

# ***Bulletin of the Archaeological Society of Delaware***

ISLAND FIELD MUSEUM  
RD #2 BOX 126  
MILFORD, DEL. 19963

**Current Research in the  
Historic Archaeology of Northern Delaware**

**Edited by  
Jay F. Custer and Kevin W. Cunningham**



**A Special Issue Sponsored by the Delaware Department of Transportation  
and the Federal Highway Administration**

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## INTRODUCTION

Jay F. Custer and Kevin W. Cunningham

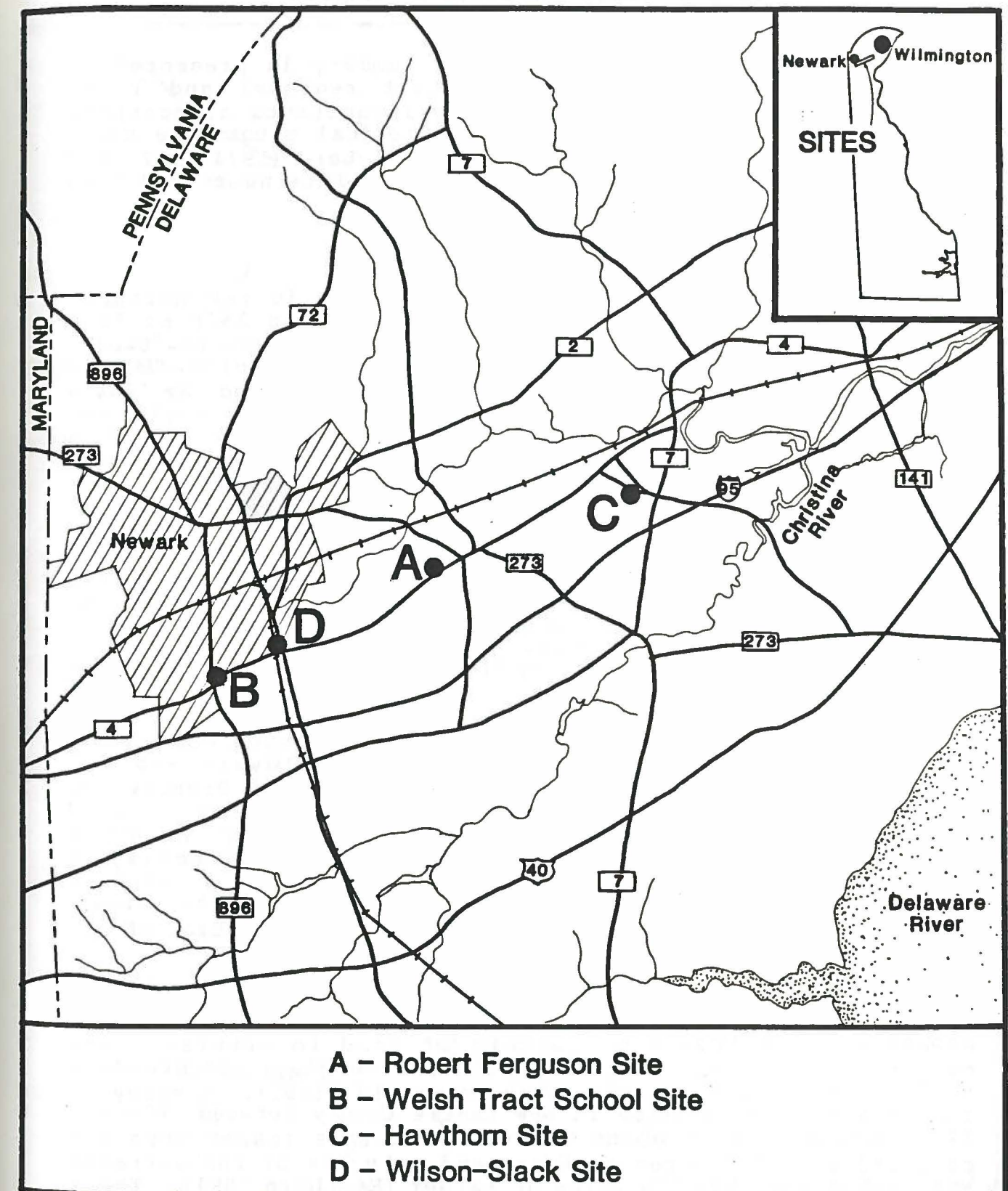
This special bulletin of the Archaeological Society of Delaware is partially funded by the Delaware Department of Transportation and the Federal Highway Administration. The purpose of the volume is to describe the results of a series of historic archaeological excavations at four sites in the greater Newark-Christiana region (Figure 1), which were destroyed by highway construction associated with the upgrading of Chestnut Hill Road (Route 4) and New Churchman's Road. Initial survey of the general area was carried out by Middle Atlantic Archaeological Research, Inc. (Thomas 1980). Test excavations salvage excavations, and report preparation were carried out by personnel from the Delaware Department of Transportation and the University of Delaware Center for Archaeological Research.

Testing and salvage excavations were coordinated to deal with a consistent series of research questions. For the most part, the major occupations of all sites dated from the late eighteenth through mid-nineteenth centuries, and this time period is one of major cultural changes in northern Delaware (see Catts and Coleman, this volume). The general goal of the research at these four sites, and others to be excavated in the northern Delaware area was to see how the emergence of a national market economy in the nineteenth century (Fletcher 1950; Lemon 1972:224-228) affected people of varied socio-economic status and varied occupations within a predominantly rural community.

More specifically, excavations at these four sites focused on collecting data that would show changes in spatial utilization at sites and changes in purchase and consumption habits of the sites' inhabitants. Data on these questions cannot always be gathered from historic documents and historic archaeology can make major contributions to the study of these questions. In order to analyze changes in spatial utilization at sites, excavations covered broad areas and data on the distribution of varied classes of artifacts, features, and buildings were recorded. To study purchase and consumption habits, documentary research focused on determination of the socio-economic standing of the varied sites' inhabitants. Data on socio-economic standing were then compared to ceramics and other items of material culture to see if there were correlations between socio-economic standing and material symbols of wealth and status (see G. Miller 1974, 1980). Food refuse remains were also studied to see if there were correlations between diet and socio-economic status.

The papers in this volume describe the archaeological findings at each site. An historical overview of the study area and a summary discussion of all of the sites' data are also included.

FIGURE 1  
Site Locations





## LOCAL HISTORICAL SUMMARY

Wade P. Catts and Ellis C. Coleman

The following local historical summary is presented to provide a background on the important regional and local historical events that affected the inhabitants of northern Delaware. Descriptions of regional historical events are based on the work of Munroe (1978,1979), Hoffecker (1974,1977) and Scharf (1888). Figure 2 shows some of the place names and town locations noted in the text.

