RESEARCH DESIGN AND METHODS

Research Design, Context, and Perspectives

The primary goal of the data recovery programs at the Whitehart and Powell plantation sites was to obtain archaeological data related to diachronic change in spatial organization, food preparation and consumption, and artifact assemblage patterns and composition. The study of these changes is part of two interrelated research domains presented in the **Management Plan for Delaware's Historical Archaeological Resources** (De Cunzo and Catts 1990:14-25).

The primary focus of research into a historical archaeological site's inhabitant's domestic economy is the family/household. The family/household is considered by archaeologists, historians, and social scientists to be the central unit of production, reproduction, consumption, and socialization in society (Mrozowski 1984). De Cunzo and Catts (1990:14-25) define domestic economy as the complete range of domestic strategies employed by a family/household to achieve its goals. Specific domestic strategies that can be investigated through historical archaeology include the demographics and occupational structure of the family/household, consumer behavior, and household production. Additionally, the family/household can then be examined from an intersite perspective, comparing them to others in the region. The research domain of landscape change is also predicated upon the household as the primary level of investigation. Landscape issues involve the reconstruction and interpretation of past human and physical landscapes. More specifically, the study of the historical landscape seeks data on settlement patterns, site layout, and environmental change.

Previous historical archaeological research on sites excavated in Delaware had implicitly investigated the research topics of domestic economy and landscape (Custer and Bachman 1986; Custer, Bachman, and Grettler 1986, 1987). Thus, the work undertaken at several of these sites is applicable to the Phase III investigations at the Whitehart and Powell plantations. More specifically, the two Pollack sites could be compared to the Strickland Plantation (Catts et al. 1994) and Thompson's Loss and Gain (Guerrant 1988a, 1988b) sites. Research considerations at both sites had looked for data related to diachronic changes in intra-site spatial organization (household organization and landscape), food preparation and consumption (domestic economy), and artifact assemblage patterns and composition (consumer behavior, home production, household organization). On a site-specific basis, the questions that governed the research design at the Whitehart and Powell plantations 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 either of the above questions be analyzed for meaningful covariance?

These overarching research questions 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 broader themes of American history which can be addressed through the historical and archaeological investigations of the Richard Whitehart and John Powell plantations. 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 Whitehart and Powell plantations date to the earliest period in Delaware history. This period from 1630-1730 was defined by Ames et al. (1989:37) as one of initial exploration and frontier development. De Cunzo and Catts (1990:27-40, 125-130) refined this chronology and suggested specific research questions that could be addressed at sites dating to this period. The most pressing research need identified by De Cunzo and Catts is the gathering of data on even the most common aspects of daily life of Delaware's first settlers. Very little is known about Delaware's "frontier" and a primary goal of the research at both sites was to reconstruct the lifeways of Richard Whitehart and John Powell. No other seventeenth century sites have ever been excavated in central Delaware. Only eight other archaeological sites from this period are known in the entire state (De Cunzo and Catts 1990:112-114). Little is known of even the broadest realities of everyday life, society, and economy in this period and the twin research domains of domestic economy and landscape would begin to fill important gaps in our knowledge of Delaware and Middle Atlantic history.

The second specific research question for such early sites in Delaware is how life in Delaware compared to the Chesapeake region. The seventeenth and early eighteenth century Chesapeake has been extensively studied (see Kulikoff 1986), and data from sites along the Delaware Bay could shed light on both settlements. For example, we could seek to determine to what degree Powell, Whitehart, and other early Delaware farmers participated in the tobacco economy that dominated life in Maryland and Virginia? We could also consider if disease was as important a demographic factor in Delaware as it was in the Chesapeake.

In conclusion, data from the Richard Whitehart and John Powell plantations can address numerous important research questions in history and historical archaeology. These data can be used on several levels. First, these data can be used to reconstruct the lifeways of Delaware's earliest settlers. Second, these data can be compared to other sites from Delaware and the Middle Atlantic region. Third, these comparisons can yield data about current research questions and methodological concerns applicable to broad questions in history and historical archaeology.

