

Archaeological Investigations at the ca. 1783 Log Stable, Loatman Road, Lower Hopewell Township, Cumberland County, New Jersey

Formerly known as the “Swedish Granary”

Lu Ann De Cunzo, Ph.D.

July 2024

Introduction

This project was undertaken in conjunction with an initiative to re-interpret the log building now on the grounds of the Cumberland County Historical Society on Ye Greate Street, Greenwich Township, Cumberland County, New Jersey. A Preserve New Jersey Historic Preservation grant from the New Jersey Historic Trust supported the project. Dr. Lu Ann De Cunzo, Professor of Anthropology, University of Delaware directed the archaeological project, with support from Richard Adamczyk, Curator of the Alan E. Carman Museum of Prehistory in Cumberland County. Joe Mathews and Clifton Jones assisted with the fieldwork. Team member Joan Berkey completed historical research about the farm in advance of fieldwork. Team member and interpretive specialist James Turk visited the site during archaeological testing, and log building expert Douglas Reed shared information about possible archaeological evidence of the stable’s construction and history. Joe Mathews provided overall coordination and support.

Until 1974, the log stable stood on a farm under the current ownership of Robert Fralinger, who generously provided access for our testing. The project’s purpose is to examine the archaeological record of the log stable’s original site as a basis for assessing the potential of further archaeological investigations to help with understanding and interpreting the physical history and uses of the building during its active life on the Holmes/ Perry/ Fralinger Farm.

Geographical and Historical Context

The stable originally stood on the Fralinger farm in Lower Hopewell Township in the Cohansey River drainage, approximately 4,000 linear feet from the nearest bend of the meandering river. Just over 4.5 linear miles southeast of this point, the Cohansey River empties into the Delaware Bay (Figure 1). Comparison of the current river course with the 1862 Pomeroy Map of Cumberland County shows remodeling and expansion of the marsh fringe in the vicinity of the site (Figure 2). Diking and banking the marsh on the river’s north edge as part of land reclamation efforts along the Cohansey was already extensive by 1866. Further expansion at that time was proposed for salt hay farming (Nesbit 1885:137-9, quoted in Sebold 1992:9; Sebold 1992:21-23, 30). The farm lies in the Atlantic Coastal Plain and contains well-drained Matapeake A silt loam on the upland terrace and flats (0-2% slope). Moderately well-drained Mattapex silt loam occurs closer to the marsh (0-5% slope; Cumberland County Soil Survey 2008).

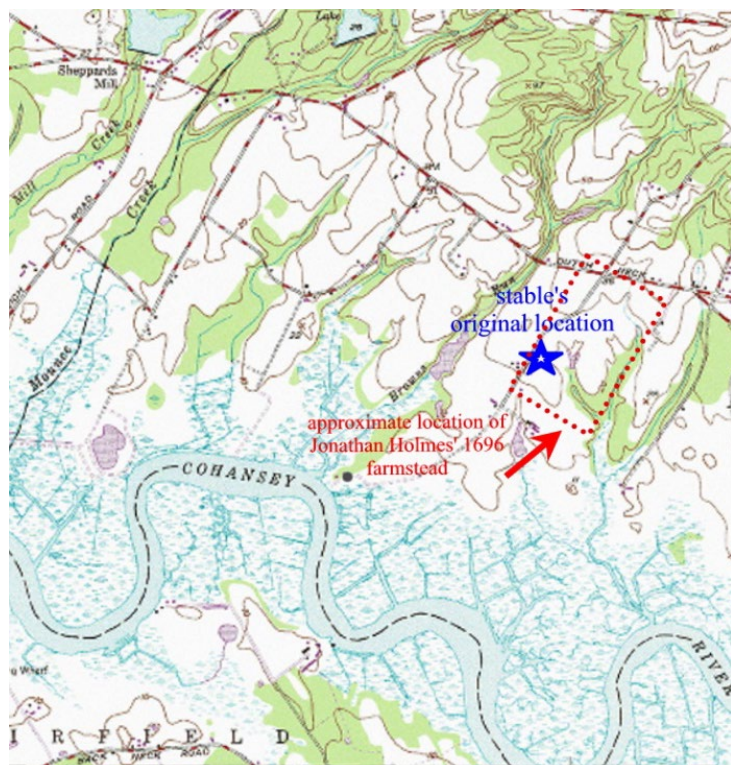


Figure 1: USGS map annotated to show the location of Jonathan Holmes' 1696 farmstead, the original location of the log stable. North is represented by the top of the image. Reproduced from Berkey 2023.



Figure 2: 1862 Pomeroy Map of Cumberland County, NJ. Portion showing parts of Greenwich, Stow Creek, and Hopewell Twps. Holmes Farm area outlined in red. North is represented at the top of the image. Library of Congress.

The author and project team recognize this land as the ancestral home of the Lenape people. Lenape history is not presented in this report due to its focus on the late eighteenth-third quarter twentieth-century European American farm and its log stable.

The following is excerpted from Joan Berkey's report, "Historical Background of the Farmstead on Which the Log Stable Originally Stood." Refer to Berkey's report for source citations.

"The farmstead originally consisted of two tracts—one of 163 acres and the other of 40 adjoining acres—purchased in March 1696 by Jonathan Holmes (ca. 1668-1712) from the estate of John Barkstead (Figure 3). The legal description in the deed noted that the acreage was located on the "northside of the Cohansey [sic] in the forks of Kiewhaps Creek, along the Turtle Branch."