### The Seventeenth Century

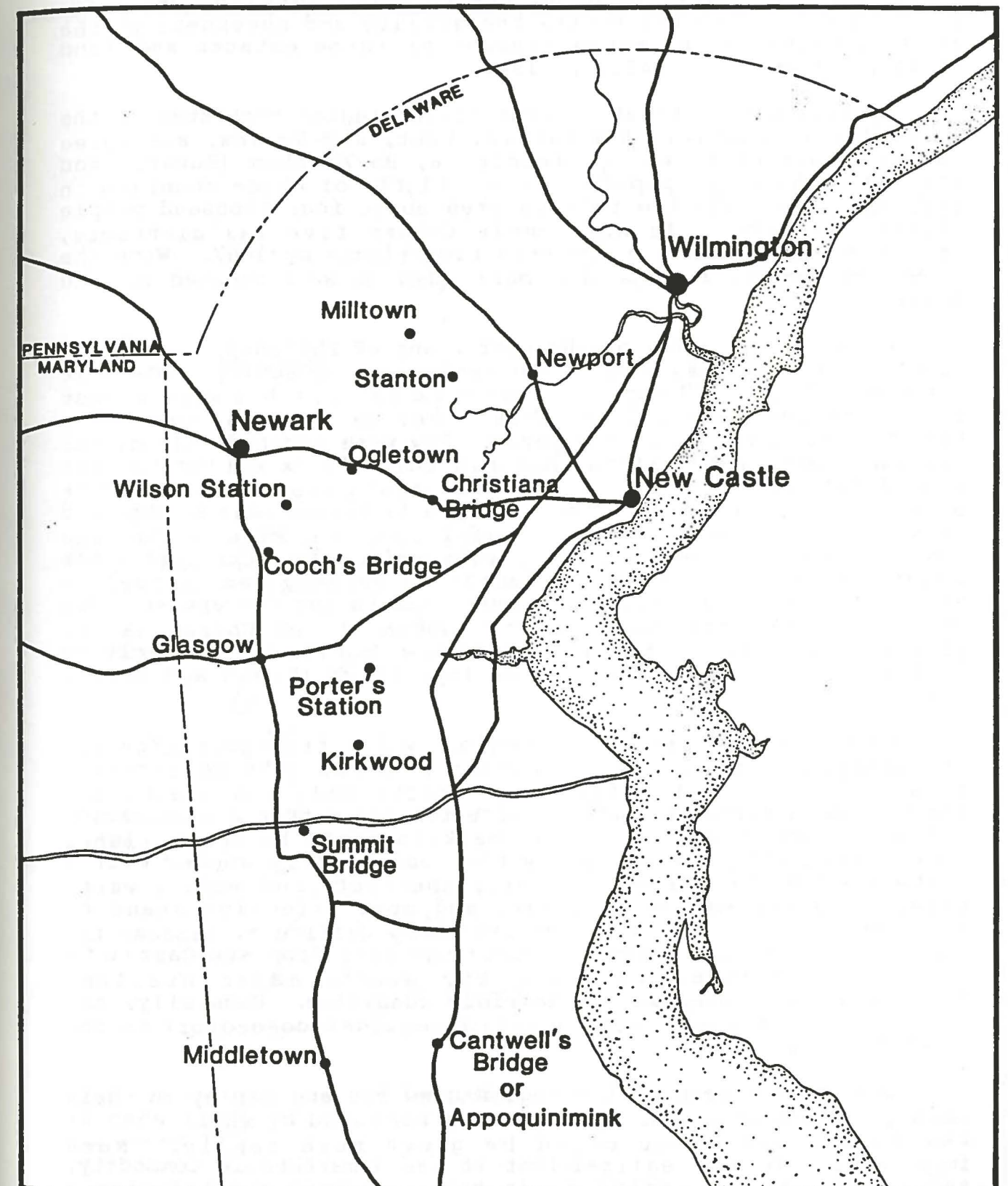
The first historic settlement in what is now northern Delaware was the Swedish colony established in 1638 at Fort Christina, near the present site of Wilmington, by the New Sweden Company. Although the land was claimed by the Dutch, it was little used and was unsettled when the Swedes arrived. By 1654 a small village, Christinahamm, existed behind the fort, and approximately 400 Swedish, Finnish, and Dutch settlers resided in the area. In 1655, the uneasy coexistence between the Swedes and Dutch was abruptly ended when the Dutch seized control of New Amstel (modern New Castle) became the economic and commercial center for the lower Delaware Valley. Ownership of the Delaware region changed hands again in 1664, when the English took control of proprietary rights to William Penn and his representatives by the Duke of York essentially gave economic and political control of the Delaware region to Philadelphia, the new seat of government (Munroe 1978).

The settlement pattern for this early period was one of dispersed farmsteads located along the Delaware and its tributaries, such as the Christina, Appoquinimink, Brandywine, White Clay and Red Clay, where the land possessed good agricultural qualities (Hoffecker 1977). The Swedish and Dutch settlers had also pushed their settlement far up the valley of the Christina toward the Elk River. The town of Christiana Bridge, so named because it was the crossing place of that river, was established by about 1660 at the head of navigation of the Christina.

With the arrival of Penn in the 1680's, an individualistic system of land settlement including the granting by the proprietors of tracts or parcels of land to settlers, was pursued. Penn usually granted land to families, the standard size tract being about 500 acres (Myers 1912:263). A study of the land warrants granted in New Castle County between 1679 and 1700 indicates that about 80% of the grants issued were for properties of 300 acres or less, and only 13% of the warrants were for properties 500 acres or larger (Eastburn 1891). These larger grants usually went to land speculation companies, such as

FIGURE 2

## Place Names and Town Locations





the London Company, who by 1687 possessed a tract of over 1300 acres north of White Clay Creek. The price of land was inexpensive, in the province of Pennsylvania selling for 5 to 15 pounds for 100 acres, or about one to three shilling per acre. Unlike colonies to the south, the quality and cheapness of the land discouraged the establishment of large estates and land tenancy (Bidwell and Falconer 1941).

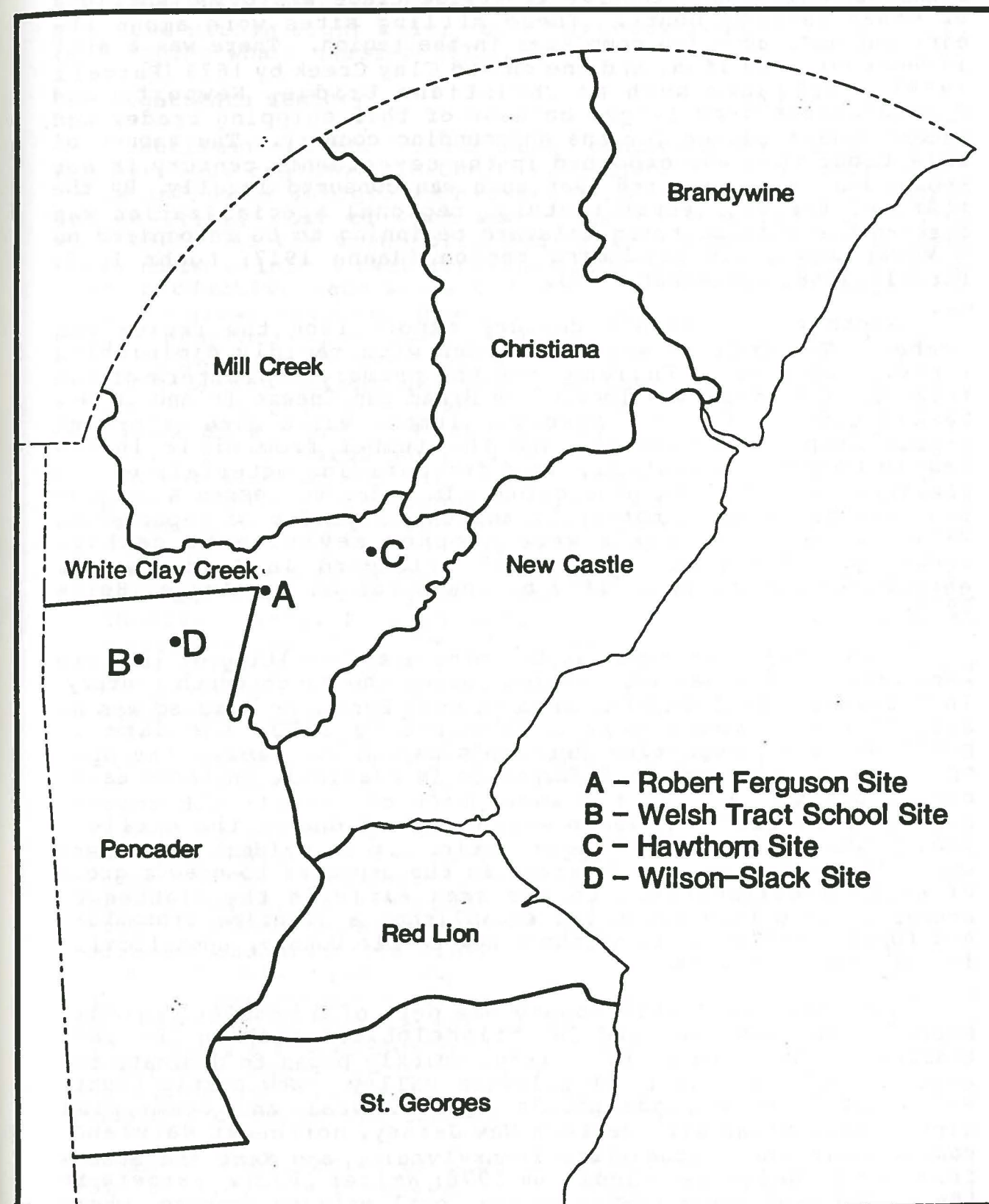
By 1683 the cultivated areas of the region consisted of the three lower counties, New Castle, Kent, and Sussex, and three Pennsylvania counties, Philadelphia, Buckingham (Bucks), and Chester. The total population of all six of these counties in 1683 has been estimated to have been about four thousand people (Myers 1912:239). In New Castle County five tax districts, called Hundreds, had already been established by 1687. With the growth of the population, four more hundreds were created in 1710 (Figure 3).

With the exception of the port towns of Philadelphia and New Castle, there were no other major commercial or social centers in the area. The small hamlets that were established were almost always situated on a navigable river or stream, the major transportation routes of the period. Few were located inland, for the road network was almost nonexistent. An exception to this was "Ogle's Town", which was located along the road to the Elk River as early as 1679. The villages of Christiana Bridge and Cantwell's Bridge were the only hamlets of any size in the area and both were located on major rivers and roads; Christiana was located on the road from New Castle to Upland, and Cantwell's Bridge was on the Bohemia Manor cart road to the Chesapeake. The village of Christinahamm, at the mouth of the Christina was slowly being eclipsed by the rise of New Castle, and as early as 1690 was a village of only minor importance (Klein and Garrow 1984).