Archival Research Methods

The identity of the inhabitants of the Whitehart and Powell plantations was determined through the reconstruction of the chain of title of the Pollack property. This research was conducted primarily through analysis of Kent County deeds, probate records, and early warrants and surveys. Probate records included wills, administrations, and inventories. Additional archival research was undertaken to provide detailed historical data about the site's occupants and function through time.

Beyond the immediate history of each site, research into the earliest settlements in central Delaware was conducted in order to provide a larger local and regional historical context for each site. This research included examinations of additional Kent County deeds, land warrants and surveys, and tax records. The earliest proprietary records of Delaware and Pennsylvania, particularly rent rolls and early censuses, were also examined.

The secondary literature of early settlements in Maryland and Virginia were also consulted. The history of the Eastern Shore of Maryland was especially germane to the two Pollack historical sites (Clemens 1980; Mason 1984). The earliest settlements along the western shore of the Chesapeake in Virginia and Maryland were also used (Carr, Morgan, and Russo 1988; Carr and Walsh 1977, 1982; Earle 1975, 1979; Earle and Hoffman 1976; Harris 1977; Horn 1979; Kulikoff 1986; Main 1982; Menard 1973a, 1973b, 1977; and Walsh 1977). The research of Richard Bushman and Anna Hawley (1987) into Kent County inventories between 1725 and 1775, also provided much of the data needed to reconstruct central Delaware society. Several published primary sources were invaluable in providing the background historical context for Duck Creek Hundred and Kent County in the eighteenth century. These include the several works by Harold Hancock (1962a, 1962b, 1963) and the records of the Colonial American Church (Perry 1878).

Field Research Methods

Field investigations at the Richard Whitehart and John Powell plantations began with the excavation of systematic samples of plow zone soils. Both sites were divided into 20- x 20-foot grids. In order to implement the research design and collect data on spatial organization and artifact distribution, a 25 percent stratified, systematic, aligned sample (see Plog 1976) of the plow zone soils from the core areas of both sites was excavated. The limits of plow zone testing were based on the site limits and artifact density distributions determined by Phase II testing (Grettler, Seidel, and Kraft 1994). The 25 percent plow zone samples at the Whitehart and Powell plantations were conducted through the excavation of randomly selected test units from within the larger 10- x 10-foot sub-units (Plate 5). All 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.

Following plow zone sampling, the remaining plow zone was carefully removed mechanically with an excavator at both sites (Plate 6). All subsurface prehistoric and historical features were then identified, numbered, and mapped on the 20- x 20-foot grid. Features were numbered consecutively and given a prefix matching the Phase II area in which they were located. Thus "Feature C465" was the 465th feature identified in Area C. Larger features were fully excavated and recorded, and all features were sectioned, plan viewed, and profiled (Plates 7 and 8). All historical features were mapped, excavated,

PLATE 5

Excavation of Plow Zone Sample Units at the John Powell Plantation

and profiled in feet and tenths of feet. All feature soils were screened and artifacts bagged in a similar fashion to that described for the plow zone units. Soil samples were collected from the plow zone and subsoil in every plow zone sample test unit, and from the plow zone and subsoil of the surrounding 10- x 10-meter or 10- x 10-foot blocks. Chemical analyses of the soil samples were conducted by the Soils Laboratory of the University of Delaware College of Agriculture. Flotation samples were taken from selected historical features such as trash pits and wells. Black and white prints, videotape, and/or 35-millimeter color slides were taken of selected features, soil excavation profiles, and test unit plan views.

Laboratory and Data Analysis Methods

Prior to artifact analysis, the standard artifact processing procedures of the Delaware Bureau of Museums were applied to all artifacts recovered from both sites. All artifacts, bone, and shell, were cleaned with water or, as in the case of deteriorating bone, were damp-brushed (Plate 9). Bone and shell

PLATE 6

Removing Plow Zone Soils with an Excavator

were then placed in labeled bags, while other artifacts were themselves labeled with site numbers and a three-digit provenience number. Historical artifacts were sorted into categories for cataloging based on their material composition; i.e., ceramics, bone, shell, nails, and glass (Tables 1 and 2).

