RESEARCH DESIGN AND METHODS

Research Design

The primary goal of the data recovery programs at all three sites was to obtain archaeological data related to diachronic change in spatial organization, food preparation and consumption, and artifact assemblage patterns and composition. Upon completion of the data recovery and description of each site, these patterns of spatial organization, diet, and artifact composition would be compared on an inter-site level to other archaeological sites in the Middle Atlantic region, in particular sites with similar temporal periods of occupation, site function, or inhabitants. Using these broad research categories to govern the site excavations and artifact analyses, several questions concerning rural culture change and adaptation in Delaware and the Delmarva Peninsula could be addressed (Custer, Bachman, and Grettler 1986, 1987; Custer and Bachman 1986). Specifically, these questions were:

1) Are there changes present in the refuse disposal processes and techniques at these sites? Can temporal changes be observed in the patterns of artifact distributions and densities, and are these changes indicative of varied spatial utilization of the site? Additionally, can such changes in inter-site patterning be related to historically-documented economic and social changes in central Delaware and the surrounding Middle Atlantic region?

2) Are there changes at these sites in the presence/absence, or frequencies, of certain artifact classes? Can these changes be related to the social or economic position of the sites' occupants and/or to local or regional economic conditions?

3) Can changes in any of the above questions be analyzed for meaningful covariance?

These research questions used to govern the three data recovery programs actually contain a number of different research perspectives which can serve to focus the investigation. Broadly defined, these research perspectives can be divided into two categories: historical and archaeological research perspectives. Neither category is mutually exclusive of the other, and both rely on data generated from the other to be effective in site interpretations. The research perspectives presented below should be regarded as part of the broader themes of American history which can be addressed through the historical and archaeological investigations of the Moore-Taylor Farm, Benjamin Wynn Tenancy, and Wilson-Lewis Farm sites. The historical and archaeological research perspectives should be viewed as the framework of topics and issues of a narrower scope that, when combined together, help to shape and define the overall interpretations of larger historical processes.

The background research conducted for the Phase I and II investigations of the Moore-Taylor Farm, Benjamin Wynn Tenancy, and Wilson-Lewis Farm sites indicated that all three sites share the potential to address three specific historical research issues. The first issue concerns agricultural tenancy in central Delaware. The second historical issue concerns the social and economic changes brought by urbanization, industrialization, and the development of a powerful, but volatile, nationwide economy in the nineteenth century. The third historical issue is the role of agricultural change in an increasingly volatile economy. These three issues are based on the overall research domains identified for all historical archaeological sites in the Delaware State Plan (De Cunzo and Catts 1990).

All three sites were occupied by tenants at various times in the nineteenth century. The Benjamin Wynn Tenancy and Wilson-Lewis Farm sites in particular, were primarily tenant-occupied. The tenant occupations span the late eighteenth to the late nineteenth century and can be used to reconstruct the lifeways of the tenant class of rural Delaware, and, by implication, of the larger Middle Atlantic region.

Farm tenants comprised a significant portion of the rural population of nineteenth century Delaware (Bausman 1933) and the traditional view of farm tenants as poor and of lower social position has been recently called to question by a number of researchers (Herman 1987a, 1987b; Lemon 1972, and Simler 1986). Additionally, a number of recent historical archaeological investigations have been conducted on rural tenant-occupied sites in Delaware, including the William Strickland Plantation Site (Catts et al. 1994), Robert Ferguson house (Coleman et al. 1983), Marsh Grass Site (Thomas 1983), the Grant Tenancy Site (Taylor et al. 1987), Thompson's Loss and Gain (Guerrant 1988), Whitten Road Site (Shaffer et al. 1988), W. Eager Site (Grettler et al. 1991b), and Cazier Site (Hoseth, Catts, and Tinsman 1994).