In the New Castle County region, water transportation was the major mode of travel and commerce in the late seventeenth century. Most of the farmstead tracts and land grants had frontage on a stream or water course to ensure that communication and moving of produce to local markets could be accomplished (Hoffecker 1977). In a country that was heavily wooded with a mixture of oaks, walnut, hickory, chestnut, and maple, water travel was the easiest, safest, and most effective means of transport. Overland travel was extremely difficult, because the roads were few and very poor. Even the road from New Castle to Christiana Bridge, probably the area's major overland transportation route, was in horrible condition. Generally, the roads in the area were simply intra-regional connectors to the coastal towns.

Swedish settlers to the region grew rye and barley on their farms, but these grains were quickly replaced by wheat when it was found that wheat could be grown more easily. More importantly, it was realized that it was a marketable commodity, and the farmers and settlers in the area soon shifted from a

FIGURE 3  
Northern Delaware Hundreds and Site Locations





subsistence-oriented to market-oriented agriculture. Wheat, and to a lesser extent corn, were grown and then shipped by water to local milling sites. The transportation of grains to milling sites supported an extensive coastwide trade employing shallows or other similar boats. These milling sites were among the earliest manufacturing complexes in the region. There was a mill in New Castle by 1658, and one on Red Clay Creek by 1679 (Pursell 1958). Villages such as Christiana Bridge, Newport, and Appoquinimink grew larger because of this shipping trade, and became market places for the surrounding country. The amount of this flour that was exported in the seventeenth century is not known, but it is expected that much was consumed locally. By the start of the eighteenth century, regional specialization was discernible with northern Delaware beginning to be recognized as a wheat and grain producing region (Hanna 1917; Loehr 1952; Pursell 1958; Hoffecker 1977).

Another seventeenth century export from the region was lumber. The English settlers faced with rapidly diminishing timber resources in England were the primary exploiters of the forests. A sawmill was located on Bread and Cheese Island in New Castle County by 1679. However, lumber was a more important export from Sussex County, and the lumber from mills in New Castle County was probably used for building materials by the steadily growing urban population. In order to lessen a chronic shortage of building materials and the necessity of importation from abroad, brickyards were another seventeenth century industry. The first commercial brickyard in Delaware was established as early as 1657 by the Dutch at New Amstel (Heite 1976).

Unsuccessful attempts at the mining and smelting of iron ore were tried in the Delaware region during the seventeenth century. In Delaware, the Iron Hill area in west Pencader Hundred was an area known to contain iron deposits by 1673, the date of publication of Augustine Hermann's map which labels the spot "Yron Hill". However, no information is available on these early mining activities. If the assumption of seventeenth century mining is correct, Delaware would rank as one of the earliest iron producers in the Middle Atlantic. It is evident that there was sufficient trust and interest in the deposits to draw a group of Welsh miner/settlers to the area early in the eighteenth century. From this event was established a longtime ironmaking and forging tradition in northern New Castle County, specifically in the Iron Hill area.

Northern New Castle County was part of a broader regional economy that was centered in Philadelphia, which in the last quarter of the seventeenth century, quickly began to dominate the economic scene in the lower Delaware Valley. New Castle County was a part of Philadelphia's agricultural and commercial hinterland, along with western New Jersey, northeast Maryland, southeastern and northeastern Pennsylvania, and Kent and Sussex Counties in Delaware (Lindstrom 1978; Walzer 1972). Farmers in the region sent their grains to the local milling centers, where

the wheat flour and bread were then shipped to Philadelphia for export to the West Indies, other North American colonies, and southern European countries. The farmers in New Castle County quickly adapted to this market system of agriculture. It is estimated that over one-half of the farmsteads in the area were situated within eight miles (or a half-day's journey) of a mill or shipping wharf (Walzer 1972:163).

### The Eighteenth Century

Settlement in New Castle County continued much as it had in the previous century. In the Philadelphia region, there was a large influx of immigrants between 1725 and 1755, particularly Scotch-Irish, most of whom were indentured servants (Munroe 1978:160). As the transportation network improved, colonists began to move inland away from the navigable rivers and streams. Good, productive land was settled first, but as the population began to grow, marginal property was also occupied. Land was still inexpensive, in 1795 selling for 3 to 4 pounds per acre near Christiana Bridge, or about \$300 an acre (Strickland 1801:19; La Rouchefoucault 1800). A study of the land warrants granted by the Penn government in New Castle County between 1701 and 1725 shows that 85% of the farm properties granted to settlers in the area were of 300 acres or less in size, a percentage similar to that in the seventeenth century (page 2, this article). Significantly, farms of 100 acres or less increased from only 10% of the total between 1679 and 1700 to 27% by the first quarter of the eighteenth century (Eastburn 1891). This was due to a tendency for the large grants and tracts to be divided and subdivided by sale and inheritance (Munroe 1954:19). If Chester County, Pennsylvania, can be used as a comparison, farm sizes dropped from about 500 acres in 1693 to less than 130 acres by 1791 (Ball and Walton 1976:105). By 1750 it appears that the density of rural settlement in southeast Pennsylvania and New Castle County was approximately five households per square mile (Ball 1976:628; Lemon 1972). At the close of the century, Delaware ranked third in population density behind Rhode Island and Connecticut (Seybert 1818).

With regard to urbanization, Lemon (1967) has divided the eighteenth century in the Philadelphia region into three periods of growth. The first period, from 1700 to 1729, was one of urban stagnancy after the initial rapid growth of the seventeenth century. However, hamlets - unplanned towns that sprang up at crossroads and around taverns, ferries and mills - did begin to appear at this time. Ogletown is a fine example of the eighteenth century hamlet in New Castle County. It certainly did not deserve the appellation of town "...There being but one Brickhouse & a Few Wooden ones all the property of Thomas Ogle, no tavern in the place..." (Paltsits 1935:7). But Ogletown was, like Red Lion, Middletown, and Aiken's Tavern, located at a crossroads on major overland transportation route.

The second period of urbanization that Lemon recognizes, 1730 to 1765, saw a renewal of town growth based on internal



trade. In the Pennsylvania region, Lancaster, York, Carlisle, Reading, and Wilmington were examples of this period of urban growth. On a more local scale, towns such as Newport, Cuckoldstown (modern Stanton), and Newark were chartered and prospered during this period. Christiana Bridge, which had stagnated since the 1680's saw growth and prosperity as a major grain transshipment port for produce coming from the upper Chesapeake Bay area. Having only about ten houses in 1737, Christiana blossomed under the trading and shipping industries into a burgeoning town with several large mills, between fifty and sixty houses, and several taverns by the end of the century (Acomb 1958:124; Padelford 1939:11; Conrad 1908, vol. 2:495).

Newport, established about 1735, rivaled Wilmington and Christiana Bridge as a grain-shipping and flour-milling center during the eighteenth century. Because it was cheaper to ship flour by water to Philadelphia from Newport than to transport the grain overland directly from Lancaster to Philadelphia, grain was transported to Newport overland from the Lancaster and York areas of Pennsylvania. Contemporary travel maps of Newport show it to have been laid out in a regular town plan, consisting of parallel streets extending from the Christina River, and intersected by others at right angles (Colles 1961:170; Moore and Jones 1804:170; Scott 1807:180). It was described by travelers as being the size of New Castle, with about forty well-built houses, three or four stores and as many taverns (Padelford 1939:11, Scudder 1877:264; Penn 1879:295).

The crossroads town of Newark, chartered in 1758, represented a shift from a water-oriented shipping town to an inland market town. It was located on the two major overland transportation routes, the road from Dover to southeast Pennsylvania and the road from Christiana to Nottingham. Eighteenth century maps show it to have been at the center of no fewer than six roads (Cooch 1946). Newark was established as a market town that supplied the local population with commodities brought from Philadelphia and the surrounding region. While not quite as large as Newport, it was "...the most considerable collection of houses... since Lancaster" (Penn 1879:295). Several mills for local produce were found along White Clay Creek in the town's vicinity, and the Newark Academy was established in the town by the early 1760's.

The town of Stanton, known as Cuckoldstown as early as 1746, became an important milling and grain center in the late eighteenth century. A grist mill was known to be in the vicinity of Stanton as early as 1679, and by 1800 Cuckoldstown rivaled Newport as a local grain processing center. Ships of moderate draft were able to navigate up Red Clay Creek and take on local as well as southeastern Pennsylvania farm produce. Located at the confluence of Red Clay Creek with White Clay Creek, Stanton was never a large town. A map of the New Castle County region, drawn in 1777, did not even include the location of Stanton (Cooch 1946), and a traveller's guide, published in 1789 (Colles 1961:170) shows only a mill and ten dwellings in the vicinity of

the town. It was described at the end of the eighteenth century as a "...place of little note...in its vicinity were some good flour mills" (Moore and Jones 1804:6).