Ceramics recovered from all features were sorted as to ware type, and vessel reconstruction and crossmending were carried out to arrive at minimum vessel estimates. These minimum vessel counts were then used in all analyses because vessel counts have been shown to be more accurate than sherd

TABLE 1

Total Artifacts from the Richard Whitehart Plantation

	PLOW ZONE	FEATURES	TOTAL
CERAMIC			
Redware	336	18	354
North Devon	19	---	19
Delft	4	---	4
English Brown Salt-Glazed	5	---	5
Bellarmine	19	2	21
Flemish Earthenware	4	---	4
Misc./Red Earthenware	15	---	15
Staffordshire	15	---	15
Creamware	4	1	5
Whiteware	13	1	14
Misc. Stoneware	5	---	5
Porcelain	1	1	2
Unidentifiable	16	2	18
Tobacco Pipe	415	55	470
GLASS			
Bottle	129	126	255
Household	5	---	5
ARCHITECTURAL			
Window Glass	33	2	35
Brick (grams)	146 (472)	---	146 (472)
Mortar/Daub	1	11	12
Nail			
Wrought	17	13	30
Cut	68	35	103
Wire	2	---	2
Unidentifiable	400	80	480
PERSONAL			
Button/Thimble	6	---	6
Coin	2	---	2
Tableware	2	3	5
Wood	1	10	11
MISCELLANEOUS			
Misc. Metal	12	67	79
Tools	3	---	3
Arms	3	---	3
Gunflint	28	9	37
Bone	142	867	1,009
Shell	66	19	85
Nuts	1	3	4
Coal	252	---	252
Floral	---	56	56
TOTAL	2,190	1,381	3,571