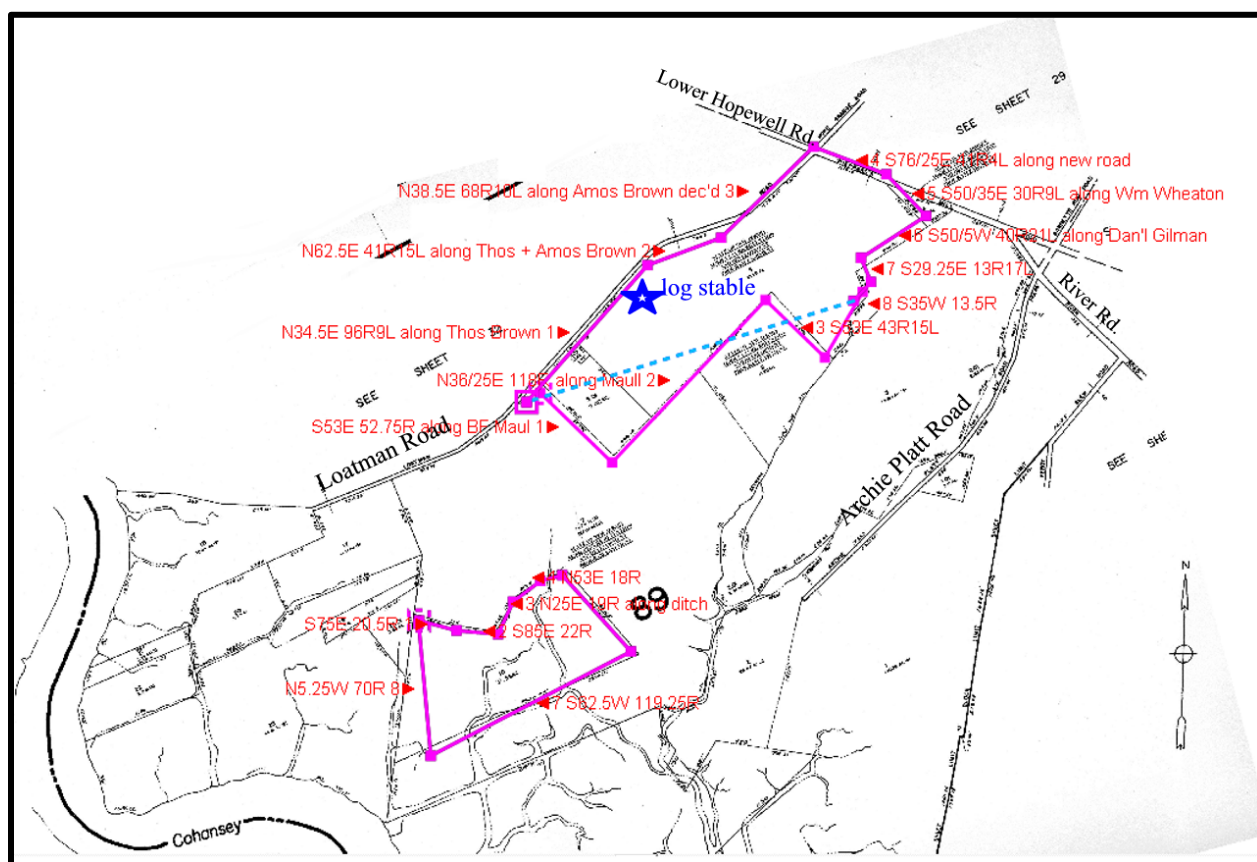


Figure 3: Current tax map with the outlines (in pink) showing the boundaries of the two parcels that Alfred Holmes bought in 1855. Reproduced from Berkey 2023.

The Holmes were typical English settlers to the lower Cohansey in the late seventeenth century. Originally from Lancashire, England, the family settled first in Massachusetts. Subsequent generations moved to Monmouth County, New Jersey, and then to Greenwich by 1685. The farm passed through five generations of the Holmes family before being sold to the Perrys in 1893. Jonathan Holmes' grandson Abijah erected the stable in 1783-4, not long before his death in 1785. Abijah's estate records document his livestock holdings in "cattle, horses, hogs, and sheep in addition to wheat and hay, some of which were

likely housed or stored in the log stable. He also owned wagons, a sleigh, and “plantation utensils” along with two “Negro slaves.” “It is not known what role, if any, Holmes’ enslaved people played in building, working in, or possibly even residing in the log stable.”

In 1801, Abijah’s son, John, inherited the portion of his father’s farm on which the stable stood. He and his family farmed the land until his death in 1855 at the age of 77, although we currently know little about his life and agricultural practices. “At his death, he owned household goods that were typical of the mid-19th century and included carpet, tinware, earthenware, Windsor chairs (6), blankets (18), quilts (11), a map of the United States, and numerous beds. He owned no livestock, but farming-related items included a fan mill [windmill], a plow and cultivators, a watering trough, and grain cradles.”

“That fall, the John Holmes farm was sold at auction. The sale, advertised in the local paper, noted that the farm consisted of 165 acres of upland, meadow, and plowed land “in a high state of cultivation” in addition to “woodland composed of chestnut, oak and hickory.” The farm was enclosed with “a good fence of cedar and chestnut rails.” The buildings were described as a house that was “a good frame two storys [sic] front, and cellar under, with kitchen, sitting and bedrooms adjoining,” in addition to a “large wagon house with cellar that will hold 2000 bushels of potatoes,” and “out stables for young stock, sheep, &c.,” the latter likely describing the log stable.”

John’s farm was divided and sold in portions. His son Alfred purchased the parcel containing the stable. He lived on and presumably had farmed the land during his father’s latter years. The farm remained in his ownership until his death in 1893. He, his wife, several of their seven children (and later grandchildren), live-in apprentices, and laborers worked the farm.