Wilmington was by far the largest urban center in New Castle County that developed in this period. Chartered in 1739, the city's location was considered by one visitor to be "one of the pleasantest and most favorable on the whole continent" (Acomb 1958:123). Wilmington soon became a port of entry and a post town, and was an important link in the Philadelphia trading network. Of special significance to the city's location was its proximity to the Brandywine mills. Located one-half mile north of Wilmington, Brandywine Village was a small town "...chiefly consisting in mills and taverns, eight or ten being within 100 yards of each other" (Chilton 1931:288). Wilmington thus was a receiving center for local and regional farm produce, brought by water from Christiana, Stanton, and Newport, and shipped up the Delaware to Philadelphia (Lindstrom 1978; Walzer 1972).

Lemon's third period of urban development, 1766-1800, was marked by less noticeable town growth which paralleled a more erratic economic pattern. Little growth in the towns of New Castle County took place during this period. However, an increase in population and land tenancy was noted (Lemon 1972:216).

The condition of roads in New Castle County improved considerably over the course of the eighteenth century, but in some locations they were unsatisfactory even by contemporary standards (Munroe 1954:137; Gray 1961:309). In 1755 the road from Middletown to 'Christeen' was considered good, but from Christiana north "the roads are, in many places, extremely bad and the appearance of the country the same" (Padelford 1939:12). The road from Christiana to Philadelphia, by way of Newport, Wilmington, and Chester, was the post road, but it was described as a "hilly and rocky road; a better and more pleasant is by New Castle" (Schoepf 1911:376).

The road network in north-central New Castle County also improved due to both population growth and interregional trade. A road known as the "New Munster Road" passed through Newark on its way to Lancaster and was laid out in 1765. The "Limekiln Road" (present-day Limestone Road) was evidently established as early as 1726, and extended from the rich grain producing country of southeastern Pennsylvania to the mills in the vicinity of Stanton. A road from Ogletown to the Elk River was resurveyed in 1774 (Conrad 1908:2:490). From Wilmington, a nexus of roads radiated west, south, and north, connecting the Delaware River with the head of the Chesapeake Bay (Head of Elk), Kent and Sussex counties, and southeastern Pennsylvania. Christiana was a major crossroads town on the road to Head of Elk, and also on the route from Red Lion to New Castle. Newport was the terminus of the Lancaster Road, and a route from Newport westward to Newark was laid out in 1750. By mid-century, the roadbeds of many of the area's present-day state roads (Route 4, 7, and 273; portions



of Pennsylvania's Route 896), were already established.

Farming in the eighteenth century in New Castle County continued to be a system of mixed husbandry, combining the cultivation of grains with the raising of livestock (Bidwell and Falconer 1941:84). Farming was the most important occupation for between 80 and 90 percent of the area's population (Engal 1975:201). Wheat remained as the primary grain produced, followed by rye, corn, barley, oats, and garden vegetables. In many areas, generations of repeated tillage had begun to exhaust the soil, and in general, even judged by contemporary standards, "...the business of the inland farmers at the end of the eighteenth century was ineffectively and even carelessly managed. Only in a few particulars had any noticeable improvements been made over the primitive methods employed by the earliest settlers" (Bidwell and Falconer 1941:84). A French traveler in Delaware at the end of the eighteenth century, reflecting European views of American agriculture, wrote "the farms are in general small and ill-cultivated; they receive little or no manure and are in every respect badly managed. Some English farmers have recently settled in this neighborhood ... they will doubtless make considerable improvements in agriculture" (La Rouchefoucault 1800:511).

Agricultural practices in New Castle County followed an extensive, rather than an intensive, use of the land (Lemon 1967, 1972:169). Not until the 1750's did three-field or four-field rotational patterns of planting, and only occasionally six-field rotation, become prevalent and widespread. Contemporaries reported that, through the use of these rotational patterns, a yield ranging between six and twenty bushels of wheat per acre could be harvested (Tilton 1946; Strickland 1801). The extensive use of the land was based on this wheat production, the most valuable and important trading commodity that the region could export. It has been suggested that this pattern of land use was the result of a lack of adequate labor supply, the availability of inexpensive land, household consumption, the market, and the attitudes of the people of the region (Lemon 1972:179).

Research in southeast Pennsylvania for this time period indicates that on an average farm of 125 acres, twenty-six acres would be in grain; thirteen in meadow for hay; twenty for pasture; eight of nine in flax or hemp, roots, other vegetables, fruits, and tobacco; three for the farmstead; and the remaining sixty acres would be fallow and woodland (Lemon 1972:167; Ball 1976:628).

Studies of the economic development of the region through the eighteenth century (Sachs 1953; Lemon and Nash 1968; Engal 1975; Ball 1976; Ball and Walton 1976) have found the period to be one of modest changes in agricultural productivity. These changes, based on population growth and the rise in per capita income, can be seen in two distinct periods; 1720 to 1745, and 1745 to 1760. Minor fluctuations throughout the century were caused by King George's War, the French and Indian War, and the

nonimportation agreements of 1766 and 1769-1770. In addition, colonists were affected by alternating periods of prosperity and depression. Philadelphia continued to be the major urban center in the region, and from about 1750 until the end of the century was the dominant commercial and social center of the eastern seaboard, with a population that was second only to London.

Main (1973) categorizes the New Castle County area as a commercial farm community, or a community that sold a high proportion of its agricultural produce. For this type of community to exist, good farmland and accessibility to markets were necessary. Main's research found that these communities were characterized by high percentages of wealth, rich men, artisans, professionals and merchants, and a high proportion of large vs. small farmers.

Delaware's manufacturing capacity in this century began to be realized. During the eighteenth century the iron industry, lumber products, and grain milling enterprises continued to grow and prosper. New industries were started that engaged in the preparation of snuff from tobacco, the production of salt from brines in lower Delaware, and the rudimentary beginnings of the textile industry. By the end of the century Delaware was one of the leading manufacturing states and Wilmington was one of America's leading industrial cities. It is evident from research that much of the century was characterized by the stagnated growth of industry due to the effects of first English trade policies, then the Revolutionary War, and finally by the economic uncertainties that followed the War. However, "Locally from 1790 to 1810, commerce prospered as it never had nor would again" (Welsh 1956). This period of increased growth corresponds with the implementation of more sophisticated record-keeping by the Federal Government and thus, much more substantial research is possible.

A report on the industries of the City of Wilmington in 1791 noted the presence of 12 flour mills, 6 saw mills, 1 paper mill, 1 slitting mill, 1 barley mill, and 1 snuff mill. A turn of the century observer commented: "No less than 265,000 barrels of flour, 300,000 barrels of wheat, 170,000 bushels of Indian corn, besides barley, oats, flaxseed, paper, slit iron, snuff, salted provisions and etc. are annually sent from the waters of the Delaware state; of which the Christiana is by far the most productive and probably many times as much so as any other creek or river of like magnitude in the union" (Hancock 1947). Another observer in 1799 recorded the presence of additional mills devoted to the manufacture of linseed oil, a calico printing house, a manufactory of silk bolting-cloth, a hat-making factory, and numerous ship building facilities.

Manufactories that processed iron products also developed. The construction of a forge by Samuel James within the Welsh Tract in 1723 was the earliest successful forge in the Middle Atlantic. In Maryland, the Principio Furnace Company, which was to become the largest iron producing company in the Middle



Atlantic did not begin production until 1734 (Whitely 1887). In Virginia a successful iron works was not established until 1724 (Swank 1884). While Colonel Lewis Morris had operated a bog ore mine at Shrewsbury in New Jersey as early as 1676, it was not until the second decade of the eighteenth century that a truly commercial works was established (Bining 1938). Many of these eighteenth century ironworks were organized into a sort of plantation system with a main ironmaster's house overlooking the forge areas, workshops, storehouses, and worker's housing. While this system was present in Pennsylvania and New Jersey throughout the eighteenth century, little is known about the Delaware system. Two of the early ironworks in Delaware, one established by William Keith in 1722 near Cooch's Bridge and a rolling mill set up by Alan Wood on Red Clay Creek both seem to have been organized under the plantation system. The ethnic ties of the Iron Hill Welsh miners seem to have allowed for a less strict plan of settlement. Outside of the immediate area of the blast furnace and forge, the ironworks in all situations encouraged blacksmiths and other artificers to settle in the immediate region. The bar iron produced by the forges was used by these persons to make tools, implements, and ironware of different sorts. In a largely agricultural area such as New Castle County there was a close connection between ironmaking and agriculture during the eighteenth and part of the nineteenth centuries. The combination of a readily available raw product and a constant market for their products created the need for a large population of blacksmiths and machinists. Thus, northern New Castle County was in the forefront of economic development during the first three quarters of the nineteenth century.