Tenant-occupied sites can also be meaningfully compared to owner-occupied sites such as the Moore-Taylor Farm Site, Buchanan-Savin Farm, (Scholl, Hoseth, and Grettler 1994), Patterson Lane Site (Catts, Hodny, and Custer 1989b), Hawthorn Site (Coleman et al. 1984), and the Wilson-Slack Site (Coleman et al. 1985). By definition, tenancy becomes most meaningful when compared to owner occupations. Differences in material culture, housing, and agricultural practices are expected between the two groups. The differences should be especially pronounced by the second and third quarters of the nineteenth century when changes in the agricultural economy of central Delaware favored farmers most willing, and able, to invest in expensive agricultural improvements, and thereby exploit regional urban markets.

The second historical research issue concerns the social and economic changes brought by the development of a powerful, but volatile, nationwide economy in the mid-nineteenth century with urban and industrial growth. The suburban and industrial expansion of large regional cities such as Baltimore, Philadelphia, and New York affected Delaware in two ways. First, the inhabitants of these cities had to be fed. Delaware farmers were poised and eager to supply these markets. Excellent river transportation and improving rail transportation encouraged the production of highly perishable, but potentially profitable truck produce and orchard crops. Second, as land prices rose in the mid-nineteenth century with suburban and industrial expansion, marginal areas such as the relatively poorly-drained project area were cleared and cultivated.

The third historical research issue is the role of agricultural change in regional economic development brought by the growth of new urban and industrial markets. Throughout the nineteenth century, Delaware farmers sought new crops, new agricultural techniques, and labor-saving machinery to keep pace with new market opportunities.