The 1880 agricultural census offers the most detailed insight into the land and the family’s farming practices. It “consisted of 72 tilled acres and 27 acres of “permanent meadows, pastures, orchards, and vineyards.” He owned two acres of unimproved woodland and forest. He valued his farm at \$8,000 which included \$250 of farming implements and \$475 of livestock. Fertilizer cost him \$75 in 1879 and farm labor \$198. In 1879 the estimated value of all farm products was \$1,775 and he harvested 34 tons of hay. He owned five milk cows that produced 150 pounds of butter in 1879, four horses, four swine, and 25 chickens that produced 90 dozen eggs in 1879. His crops included 24 acres of Indian corn that produced 1,000 bushels, 24 acres of wheat that produced 600 bushels, and one acre of Irish potatoes that produced 175 bushels; these crops were also grown by neighboring farmers. His apple orchard consisted of 27 bearing trees on two acres.”

Edwin and Anna Wheaton Perry purchased the farm at auction from the Holmes’ heirs in 1893. During the next seven-plus decades, the farm passed to Anna upon Edwin’s death and then was purchased by son Edward Linwood in 1936, who held it until 1969 when the Fralingers acquired the farm; it remains in Fralinger ownership today. Edwin and Anna raised seven children on the farm and were cited as active in the grange and other agricultural organizations in the county. In the 1930 census, Anna was a 74-year-old widow... farmer of a “general farm.” She shared her house with a boarder and likely farm worker, 15-year-old Charles McPherson. Joan Berkey identified Figure 4 as the earliest aerial photograph of the farm, dated 1931. She wrote: “E. Linwood Perry appeared in the 1940 census as a 52-year-old farmer, living with his wife, 50-year-old Elsie. In the 1950 census, he is cited as a 61-year-old farmer living in the house with his wife, Elsie. Like his parents, both were active in the Hope Grange in Bridgeton.”



Figure 4: Close-up of Loatman Road and then Perry Farm (outlined in red), 1930 Aerial Map, Cumberland County, NJ.

Robert Fralinger Jr., a local peach and poultry farmer, purchased the farm soon after Perry's death in 1969. A 1970 black and white aerial photograph clearly shows a farmhouse with "three outbuildings to the south. The largest of the outbuildings is the southernmost one [circled in red in Figure 5] which is the log stable with its two shed additions. In 1974, after Robert Fralinger decided to donate the log stable to the Cumberland County Historical Society, restoration architect G. Edwin Brumbaugh of Gwynedd Valley, Pennsylvania visited the farmstead to examine the stable at its original location."



Figure 5: 1970 aerial photograph showing the farmstead with the house and three outbuildings. The log stable is circled in red. [NJ Geo-Web, 1970 Wetlands Black and White Imagery overlay]. Reproduced from Berkey 2023, Figure 7.

The following is excerpted from Douglas Reed, “Origins, Significance, Use: The Cumberland County Log Out-Stable,” pp. 23-4, 29-35.

The photos presented and cited here were first assembled by Penny Watson for the HSR; she shared scans with Doug Reed. Historical consultant Joan Berkey acquired additional images from the G. Edwin Brumbaugh collections at the Winterthur Museum and Library. Eight of the images proved relevant to the archaeological assessment.

A ca. 1961 image shows that the building was no longer in use, and the area around the building was plowed almost to the building foundation (Figure 6). A second image shows the rear open shed supported by posts, likely used for farm equipment storage (Figure 7). The building surroundings are not as overgrown as they appear in later images, but the vegetation does obscure the foundations. Later, but pre-1973 images show the building abandoned, in disrepair, and surrounded by overgrowth. Sheds are attached to the south (rear) and east walls of the building.



Figure 6: The log stable. Original photographer unknown. Photo dates uncertain, but if 1961, man could be Elmer Gandy. Reproduced from Reed 2023, Image 13.

Figure 7: The log stable with rear open shed addition supported by posts. Unknown photographer and date. Same man as in Figure 6. Image courtesy of CCHS. Reproduced from Reed 2023, Image 14.



Historical architect G. Edwin Brumbaugh consulted on the building history and significance. July 1973 photos taken during his site visit show heavier overgrowth, making it impossible to see the presence and condition of any foundations. One Brumbaugh image and a slightly later image taken inside the shed show the log building sill resting on rectangular stone, concrete, or stone set in concrete corner piers set with the long edges paralleling the building front and rear walls (Figures 8). It is not clear if the supports rest on the soil surface or extend below ground. An uneven layer of cobbles and fractured stones, with many gaps, were tucked under the building sill between the corner posts. This may be a meager attempt to discourage vermin from getting under the floor.



Figure 8: Photograph by G. Edwin Brumbaugh, 26 July 1973. Brumbaugh archives, Col 34, Box 8, Greenwich, Winterthur Library. Reproduced from Reed 2023: Image 12.