### The Nineteenth and Twentieth Centuries

In the northern Delaware area, the mid-nineteenth century was marked by rapid industrial and urban growth. Population expansion was accompanied by a noticeable decline in the number of people engaged in agriculture. The rapid growth of the population during the early decades of the century forced many new farmers in the Middle Atlantic area to clear and farm lands of poor or marginal quality. Many of these farmers were hard-pressed to turn a profit from their farmsteads, and there was an outmigration of a large portion of the population during the 1820's and 1830's to better lands to the west, particularly in the Ohio River Valley. It has been noted by one author that between 1810 and 1820 the population of Delaware remained stationary and only increased after 1840 (Hancock 1947:374). The loss of jobs related to agriculture was partly offset by the development of new sources of income and employment, particularly in urban and industrial contexts (Taylor 1964a:441; Lindstrom 1979:300). Thus, much of the surplus population that had in previous centuries been farm laborers, tenants, or unemployed, moved into urban and industrial centers where jobs were more plentiful. These trends occurred over the first half of the nineteenth century, and by 1860 were well established.

Urbanization in New Castle County during the first quarter of the century was closely tied to transportation routes and agricultural and industrial production. However, most of the towns of importance in the eighteenth century - Christiana Bridge, Newport, Stanton, Cantwell's Bridge, and Newark - originally settled because of their location on major transportation arteries, remained major marketing, milling and shipping centers for only a brief period into the nineteenth century. As early as 1808, it was reported that Christiana Bridge "was formerly the greatest of all the waters across the peninsula," and that its decline was caused by the numerous mills on the Elk River and its tributaries, the rise of Baltimore and the inexpensive cost of shipping produce to that city, and the development of other water and overland transportation routes more convenient than the one through the town (*American State Papers* 1808, Misc. 1:758). In a more favorable review in 1815, however, it was recorded that Christiana Bridge "is an important place as a depot for goods transporting east or south, as it offers the shortest land carriage between the bays" (*Niles' Weekly Register* IV, 6:93). Clearly, Christiana remained a major crossroads town, but by the late 1820's was no longer the commercial center it had been in the eighteenth century (Cooch 1976).

The fate of Newport in the early nineteenth century was similar to Christiana's. Transportation costs from southeast Pennsylvania to Philadelphia and even Baltimore (by way of the Susquehanna River), became less expensive, reducing the amount of traffic through the town. By 1809 the village was described as "a small village falling into decay. It once contained five taverns and seven stores, which are now reduced to two of each kind" (Scudder 1877:265).

By mid century, spurred first by the construction of the Chesapeake and Delaware Canal, and then by railroad construction, several of the local towns were experiencing a rebirth as transportation and manufacturing centers. Newport retained some of its importance as a transshipment and milling center because of the construction of the Philadelphia, Wilmington, and Baltimore Railroad, which was completed in 1837 (Strickland 1835:225-234; Dare 1856:80). By the end of the century, Newport was a "thriving village of 750 inhabitants ... now as prosperous and progressive as ever" and was fast becoming industrialized as a textile milling center (*Delaware State and Peninsula Directory* [DSPD] 1898:169). Stanton, like Newport, was saved from total decline by the railroad, and by 1900 was also a manufacturing center of woolen mills, flour mills, and fertilizer works. Its population at this time was 279 people (DSPD 1898:198). By 1898, "Ogletown" was a tiny village of only eighty inhabitants, and was strictly an agricultural town. Railroads, canals, and turnpikes had passed it by, and Ogletown did not even possess a bank (DSPD 1898:174). Newark was fortunate to be the home of Delaware State College, later the University of Delaware, and to have two railroads constructed nearby. The town was a manufacturing center like Newport and Stanton, and was located on major



transportation routes.

In the first half of the nineteenth century, methods and routes of transportation underwent substantial changes in New Castle County, as first turnpikes, then canals, and finally railroads were introduced. Throughout the century, improved transportation was the key to urban, agricultural, and industrial development. The first successful turnpike in Delaware was the Newport and Gap turnpike, which was begun in 1808. It was noted in 1809 that the economic situation of Newport was failing and that "the inhabitants hope something from a turnpike road now progressing" (Scudder 1877:264). The Newport and Gap turnpike did slow this process of decay, but it could not halt it.

By 1815, eight more turnpikes, all with roads in New Castle County, had been chartered: the Wilmington Turnpike Company, incorporated 1808; the New Castle and Frenchtown Turnpike Company, 1809; the New Castle Turnpike Company, 1811; the Kennet Turnpike Company, 1811; the Wilmington and Great Valley Turnpike Company, 1813; the Wilmington and Philadelphia Turnpike Company, 1813; the Elk and Christiana Turnpike Company, 1813; and the Wilmington and Christiana Turnpike Company, 1815. It should be noted that economic decline like that suffered by Christiana was often an impetus for the construction of a turnpike. For example, the two turnpikes that were built through Christiana in 1813 and 1815 were attempts to get Christiana 'back on the map', and to provide a viable Baltimore-Philadelphia overland connection. Despite the improved transportation routes listed above, it was found that water travel was still the cheapest, fastest, safest, and most dependable means of transport available (Gray 1961:311).

The most significant canal built in Delaware was the Chesapeake and Delaware Canal, completed in 1829. Originally planned to connect the Elk and Christina Rivers, it was later constructed across the Delmarva Peninsula below New Castle, just north of Reedy Island. The canal was expected to bring wealth and prosperity to the communities of northern Delaware, and in fact, two new towns were constructed, Delaware City and Chesapeake City, at the termini of the Canal. Instead of widespread prosperity, however, the canal contributed to the economic decline of Christiana, Newport, Stanton, and New Castle, as goods previously shipped overland across the peninsula could now be sent more cheaply by water. Even Chesapeake City and Delaware City were disappointed in their expected economic boom, and growth in these towns was slow. Only Wilmington, fast becoming an important regional industrial town, benefited from the Canal. Although not an original purpose of its construction, the Canal also came to serve as a border between two distinct socio-cultural sections of Delaware: the industrial/commercial area of northern New Castle County, and the agrarian communities of southern New Castle, Kent, and Sussex Counties. The Canal would continue to serve in this borderline function throughout the remainder of the century, and does so today.

Railroads came to New Castle County in the 1830's. The first line, the New Castle and Frenchtown Railroad, was constructed in 1832 as a direct result of the opening of the Chesapeake and Delaware Canal, and was an effort to compete with that transportation route (Hoffecker 1977:43). In 1838, the Philadelphia, Wilmington, and Baltimore Railroad was completed, and quickly became the major transportation route across the Delmarva Peninsula (Dare 1856). Throughout the remainder of the century, rail lines continued to be built in northern New Castle County, such as the Baltimore and Ohio, the Wilmington and New Castle, and the Wilmington and Western railroads. As noted previously, the towns of Newark, Stanton, and Newport benefited from their proximity to these railroads, staving off the economic stagnation and decline that were experienced by Christiana, Ogletown, and Glasgow.

New Castle County continued to be predominantly agricultural throughout much of the nineteenth century. In 1815 it was reported that "the greater part of the inhabitants of this state are devoted to agricultural pursuits, and they have rendered it very productive. The principal produce is wheat, rye, indian corn, barley, oats, and flax. Grasses are abundant, and thrive very luxuriantly, furnishing food for many cattle - and every sort of vegetable ... thrives well here. The staple produce is wheat, of which a great quantity of flour is made for export" (Melish 1815:181). At the start of the nineteenth century, however, agriculture in New Castle County was in a dismal situation. Farming practices continued as much they had during the previous century with the use of the four field system of cropping. Wheat was still the dominant crop, the use of fertilizers was infrequent, and a large number of tenant farmers worked the land. Production was, on the whole, quite low during the first quarter of the century. It was estimated that the average return of crops for all of Delaware was five bushels of wheat per acre, ten of corn, and fifteen of oats, despite the knowledge that the use of fertilizers could increase crop yields to forty bushels of wheat per acre and eighty of corn (Allmond 1958:57).

Demand for American agricultural products was high until about 1815. The outmigration of the population that took place at this time can be seen in the tax assessment data for the nineteenth century for White Clay Creek Hundred (Coleman et al. 1984). A steady rise in the number of taxables was observed from 1800 to 1818, with a sudden drop in 1819. The assessments also list many of the taxables as no longer being in the Hundred, and often there is a notation of "gone to Ohio" or "Moved to Indiana". Contributing to these difficulties were the problems presented by the Hessian Fly and Black stem-rust, both of which did severe damage to wheat crops. However, it has been suggested that indirectly the Hessian Fly was helpful to wheat cultivation, because it caused increased attention to be given to fertilization and crop tillage, which increased agricultural productivity (Bidwell and Falconer 1941:96).



