INTER-SITE ANALYSES AND INTERPRETATIONS

Introduction

Inter-site analyses and interpretations involving the Moore-Taylor Farm, Benjamin Wynn Tenancy, and Wilson-Lewis Farm sites were undertaken to provide archaeological perspectives into local and regional historical social, cultural and economic developments. The historical significance of these three sites was largely determined prior to the advent of Phase III investigations by the sites' potential to address current and future archaeological research goals. In Delaware these research goals were initially defined for historical architecture by Ames, Herman and Siders (1989), and were subsequently adapted, defined, and summarized for historical archaeological resources in the **Management Plan for Delaware's Historical Archaeological Resources** (De Cunzo and Catts 1990). Four broad research domains, or themes, for historical archaeological inquiry are outlined by De Cunzo and Catts (1990): 1) Domestic Economy, 2) Landscape, 3) Manufacture and Trade, and 4) Social Group Identity and Interaction. For the purposes of these inter-site comparisons, only the first two research themes, Domestic Economy and Landscape, will be considered. These two research themes are meant to be inclusive rather than exclusive groupings and are designed to facilitate further historical archaeological inquiry into the region. Moreover, both themes seek to minimize artificial disciplinary boundaries and to foster complementary historical and archaeological research (De Cunzo and Catts 1990).

The inter-site analyses and interpretations of the Moore-Taylor Farm, Benjamin Wynn Tenancy, and Wilson-Lewis Farm sites that follow are organized according to the research themes of Domestic Economy and Landscape. Under the heading of Domestic Economy, three specific analyses are conducted using sites in Delaware and the Middle Atlantic region: 1) architectural comparisons; 2) ceramic economic scaling analyses; and 3) ceramic vessel function analyses. Under the heading of Landscape, two additional, but related, analyses were conducted: 1) a comparison of farmstead layouts; and 2) activity and trash disposal pattern comparisons.

Domestic Economy and Social and Economic Context

The research domain of domestic economy encompasses the complete range of means, or strategies, used by the family/ household to maintain itself and achieve domestic goals. These domestic goals may range from simple survival and reproduction of the household unit, to geographic, occupational, or socioeconomic stability. The elements of the domestic strategy include the composition and occupational structure of the family/household, home production, and consumer behavior (De Cunzo and Catts 1990:17). The following inter-site comparisons seek to examine one or more of the elements of the domestic strategy used at sites in Delaware and Middle Atlantic through the analyses of house dimensions, ceramics as economic and social indicators of status, and ceramics as indicators of special social and economic activities, such as tea drinking or commercial dairying.

Inter-site Architectural Comparisons. Researchers of historical architecture, whether archaeologists, folklorists, geographers, or historians, have observed that, in general, house sizes vary according to the relative wealth and socioeconomic status of their inhabitants (Upton 1983; Soltow 1985; Simler 1986; Herman 1987a; Yentsch and McKee 1987; Catts and Custer 1990; Garrison 1991; Bushman 1992). While not always the case, wealthier, land-owning people tended to live in larger or

better appointed (i.e., finished and/or furnished) houses than poorer landowners and tenants. Research in the Middle Atlantic has shown that tenant farms often had fewer specialized outbuildings than owner-occupied farms; however, within Delaware, regional differences in the numbers and kinds of outbuildings on owner-occupied farms have also been observed (Stiverson 1977; Herman 1987b:64, 1988).

Herman (1982:183) has pointed out that, for the colonial period at least, the existing stock of historical houses in Delaware is clearly biased toward examples constructed of brick that reflect the housing of the landed upper class. Housing of the elite has survived to the present because they were large, well-appointed, and adaptable to changing perceptions of individual taste, layout, and design (Upton 1983). Historians and folklorists working in Delaware have attempted to control for this bias by examining documentary sources that provide a glimpse of the housing of the unlanded and the poor. Historical archaeological studies can also serve to enhance this documentary record through the examination of the physical remains of housing, especially of the houses that have not survived. In a survey of Kent County, Delaware orphans' court valuations for the period 1760 to 1830, Bushman (1992:110) found that 67 percent of the houses contained less than 450 square feet of floor space on the ground floor; houses of this type were generally constructed as one-room, or single-cell, dwellings. Only 22 percent of the houses contained between 450 and 600 square feet, and a final 11 percent had over 600 square feet of space, probably representing two room, hall-parlor plans.

Within Delaware, there were local variations in house dimensions, reflecting regional social, cultural, and economic influences from throughout the Middle Atlantic, such as southeastern Pennsylvania and the Lower Eastern Shore, and southwestern New Jersey (Herman 1982:179). In Sussex County, for example, 85 percent of the houses were 500 square feet or less constructed on one-room plans; in fact, the most common house size was 18 x 20 feet, or 360 square feet (Herman 1988; 1992:183). The majority of all dwellings in Delaware were built of wood, either of timber framing or log. Comparatively few houses were built of brick; for example, in Dover and Duck Creek Hundreds between 1785 and 1830, only 25 percent of the dwellings were constructed of brick. In the Piedmont region of the state, better-built stone and brick houses with multiple rooms were more common, but these were still in the minority (Herman 1988:133-134).

To place the Benjamin Wynn Tenancy house and blacksmith shop in a broader regional context, the first floor dimensions of the house and shop were compared with the house dimensions of seven other archaeological sites dating from at least the second half of the eighteenth century (Table 33). Four of these sites were occupied by tenants; Marsh Grass (Thomas 1983), Stewart Farm (Whitten Road Site - Shaffer et al. 1988), Thompson's Loss and Gain (Guerrant 1988), and the Evans-Black house at the Williams Site (Catts and Custer 1990). Two owner-occupied sites were also included in the comparison; the John Read house (Catts, Hodny and Custer 1989), and the main dwelling on the William Strickland plantation (Catts et al. 1994).

Both the Marsh Grass and Thompson's Loss and Gain houses were the dwellings of tenant farmers in southern Delaware. Thompson's Loss and Gain was occupied from circa 1720 to 1780, and the Marsh Grass house dates from the end of the eighteenth century. The dwelling house at the Strickland plantation dates to about 1750 and was located in central Delaware. The three remaining houses were located in New Castle County. The earliest of these was the John Read house, a two-story brick structure erected circa 1740, and used as a dwelling for the next 200 years. The Stewart Farm and Evans-Black tenancies were the homes of small-scale tenants. The former was occupied from circa 1750 until the middle decades of the nineteenth century, and the latter from 1795 until about 1845.

TABLE 33

Comparison of First Floor Dimensions of Mid-to-Late Eighteenth Century Houses in Delaware

Site	Dimension (feet)	Area (square feet)
John Read House 7NC-E-53 circa 1740-1930 Owner-occupied	46 x 29	1334 square feet
Benjamin Wynn Tenancy 7KC-C-362 circa 1765-1820 Tenant-occupied	**house core 24 x 30 shed addition 8 x 24**	**912 square feet**
Marsh Grass Site 7S-D-45 circa 1810 Tenant-occupied	28 x 16	448 square feet
Benjamin Wynn Blacksmith Shop 7K-C-362 circa 1765-1820 Blacksmith Shop	**shop 16 x 24 addition 8 x 8**	**448 square feet**
Stewart Farm 7NC-D-100 circa 1750-1850 Tenant-occupied	24 x 18	432 square feet
Thompson's Loss and Gain 7S-G-60 circa 1720-1780 Tenant-occupied	18 x 24	432 square feet
Strickland Plantation 7K-A-117 circa 1726-1764 Owner-occupied	24 x 17	408 square feet
Evans-Black Tenant House 7NC-D-130 1795-1845 Tenant-occupied	14 x 22	308 square feet

The Benjamin Wynn house measured 24 x 30 feet with a single 8- x 24-foot shed or porch addition. The total area of the house was 912 square feet. At 912 square feet, the Benjamin Wynn Tenancy was the second largest house, second only to the John Read house measuring 1334 square feet (Table 33). Indeed, the Benjamin Wynn Tenancy was more than twice as large as any of the tenant-occupied houses and even the owner-occupied Strickland dwelling (408 square feet). Except for the Benjamin Wynn Tenancy, all of the tenant-occupied houses measured between 308 and 448 square feet. The smallest of the tenancies was the Evans-Black Tenant house and the largest was the Marsh Grass Site. Most of this variation was probably due to different dates of construction, lengths of occupation, house modifications, and the preservation of earthfast dwellings.