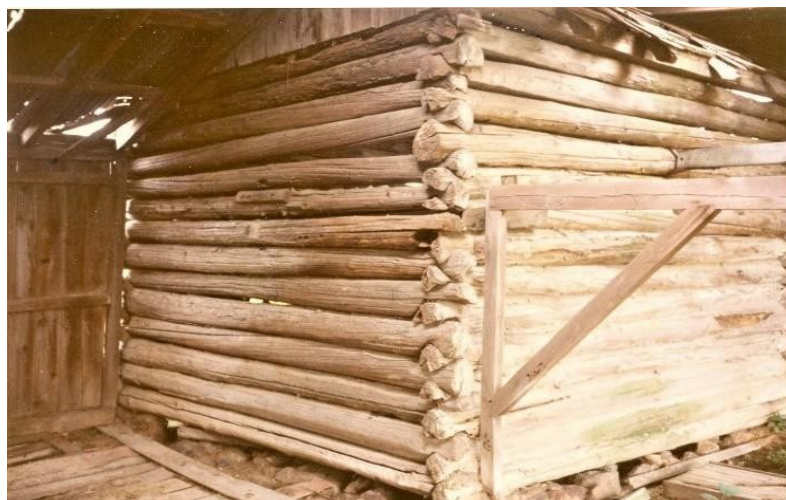


Figure 9: Photograph by G. Edwin Brumbaugh, 26 July 1973. Brumbaugh archives, Col 34, Box 8, Greenwich, Winterthur Library. Reproduced from Reed 2023: Image 15.

In May 1974, to facilitate the move of the stable to the grounds of the Cumberland County Historical Society in Greenwich, amateur historian Joseph G. Hancock called the property owner Robert Fralinger, Jr. to ask for permission to allow necessary excavation to install carrier beams under the structure. These beams were used to carefully lift the log crib off the ground and place it on a flatbed truck. Russell Brothers Home Movers moved the log structure in two days in the

fall of 1974. First, the team cleared the area of vegetation, the sheds, and the log stable's upper structure and roof. Shallow trenches were dug under the log wall sills north to south into which the carrier beams were slid under each of three sections of the building. The remains of the log crib building were lifted high enough to back a flatbed truck under the structure. The carrier beams with the structure above were then lowered onto the flatbed and tied down for the drive to the Gibbon House site in Greenwich. The ground surface around the stable appears to have been scraped away to provide access for the workers to trench and install the carrier beams, insert the log cribbing, and provide access to the flatbed on which the building was moved. The soil color suggests scraping to the naturally occurring light yellowish-brown silty loam subsoil, however extreme dry conditions, photographic conditions, and subsequent color changes to the photographic print make this determination inconclusive (Figure 10).

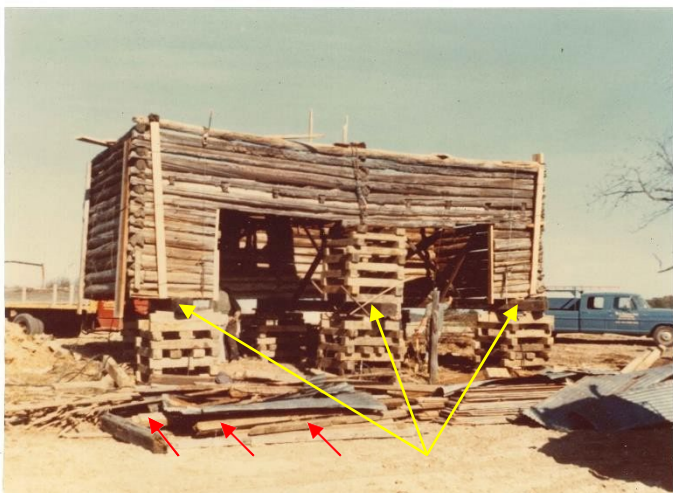


Figure 10: Log stable on cribbing to lift onto truck for move. Photo likely by Joseph Hancock, 1974. Reproduced from Reed 2023: Image 18.

A subsequent image taken after the log building was transferred to the flatbed shows some of the logs and frame members left behind. They appear in a shallow depression, suggesting more soil removal while preparing for lifting the building than just trenching to install carrier beams (Figure 11).



Figure 11: Photographer unknown, Fall 1974. From Architect Penelope Watson. Courtesy of CCHS. Reproduced from Reed 2023: Image 19.

Implications of Site History for Preservation of Archaeological Remains

Potential for pre-1974 Relocation of Log Stable on Holmes Farm

Extensive research conducted in southern New Jersey and Delaware has documented how commonly farm outbuildings and houses were moved in the nineteenth and first half of the twentieth centuries (Berkey 2008; Herman 1992). Log buildings typically sat on corner piers or shallow stone or brick foundations, to which they were not secured. Using log rollers and flat wagons, small buildings like the log stable on the Holmes Farm could be moved around the farm and from one farm to another using a process similar to the one employed in 1974.

To date, there is no documentary, architectural, landscape, or archaeological evidence that the log stable was moved before 1974, but it is possible. Archaeological testing may provide evidence to address this question.