The revival of the New Castle County Agricultural Society, one of the first such organizations in the nation, in 1818, encouraged farmers in the use of improved drainage techniques, fertilizers, and machinery. New Castle County was on its way to becoming one of the finest agricultural counties in the United States by 1860. Indeed, between 1830 and 1860, when judged by contemporary agriculturalists, the county was considered to be "far superior to other sections of the state" (Hancock 1947:375), and one newspaper observed that "it will satisfactorily compare, in every respect, with the crack counties in the large neighboring states" (*Delaware State Journal*, June 12, 1846). Fertilization, farm machinery, and improved drainage were helpful in the agricultural success, but the county's rich natural resources, its fine transportation network, and the proximity of cities, were advantages with which other areas, particularly Kent and Sussex Counties, found difficult to compete. A traveler through the region summed this up well when he wrote "the northern portion of this little state is generally a fine tract of country, being highly and skillfully cultivated, and well adapted to the growth of wheat and other grains of superior quality. In a word, this portion of the state presents all that is delightful in agriculture" (Myers 1849:39).

Average farm size remained much as it had been during the eighteenth century, about 200 acres. However, farms of 300 to 400 acres were not uncommon (Bausman 1933:64). Prior to 1900, real estate values for agricultural property ranged from \$50 to \$125 an acre in the Christiana-Ogletown-Stanton area (DSPD 1898). The system of farming employed in northern Delaware was similar to that used in neighboring Chester County, and was either a cropping system, a mixed system, or a grazing system (Bidwell and Falconer 1941:261). Documentary evidence of the W.M. Hawthorn farmstead (Coleman et al. 1984) indicates that the mixed system of farming was used by the occupants of the farm. In this method, a well-watered portion of the farm was kept as permanent pasture and was frequently manured, with the remainder of the farm cropped in a rotation of corn, oats, baley, wheat, and clover. The Chester County system of farming was widely held in high esteem, and a typical farm, following this pattern, probably was clean and well arranged, with well-built fences dividing the farmstead into seven to twelve enclosures, and with neatly-constructed farm buildings located near a spring (Bidwell and Falconer 1941:262).

Livestock production in New Castle County continued to be a major farm occupation in the first half of the nineteenth century (Bidwell and Falconer 1941:394). Prior to 1850, the area of eastern Pennsylvania, New Jersey, and northern Delaware had been known for its cattle-feeding industry. However, it was dairy-farming that began to predominate in New Castle County, particularly because of the need for fresh butter and milk in the urban centers of Philadelphia and Wilmington. By 1847, dairies ranging from 15 to 100 cows were common in northern New Castle County (Bidwell and Falconer 1941:427).

Between approximately 1840 and 1860, southern New Castle County and Kent and Sussex Counties were large producers of peaches, which were shipped by rail and water to Philadelphia, Wilmington, and Baltimore. This "peach boom" was short-lived, however, when a disease called "the Yellows" devastated the orchards. Some northern New Castle County farmers did grow peaches, but the area did not base its agricultural production on this fruit. Thus, farmers in this area were less effected by the peach blight than areas further south. Other fruits, particularly apples, were grown for profit in the northern New Castle County area (U.S. Agricultural Censuses, 1850-1880; Myers 1849:39; Hoffecker 1977).

From 1860 until the end of the century, truck or market gardening and the orchard industry began to predominate in much of Delaware. This trend saw its largest percentage increase in the state between 1889 and 1899, with an increase of 457.2% (Shannon 1945:260). Northern New Castle County did join this agricultural trend, but still grew a large amount of cereal crops. These grains were no longer for export or widespread consumption, but were for local use in the urban centers, and for cattle-feeding.

Tenant farming, which had been quite common in the eighteenth century, became even more prevalent during the nineteenth century. Large land owners, having acquired much of their holdings during the hard times of the 1820's leased their lands to tenants. One author had likened the farm situation in Delaware in the second half of the nineteenth century to that of the antebellum southern aristocracy: "there developed a class of farm owners who not only did little labor themselves, but required that the hired labor render personal services...They lived on their farms and personally directed their farm businesses. Some of them owned additional farms which they either 'carried on' or rented to tenants" (Bausman 1933:165). By 1900 over 50% of all the farmers in Delaware were tenants or share croppers. Over the period between 1880 and 1900 this figure represents almost an 8% increase in farm tenancy (Shannon 1945:418). Tenancy remained a dominant farming practice into the twentieth century.

The growth of non-agricultural businesses coincided with the decline in agricultural pursuits, which was caused by population expansion and outmigration, poor agricultural production in the early years of the nineteenth century, and urban and industrial expansion (Taylor 1964a; Lindstrom 1978, 1979). Lindstrom (1978: 123) found that in 1820 over 76% of the population in the Philadelphia hinterland were farmers by occupation, and by 1840 this number had declined to about 70%. In addition, the income per agricultural worker fell well below that of the non-agricultural worker. At the same time the income of farmers in the region who were able to remain productive was higher when compared with other areas of the nation. Thus, while many farmers were forced to migrate west or into the cities, or become tenants, many farmers who were successful enjoyed a substantial



income and prosperity.

In New Castle County, these changes had brought an end to export crop production, and a real specialization began to occur. New Castle County became an area that specialized in the production of corn, dairy products, fruits and vegetables, and lumber, while producing much less wheat and livestock (Lindstrom 1978:125). By the middle of the century, the county produced goods that were desired by the nearby urban communities supplying perishables such as milk, butter, fruits, and vegetables. This shift from cereal farming to market gardening would continue into the next century.

Regional development during the nineteenth century was much more complex than in the previous decades, primarily due to the great strides in industrialization, urbanization, and transportation that were caused by the Industrial Revolution (Taylor 1964b; Walzer 1972; Lindstrom 1978, 1979). The first half of the century witnessed a noticeable decline in Philadelphia's economic influence over the region, caused by Baltimore's rise, the competition for markets between the two cities, and a drop in the consumption by foreign markets of Philadelphia's agricultural produce. The area responded by diversifying its agricultural production, but primarily it devoted increasingly more of its resources to manufacturing (Lindstrom 1978:122).

While milling continued to be an important occupation in New Castle County, manufacturing of all sorts became common as the century wore on. The variety of manufacturing and milling establishments in northern New Castle County was astounding. In 1815, Niles Weekly Register observed that the White Clay Creek, Red Clay Creek, and Christiana River drainages within Delaware were the power sources for forty-six different mills or manufactories: twenty-four grist mills, ten saw mills, five cotton mills, two woolen manufactories, one paper mill, one slitting mill, one snuff mill, one glazing mill, and one oil and saw mill. Less than thirty-five years later, the number of woolen and cotton manufactories had doubled to fourteen, all steam or water powered, and it was recorded that "the manufactures of Delaware are more extensive than its commerce" (Myers 1849:40). Although Beers' Atlas of the State of Delaware shows only a slight increase since 1815 in the total number of mills and factories in the hundreds of White Clay Creek, Mill Creek, Christiana, and Pencader, the diversification of mill types in 1868 reveals a shift in the number of agriculturally-oriented establishments and a rise in the number of manufactories based on an industrially-oriented economy. As noted above, in 1815 there were twenty-four grist mills and, excluding saw mills, only half as many mills of other types. By 1868, there were nineteen grist mills and, again excluding saw mills, fifteen mills of all other types - iron, cotton, woolen, paper, snuff, spice, bark, and phosphate.

The first official report on the state of manufacturing in the United States was compiled by Tench Coxe for the Year 1810 (Coxe 1814). The report not only provides the first statewide census for manufacturers, but also a breakdown by county for this data. New Castle County was dominant in most aspects of manufacturing and of the twenty-seven categories of manufacturers, sixteen were unique to New Castle County. Manufacturers present statewide included woolen and flaxen goods made at home, fulling mills and looms, tanneries, and distilleries. At this time grist mills produced the greatest value of goods with iron manufacturers second in rank.

The War of 1812 and the Embargo Acts that preceeded it proved a great stimulus to manufacturing in Delaware, especially in textiles (Munroe 1978). Much of the reemergence and success of both industry and agriculture in Delaware can be attributed to improved transportation facilities beginning in the 1830's. The linking of Wilmington by railroad with Baltimore and Philadelphia in 1837 provided not only Wilmington, but also its hinterland, with excellent markets both for the purchase of raw materials and the sale of finished products. Contained within this hinterland was also a sizable population of skilled mechanics and machinists who were able to perform the skilled technologies. This combination of good transportation, a large labor pool, and a ready supply of raw materials allowed industry in northern New Castle County to grow and diversify very rapidly. It has been pointed out that, "a notable aspect of the industrial pattern in Wilmington was the interrelationship among the local industries" (Hoffecker 1974:27). This pattern benefited greatly not only manufacturers in Wilmington, but also the small businesses that were established surrounding the city. With good railroad facilities, requested goods could be delivered within the same day, even from Philadelphia. The carriage manufacturing business represents the process well with leather tanners, foundaries, and wheel shops providing the necessary parts that then only needed assembly. Subsequent sale was usually via railroad to Southern markets or to the government during the Civil War when lucrative contracts for wagons and gun carriages were received (Hoffecker 1974). Other successful businesses also followed this pattern of the shipping of their products for out of state sale. Favorable conditions allowed Wilmington to become a leading manufacturer of transportation related equipment such as carriages, railroad cars, and iron ships. In 1853 the majority of workers in Wilmington were employed in cotton manufacturing, iron-casting, wheel making, railroad-car manufacture, shipbuilding, carriage making, leather tanning, and cooery.