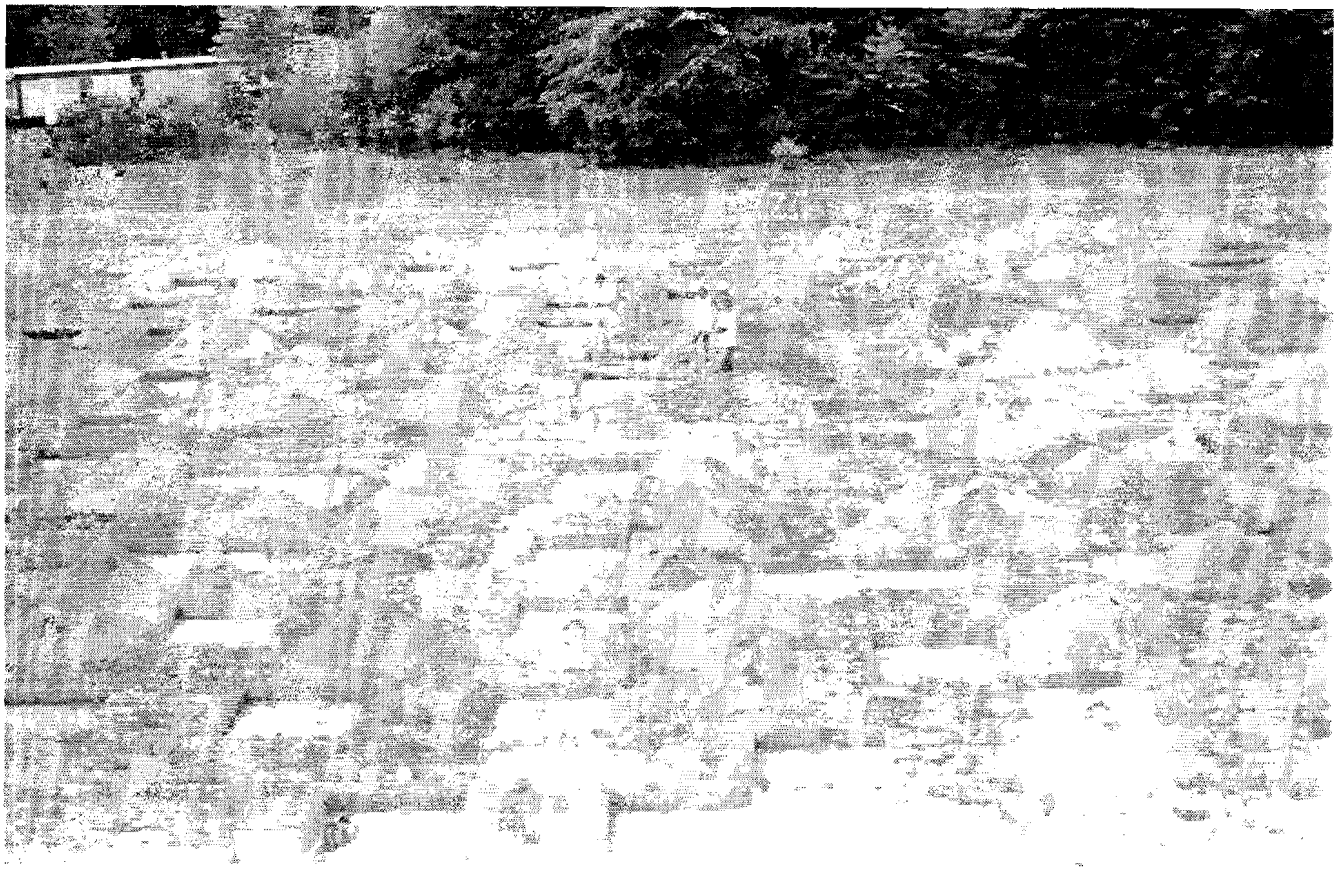
Archival Research Methods

The Phase I and II archival research conducted by Bachman, Grettler, and Custer (1988) and Grettler et al. (1991a) provided a basic chronology of each site and those reports summarize the background research undertaken. Additional archival research was also undertaken in conjunction with the Phase III studies to provide detailed historical data about the sites' occupants and function through time. Additional historical sources, not used in the Phase I and II surveys were consulted. These sources included nineteenth century Little Creek Hundred tax assessments, Kent County deeds and probate documents (wills, administrations, inventories, estate sales), U.S. manuscript census returns from 1850 to 1900, and interviews with several local residents.

Beyond the immediate history of each site, research into the growth and development of central Delaware and the Leipsic-Dover area was also conducted in order to provide a larger local and regional historical context for each site. This research included examinations of deeds, Kent County Road Petitions and Returns, and Delaware State Directories published in the second half of the nineteenth century.

PLATE 3

Moore-Taylor Farm Site - Plow Zone Sampling



Structural analyses of a 25 percent random sample of local tax assessments from 1797-1860 were also undertaken. Other archival sources studied included secondary historical discussions of the area, and several historical maps not examined by the Phase I and II investigations.

Field Research Methods

Field investigations at the Moore-Taylor Farm, Benjamin Wynn Tenancy, and Wilson-Lewis Farm sites began with the reestablishment of the site grids used for the Phase I and II surveys. All three sites were divided into 100- x 100-foot grids further divided into 10- x 10-foot subunits. Next, in order to implement the research design and collect data on spatial organization and artifact distribution, a 25 percent stratified, systematic, unaligned sampling (Plog 1976) of the plow zone from the core areas (Area I) of the Moore-Taylor Farm and Benjamin Wynn Tenancy sites was conducted. Plow zone sampling was not undertaken at the Wilson-Lewis Farm Site because of the very low artifact densities identified by Phase I and II testing. For this same reason, no intensive plow zone sampling was conducted in Area II of either the Moore-Taylor Farm or Benjamin Wynn Tenancy sites.

The 25 percent plow zone sampling at the Moore-Taylor Farm and Benjamin Wynn Tenancy sites was conducted through the excavation of randomly selected 5- x 5-foot units from within the larger 10- x 10-foot subunits (Plate 3). Recent research utilizing plow zone soils and artifacts derived from plow zone contexts have suggested the importance of sampling this stratum of a site (Custer 1992; Moir and Jurney 1987; Pogue 1988; Riordan 1988). Plow zone test units were excavated in one soil level, and all soils were screened through 1/4-inch wire mesh, and all artifacts recovered were bagged according to test unit provenience and grid coordinates (Plates 4 and 5).