1974 Site Preparation to Lift Log Stable for Relocation

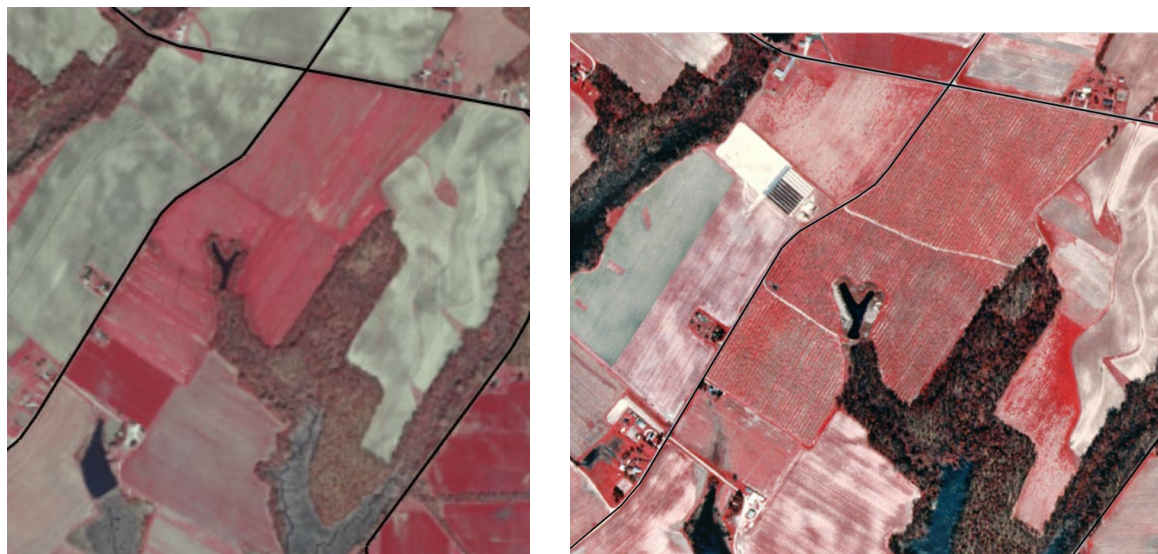
Preparations to lift the log stable for removal to Greenwich in 1974 compromised the archaeological integrity of the Holmes farm site. Removal of sheds, clearance of vegetation around the stable, trenching and scraping to insert the carrier beams and provide access to lift the stable onto the flatbed truck for transport, and site clean-up following the move all contributed to the loss of archaeological evidence. Surface-laid foundations and shallow corner piers, the stable and shed flooring, and layers of soil that accumulated around the building during its tenure on the site were removed, displaced, and relocated, or smeared around the area. [Note that surface-laid board flooring appears in one of the stable additions; Figure 12]. No pre-1975 photographs of the interior of the main log stable have been located to indicate whether it had board or dirt flooring.



Figure 12: Photographer unknown, before Fall 1974. Reproduced from Reed 2023, Image 16.

Post-1974 Agricultural Activity

Following removal of the log stable, the Fralingers incorporated the site into the surrounding agricultural field. It was plowed to about 1.0' below surface and cropped. Based on aerial photographs, the Fralingers converted the field into a peach orchard in the 1980s (Figures 13-14). Currently, the field hosts the third generation of peach trees. The second generation stood in the corridor between the current trees.



Figures 13 and 14: Infrared Aerial Photography, Cumberland County, NJ. Left: Fralinger farm, 1980s; Right: Fralinger farm, 1992. The rows of orchard trees are clearly visible in the 1992 photograph.

Mr. Fralinger reported that below 8-12" of plowzone lies a dense clay 'hardpan', as he described it, which limits soil drainage. To break up the 'hardpan' and facilitate soil drainage, the trees are 'subsoiled', which involves running a single plowshare-like metal implement in a line along the side of the trees, creating a 2.0-2.5' deep, narrow trench.

When the trees reached the end of their productive life, they were removed using special equipment that knocks over and lifts the tree. This process is eased by the trees' shallow root system.

Mr. Fralinger remembers encountering ironstone/ sandstone 'foundations', pipes, horseshoes, and other objects at the former stable complex during orchard planting, subsoiling and tree recycling.

Plowing, orchard planting, subsoiling, and tree removal all further disrupted the pre-1974 archaeological record of the stable complex.

Groundhog tunnelling under and around the stable during its tenure in the study area and after its removal may have further disrupted the pre-1974 archaeological record.

Archaeological Investigation

Original Scope of Work

Project Purpose and Goals

- Undertake archaeological testing at the Fralinger Farm site of the stable
- Identify nature, extent, integrity, research and interpretive potential of archaeological remains (soil layers, foundations, artifacts, etc.) of the granary and its immediate land/yardscape

Project Methods

- Hand excavate 2 2' x 10' trenches to naturally occurring subsoil
- Excavation, soil screening, artifact recovery, field documentation will meet professional standards
- Apply for NJ Archaeological Site Inventory number as warranted
- Process, catalogue, research artifact collections
- Analyze site and artifact data in association with historical documentary and graphic evidence (assembled by other grantees)

Project Deliverables

- Management Summary Report
- Final Archaeological Report (Introduction, Methods, Findings, Analysis, Interpretation, Recommendations, Conclusion, Appendices (site and artifact data; photographs)
- Curated archaeological collections to Cumberland County Historical Society
- Original site and artifact documentation to Cumberland County Historical Society
- Public presentation to Cumberland County Historical Society membership

Revised Scope of Work

In late October 2023, as the team prepared for the fieldwork, archaeologist and CCHS curator Richard Adamczyk, expressed concern about possible soil contamination resulting from agricultural spraying at the site, a peach orchard, and the potential risk to volunteers. Mr. Adamczyk and I concurred that due diligence demanded soil testing for contaminants harmful to humans prior to undertaking the proposed fieldwork. Due to the expense and schedule delays associated with such testing, I proposed a two-part alternative to the original scope: first, a systematic probing of the site to search for a building foundation or some other obstruction and, second, a literature search for reports on late eighteenth-nineteenth farm outbuildings in the New Jersey and Delaware coastal plains. The benefits are that archaeologists will not handle, screen, or breathe in soil particles; and a smaller team is required to execute over a shorter period. The findings will inform future decision-making regarding archaeological inquiry at the site. The disadvantage is that we will not know with confidence what the dense features/ obstructions are, and a lack of a discernible pattern will complicate interpretation.

The systematic probing with a 0.5" solid core probe would aid in locating building foundations and related features through which the probe will not pass. The probing consists of two steps:

1. Probes in a grid pattern at regular intervals over a ca. 30' x 30' area and recording of features encountered (objects denser than naturally occurring subsoil in or below the 8"-12" plowzone).
2. Closely placed probes in areas where features/obstructions are encountered to establish the pattern and extent of the underground anomalies (e.g., trace building foundations, etc.).

