponge/spatter	1
Brown /gold glazed	4	stenciled	1
brown	2	stenciled ring	1
brown glazed	114	tan	1
brown/ gray salt glaze	4	tea cup	1
exterior bristol-glazed	1	transfer print	3
glazed	32	unglazed	7
gold/black rim	3	w/ blue	2
gray glazed	1	w/ blue design	2
grayish-blue w/stencil	1	w/ blue stencil	1
green painted	1	w/ green design	2
green shell-edge	1	w/ light purple floral	1
gray	1	w/ molding	1
gray salt-glazed	2	w/ purple design	1
gray unglazed	1	w/ thin gold band	1
gray/brown	1	white	2
hand-painted	2	white w/gold trim	1
high fired	2	white/gray	1
lead glazed	79		
lead-glazed crockery	2		

* Number of sherds with given attribute

Ceramic Type	Sum*	Percentage**
whiteware	346	42.98%
redware	186	23.11%
stoneware	103	12.80%
terra cotta	101	12.55%
porcelain	78	9.69%
pearlware	60	7.45%
unclassified	11	1.37%
creamware	5	0.62%
ironstone	4	0.50
Total Ceramics	**805**	**100.00%**

*Sum of sherds from all proveniences **Percentage of recovered ceramic assemblage

Appendix D Ceramic Sherds by Level

UNIT	LEVEL	ARTIFACT	DESCRIPTION	COUNT
1	1	redware	plain	5
1	1	whiteware	plain	2
1	1	whiteware	blue sponge	1
1	1	redware	lead-gl.interior	1
1	1	earthenware		1
1	1	porcelain	plain	3
1	1	pearlware	plain	2
1	2	redware	plain	2
1	2	redware	lead glazed	1
1	2	stoneware	lead glazed	2
1	2	stoneware	plain	4
1	2	pearlware	plain	1
1	3	whiteware		4
1	3	pearlware		1
2	1	whiteware	plain	4
2	1	redware	plain	12
2	1	porcelain	plain	4
2	1	pearlware	plain	2
2	1	whiteware		4
2	1	redware		1
2	1	porcelain	plain	1
2	2	whiteware	plain	3
2	2	whiteware		5
2	2	stoneware		1
2	2	redware	plain	2
2	3			0
2	4			0
3	1	redware		15
3	1	porcelain	plain	2
3	1	porcelain	orange/brn	1
3	1	whiteware	w/thin gold band	1
3	1	whiteware	plain	3
3	1	whiteware	sponge/spatter	1
3	1	redware	lead glazed	3
4	1	porcelain	blue/green	1
4	1	redware	lead glazed	1
4	1	ironstone		1
4	1	whiteware		3
5	1	redware	plain	2
5	1	whiteware	plain	1
5	1	stoneware	plain	1
5	1	stoneware	lead glazed	1
6	1	porcelain		3
6	1	redware		1
6	1	earthenware	plain	1
6	1	whiteware	plain	5
6	1	whiteware	w/ light purple floral	1
6	1	stoneware	brn ext/wht int	1
6	1	stoneware	salt glazed	2
6	1	creamware		1
6	1	porcelain	plain	2
6	1	redware	plain	2
6	1	pearlware	plain	1
6	1	whiteware	plain	1
6	1	whiteware	transfer print	1
6	1	whiteware	blue hand-painted	1
6	2	redware		1
6	2	creamware		1
6	2	redware	lead glazed	8
6	2	porcelain	plain	1
6	2	pearlware	plain	2
6	2	earthenware	lead glazed	2
6	2	stoneware		2
6	2	stoneware	blue	1
6	2	pearlware	blue/white print	1
6	2	whiteware	red/white print	1
6	2	stoneware	salt glazed	1
6	2	stoneware	plain	1
6	2	pearlware	plain	2
6	2	earthenware	brown	1
6	2	redware	plain	2
6	2	creamware		1
6	2	redware	lead glazed	3
6	2	porcelain	plain	2
6	2	whiteware	plain	5
6	2	pearlware	blue/white	1
6	2	pearlware	blue/black annular	1
6	3	redware	lead glazed	2
6	3	pearlware	blue hand-painted	1
6	3	pearlware	plain	4
6	3	porcelain	plain	1
6	3	whiteware	plain	2
6	4			0
6	5			0
7	1	whiteware	stenciled	1
7	1	whiteware	blue hand-painted	1
7	1	whiteware	plain	2
7	1	whiteware	brown glazed	6
7	1	porcelain	w/ moulding	1
7	1	porcelain	gold/black rim	2
7	1	porcelain	plain	4
7	1	redware	plain	2
7	1	redware	lead glazed	5
7	1	stoneware	lead glazed	1
7	1	stoneware	gray glazed	1
7	1	earthenware		
7	1	whiteware	white/grey	1
7	1	porcelain	gold/black rim	1
7	1	creamware		1
7	1	earthenware	plain	2
7	2	porcelain		5
7	2	earthenware		
7	2	whiteware		2
7	2	terra cotta		2
7	2	stoneware	brown	1
7	3	pearlware		2
7	3	whiteware		2
7	4	redware	glazed	1
7	4	whiteware		2
7	4	whiteware		1
7	4	stoneware	w/ green design	2
7	5			0
7	6	whiteware	w/ purple design	1
7	6	earthenware		1
7	6	stoneware	brown glazed	1
7	7	stoneware	lead glazed	1
8	0			0
8	1	redware	lead glazed	4
8	1	redware		2
8	1	whiteware		1