At the turn of the twentieth century. America's industrial economy had become truly national in scope; however Delaware was falling behind the rest of the nation (Hoffecker 1977). Many of the successful firms in Wilmington were bought by large, national companies and the others went bankrupt due to competition from the Midwest. Nonetheless, in 1907, Wilmington stood seventh in manufacturing in the United States according to population, and had a greater diversity of industries than any other city in the



United States. In sum, the historical record of the study area shows a developing commercial agriculture and increasing urbanism. This increasing urbanism had accelerated in recent years and is ultimately the cause of the historic archaeological research described here.

## ARCHAEOLOGICAL INVESTIGATIONS AT THE ROBERT FERGUSON HOUSE

Ellis C. Coleman, David C. Bachman, Wade P. Catts,  
and Kevin W. Cunningham

The following paper presents the results of archaeological research at the Robert Ferguson House near Ogletown (Figure 1). The research was undertaken by archaeologists from the Delaware Department of Transportation during the summer of 1981 because the house and associated yard areas were scheduled for direct impact by the proposed widening of Route 4 (Figure 4). The house structure was eventually demolished prior to final construction. Initial testing of the site was undertaken by Middle Atlantic Archaeological Research, Inc. (Thomas 1980) and indicated that intact features and artifacts were present. Subsequent research by DelDOT archaeologists focused on the identification of the features, structures, and associated artifact distributions.

### Architectural Description

The Ferguson House was representative of the development of building techniques from the early nineteenth through twentieth centuries (Figure 5). The interior trim and construction details suggest that the two-story, two bay west portion of the residence was constructed in the nineteenth century. This single-pile, 21 ft.X 16 ft. section, featured an interior gable end chimney, box cornice, field stone foundation, and a full basement. Unlike the other portions of this structure, its framing consisted of mortise and tenon joining. A lower, two story, one-room deep section, 18 ft.X 16 ft., adjoined the earlier structure and retained its original six-over-six double hung sash windows and interior end chimney. Examination of the original hardware found in this section and its building techniques suggests a mid to late nineteenth century construction date. A twentieth century basement had been added under this section to house heating equipment. Sometime in the early twentieth century, circa 1940, a third section was added to the east end of the structure.

The interior of the structure had retained its original molded door and window surrounds, baseboard trim, four-paneled doors, and painted fireplace mantels. The staircase wall within the earliest section retained its original vertical sheathing with beaded edge. The staircase railing featured a square handrail and balusters and terminated with a columnar newel post surmounted by an Ionic capital with an egg-and-dart motif.

### Documentary Research

The earliest deed of record relating specifically to the Ferguson property dates to January 27, 1684 when John Kirksey petitioned the Commissioners of Property for a warrant to a 300 acre tract of land called "Midland". This warrant was purchased



FIGURE 4  
Robert Ferguson Site Map

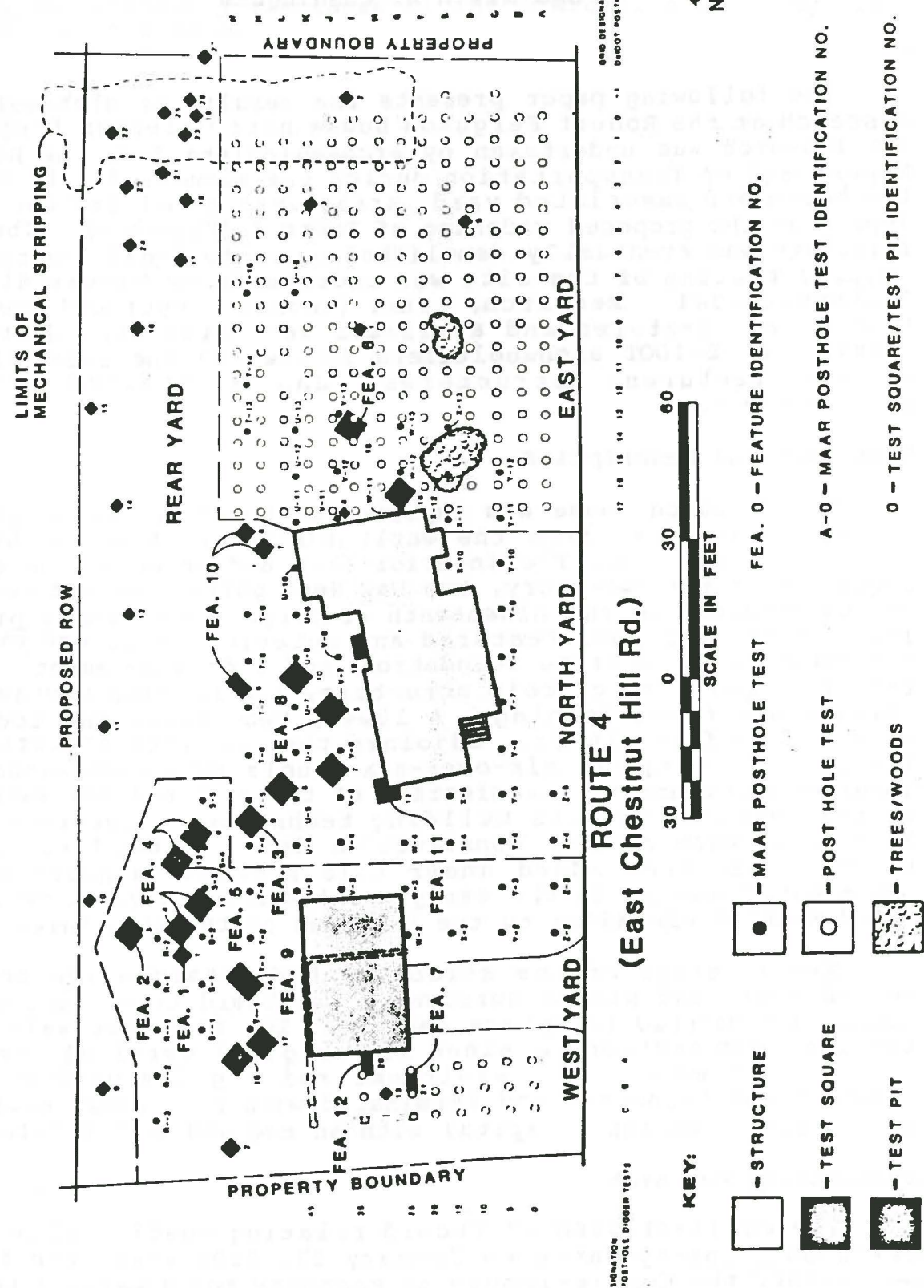
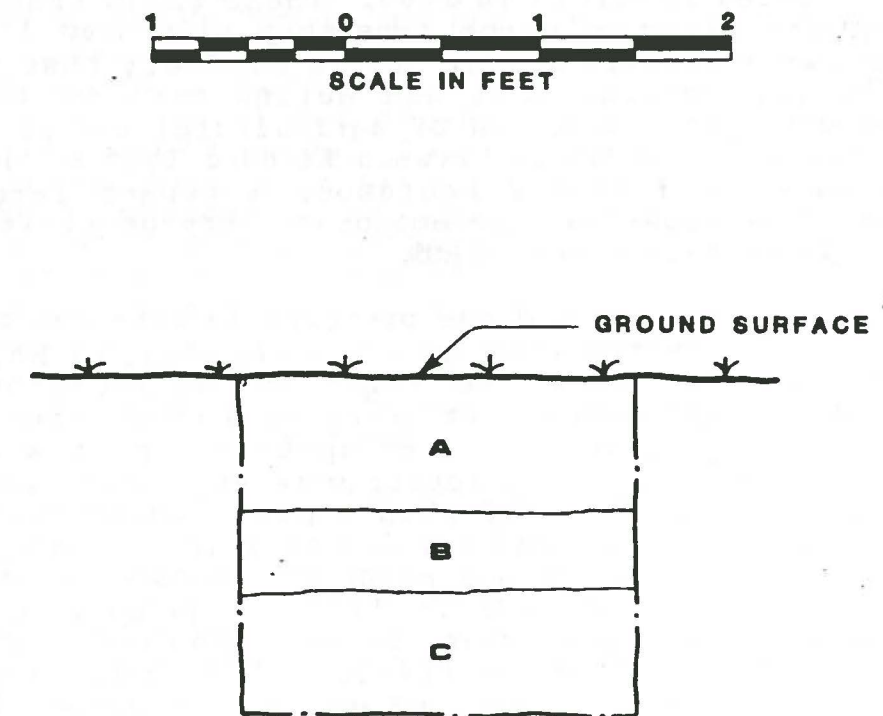


FIGURE 5  
East Yard Profile – Robert Ferguson Site



KEY:

- A - 10YR. 3/2.5 VERY DARK GRAYISH BROWN HUMUS WITH SOME ARTIFACTS
- B - 10YR 3/4 DARK YELLOWISH BROWN SANDY LOAM WITH FEW ARTIFACTS
- C - 10YR 4/6 DARK YELLOWISH BROWN CLAYEY LOAM - STERILE SOIL



on August 13, 1685 by Charles Bailey, who obtained a patent to the land as a result of a land survey dated June 11, 1686. The 300 acre tract, still called "Midland", extended northward to Back Creek, a still extant tributary of the White Clay Creek.