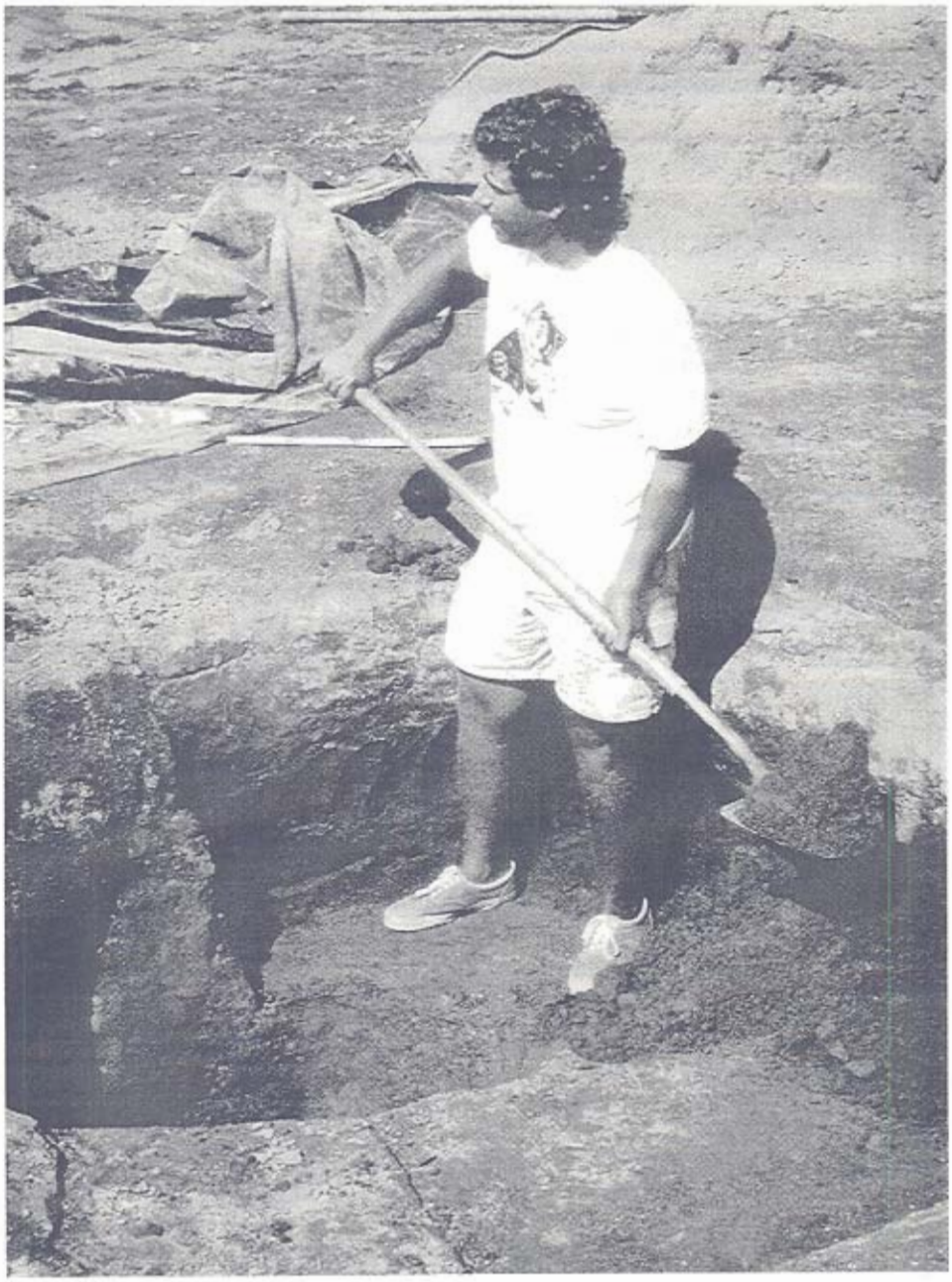
TABLE 2

Total Artifacts from the John Powell Plantation

	PLOW ZONE	FEATURES	TOTAL
CERAMIC			
Redware	572	427	999
Delft	4	48	52
English Brown Salt-Glazed Stoneware	3	22	25
White Salt-Glazed Stoneware	2	4	6
Misc./Red Earthenware	3	10	13
Rhenish	28	50	78
Staffordshire	57	58	115
Creamware	1	---	1
Whiteware	5	2	7
Misc. Stoneware	63	32	95
Manganese Mottled	1	---	1
Ironstone	22	---	22
Westerwald	6	---	6
Porcelain	1	---	1
Unidentifiable	3	28	31
Tobacco Pipe	395	860	1255
GLASS			
Bottle	97	102	199
Household	7	8	15
ARCHITECTURAL			
Window Glass	16	47	63
Brick (kilograms)	95 (2.4)	991 (3.3)	1086 (5.7)
Mortar/Daub (kilograms)	(.008)	(.08)	(.088)
Nail			
Wrought	79	828	907
Cut	31	375	406
Wire	1	4	5
Unidentifiable	997	154	1,151
PERSONAL			
Button/Thimble	2	8	10
Tableware	7	10	17
Toys	1	---	1
MISCELLANEOUS			
Misc. Metal	7	5	12
Tools	5	6	11
Arms	---	6	6
Gunflint	17	53	70
Lead Shot	2	---	2
Bone	1,772	7,155	8,927
Shell	51	455	506
Coal	71	---	71
Floral	---	383	383
TOTAL	4,424	12,131	16,555