TABLE 34

House Size Comparisons of Late Nineteenth Century House Sites in New Castle and Kent Counties

Site	Dimension (feet)	Area (square feet)	Stories	Total Area (square feet)
John Read House 7NC-E-53 circa 1740-1930 Owner-occupied	46 x 29	=1334	2.5 stories	3335 square feet
Wilson-Slack House N-6269 1850-1893 Owner-occupied	house cellar	32 x 30 = 960 32 x 30	2 stories	1920 960 2880 square feet
Buchanan Tenant House circa 1857	frame core frame kitchen	= 720 = 432	2 stories 2 stories	1440 864 2304 square feet
C. Kimmey House 7KC-D-119 circa 1830-1970 Tenant-occupied	brick core frame kitchen shed addition shed addition porch	27 x 20 = 540 33 x 16 = 528 12 x 15 8 x 6 16 x 6	2 stories 1.5 stories	1080 792 180 48 96 2196 square feet
Buchanan-Savin House 7NC-J-175 1850-1990 Owner-occupied	frame core frame kitchen frame addition cellar	= 320 = 288 = 384 = 384	1.5 stories 1.5 stories 2 stories	480 432 768 384 2064 square feet
Hawthorn House 7NC-E-46 1838-1960 Owner-occupied	original log frame addition frame kitchen	29 x 21 = 609 12 x 21 12 x 17	2 stories	1218 252 204 1674 square feet
Temple House 7NC-D-68 circa 1830-1955 Tenant-occupied	original frame frame addition cellar	16 x 24 = 384 16 x 20 = 320 16 x 24	2 stories 1.5 stories	768 480 384 1632 square feet
Ferguson House N-3902 1837-1955 Tenant-occupied	original frame frame addition	16 x 24 = 384 18 x 15 = 270	2 stories 1.5 stories	768 405 1173 square feet
Moore-Taylor House **7K-C-380** **1829-1939** **Owner occupied**	**original frame** **kitchen addition** **porch** **porch**	**24 x 12 = 288** **20 x 12** **30 x 7** **12 x 7**	**1.5 stories**	**432** **240** **210** **84** **966 square feet**
W. Eager House 7K-C-383 1850-1900 Tenant-occupied	original frame	30 x 20 = 600	1.5 stories	900 square feet
Grant Tenancy 7NC-B-6 circa 1930-1941 Tenant-occupied	original frame east addition cellar	16 x 15.5 = 248 6 x 16.5 16 x 15.5	2 stories	496 99< 248 843 square feet
H. Wilson-Lewis House **7K-C-375** **circa 1860-1889** **Tenant-occupied**	**original frame** **northeast addition** **porch** **southeast addition**	**20 x 20 = 400** **8 x 12** **6 x 30** **6 x 10**		**400** **96** **180** **60** **736 square feet**
Cazier Tenancy 7NC-F-64 1844-1935 Black tenant-occupied	brick original west addition	17 x 17 = 289 17 x 9	2 stories	578 153 731 square feet
Heisler Tenancy 7NC-E-83 Tenant-occupied	core cellar	12 x 21 = 252 12 x 21	2 stories	504 252 756 square feet
Williams-Stump House 7NC-D-130 circa 1845-1930 Black owner-occupied	27 x 17	= 459	1.5 stories	689 square feet
Dickson II House 7NC-E-82 circa 1880 Black tenant-occupied	18 x 22	= 396	1.5 stories	594 square feet

TABLE 35

Summary of Late Nineteenth Century House Sizes in Northern and Central Delaware

Site	Total Square Feet	First Floor Dimensions (square feet)
Owner-Occupied		
John Read House	3335	1334
Wilson-Slack House	2880	960
Buchanan-Savin House	2064	992
Hawthorn House	1674	1065
Moore-Taylor House	**966**	**822**
Williams-Stump House*	689	459
Tenant-Occupied		
Buchanan-Savin Tenant House	2304	1152
C. Kimmey House	2196	1392
Temple House	1632	704
Ferguson House	1173	654
W. Eager House	900	600
Grant Tenancy	843	595
H. Wilson-Lewis House	**736**	**736**
Cazier Tenancy*	731	442
Heisler Tenancy	756	252
Dickson II House*	594	396

* Denotes black-occupied sites

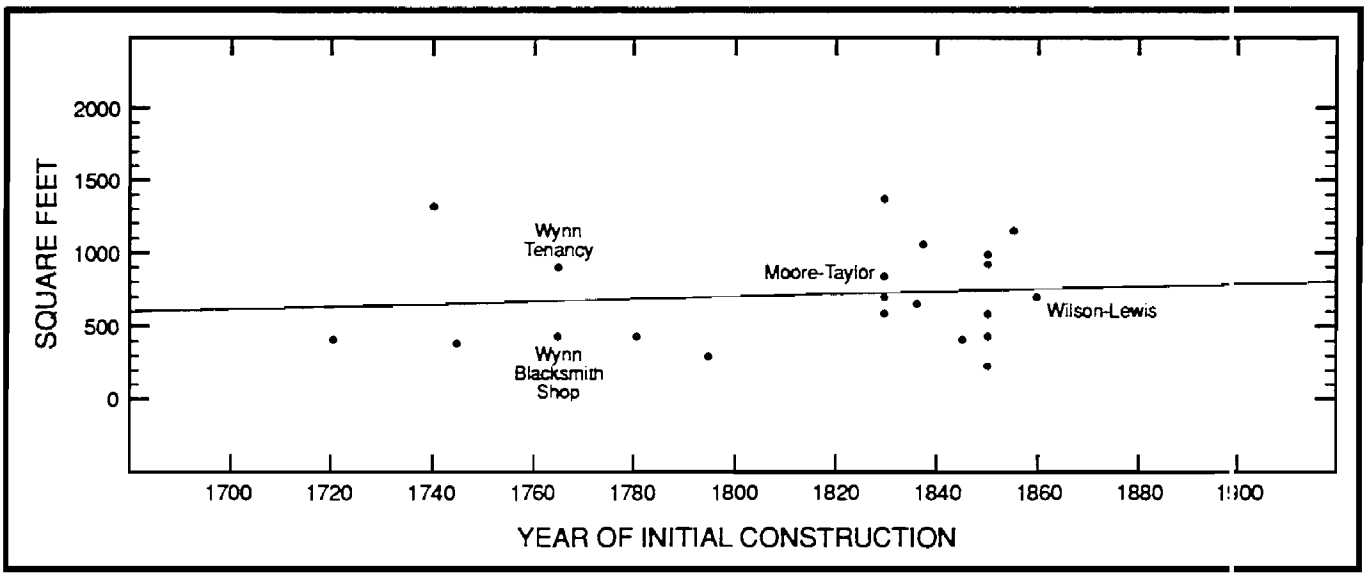
The Benjamin Wynn blacksmith shop measured 16 x 24 feet with a small 8- x 8-foot work area attached to the east gable end. The total area of the shop was approximately 448 square feet (Table 33). The average square footage for blacksmith shops seems to have been about 459 feet, so the Wynn shop was not unusual in its dimensions. The dimensions of the shop were close to those of three earthfast tenant houses at the Marsh Grass, Stewart Farm, and Thompson's Loss and Gain sites. The Marsh Grass house measured 28 x 16 feet. The Stewart Farm and Thompson's Loss and Gain houses measured 24 x 18 feet. All four structures measured 24 feet or 16 feet on at least one side. Even the smallest of the tenant houses, the Evans-Black house, measured 14 x 22 feet—both very nearly standard dimensions.