Existing Conditions

The site hosts 4-year-old peach trees, the third generation planted in the field. The trees stand ca. 13' apart in the middle of a ca. 11'-wide row of exposed. The ca. 15' corridors between trees are planted with grass, mowed regularly for access to the trees. 'Subsoiling' precludes the need for an underground irrigation system. The trees are sprayed in the fall, and when in bud in the spring; they are harvested about the second week of June. Small brick fragments appear occasionally on the exposed soil surfaces around the trees in the project area (Figures 15-17).



Figure 15: Rows of peach trees in project area, Fralinger Farm, December 2023. Photograph by the author. Looking southwest.



Figure 16: Close-up of exposed soil corridor in which trees planted, showing brick fragments. Project area, Fralinger Farm, December 2023. Photograph by the author. Looking west.

Probe Survey, Original Site of Log Stable

Methods

Field team volunteer members Lu Ann De Cunzo, Richard Adamczyk, Joseph Mathews, and Clifford Jones undertook the probe survey on 9 December 2023 (Figure 17). The weather was clear and unseasonably warm.



Figure 17: Joseph Mathews, Clifford Jones, and Richard Adamczyk (left to right), on site at Fralinger farm, December 2023. Photograph by the author.

Team historian Joan Berkey used the New Jersey GIS system to overlay aerial photographs and pinpoint the former location of the stable in a 15' wide corridor encompassing the fourth row of trees from Loatman Road (115.3' from the road) and the eighth line of trees from the lane trace that separated the former Holmes house site and agricultural complex. The 1970 aerial photograph, which showed the stable, allowed Berkey to pinpoint the almost exact location in latitude and longitude. Latitude: 39.394981 to 39.396072; Longitude: -75.293546. On site, data accessed on cell phones allowed the team to locate these points.

To lay out the grid, we extended the south longitude ca. 0.8' to establish the southeast corner of the grid. Using triangulation, we laid out a 30'-square grid extending north and west of that point. Working in two teams, De Cunzo and Mathews (Columns 6-10; Mathews probing), and Adamczyk and Jones (Columns 1-5; Adamczyk and Jones alternately probing), we placed 110 probes at 3' intervals, including the 30' x 30' border of the study area. Pressure was exerted on the probe until no further penetration into the soil was possible. The length of the 4' probe remaining exposed was measured and recorded; this was later converted to depths below surface (Figures 18-19).



Figures 18 and 19: Field probe survey, showing grid boundaries, probe and probe in use, recording. Richard Adamczyk, both figures; Clifford Jones probing, Figure 19. December 2023. Photograph by author.

Six additional probes were placed in the vicinity of obstructions (see Appendix X).

The process was documented through field notes, drawings, and digital photographs.

Findings

Probes deemed unobstructed extended between 0.95' and 2.85' below surface, of which 19 penetrated greater than 2.0'. The mean depth was 1.47' below surface; excluding probes identified as containing obstructions or anomalies, the mean depth was 1.59'. This represents a generalized pattern of a ca. 1.0' silty plowzone now planted in grass, and another average 0.5' into the dense, clayey subsoil.

Twenty-three of the total 116 probes encountered obstructions at shallower depths than the average probe penetration. Twenty-one were encountered between 0.25' and 1.25' below surface; two others, near shallow obstructions, ended on solid obstructions 3.0' and 3.1' below surface (Figure 20).