PLATE 4

Benjamin Wynn Tenancy - Plow Zone Excavations

PLATE 5

Benjamin Wynn Tenancy - Artifacts from Plow Zone Excavations

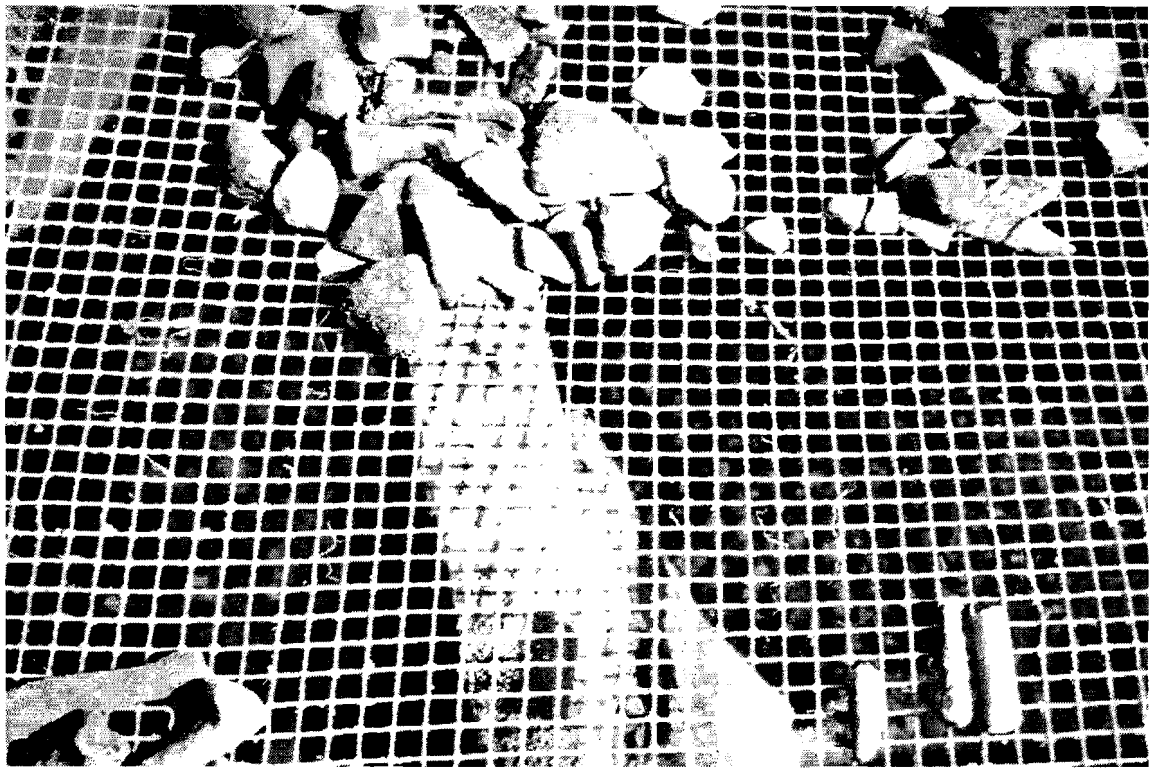


PLATE 6

Benjamin Wynn Tenancy - Mechanical Stripping of Plow Zone

PLATE 7

Wilson-Lewis Farm Site - Identifying and Mapping Features

Following the sampling of the plow zone, the remaining plow zone was carefully removed mechanically with heavy equipment at all three sites (Plate 6). All subsurface features were then identified, numbered, and mapped on the same grids as the Phase II survey and plow zone testing (Plate 7). Larger features were fully excavated and recorded, and all features were sectioned, plan viewed, and profiled (Plate 8). Deeper features, such as wells, were excavated by hand to a depth of approximately five feet (Plate 9). Below that depth, excavations were undertaken with a backhoe to prevent injury to field personnel (Plates 10 and 11). All soils from the features were screened and artifacts bagged as described for the plow zone units.