These common dimensions suggest a tradition of earthfast construction extending at least to overall house size. This tradition of earthfast construction, however, probably does not extend to construction techniques as a variety of earthfast methods were used at all five earthfast sites, including the two Benjamin Wynn Tenancy structures. All of these earthfast structures were constructed with a variety of methods, including post-in-ground and ground-laid sills. This mix of construction techniques indicates the range of choices available to vernacular builders in Delaware. Despite its large size, the Benjamin Wynn tenant house was probably still part of a broad tradition of earthfast construction using common 16-foot and 24-foot dimensions. The 24- x 30-foot core of the Wynn Tenancy may represent two 16- x 24-foot segments laid side by side. Even the 8- x 24-foot shed addition was constructed on a multiple of the 16- x 24-foot plan.

The second inter-site architectural analysis compared the Moore-Taylor Farm and Wilson-Lewis Farm sites to 14 other mid-to-late nineteenth century owner- and tenant-occupied sites (Tables 34 and 35). As a tenant site inhabited by relatively poor whites, the Wilson-Lewis tenant house was expected to be smaller than white owner-occupied houses and larger than black tenant houses. As an owner-occupied house, the Moore-Taylor house was expected to be both larger than the Wilson-Lewis and other tenant houses and larger than all black-occupied houses. All four general conclusions were supported by data from the Moore-Taylor Farm and Wilson-Lewis Farm sites.

FIGURE 99

First Floor Dimensions of Eighteenth and Nineteenth Century Houses in the Lower Delaware Valley



Total house size, including additions and upper stories, was able to be calculated for these later sites because of the existence of both archival and archaeological data for all of the nineteenth century houses. For almost every house, detailed insurance, deed, or tax records recorded the number of stories. As upper stories to houses and additions substantially increase total house size, this additional information was included in the inter-site comparisons. First floor dimensions, however, are also given in Table 35 and Figure 99, since this is the measurement most commonly used by architectural historians.

Archaeological evidence from the Moore-Taylor house indicates that it consisted of a one and a half story frame house with an attached shed kitchen and two porches. The core of the house measured 24 x 12 feet and the kitchen addition measured 20 x 12 feet. The two porches measured 30 x 7 feet and 12 x 7 feet. The total first floor area of the house was at least 822 square feet. When the half story of the house core is added, the living space increases to 966 square feet. The exact sequence of these additions is unclear, but the archaeological evidence suggests that these additions were added over a brief period of time shortly after initial construction.

When compared to other mid-to-late nineteenth century houses, the Moore-Taylor house was the second smallest owner-occupied house, but significantly larger than most tenant houses. Moreover, the Moore-Taylor house was substantially larger than all black-occupied sites, including the owner-occupied Williams-Stump house (Tables 34 and 35). Specifically, the Moore-Taylor and Wilson-Lewis houses were compared to four white, owner-occupied houses in New Castle County: the John Reed house (Catts, Hodny, and Custer 1989), Buchanan-Savin house (Scholl, Hoseth, and Grettler 1994), Hawthorn house (Coleman et al. 1984), and Wilson-Slack house (Coleman et al. 1985). Six white tenant-occupied sites in northern and central Delaware were also used: the Temple house (Hoseth et al. 1990), Kimmey house (Jamison et al. 1994), Buchanan-Savin Tenancy (Scholl, Hoseth, and Grettler

of the two comparisons of archaeologically-derived architectural data indicates that the documentary evidence of the generally small size of tenant-occupied houses is also manifested archaeologically. Archaeological evidence of house size can thus be used to determine relative socioeconomic status. Archaeological evidence is often the only information available on the social ranking of many occupations, especially those of poor tenants and blacks who rarely appear in documentary records.

The two inter-site architectural comparisons also indicated a slight trend towards larger houses over time in the lower Delaware Valley (Figure 99). Owner- and tenant-occupied sites in the lower Delaware Valley get slightly larger over time. Significant variation in first floor dimensions is present in all periods and variation increased over the nineteenth century. Additional regression analyses of owner- versus tenant-occupied houses also showed no significant difference in how fast they increased in size. This similarity indicates that both tenants and landowners benefited equally from changes in house size and construction techniques. Small sample size and significant variation in house size in all periods, however, weakens all three conclusions. Further analysis of data from more houses, and more tightly dated houses, may confirm this trend and indicate some of the underlying social and economic factors.

Inter-site Ceramic Analyses. Consumer behavior and the relationship between goods and socioeconomic status are major topics of research and speculation for historical archaeologists. Many articles, and at least one book, have been published on this subject in recent years (Spencer-Wood 1987; Adams and Boling 1991; Baugher and Venables 1987; Spencer-Wood and Herberling 1987; Orser 1977; Shepard 1987; LeeDecker et al. 1987; Garrow 1987; Miller 1980, 1991; Miller and Hurry 1983). Ceramics are one of the major artifact types used to study consumer behavior and its relationship to socioeconomic status. Ceramics, however, present both problems and opportunities when applied to the study of consumer behavior and socioeconomic status.

Unfortunately, ceramics played a limited role in the lives of those who purchased, used, broke, and discarded them. In eighteenth and nineteenth century account books from general stores, ceramics generally account for less than one or two percent of the money spent. Textiles, for example, were much more important and accounted for 40 to 60 percent of all expenditures (Miller 1990; Catts, Hodny, and Custer 1989). In computing the consumer price index, the Federal Commerce Department estimates that the average American household spends less than one quarter of one percent of their weekly income on ceramics (Miller 1990). Given the generally low levels of expenditure, ceramics are clearly limited as a tool for studying consumer behavior and the relationship between goods and socioeconomic status.

While ceramics have serious limitations as research tools, they also have unique strengths for the study of consumer behavior. The strengths are the result of both intrinsic and extrinsic characteristics. Intrinsically, ceramics break easily, and once broken, they have minimal potential for recycling. After they become part of the archaeological record, ceramics are also one of the most physically stable artifacts. Thus, once broken, ceramics become an immediate and long-lasting part of the archaeological record.

The extrinsic characteristics of ceramics also greatly enhance their research potential. Ceramics evolved through a series of well documented technological and stylistic changes making them among the most datable artifacts available to archaeologists. Historical domestic sites have invariably had ceramic artifacts even though associated probate inventories did not necessarily list any ceramics (Pogue 1992). Ceramics were also used by everyone. Ceramics prices ranged from cheap, basic necessities to expensive, luxurious wares. Given this range of choices and prices, ceramic artifacts make an excellent

1994), Ferguson house (Coleman et al. 1983), Grant Tenancy (Taylor et al. 1987), and the W. Eager house (Grettler et al. 1991a). The Moore-Taylor and Wilson-Lewis houses were also compared to a black owner-occupied house, the Williams-Stump house (Catts and Custer 1990), and three black tenant-occupied sites, the Cazier Tenancy (Hoseth, Catts, and Tinsman 1994), Dickson II and the Heisler tenant house (Catts, Hodny, and Custer 1989). All of the black-occupied sites are located in northern Delaware.

Five owner-occupied houses were larger than the Moore-Taylor house: the John Reed, Wilson-Slack, Buchanan-Savin, and Hawthorn houses. All five houses ranged in size from the Hawthorn house at 1674 square feet to the largest house, the John Reed house, at 3335 square feet (Tables 33 and 35). The 966 square feet Moore-Taylor house was by far the smallest white owner-occupied house. The only owner-occupied house smaller than the Moore-Taylor house was the black-occupied Williams-Stump house (only 689 square feet). The four larger white-occupied houses came from occupations significantly wealthier than the Moore-Taylor house (Catts, Hodny and Custer 1989; Scholl, Hoseth, and Grettler 1994; and Coleman et al. 1984, 1985). All four houses were associated with substantial owner-occupied farms, and the Buchanan-Savin Farm had an associated tenant property. The significantly smaller size of the Moore-Taylor house is consistent with the known lower socioeconomic status of the owner- and tenant-occupants of the site.