8	1	porcelain		1
8	1	whiteware		2
8	1	stoneware		1
8	2	stoneware	plate frag.	1
8	2	whiteware		3
8	2	redware	glazed	1
8	2	stoneware	lead glazed	1
8	2	whiteware		1
8	2	stoneware	salt glazed cobalt	1
8	3	terra cotta		1
8	3	porcelain		3
8	3	whiteware		3
8	3	stoneware		1
8	3	whiteware	plain	3
8	3	whiteware	blue transfer print	1
8	3	whiteware		1
8	3	porcelain		2
8	3	stoneware	salt glazed	1
8	4	whiteware		2
8	4	redware	glazed	1
8	4	redware		1
8	4	pearlware		1
8	4	terra cotta		1
8	4	stoneware		2
8	4	whiteware		1
8	5	terra cotta		1
8	5	porcelain		1
8	5	whiteware		1
8	5	terra cotta		1
8	6	whiteware		1
9	1	terra cotta		1
9	1	earthenware	brown glazed	1
9	1	whiteware	plain	1
9	1	porcelain		1
9	2	terra cotta		6
9	2	stoneware	lead glazed	1
9	2	stoneware	blue glazed	1
9	2	whiteware		5
9	2	porcelain		7
9	3	redware		5
9	3	porcelain		12
9	3	whiteware	brown glazed	3
9	3	whiteware		2
9	4	whiteware		2
9	4	porcelain		2
9	4	porcelain	tea cup	1
9	4	whiteware		6
9	4	porcelain		1
9	5	stoneware	lead glazed	1
9	5	whiteware	brown glazed	3
9	5	whiteware	purple transfer print	1
9	6	?	lead glazed	1
9	7			0
10	1	earthenware	red	1
10	1	whiteware	brown glazed	5
10	1	whiteware	plain	1
10	2	redware		1
10	3			0
10	4	whiteware		7
10	4	redware	lead glazed	4
10	4	stoneware	bristol glazed	1
10	4	earthenware	brown glazed	9
10	5	whiteware	brown glazed	2
10	5	whiteware	plain	2
10	6			0
10	7	whiteware	brown glazed	1
11	1	redware	lead glazed	1
11	1	redware	salt glazed	1
11	1	stoneware	lead glazed	1
11	1	stoneware	plain	1
11	2	terra cotta		2
11	2	whiteware	brown glazed	2
11	2	pearlware	plain	1
11	3	whiteware	high fired	2
11	3	whiteware		1
11	3	stoneware	brown glazed	2
11	3	terra cotta		2
11	4	earthenware	brown glazed	2
11	4	terra cotta		4
11	4	porcelain		1
11	4	whiteware		1
11	5	earthenware	brown glazed	5
11	5	redware	brown glazed	1
11	5	whiteware	plain	5
11	5	whiteware	blue hand-painted	1
11	6			0
12	1			0
12	2	whiteware	plain	1
12	2	whiteware	plain	2
12	3	pearlware		8
12	3	redware		5
12	3	stoneware	brown glazed	1
12	5	porcelain		1
12	5	whiteware		1
12	5	stoneware	brown glazed	1
12	6			0
12	7			0
13	1	whiteware		4
13	2	whiteware	transfer print	1
13	3	redware		1
13	3	stoneware		3
13	3	whiteware		8
13	3	porcelain		1
13	3	whiteware	glazed	1
13	4	redware	glazed	1
13	4	stoneware	brown glazed	1
13	4	porcelain	white	1
13	4	whiteware		1
13	4	porcelain		1
13	4	redware		1
13	4	stoneware		1
13	5	whiteware		2
13	5	porcelain?		1
13	5	redware	glazed	1
13	5	stoneware	glazed	6
13	5	stoneware	salt glazed	1
13	6	creamware	plain	1
13	6	pearlware	plain	2
13	6	whiteware	plain cup frags.	13
13	6	redware	lead-gl. redware	1
13	6	redware	lead-gl. crockery	2
13	6	whiteware	red transfer print	1
13	6	stoneware	salt glazed	1
13	Extens.	whiteware		2
13	Extens.	porcelain	plate frag.	1
13	Extens.	stoneware	brown/grey salt glaze	4
14	1	porcelain	plain	1
14	1	whiteware	brown glazed	2