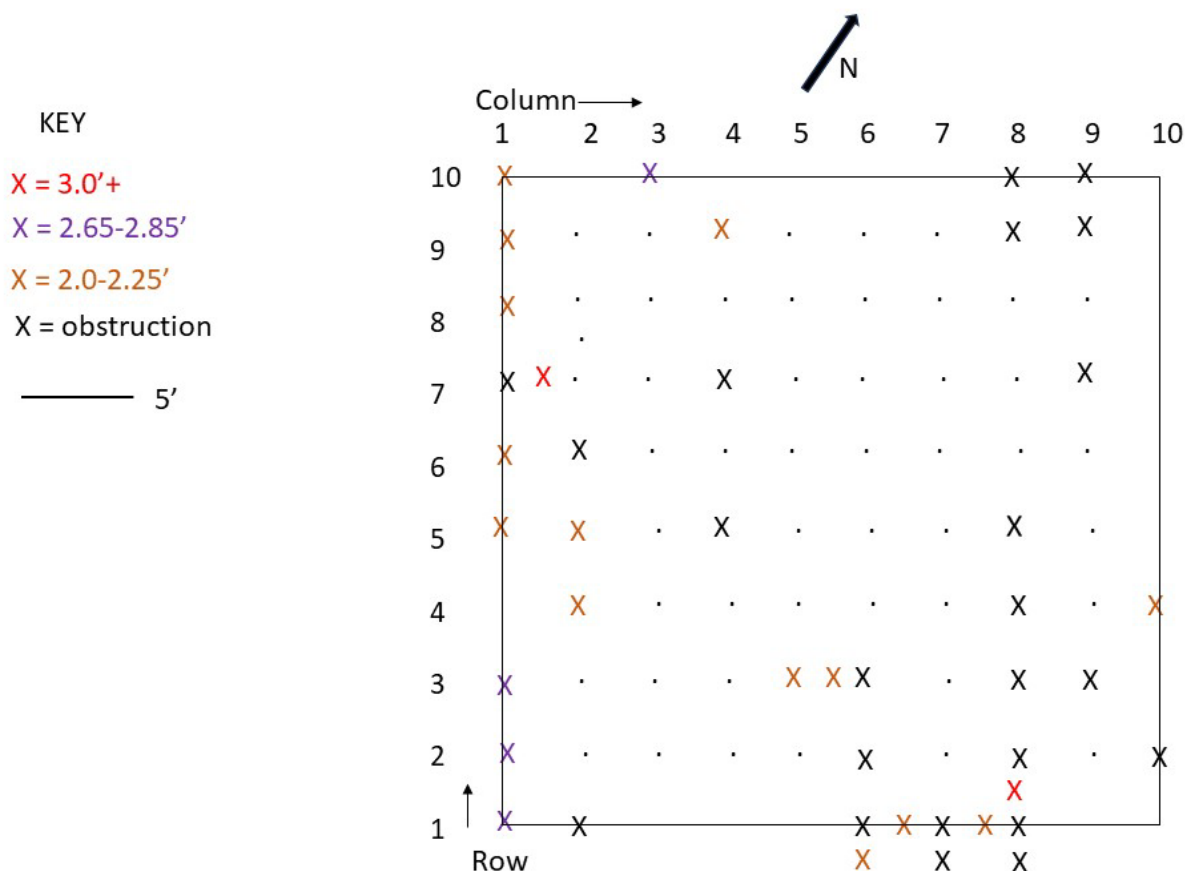


Figure 20: Probe testing plan, with probe locations indicated by “.”, and summary of probe findings by depth of penetration and locations of obstructed penetration of soil.

A scatter of brick fragments was noted on the exposed soil surface surrounding the tree line between test columns 4-7. Extant 1973-1974 photographs, and one taken possibly as early as 1961, show no use of brick in visible foundations and no chimney.

Patterning in the probe results include: (Figure 21)

1. Column 1, along the western boundary of the grid: less dense soils allowed probe to push 2.0'+ below the surface, with depth increasing at the southern end of the test area. Possible indicator of: excavation to insert carrier beams for 1974 removal of stable; subsoiling or removal/ recycling of earlier peach treeline
2. Western edge of anomaly 1, extending north an additional 5', with a second patch ca. 10' west; northwest quadrant over ca. 6-8' (grid north-south) x 1-1.5' (grid east-west) area: layer of crushed stone or pebble layer overlying the clayey subsoil and/or mixed into its surface. Fralinger did not indicate this material was introduced during his tenure at the farm. Possibly introduced earlier, during the life of the stable as a rough paving or to facilitate drainage.
3. Northwest grid boundary and southeast quadrant: two probes that reached 3.0' and 3.1' below the surface. Possible post or pier holes for stable or shed additions, peach tree planting holes or collapsed groundhog tunnels.
4. Obstruction clusters that limited depth of probe penetration

1. Southeast quadrant (includes group of 2.0' + deep probes), largest area: 12-15' (grid north-south) x 17-20' (grid east-west). Northerly extension, or a separate line, incorporates Column 8 obstructions, 20-23' (grid north-south) x 5-6' (grid east-west).
2. Northeast quadrant: 5-6' (grid north-south) x 8' (grid east-west)
3. Diagonal, northwest to southeast, west half of test area: approximately 5' x 15'