The Wilson-Lewis house, including all three additions, contained at least 736 square feet (Table 34). The core of this one story house was a simple 20- x 20-foot square. This core was expanded by three additions—two sheds (6 x 10 feet and 8 x 12 feet) along the east wall and a 6- x 30-foot porch along the north side. These additions almost doubled the size of the 400-square foot core As with the Moore-Taylor house, the exact sequence of these additions is unclear. The archaeological evidence indicates, however, that these additions were added over a relatively brief period shortly after initial construction. When compared to other mid-to-late nineteenth and early twentieth century sites from northern and central Delaware, the Wilson-Lewis house falls midway between the largest and smallest sites (Tables 34 and 35). The Wilson-Lewis house was the fourth largest of the 10 sample houses. The Wilson-Lewis house was significantly smaller than all five white owner-occupied houses, including the Moore-Taylor house. This distribution supports the observation that tenant houses in central and northern Delaware are typically smaller than owner-occupied houses. As Herman (1987b:64) and Stiverson (1977) have observed, for the first half of the nineteenth century, a house size of approximately 490 square feet appears to be the dividing line between tenant- and owner-occupied sites. It should be recalled that there is however, significant variation in average house dimensions from region to region, even within Delaware.

The Wilson-Lewis house was also the second smallest white tenant-occupied house. The only smaller house was the Heisler Tenancy at 252 square feet. The six larger white-occupied tenant farms ranged from the Grant Tenancy at 843 square feet to the Buchanan tenant house at 2064 square feet. Some of the difference between these white-occupied tenant houses, however, appears to be a gradual trend towards larger houses over time for all occupations, particularly after the mid-nineteenth century. This trend is obscured in this sample, however, by the small sample size and lack of sites immediately before and after the critical ca. 1850-1860 period.

Herman (1987b:162) observed that nineteenth century laborers typically lived in smaller, less stylish dwellings than landowners. He based his conclusions on the relationship between class and socioeconomic status and house sizes on observations made from standing structures. Archaeologically-derived data also show a strong relationship between class, land ownership, and house size The results

vehicle for studying consumer behavior. Questions such as social emulation, boundary maintenance, changes in foodways, and the impact of falling ceramic prices can be examined by establishing the choices that consumers made through time.

Most consumer goods made of textiles, metals, wood, and paper have not survived for study because of recycling or poor preservation in the ground. Unlike ceramics, the study of these perishable and recyclable products is limited to chance survivals in museums and private collections. Surviving objects can rarely be attributed to their original owners and complete assemblages are very rare. Complete ceramic assemblages, however, are common. One reason they are common is because archaeologists have excavated hundreds of historical sites from almost all social classes from the seventeenth century to the 1930s. No other type of surviving material culture can be associated to individual households.

The study of ceramics as items of consumer behavior has been facilitated by the development of a set of price index values for English ceramics for the period 1787 to 1880 (Miller 1980, 1991). These index values have been based on the cost of plain undecorated cream colored ware which was the cheapest refined ware for the period. Index values have been worked out for platters, plates, cups and saucers and bowls. Vessel forms that represent the most common tea, table and kitchen wares were used in most households. The prices for these studies have been taken from a combination of Staffordshire potters' price fixing lists, invoices, and individual potter's price lists.

Index values for other wares were generated by dividing the cost of that ware by the cost of plain cream colored wares, the cheapest wares available. For example, the cream color index values for shell-edged, underglaze lined and willow eight-inch twiffler plates for 1814 were generated by dividing the price for these plates by the price of cream color plates from the Staffordshire potters' price fixing list. Generating index values for the pre-1844 period was simple because the ceramics were commonly discounted at the same rate. After 1844, however, different discount rates were used for different decorative types. A more complete description of cream color index values is given in Miller (1991).

The primary use of cream color index values is to establish average index values for archaeological assemblages. Establishing the average cream color index value is simple. First, the assemblage must be dated. Second, the date range for the assemblage is used to select the appropriate year from the set of index values (Miller 1991). Selecting an index year towards the beginning of the assemblage is best as it reflects the prices of the wares when they were purchased rather than when they were discarded. Next, the index values for all plates, cups and saucers, and bowls are added up separately. Next the index values for each of the three categories are averaged. This step provides an average index value for the entire assemblage. The average index value reflects the cost of the tea, table, and kitchen wares from any assemblage in terms of the cheapest wares available in the same period.

One of the limitations of ceramic index values is that some archaeologists oversimplified the process by lumping complete collections from sites occupied for long periods into a single assemblage. The resulting index value from such a lumping is largely meaningless. Another common mistake made in the use of index values is to equate specific values with specific socioeconomic classes. Ceramics were but a small part of most family's expenditures and there could be a fair range in the amount of money they chose to spend on ceramics. This variation limits the ability of index values to indicate socioeconomic status.

Ceramic index values also do not necessarily reflect use patterns. For example, if a family has a good set of dishes used on Sundays and an everyday set of dishes used for the other 20 meals during the week, then the chance of the everyday dishes being broken would be much greater. The average index value of such an "everyday" assemblage would be lower than the hypothetical average index value of the remaining unbroken ceramics. Moreover, these unbroken ceramics would not necessarily end up in the archaeological record. Another complication could be that a household may have maintained two sets of dishes. These households, because of different breakage rates, could have a lower average cream color index value than households with only one set of dishes. As averages, index values also do not reflect the quantity of ceramics owned. How many ceramics were owned is also related to wealth, degree of social interaction, and one's place in the community.

The inferences that can be drawn from average cream color index values must be considered in light of other factors. The socioeconomic status of a site's occupants should first be determined from records related to their occupation, land ownership, wealth and other factors. Ceramic index values are more reflections than indicators and their use should be limited to determining consumption patterns of known social classes.

Another common problem with the use of cream color index values is the comparison of average index values across long periods of time. The cost of all ceramics fell from the end of the eighteenth century to the 1850s, and probably continued to fall over the rest of the nineteenth century (Miller 1991:2-3). Thus, while all cream color vessels have a value of one, that value represents a diminishing cost from the 1790s to the 1850s. If enough price information had been available, the cream color index values themselves could have been indexed to a given period of time. These specific indices will be accomplished eventually, but presently, index values for only four periods of time have been identified. These four periods of time with similar discount rates are 1780 to 1814, 1816 to 1830, 1832 to 1842, and 1844 to 1859 (Miller 1991:3-4). Comparison can be made within these periods without adjusting the discount rates. As prices dropped over time, decorative wares became cheaper. These changes over time need to be considered in diachronic comparisons.

Another caveat concerning ceramic index values concerns how index scales are chosen. Perhaps the most common approach has been to use the scale date closest to the mid-date of the assemblage. This practice, however, could be improved by choosing the scale date closest to the beginning date of the assemblage. These earlier scale dates are closer to the date when the assemblage was purchased rather than when it was broken and discarded. Secondly, it would be best to break assemblages down to as short a time period as possible. Generating a series of index values rather than a single value for a deposit may identify changes in ceramic consumption over time in the site. This method was used satisfactorily to identify changing consumption patterns at the Moore-Taylor Farm Site.

The current set of index values has one final shortcoming. We do not yet have index values for Pennsylvania redwares, American whitewares, and Chinese porcelain. Without these values, it is impossible to provide an average index value for some assemblages from the late eighteenth century and for assemblages with substantial amounts of American white granite wares from the post-1870 period.

The ceramic artifacts recovered from the Moore-Taylor Farm, Benjamin Wynn Tenancy, and Wilson-Lewis Farm sites represent occupations beginning in 1765 and ending in 1937. All three sites were primarily tenant-occupied. Unfortunately, the identity of almost all of these tenants is unknown. Therefore, it is difficult to determine if the ceramic consumption patterns at all three sites are the results

of one family's decision or are the result of a series of unknown, short-term tenants. For example, very few of the vessels from each of the three sites match. On the surface, this pattern could indicate a purchasing pattern where tenants replaced vessels as they broke rather than purchasing new sets. Other scenarios, however, are equally plausible. The fact that few ceramic artifacts matched in any assemblage may simply reflect the different tastes of a series of short-term occupants. Each family living at the site undoubtedly made their own unique contribution to the archaeological record, but without specific deposits from known occupants, it is difficult to analyze the assemblages beyond simple feature description.