Soil samples were collected from all cultural features, each of the 5- x 5-foot plow zone test units, and from the subsurface 10- x 10-foot subunits. Chemical analyses of the soil samples were conducted by the Soils Laboratory of the University of Delaware College of Agriculture. Black and white prints, videotape, and/or 35 millimeter color slides were taken of selected features, soil excavation profiles, and test unit plan views. Personnel from the DelDOT Office of Location Studies also took 35 millimeter and large format aerial photographs of the sites and their environmental settings (Plates 1 and 2).

PLATE 8

Benjamin Wynn Tenancy - Excavating a Feature

PLATE 9

Benjamin Wynn Tenancy - Hand Excavations of Well Feature

PLATE 10

Benjamin Wynn Tenancy - Backhoe Excavations of Deep Well Feature

PLATE 11

Benjamin Wynn Tenancy - Measuring a Deep Well Feature

Laboratory and Artifact Analysis Methods

Prior to a detailed artifact analysis, the standard artifact processing procedures of the Delaware Bureau of Museums were applied to all artifacts recovered from all three data recovery excavations. All artifacts, bone, and shell were cleaned with plain water or, as in the case of deteriorating bone, simply damp-brushed. Bone and shell were then placed in labeled bags, while other artifacts were labeled with site numbers and a three-digit provenience number. Historical artifacts were then sorted into categories for cataloging based on their material composition; i.e., bone, shell, nails, glass, and ceramic artifacts. Total artifact counts for all three sites are given in Appendix I.

After the initial inventory had been completed, ceramic artifacts recovered from all features of the three sites were sorted by ware type. Additional vessel reconstruction and cross-mending were then carried out to arrive at minimum vessel estimates. Vessel data were then coded to a set of standard descriptive terms for analytical purposes and entered into a specialized relational database (created with the software package Cornerstone) developed by George Miller of UDCAR and Rob Hunter of the Colonial Williamsburg Foundation.

Attributes recorded for each ceramic vessel entered into the Cornerstone database were ware, presence of plastic decoration, presence of applied decoration, color, pattern, form/function, sherd count, vessel number, attributed dates, presence of makers' marks, source texts, rim diameter/height, percentage of extant vessel, and type of context (provenience). A similar range of attributes were recorded for glass vessels. The data set derived from the vessel analysis of the Moore-Taylor Farm, Benjamin Wynn Tenancy, and Wilson-Lewis Farm sites was basic to intra-site and inter-site ceramic assemblage comparisons. These comparisons will be explained more fully later in this report.

Special Minimum Vessel Dating Techniques

The ceramic and glass vessels in this report have been individually dated to the best of our ability. In a few selected features, the context provided tighter dates for the artifacts than the artifacts provided for the feature. The context dates then became the attributed end dates of the vessels. For example, the traditional mean beginning date of common Pennsylvania redwares at the Moore-Taylor Farm Site was over a century before the site was first occupied. As none of these century old vessels were likely to have been used at the site, the mean beginning date of these wares was arbitrarily assigned 20 years earlier than the first occupation of the site. Truncating the beginning date of these wares at 20 years before occupation accounted for vessels that became part of a household's assemblage before the family occupied the site. Thus, the beginning date used for all Pennsylvania redwares at the Moore-Taylor Farm Site was 1802, 20 years before the site was first occupied in 1822. Similar changes were made for other long-lasting ceramic and glass wares at all three sites. Whenever the dates for specific wares from selected features were refined by the context or other means, the new dates and the rational for the change are given in the description of that feature.