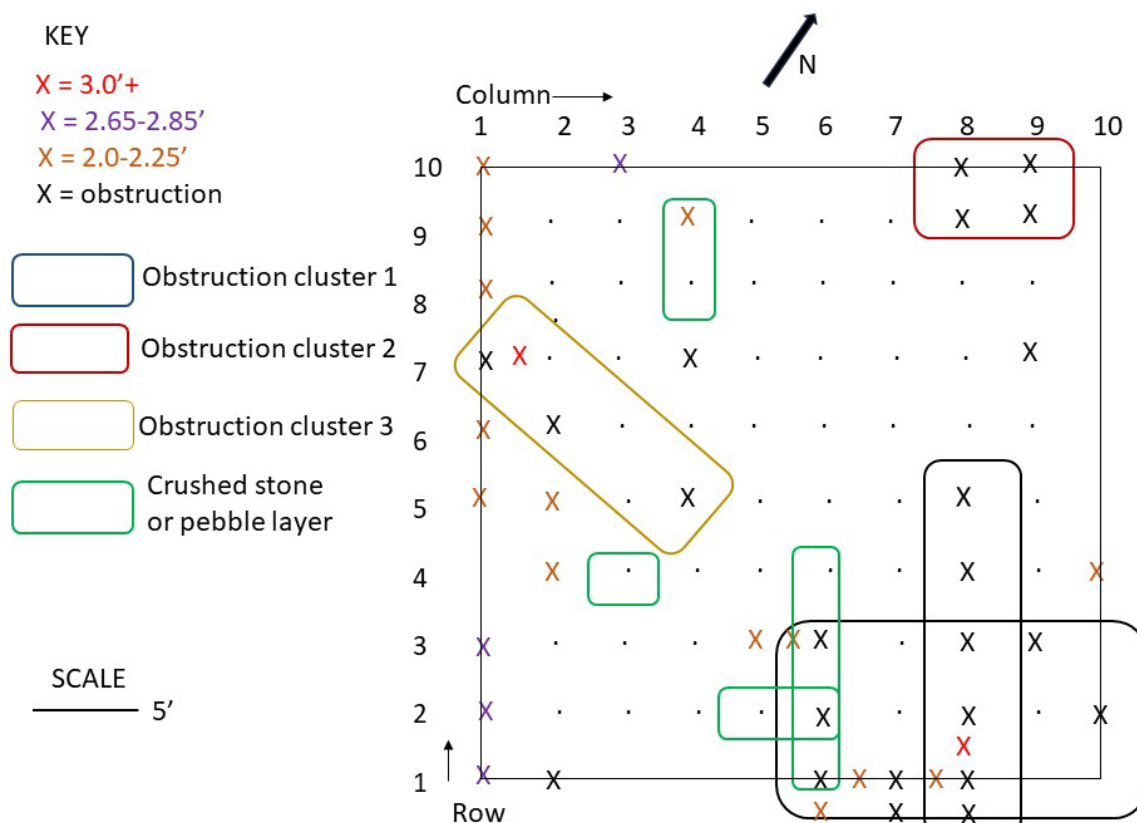


Figure 21: Probe testing plan, with probe locations indicated by “X”, summary of probe findings by depth of penetration and patterns of obstructed penetration of soil.

Conclusions

The probes yielded data useful for planning additional archaeological testing in the area. Distinctive soil patterns, anomalies, and obstructions were recorded. Identifying their nature, extent, date, and function require additional investigation. The literature review may suggest additional alternative interpretations of the data and will guide our recommendations for additional work.

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Literature Review, Archaeology of ca. 1780+ Log Stables in the New Jersey-Delaware Coastal Plain

To be submitted under separate cover

Recommendations

To be rendered upon completion of Literature Review

ARCHAEOLOGICAL PROBING, LOG STABLE, FRALINGER FARM

9 December 2023

COLUMN	ROW	X=	DEPTH PROBE	DISTANCE	NOTES
		OBSTRUCTION	PENETRATED	PROBE	
			(in	RELOCATED FOR	
			feet/tenths)	TREE	
	1			2.85	Soil less clay content
	1			2.7	Soil less clay content
	1			2.85	Soil less clay content
	1			2.25	Clayey subsoil
	1			2.2	Clayey subsoil
	1			2.0	Clayey subsoil
	1	X		0.35	Pebbles/ feature?
	1			1.95	Clayey subsoil
	1			2.1	Clayey subsoil
	1			2.2	Clayey subsoil
	1			1.75	Clayey subsoil
	2	X		1.25	Crunchy' obstruction
	2			1.25	Dense Clay
	2			1.4	Dense Clay
	2			1.9	Clay
	2			2.1	Clay
	2	X		0.8	Solid mass
	2			1.45	Clay
	2			1.45	Clay
	2			1.45	Clay
	2			1.55	Clay
	2			1.05	Clay
	3			1.75	Clay
	3			1.15	Clay
	3			1.9	Clay
	3			1.85	Crunchy' over clay
	3			1.85	Clay
	3			1.7	Clay
	3			1.65	Clay
	3			1.4	Dense clay
	3			1.45	Dense clay
	3			1.4	Dense clay
	3			2.65	Much less dense
	4			1.3	Crunchy' clay
	4			1.25	Crunchy' clay
	4			1.15	Crunchy' clay
	4			0.95	Crunchy' clay
	4	X		0.9	Solid mass
	4			1.3	Dense clay
	4	X		0.65	Possible obstruction

	4	8		1.65	Crunchy' clay
	4	9		1.95	Crunchy' clay
	4	10		2.25	Much less dense
	4	11		1.7	Much less dense
	5	1		0.95 1' west	Dense clay
	5	2		1.1 1' west	Crunchy
	5	3		2.25 1' west	
	5	4		1.3 1' west	Dense clay
	5	5		1.25 1.1' west	Stony clay
	5	6		1.15 1' west	Dense clay
	5	7		1.25 1' west	Dense clay
	5	8		1.2 1' west	Dense clay
	5	9		1.2 1' west	Dense clay
	5	10		1.5 1' west	Dense clay
	5	11		1.45 1' west	Dense clay
Between 5-6		3		2.5	
	6	1	X	1.05	Dense gravel
	6	1		2.4 1.5' south of 1	
	6	2	X	1.0	Dense gravel
	6	3	X	0.625	
	6	4		1.5	
	6	5		1.7	
	6	6		1.6	
	6	7		1.45	
	6	8		1.125	Dense clay
	6	9		1.475	
	6	10		1.475	
	6	11		1.025	
Between 6-7		1		2.3	
	7	1	X	0.5	
	7	1	X	3.1 1.5' south of 1	
	7	2		1.2	
	7	3		1.25	
	7	4		1.275	
	7	5		1.65	
	7	6		1.65	
	7	7		1.725	
	7	8		1.425	
	7	9		1.775	
	7	10		1.475	
	7	11		1.45	
Between 7-8		1		2.55	
	8	1	X	0.575	Possible?
	8	1	X	3.0 1.5' south of 1	
	8	2	X	0.775	Possible?
	8	3	X	0.875	Possible?
	8	4	X	0.9	Possible?

8	5	X	0.75	Possible?
8	6		1.55	
8	7		1.225	
8	8		1.475	
8	9		1.475	
8	10	X	0.25	
8	11	X	0.6	
9	1		1.25	
9	2		1.275	
9	3	X	0.25	Possible?
9	4		1.325	
9	5		1.175	
9	6		1.1	
9	7	X	0.75	Possible?
9	8		1.425	
9	9		1.325	
9	10	X	0.75	Possible?
9	11	X	0.5	Possible?
10	1		1.625	
10	2	X	0.7	
10	3		1.7	
10	4		2.175	
10	5		1.175	
10	6		1.075	
10	7		1.4	
10	8		1.475	
10	9		1.65	
10	10		1.55	
10	11		1.3	