The most striking aspect of the ceramic assemblages from all three sites is the high degree of off-site garbage disposal. These practices severely limited the site of the ceramic assemblages recovered. At many other sites, any available hole or abandoned cellar received household garbage. Only two features, however, received primary trash deposits. These two features were the two most recent wells at the Moore-Taylor Farm Site (Features 285 and 90). All of the other nearly 50 abandoned wells, privies, cellar holes, and other deep features at all three sites, are secondary deposits of poorly-preserved yard scatter. The primary evidence for secondary deposition is the small size of the ceramic sherds and the fact that only five percent of most vessels were recovered.

The small size of the sherds from the secondary deposits is in sharp contrast to the sherds recovered from the two most recent wells (Features 285 and 90) of the Moore-Taylor Farm Site. Sherds from these primary deposits were larger and most of the sherds to the vessels were found together in the deposits. These vessels were clearly discarded whole or nearly whole during major cleanup events or shortly after they were broken in primary deposits. Given this difference in preservation, artifacts in the fill of the other features appears to have been first deposited as yard scatter. There was also apparently a good deal of time between the time when these vessels were broken and when they were deposited in a well or other convenient hole.

Given that most of the ceramic vessels from all three sites were less than five percent extant, it is obvious that entire vessels are missing from the minimum vessel analyses. Such analyses undercount the vessels used by any occupation, but the degree of off-site and secondary trash disposals at these sites probably aggravated this inherent weakness in minimum vessel estimates. Graphic evidence of the degree of under-representation among the vessel analyses can be seen in Table 36.

TABLE 36

Average Number of Ceramic Vessels Deposited Per Year, Benjamin Wynn Tenancy, Moore-Taylor Farm, and Wilson-Lewis Farm Sites

Site	Years Occupied	Vessels	Vessels Per Year of Occupation
Benjamin Wynn Tenancy	1765 to circa 1820	218	3.96
Moore-Taylor Farm	1822 to 1937	239	2.08
Wilson-Lewis Farm	circa 1859 to 1899	55	1.83

TABLE 37

Redware Distributions from Benjamin Wynn Tenancy, Moore-Taylor Farm, and Wilson-Lewis Farm Sites

	Benjamin Wynn Tenancy 1765 to circa 1820 45.9% Redware		Moore-Taylor Farm 1822 to 1937 11.7% Redware		Wilson-Lewis Farm circa 1859 to 1889 18.2% Redware	
	Number	Redware (%)	Number	Redware (%)	Number	Redware (%)
Tea	85	2.4	111	—	26	--
Table	49	65.3	52	13.5	8	--
Kitchen	53	69.8	38	10.5	9	33.3
Toilet	1	—	4	—	2	--
Dairy	5	100.0	7	71.4	5	62.3
Storage	19	94.7	24	50.0	5	80.0
Other	6	100.0	3	—	0	--
Totals	**218**		**239**		**55**	

The sherds from the plow zone sample, not included in Table 36, would have slightly expanded the estimate of the number of vessels used per year. Despite these limitations, the ceramic assemblage of the Moore-Taylor Farm, Benjamin Wynn Tenancy, Wilson-Lewis Farm sites illustrate some of the broad changes in ceramic consumption taking place from the last half of the eighteenth century on into the twentieth century. Table 37 shows the distribution of Pennsylvania-style redwares for each site broken down by functional groups. Imported English white ceramics clearly replaced local redwares over time for almost all of the tenant farmers living at these sites. Redware was available in table, kitchen, dairy, and storage wares in the pre-1822 period. These wares made up a signified amount (45.9%) of ceramic wares used at the Benjamin Wynn Tenancy. Redware, however, only made up 11.7 percent of the wares in the Moore-Taylor Farm Site. The percentage of the redwares at this site would be even higher if all twentieth century ceramic artifacts were removed. By the time of the 1860s when the Wilson-Lewis Farm Site was occupied, redwares only made up 18.2 percent of the household ceramics.

Except for dairy and storage wares, redwares practically disappeared from the three sites after the Civil War (Table 37). Teas, table, toilet, and kitchen redwares were clearly being replaced by refined wares. Even storage and dairy redwares declined, probably replaced by salt-glazed stoneware and glass after the Civil War. Dairy redwares in particular were lead glazed, and even before the Civil War, it was known that lead-glazed wares were unhealthy. Both the Wilson-Lewis and Moore-Taylor farms had redware milk pans, suggesting that the occupants of these sites were not aware or convinced of the problems of lead contamination.

The ceramic expenditure patterns represented by the assemblages from the Benjamin Wynn Tenancy, the Moore-Taylor Farm Site, and the Wilson-Lewis Farm Site cannot be directly compared for a couple of reasons. CC price index values have only been developed for English ceramics for the period 1787 to 1880. This means that the Benjamin Winn Tenancy collection cannot be indexed because many of the ceramic vessels predate the available indexes, and the lack of CC index values for Pennsylvania red wares plates which are common in that collection. The Moore-Taylor site has a number of American made 20th century vessels for which there are not any CC index values. Thus, the only site for which it is possible to study the expenditure patterns is the Wilson-Lewis site. Even at this site, one could question the value of averaging the index values from an assemblage that was generated by more than one family. There is, however, a high level of consistency in this assemblage that suggests that both the Wilson and Lewis families purchased the cheapest ceramics with decoration which would be consistent with their tenant farmer/worker status. In addition, the small number of plates and their dates suggest that the later occupants of the Wilson-Lewis site probably used enameled tin plate for their tableware.

No information provided.

Site plans for the Whitten Road Site, William Strickland Plantation, Marsh Grass, and Thompson's Loss and Gain sites are shown in Figure 100. The Whitten Road Site (7NC-D-100) was an owner-occupied and later tenant-occupied farmstead dating from ca. 1750 to ca. 1850. Data recovery excavations at the site located evidence of three post-in-ground structures. The William Strickland Plantation Site (7K-A-117) was an owner-occupied farm dating from ca. 1726 to ca. 1764. Recent data recovery operations identified the remains of an earthfast dwelling, a post-in-ground kitchen/quarter, a smokehouse, and two outbuildings. Several fencelines, trash deposits, and a partially completed cellar hole were also found. The Marsh Grass Site (7S-D-45) was a tenant farm occupied from the middle of the eighteenth century to the early nineteenth century. The Marsh Grass house measured 28 x 16 feet and was constructed of both ground laid sills and vertical posts. A central hearth and one cellar pit were found inside the house. Two possible outbuildings were identified. The whole farm, including a small garden or orchard, was bounded by a combination ditch and wattle fence. No well was found. The Thompson's Loss and Gain Site (7S-G-60) was another tenant farm occupied from ca. 1720-1780. Excavations at the site concentrated on the dwelling and its immediate surroundings. A number of the structural posts of the dwelling had been repaired and a small shed was attached to the south side of the house. This small shed was interpreted as a possible buttery. One well was found southwest of the house and a large trash midden at the site extended from the parlor to the edge of excavation.

These four site plans can be compared to the site plan of the Benjamin Wynn Tenancy Site shown in Attachment II. The most immediate feature of all five sites was the relatively small size of each farmstead and the proximity of most buildings. At the four sites with more than one structure, all of the major outbuildings are located within 50 feet of the house. An exception to this rule is the William Strickland Plantation where one of the four outbuildings was located 65 feet away from the house. At the Benjamin Wynn Tenancy and Whitten Road sites, all of the associated outbuildings and shops are located within 30 feet of the houses. While this proximity at some of the sites may reflect the small area tested archaeologically, large contiguous areas were mechanically exposed at the Benjamin Wynn Tenancy, William Strickland Plantation, and Whitten Road sites.