PLATE 7

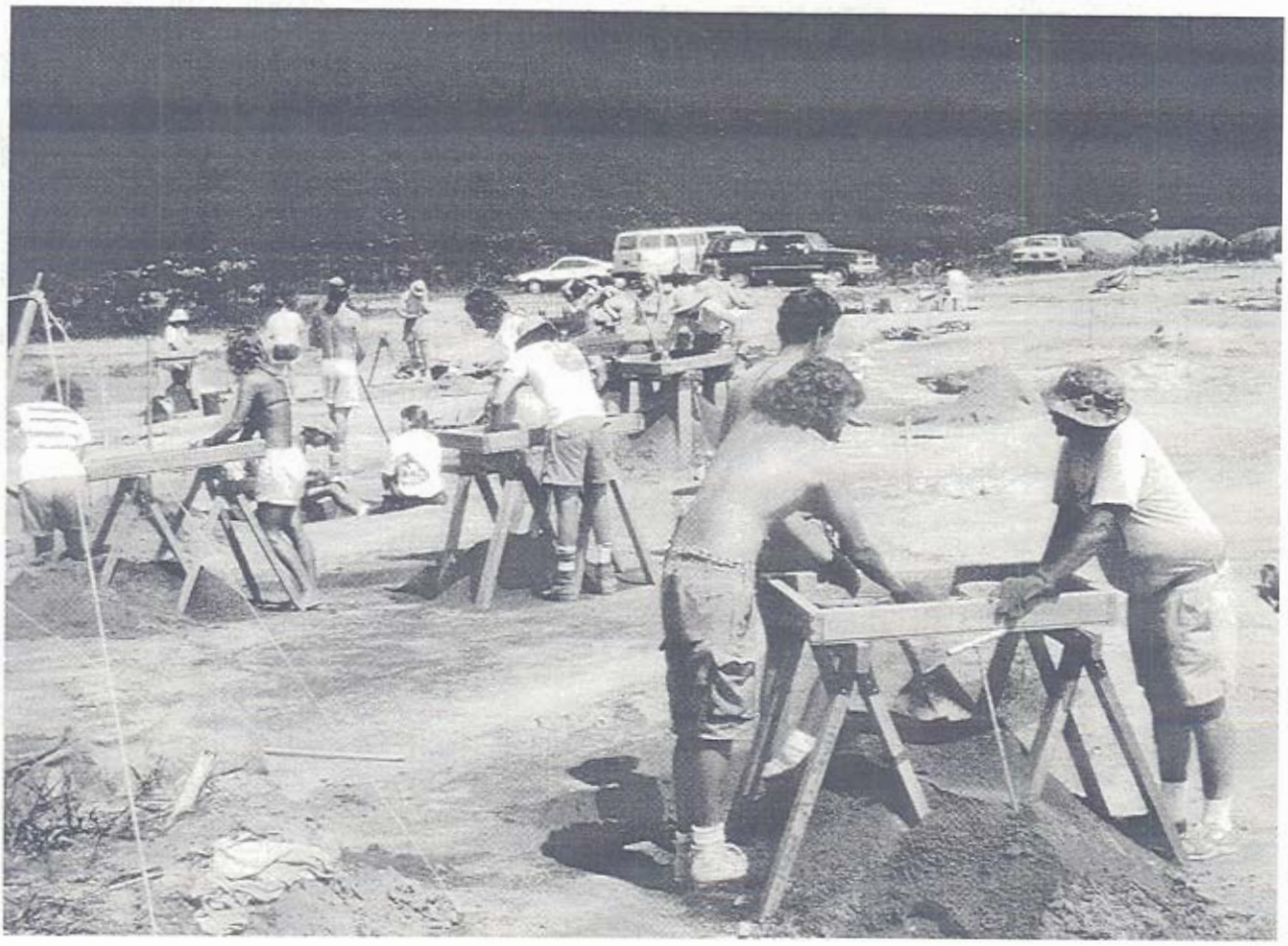
Excavating Features at the John Powell Plantation



counts (Rice 1987). Vessels were then coded to a set of standard descriptive terms for analytical purposes using the systems developed by South (1977) and Carlson (1983). The time-sensitive attributes and use-related descriptive vessel attributes were entered into a computer data base program. Special attributes of each minimum vessel were recorded including ware type, plastic decoration (such as bat-molded plate rim treatments), color of decoration, applied non-plastic decorations, variety of decoration, number type code (South 1977, Brown 1982, Carlson 1983), use, shape, date range, and median date (South 1977, Brown 1982, Carlson 1983). For more complete reconstructed vessels, vessel form was noted.

PLATE 8

Excavating Features at the Richard Whitehart Plantation



Flatware plates and saucers were differentiated from hollowware bowls, cups, mugs, and jugs. Varied vessel functional types such as tablewares, serving vessels, tea and coffee wares, food preparation and storage containers, medicinal vessels, decorative ceramics, and condiment containers, were also noted where possible.