14	1	whiteware	plain	1
14	1	whiteware	blue-painted	1
14	2	whiteware	plain	6
14	2	whiteware	brown glazed	2
14	3	whiteware		2
14	3	stoneware		1
14	3	stoneware		3
14	3	terra cotta		1
14	4	redware	red gl.	1
14	4	whiteware	lead glazed	1
14	5			0
14	6			0
16	1			0
16	2	whiteware	plain	2
16	2	whiteware	brown glazed	1
16	2	redware	lead glazed	1
16	3	porcelain	stenciled ring	1
16	3	whiteware		1
16	3	stoneware	brn/gold gl.	4
16	3	whiteware		5
16	3	porcelain	white	1
16	3	porcelain	white w/gold trim	1
16	3	terra cotta		2
16	4	stoneware	grey unglazed	1
16	4	redware		16
16	4	whiteware		12
16	4	porcelain		1
16	4	stoneware	salt glazed	2
16	4	earthenware	brown glazed	22
16	4	earthenware	exterior bristol-gl.	1
16	4	whiteware		18
16	4	redware	lead glazed	11
16	4	porcelain		2
16	4	stoneware	grey salt-gl.	2
16	4	earthenware	brown glazed	4
16	4	whiteware	blue hand-painted	2
16	4	whiteware		0
16	4	whiteware	brown glazed	7
16	4	redware	glazed	4
16	4	porcelain		0
16	5	redware	glazed	14
16	5	redware	unglazed	1
16	5	pearlware	blue hand-painted	1
16	5	pearlware	plain	14
16	5	whiteware	brown glazed	7
16	6	whiteware		2
16	6	whiteware	w/ blue design	2
16	6	redware	lead glazed	2
16	6	stoneware		3
16	6	whiteware	brown glazed	1
16	7	whiteware	brown glazed	1
16	7	whiteware	plain	1
16	8			0
17	0			0
17	1	whiteware	brown glazed	1
17	2	whiteware		2
17	2	stoneware	brown glazed	7
17	2	stoneware	blue	1
17	2	stoneware	tan	1
17	3	porcelain		9
17	3	whiteware		1
17	4	redware	lead glazed	1
17	5	whiteware	blue hand-painted	1
17	6	stoneware	brown glazed	1
17	7			0
18	1	whiteware		2
18	1	porcelain		1
19	1	redware		1
19	1	whiteware	blue transfer print	1
19	1	whiteware	plain	1
19	1	earthenware		1
19	1	pearlware	blue shell edge	1
19	1	terra cotta		2
19	1	redware	glazed	1
19	2	stoneware		3
19	2	whiteware	transfer print	1
19	2	porcelain		4
19	2	whiteware	plain	2
19	2	redware	lead glazed	3
19	2	whiteware		1
19	2	terra cotta		1
19	3	stoneware		2
19	3	whiteware		1
19	3	terra cotta		4
19	3	whiteware		1
19	4	redware	glazed	1
19	5	pearlware		1
19	6			0
19	6	pearlware	green shell-edge	1
20	1	whiteware		1
20	2	whiteware		1
20	2	whiteware	blue glazed	1
20	3			0
20	4	whiteware		1
20	4	stoneware	salt & mocha gl.	1
20	5			0
20	6	porcelain		1
20	7	whiteware		2
21	1	redware		1
21	1	pearlware		2
21	1	whiteware		1
21	2	redware	lead glazed	1
21	3	whiteware	blue transfer print	1
21	3	whiteware	blue glazed	1
21	3	whiteware	plain	1
21	3	stoneware	grey/brown	1
21	4	whiteware		3
21	5	whiteware		1
21	6			0
21	7			0
22	1	redware	lead glazed	1
22	1	redware	unglazed	1
22	1	pearlware		2
22	2	pearlware		1
22	3			0
22	4	porcelain	grey	1
22	4	redware		3
22	4	whiteware		4
22	5	whiteware	w/ blue	2
22	5	terra cotta		2
22	6			0
23	1	whiteware	blue shell edge	4
23	1	whiteware		1
23	2	stoneware	blue/grey salt glazed	1
23	2	terra cotta		2
23	2	whiteware		3
23	2	stoneware		1
23	3	stoneware	brown glazed	1