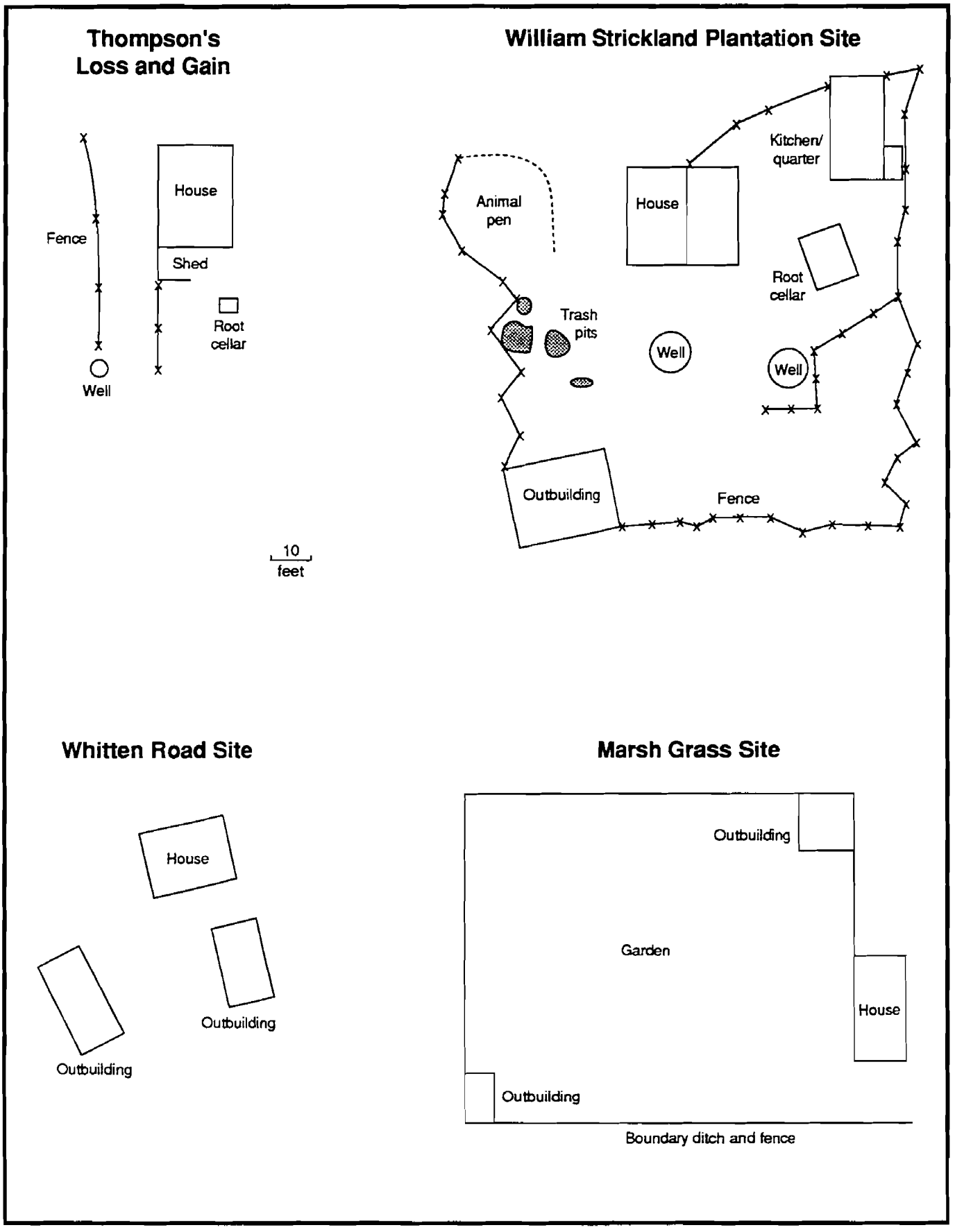
A second major feature of all five sites was the presence of at least one well. No well was found at the Marsh Grass Site and its inhabitants may have used surface water or shared a neighbor's well; however, these possibilities seem unlikely. Fresh water was a daily necessity for both humans and livestock. Delaware's sandy soil, frequent summer droughts, and proximity to salt water made wells an important feature of most farms. Indeed, all six wells at the Benjamin Wynn Tenancy, William Strickland Plantation, and Thompson's Loss and Gain sites were located between 20 feet and 50 feet of the dwellings. The only exception to this placement occurs at the Whitten Road Site where the well is over 100 feet from the dwellings and outbuildings. This pattern of wells within 20 to 50 feet of dwellings and outbuildings continued into the nineteenth century and has been identified at a number of other sites in Delaware including the nearby Moore-Taylor Farm and Wilson-Lewis Farm sites.

One interesting feature of the wells at two of the sites is the proximity of multiple wells. Both the Benjamin Wynn Tenancy and William Strickland Plantation sites had multiple wells and at both sites, the two wells were within 15 feet of each other. None of the four wells appear to have collapsed and it is likely that the soil from later wells was used to fill in the shafts of earlier wells. The proximity of multiple wells at both sites suggests that early wells were replaced for reasons other than tainted or insufficient water as it is unlikely that a new well less than 15 feet away would have avoided these problems.

A third common feature of all five mid-to-late eighteenth century farmsteads was the informal orientation of the dwelling and major outbuildings around a central work area. As suggested by Catts et al. (1994) these early farms appeared more as informal clusters of buildings rather than symmetrical, rigidly laid-out plans. Implicit in these plans is that buildings face inward toward each other rather than outward. Glassie (1972:50) uses the term "hollow square" to describe this plan on the New Jersey Coastal Plain.

FIGURE 100

Site Layouts of Delaware Colonial Farmsteads



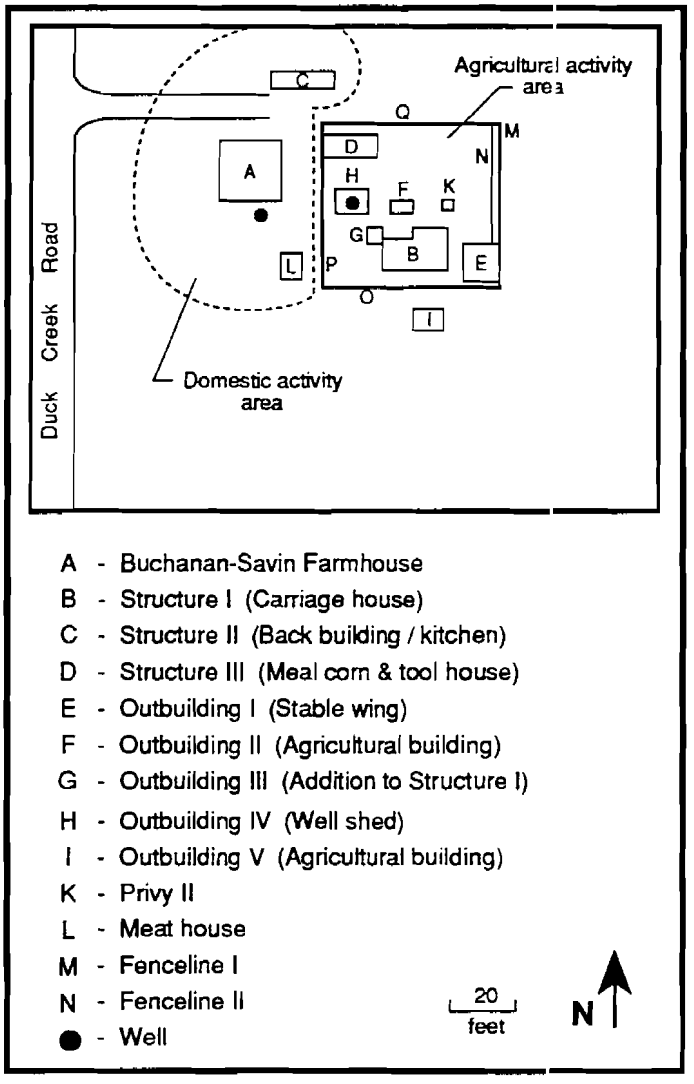
Glassie limits his conclusions to sites in New Jersey, but it would appear from sites in Delaware that the "hollow square" plan was more widespread. Catts et al. (1994) have hypothesized that the "hollow square" pattern was probably part of an earlier frontier orientation that eventually was discarded as more land was brought under cultivation and perceptions of Georgian symmetry became more common.