The goal of using mean beginning and end dates rather than South's mean ceramic dates (MCD) was to define when features and assemblages were used rather than their mid-date. In almost all cases, the mean beginning and mean end dates from our best estimates of the date of each vessel matched very accurately known events at the site. Moreover, abandoning mean ceramic dates in favor of mean beginning and end dates has enabled us to more accurately order features into meaningful chronological sequences. As the dates for vessels in this report have been refined by context-specific data, one should not use

these dates for vessels from other contexts without carefully reviewing the dating criteria for each vessel. This dating criteria is described more fully in the results of field excavations and artifact analyses discussions of each site.

Soil Chemical Analysis Techniques

The chemical analysis of the soils from the Moore-Taylor Farm, Benjamin Wynn Tenancy, and Wilson-Lewis Farm sites was undertaken because it has been shown that archaeologically-derived patterns of certain soil trace elements can be correlated with particular human activities and site use patterns (Sopko 1983:24-30; McManamon 1984; Custer et al. 1986). Besides providing a more generalized understanding of spatial utilization of a site, soils analyses can be useful in determining intra-site activity areas or proxemics, particularly when used in conjunction with artifact distribution patterns. Site proxemics is the study of the "nature, degree, and effect of spatial separation between support structures, features, gardens, fences, paths, and activity areas around a primary structure" (Moir and Jurney 1987:230).

Soil chemical analyses were conducted by the Soils Laboratory of the University of Delaware College of Agriculture. Soils analyses have been used with favorable results on other recently excavated historical sites in Delaware (Custer et al. 1986; Coleman et al. 1985; Shaffer et al. 1988:132-141; Scholl, Hoseth, and Grettler 1994; Hoseth, Catts, and Tinsman 1994; Catts and Custer 1990; Grettler et al. 1991b; De Cunzo et al. 1992) and Maryland (Fine 1980:17-25).

The soil chemical analyses for each of the three sites consisted of determining the relative frequency levels of soil phosphorus, calcium, potassium, magnesium, and soil pH across the site area from both the plow zone and the subsoil. These two contexts were analyzed separately because subsoil samples have been proven to be less affected by post-depositional activities, especially recent agricultural fertilizing. The difference between plow zone and subsoil samples was especially clear at the Benjamin Wynn Tenancy Site where recent agricultural activities significantly skewed the plow zone soil chemistry.

The level of phosphorus in the soil is probably the most significant soil chemical analysis conducted, because high phosphorus levels clearly indicate human or animal activities. High phosphorus accumulation is usually caused by the deposition of urine, excrement, and organic refuse (Sjoberg 1976; Eidt 1977). Abnormal concentrations of calcium could be the result of several possible occurrences: agricultural fertilization (i.e., liming), oyster or clam shell deposition, or the presence of building materials in the soils. Magnesium levels are generally related to the calcium levels. The presence of high potassium levels are the result of the deposition of wood ash through surface burning or from the dumping of fireplace or stove ashes. Soil pH readings of 7.0 or greater are indicative of alkaline soils, and readings below 7.0 are acidic. Delaware soil pH values are naturally acidic (Matthews and Lavoie 1970), and readings above 6.0 suggest agricultural fertilization (Sopko 1983; Custer et al. 1986).

Plow Zone Artifact Distribution Analyses

The distribution of plow zone artifacts was studied at the Moore-Taylor Farm and Benjamin Wynn Tenancy sites to provide additional evidence of intra-site activity. These analyses used artifact density data gathered from 25 percent random samples of 5- x 5-foot plow zone test units from the core of both sites. No plow zone sampling was undertaken at the Wilson-Lewis Farm Site because of extremely low artifact densities. Intra-site activity areas, especially trash disposal patterns, were determined by plotting the frequency of artifacts collected during plow zone sampling. Artifacts were mapped both by type (i.e., cut nails) and by category (total ceramic artifacts). Artifact densities were mapped with Surfer software (Version 4.0 by Golden Software).