23	3	whiteware		4
23	4	whiteware	plain	2
23	4	redware		5
23	5	whiteware	hand-painted	2
23	5	whiteware	plain	3
24	1	whiteware		2
24	1	redware	lead glazed	2
25	1	whiteware		1
25	2	whiteware		2
25	2	porcelain		2
25	2	stoneware	salt glazed	1
25	2	stoneware	lead glazed	1
25	2	whiteware	w/ blue stencil	1
25	2	whiteware	grayish-blue w/stencil	1
25	2	whiteware	lead glazed	7
25	3	redware	lead glazed	1
25	4	pearlware	blue hand-painted	2
25	4	whiteware		10
25	4	?	brown glazed	8
25	4	stoneware	salt-gl.cobalt	1
25	5	whiteware	brown glazed	2
25	5	whiteware		3
25	5	whiteware	blue-edge	1
25	5	stoneware		1
25	6			0
25	baulk	porcelain		1
25	baulk	whiteware	plain	1
25	baulk	whiteware	brown glazed	1
30	1	pearlware		2
30	1	stoneware		3
30	1	redware	unglazed	3
30	1	terra cotta		1
30	2	stoneware		1
30	2	terra cotta		2
30	2	whiteware		2
30	3			0
31	surface	ironstone	plain	3
31	surface	whiteware	green painted	1
31	surface	whiteware	plain	2
31	surface	porcelain	plain	1
31	1			0
31	2	terra cotta		6
31	2	redware	unglazed	2
31	2	redware	lead glazed	1
31	3	redware	lead glazed	2
31	4			0
31	5			0

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Master of Science in ARCHITECTURE
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AUTHOR, WWW page
Archaeology in Blacksburg: Who Were the Earliest Inhabitants of the Area?
The Blacksburg Bicentennial Website at www.blacksburg.us/bicentennial/spec/

ACADEMIC AWARD
HENRY H. WISS AWARD for outstanding academic achievement in the History and Theory of Architecture at Virginia Polytechnic Institute and State University, 1999.

HONOR SOCIETY
Induction into TAU SIGMA DELTA National Honor Society for architecture and allied arts, Spring 2000.

TRAINING COURSE
Association for Preservation Technology Exterior Wood Preservation and Conservation, 1999.

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ARCHAEOLOGIST III
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Infotec Research, Inc.
Eugene, Oregon

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Metcalf Archaeological Consultants
Eagle, Colorado

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Lowell, Arkansas

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3D Environmental Services, Inc.
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College of William and Mary,
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