Gardens, orchards, and animal pens also occur at regular intervals around the peripheries of the all five eighteenth century sites. Specific evidence of orchards and gardens was found at two sites, the Benjamin Wynn Tenancy and the Marsh Grass Site. Both orchards were located within 50 feet to 100 feet of the dwellings and were both protected by fences. The best protected orchard (or possibly garden) was the one found at the Marsh Grass Site. This orchard was protected by a combination ditch and wattle fence.

The presence of fences and ditches at every site reflects the common practice of allowing swine and cattle to roam free and forage at will. Farmers built these fences and ditches to protect their crops. Free-roaming livestock posed a very real threat to crops and other improvements, but were not systematically controlled in Delaware until the 1790s when various new laws were passed (Grettler 1990). These new and newly-enforced laws were the result of increasing population pressures, new agricultural practices, and changing perceptions of the land. Once laws were passed to outlaw free-roaming livestock, farmers in Delaware were forced to pen their animals and provide most of their food. Horses and milk cows, typically the most valuable animals on a farm, were housed in specially constructed outbuildings. Multiple barns and stables were found at both the Whitten Road Site and William Strickland Plantation. It is likely that the Benjamin Wynn Tenancy Site had at least one such structure. Although Herman (1987a:64) has suggested that tenant farms contained fewer outbuildings, no structural evidence of a barn or stable was found at the site, but high phosphorous concentrations northwest of the blacksmith shop suggest the presence of an animal pen or related outbuilding.

FIGURE 101

Buchanan-Savin Farm Site (7NC-J-175) ca. 1857



Comparing the Moore-Taylor and Wilson-Lewis farms to other mid-nineteenth century sites can yield similar significant data. Specifically, the Moore-Taylor Farm and Wilson-Lewis Farm sites can be compared to the Buchanan-Savin and W. Eager sites. The Buchanan-Savin Farm Site was a large owner-occupied farm in southern New Castle County occupied from ca. 1830-1991 (Figure 101). In 1857, the site consisted of the Buchanan-Savin house and detached kitchen, stable, carriage house, meat house, well and well house, two privies, a corn, meal, and tool shed and two other agricultural outbuildings. Surrounding the agricultural activity areas were five substantial post and rail fences. The

W. Eager Site was the location of a small tenant house situated approximately one mile south of the Wilson-Lewis Farm Site. The W. Eager Site was occupied from ca. 1851-1896. Only two structures, the one and half story Eager house and a well cover, were identified by archaeological testing (Figure 102). The site was bounded by three fencelines to the north, south, and east. A fourth fenceline to the south may have been part of a small animal pen. A barn, stable, and corn crib recorded as on the property in 1860 were not located by archaeological testing.

The most striking feature of these four nineteenth and twentieth century farms is the large number of specialized outbuildings. None of the eighteenth century farms, including the Benjamin Wynn Tenancy, had nearly as many outbuildings. Moreover, these specialized nineteenth century outbuildings were almost invariably located behind the farm house and were oriented to the house. Secondary orientations of smaller outbuildings to larger outbuildings also occurred. Indeed, changes in outbuilding alignment at the Buchanan-Savin Farm allowed archaeologists at the site to reconstruct three distinct periods of construction and related transportation changes at the site (Scholl, Hoseth, and Grettler 1994).

The only exceptions to the trend towards specialized outbuildings were the two tenant farms, the W. Eager and Wilson-Lewis Farm sites. Both tenant sites had relatively few outbuildings and correspondingly simple layouts, bearing out Herman's observation about the scarcity of outbuildings on tenant farms. The Wilson-Lewis Farm had only one outbuilding, a stable, and no evidence of outbuildings were preserved at the W. Eager Site. In comparison, the Moore-Taylor, and Buchanan-Savin farms had between three and 10 outbuildings on each farm. The large number of outbuildings at all three sites also meant correspondingly more numerous and complex activity areas.

The primary factor in the number of agricultural outbuildings in central Delaware appears to be the degree of economic specialization at each farm. The most specialized farms almost invariably had more outbuildings. This pattern is particularly true of the Buchanan-Savin Site. Most of its outbuildings were associated with commercial dairying operations brought to the farm after improvements to local transportation in the mid-nineteenth and early twentieth centuries. Commercial dairying has also been associated with increased numbers of outbuildings at other sites in northern and central Delaware including the G. W. Townsend Farm (7NC-G-112) and the Woodville Farm (7NC-E-98) (Grettler 1992a). Agricultural specialization, however, demanded a great deal of capital. Poorer farmers, especially tenants, generally could not afford expensive improvements, including specialized outbuildings. With significantly less working capital available at the Moore-Taylor Farm Site and the W. Eager and Wilson-Lewis tenancies, the inhabitants of both sites were apparently unable or unwilling to invest in agricultural improvements demanding specialized outbuildings.

Specialization in outbuildings appears to be part of a general trend towards more formalized work areas on nineteenth century farms. All four farms, including the Moore-Taylor Farm and Wilson-Lewis Farm sites, had clearly defined front and rear yards. Front yards were invariably oriented to the nearest road used by the inhabitants. These yard areas saw different degrees of domestic and agricultural activity. Artifact densities from casual trash deposition were consistently lower in the more formal front yards than in the rear or side yards where more mundane daily activities took place. This simple division of space between formal and informal yard areas was most striking at the Moore-Taylor Farm and Wilson-Lewis Farm sites.

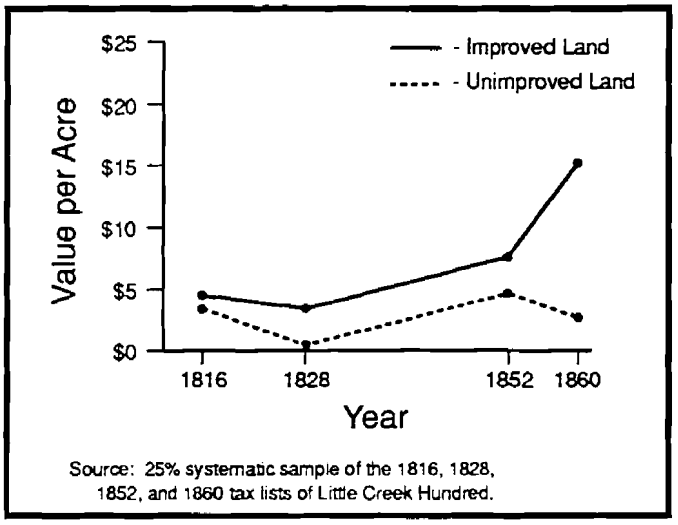
The second most striking feature of these nineteenth century farms is the large numbers of wells at almost every site. Three of the four farms had at least two wells on the property, and the Moore-Taylor Farm Site had five wells. The only site without multiple wells was the W. Eager Site. The presence of multiple wells probably resulted from two factors. First, a gradual increase in demand for water over time and second, a short life span for most wells. Analysis of the glass and ceramic assemblages from each of the five wells at the Moore-Taylor Farm Site indicates that each well was used for no more than 40 to 50 years, establishing a usable lifespan for wells in Delaware's sandy coastal plain. The two earliest wells, Features 273 and 274 were usable for a much shorter period, no more than 20 years apiece. Both early wells were also the only barrel-lined wells at the site suggesting that this type of construction was the most ephemeral.