Glass sherds, excluding those from windows, from all features were sorted as to type, and vessel reconstruction and crossmending were carried out to arrive at minimum vessel estimates. Vessels were coded to a set of standard descriptive terms for analytical purposes. Date ranges were obtained from vessel type comparisons with known glass vessel manufacturing dates. The time-sensitive attributes and use-related descriptive glass vessel attributes were entered into a computer data base program. The glass vessel data were also organized into a functional group and classification system modeled after the ceramic vessel classification system developed by South (1977). Attributes recorded for each glass sherd and/or minimum vessel included type, color, markings and decoration, mold seams, size, use, shape, function, and date range. Functional vessel types that were noted included alcoholic versus non-alcoholic beverage containers, medicinal bottles, condiment bottles, chemical containers, drinking vessels (tumblers, stemmed ware, and mugs), decorative glassware, lighting fixtures, and mirrors.

PLATE 9

Washing Wood from a Well Feature at the John Powell Plantation

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 Whitehart Plantation was 20 years after the site was abandoned. As redwares were certainly in use while the site was occupied, 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 Whitehart owned before moving to Delaware. Thus, the beginning dates used for all redwares at the Whitehart Plantation was 1661, 20 years before the site was first occupied. The beginning date of redwares at the Powell Plantation was 1671, 20 years before that site was first occupied. Similar changes were made for other long-lasting ceramic and glass wares at both sites. Whenever the dates for specific wares from selected features were refined by the context or other means, the new dates and the rationale 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 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.

Chemical analysis of the soils from the Whitehart and Powell plantations 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 intrasite 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. 1994; De Cunzo et al. 1992) and Maryland (Fine 1980:17-25).

The soil chemical analyses for each of the Whitehart and Powell 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. The 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 important on such early sites 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 Ireland 1971), and readings above 6.0 suggest agricultural fertilization (Sopko 1983; Custer et al. 1986).

TABLE 3

Chain of Title for the Pollack Property 1681-1986

Transaction	Size (acres)	Date	Deed
Warrant from William Penn to Richard Whitehart	400	12 Dec. 1681	KCW&S W6 #76
From Richard Whitehart to William Johnson	400	3 July 1686/7	B -2- 22
From William Johnson and Richard Whitehart to Thomas Sharp	300 (7K-C-203H)	4 Feb. 1689	C -1- 49
From William Johnson and Richard Whitehart to Thomas Sharp	300 (7K-C-203H)	9 Nov. 1691	C -1- 87
From Richard Whitehart to Thomas Sharp	100 (7K-C-203C)	15 June 1698	C -1- 204
From Thomas Sharp to John Powell	324	8 Oct. 1704	H -1- 81e
From David and Ann (Powell) Pugh, exrs. of John Powell decd. to Thomas Sharp	324	August 1716	H -1- 81e
From Thomas Sharp to Andrew Hamilton	324	20 Feb. 1722	H -1- 81
From Thomas Sharp to Andrew Hamilton	324	4 March 1723	H -1- 81
From Andrew Hamilton to son James Hamilton	324	1745	Pa. Wills
From James Hamilton to James Raymond	324	17 Jan. 1769	S -1- 95
From James Raymond to Sarah Allston	323	29 Nov. 1775	W -1-18
(Unknown transactions between the heirs of Rebecca Denny and James Raymond)			
From Thomas Denny (decd.) to wife Rebecca Denny	193	1827	KC Oct. K - 1 - 91
From Rebecca Denny (decd.) to son John Denny	223	March, 1869	KC Oct. Z -1-437
From John Denny (decd.) to Ephriaim S. Garrison	223	March, 1869	KC Oct. Z-1-437
From Mary E. Garrison et al. to Thomas D. Garrison	223	24 Aug. 1914	R-10-355
From Thomas D. Garrison to Norris B. Garrison et al.	180	14 Dec. 1944	S -16- 382
From Norris B. Garrison et al. to Linton Truitt	180	29 April 1949	N -18- 450
From Linton Truitt to Harley and Anna Taylor	183	13 Nov. 1950	A -19- 419
From Harley and Anna Taylor to Henry A. Pollack	183	30 Aug. 1956	H -21- 178
Henry A. Pollack to wife Rose Pollack	183	6 April 1986	S -48- 315

Key:

KCW&S: Kent County Warrants and Surveys
KC Oct.: Kent County Orphans Court