The third most striking feature of all five nineteenth century farms was evidence of the rising importance of overland transportation. Although the eighteenth century Benjamin Wynn Tenancy is oriented to a small sandy ridge, all of five nineteenth century farms were oriented primarily to local roads. Local physiographic features, such as slight sandy rises, were secondary concerns. Front facades of houses faced the nearest road and gable ends were usually perpendicular to the road. Attached kitchen ells were added to the rear of the Buchanan-Savin and Moore-Taylor houses.

The increasing orientation of nineteenth and twentieth century farms to local roads reflects important local and regional economic forces. The three poorest farms, the Moore-Taylor Farm, W. Eager, and Wilson-Lewis Farm sites, were located on marginal land that was not occupied intensively until a local boom in the economy in the 1850s more than doubled land prices. Improved land in Little Creek Hundred valued at only $7 per acre in 1852 rose in value to $15 an acre in 1860 (Figure 103). This increase in value was precipitated by a slow increase in land values in the 1830s and 1840s. The two key events in the local economy, however, were renewed population growth and improved access to regional urban markets brought by the completion of the nearby Delaware Railroad through Dover in 1854 (Grettler 1990:196-97).

FIGURE 103

Median Value Per Acre of Improved and Unimproved Land, Little Creek Hundred, 1816-1860



Source: 25% systematic sample of the 1816, 1828, 1852, and 1860 tax lists of Little Creek Hundred.

The siting of the Moore-Taylor Farm, W. Eager, and Wilson-Lewis farms are good examples of this process. All three farms were settled on marginal land during brief periods of renewed local prosperity and associated population growth. Prior to settlement, all three farms were part of low, poorly drained wooded areas along Muddy and Dyke branches. Orphan's Court plats of the area in the 1820s and 1830s show large areas of woods and "cripple," the term given to heavily wooded interior swamps and drainages. These woods had probably been logged regularly because wood was already scarce on most farms in central Delaware in the 1780s (Grettler 1990). By 1797, the first year for systematic data on woodlot size, most farms in Little Creek Hundred had already cleared as much land as possible. In this

year, most farms in Little Creek Hundred had already cleared 70 percent of their total acreage. With less than 30 percent of most farms left timbered to supply fuel and building materials, new farms were carved out of marginal, poorly-drained land.

Trash Disposal Patterns. Trash disposal patterns are an important and revealing part of the historical landscape. Trash disposal patterns are also uniquely visible in the archaeological record. Moreover, changes in trash disposal patterns reflect major changes in lifeways and have been used in the Mid-Atlantic to reconstruct specific social and cultural events (Grettler 1992a, 1992b).

The archaeological evidence of trash disposal patterns at the Moore-Taylor Farm, Benjamin Wynn Tenancy, and Wilson-Lewis Farm sites included a combination of casual sheet refuse, off-site disposal, and secondary deposits in deep features. The distribution of artifacts in the plow zone indicates that sheet middens were probably the most common disposal pattern. Secondary deposits in deep features—typically wells—were also found at all three sites. These secondary deposits, however, were more common on the two later nineteenth century sites, the Moore-Taylor Farm and Wilson-Lewis Farm sites, where the degree of plow disturbance was slightly less severe. Evidence for off-site trash disposal was also clearest at these two later sites.

The primary evidence of both causal sheet middens and secondary feature deposition at all three sites was the small size of the artifacts found in both plow zone and feature contexts. This small percentage of extant vessels from feature contexts indicates that household garbage was routinely disposed of as sheet refuse or off-site. For the Wilson-Lewis and Moore-Taylor Farm sites, a combination of both patterns probably occurred. Yard debris was probably composted with animal manures and spread on adjacent fields as fertilizer. This scenario would account for the large areas of low artifact density surrounding both sites identified during the Phase I and II surveys (Bachman, Grettler, and Custer 1988; Grettler et al. 1991b).

The exceptions to this varied pattern of trash disposal included specific "cleanup" events where large amounts of trash were deposited in deep features, particularly wells. A "cleanup" occurred at the Moore-Taylor Farm Site when it was abandoned. The largest numbers of intact or nearly intact ceramic and glass vessels from the most recent Moore-Taylor well was deposited over a short period of time at the end of occupation. Everyday disposal patterns and the major cleanup event are reflected in both the distribution of plow zone artifacts and the stratigraphy of the deep features. High densities of ceramic artifacts, glass, and faunal remains indicating sheet midden disposal were found along known fencelines and the edges of all three sites. Cleanup events are indicated by the presence of nearly intact and the consistent lack of internal stratigraphy. The presence of architectural debris in deep features is additional evidence of cleanup events.

Evidence of discrete cleanup events was used to reconstruct at least two assemblages from otherwise unstratified deep features at the Moore-Taylor Farm Site. The first and oldest assemblage consists of artifacts accumulated over a long period of multiple occupations as sheet midden and deposited in deep features during the construction of nearby deep features and during cleanup events. Some long term accumulation of domestic artifacts and debris at the Moore-Taylor Farm Site was also identified in a similarly protected context under the piers of the house and shed kitchen. The ceramic and glass vessels in these gradually accumulated deposits were typically less than five percent extant. The small size and poor-preservation of these artifacts is consistent with their origins as yard scatter. While the

artifacts in these gradual deposits tend to be poorly-preserved, some of them represent the earliest artifacts found in that feature. In the case of multiple wells with builder's trenches, these early artifacts were probably deposited during the construction of replacement wells.

These earlier assemblages, however, cannot be attributed to specific occupations. These artifacts were deposited as sheet refuse from multiple occupations and specific occupations could not be identified. The only specific occupations that could be reconstructed from these deep features were those responsible for the final cleanup events. These cleanup deposits can be defined by the presence of significantly more intact vessels. Deposits where 50 percent or more of most of the minimum ceramic and glass vessels are intact indicate single events.

The off-site deposition of trash is clearly indicated at the two late nineteenth century sites, the Moore-Taylor and Wilson-Lewis farms. Household garbage from both farms was probably thrown on the manure pile and spread over adjacent fields as fertilizer. This type of deposition has been identified at other nineteenth century farms including the G. W. Townsend and C. Kimmey sites in northern and central Delaware. The presence of specialized livestock pens and shelters and the distribution of plow zone and subsoil phosphorous at both the Moore-Taylor Farm and Wilson-Lewis Farm sites indicates manure collection at both sites.

The use of mechanical manure spreaders and other off-site disposal techniques has two other major archaeological implications. First, off-site deposition has severely limited the amount of material culture, particularly the ceramic and glass assemblages, to be recovered archaeologically. We may not be recovering as large a percentage of the total material assemblage of mid-nineteenth to early twentieth century sites as similar excavation techniques would recover from earlier sites where off-site disposal was not practiced. The second archaeological implication of off-site trash disposal affects site identification and assessment surveys. Mechanized manure spreading and off-site disposal has covered large areas of central Delaware with low densities of plow zone artifacts. Site identification under these conditions has been to discern significant concentration of artifacts amid very low artifact densities covering tens and even hundreds of acres.

All three major trash disposal patterns at the Moore-Taylor Farm, Benjamin Wynn Tenancy, and Wilson-Lewis Farm sites, however, were affected by subsequent plowing and erosion. Deep plowing undoubtedly destroyed shallow trash deposits, mixing their contents with casual sheet refuse. Thus later plowing, a feature of all three sites, probably obliterated most shallow trash pits.

Three different trash disposal patterns were found at the Moore-Taylor Farm, Benjamin Wynn Tenancy, and Wilson-Lewis Farm sites. The two latest sites, the Moore-Taylor and Wilson-Lewis farms, showed evidence of off-site trash disposal. Some of the deep features of all three sites showed evidence of two different trash disposal patterns. These two patterns could be separated through comparisons of the percent extant of minimum glass and ceramic vessels. Unfortunately, neither of these two patterns could be linked to specific occupations although trash deposited during final "cleanup" events could be associated with the last occupants of the site.