This tract of land changed ownership a total of 13 times between the survey of Charles Bailey in 1686 and the purchase of the tract by Samuel Bradford in 1769. These rapid transactions represent an era of speculative ownership witnessed throughout northern Delaware (Scharf 1888). It is unlikely that the land was improved for agricultural use during much of this time period. The earliest indication of agricultural use of the land is a 1761 article of agreement between Richard Thomas, then owner of the property, and Thomas Robinson, a tenant farmer. No details were given regarding the amount of acreage tilled, crops raised, or improvements to the land.

Samuel Bradford purchased the property in 1769 and then died in 1774. His will stated that he was a resident of White Clay Creek Hundred at the time of his death and an inventory dated October 23, 1775, indicated that he owned a house containing a common room, a lodging room, and an upstairs, plus a barn and crops in the field. Among the latter were 66 bushels of rye, 11 bushels of oats, 42 bushels of wheat, plus Indian corn in the field, wheat in the ground, and hay and flax in the barn. Income tax assessment records for Samuel Bradford's estate dated 1777 to 1794 show values of 10 pounds in 1777, 20 pounds in 1786, 8 pounds in 1794, the last year Samuel Bradford appears in the listing. Jackson T. Main (1973:32-33) indicates that a substantial farm owner of this time would be assessed 10 to 50 pounds and a poor farmer assessed less than 6 pounds. Thus, Samuel Bradford's estate would be classified in the lower end of the "substantial" scale but above the "poor" designation.

His son James Bradford is listed in the 1798, 1801, 1803, and 1807 tax assessment records with a single holding, a 150-acre parcel in White Clay Creek Hundred. This is assumed to be land inherited from Samuel Bradford. It is also assumed that James is residing on the property, since no other properties are listed in his name, and that he is residing in the house mentioned in Samuel Bradford's inventory of 1775. This places a dwelling on the property by 1775. On the 1816 tax assessment list, James Bradford's estate is listed as containing 157 acres near Christiana Bridge (present day Christiana) in the tenure of J. Davis. Of the acreage, 137 are listed as improved, with 29 acres of woodland. Included in the improved land is one log dwelling and a barn. If this is the dwelling mentioned in the 1775 inventory of Samuel Bradford, then it is too early to be the Robert Ferguson house. It is known that the Ferguson house is not a log structure; therefore, it is felt that the former Lynch farmstead, located near the Ferguson house, is the dwelling mentioned in the Samuel and James Bradford documentation.

Although the 1816 tax assessment records suggest that James Bradford was a prosperous yeoman farmer, other information

provides a different interpretation. In 1822, John Reed purchased the property, the proceeds of which went toward satisfying a debt of \$2,750 owed by Bradford's estate to the Farmers's Bank of Delaware. The White Clay Creek Hundred tax assessment for 1828 lists John Reed as taxable for one 145 acre tract of land with a log house and barn assessed for \$2,900. It thus appears that the structure known as the Ferguson house had not yet been built. An inventory made on March 22, 1833 for a public sale of Reed's "goods and chattels" gives some information about his possessions and agricultural land use. Among the items on the list are 50 bushels of corn, 105 1/2 bushels of oats, 175 1/2 bushels of corn, 1 lot of wheat in the ground, 1 shoat, 2 cows, 1 calf, and 13 sheep. The crops are all very typical of what was grown throughout New Castle County during this time period. More interesting are the 13 sheep owned by Reed at the time of the sale. Along with peaches and silk-worms, sheep were the livestock some farmers turned to for quick wealth when faced with competition and lowered profits from the more ordinary crops such as wheat and corn. After Reed's death in 1833, his wife Hannah appealed to the New Castle Orphan's Court for widow's dower. In 1834 she became the wife of Joseph Cranston, who sold the property to Robert Ferguson in the fall of 1834.

The tax records for 1835 show that Robert Ferguson was assessed for 145 acres, a log house and a frame barn. The valuation is given at \$2,900. In 1837, he is assessed for 144 acres, 2 frame houses and 2 frame barns. The valuation is \$4,317. It is concluded that the additional dwelling mentioned in the 1837 list is the Ferguson House.

Very little is known about Robert Ferguson, for whom the house and site are named, and who owned the property from 1834 to 1870. The Rea and Price map of 1849 and Beer's Atlas of 1868 show the Ferguson property as lying on both sides of Route 4 with structures present on both sides as well. In the U.S. Census for Agriculture, 1850 Robert Ferguson, Sr., born in Scotland is recorded in White Clay Creek Hundred. He is listed under occupation as a "gentleman", with a 144 acre farm valued at \$10,000 and one slave and one bonded servant. His son, Robert Jr. is tabulated next as a farmer and manager of the above farm. It is probable that Robert Sr. was living in the former log dwelling house of James Bradford and Robert Jr. was living in the Ferguson House.

The property was sold by Robert Ferguson to Jacob Currinder in 1870, who held the land for only three years before selling it in 1873 to Robert J. Morrison. Tax assessment records for 1881-1885, 1893-1897, and 1897-1901 provide significant information on the property during this period. In 1881-1885, a frame house, a frame barn, and a tenement are listed. It appears that the log dwelling, now framed over, is still the living quarters of the farm owner (Morrison), and that the tenement corresponds to the Robert Ferguson House. Assessments for the period 1881-1901 show a decrease of the property value by one-half. The reason for this sharp decline is not known. Baist's Atlas of 1893 shows the



144 acre property as being occupied by three structures, two on the north side of Chestnut Hill Road and one on the south side. These represent the Robert Ferguson House and the barn known from archaeological and informant information (north side) and the ca. 1774 structure (south side).

The pattern of the owner of the property living on the south side of Route 4 (Chestnut Hill Road), with the structure on the north side (Ferguson House) rented out is also present during the period 1920-1943. During this time the owner, Jasper Lynch, lived in the structure on the south side of the road while his parents resided in the Ferguson House. Charles Lynch, Jasper's nephew, recalls much about both of the structures present and of the land use of the property during the period 1920-1960. During this time a small barn was present in the area of the present garage. The barn had a drive-in shed for a wagon and two box stalls for horses or mules with a small second story for storage of animal feed. Sometime in the mid-1940's this structure was moved to the adjacent lot on the west and converted to a private residence. This building was demolished in 1979 after falling into ruin. Also present during the period 1920-1943 was a "very old" chickenhouse, located behind the presently standing garage. The only other structure present within the yard area was an outhouse, present at the intersection of the eastern fence row and the edge of the yard. As in other rural locations, the privy was dug out periodically, and the contents were spread over the adjoining field.

Mr. Lynch stated that the crops raised during this period were very similar to that described for a much earlier period, i.e. 1830-1960. Cereal grains, principally corn, wheat, and alfalfa were the most important crops grown throughout the period, providing a fairly stable income. His uncle, like many farmers in the area, practiced extensive truck farming of fruits and vegetables. During the growing season, daily trips were made on Route 4 transporting these goods to the markets in Wilmington. The income from this provided the "get ahead" money for the family.

## RESULTS

Discussion of the results of the excavations will be divided by yard areas (Figure 4). Within these yard areas, the following excavation units were used: 2 ft. X 2 ft. test pits, 5 ft. X 5 ft. test squares, and shovel test pits. Locations of all excavation units are noted in Figure 4.

### East Yard Area

A stratigraphic profile typical of the East Yard Area is shown in Figure 5 (Test Pit 4). A disturbed/plowed topsoil approximately 0.75 ft. in depth is underlain by yellow and yellow-brown clayey loams. The plowzone and the upper part of the subsoil contained non-diagnostic redware, porcelain, whiteware, bottle glass, window glass, nails, and other metal

fragments. Test Pit 3 contained an ash layer from 5 in. to 8 in. below the surface which yielded non-diagnostic redware and window glass. A buried organic horizon was found between 16 in. and 20 in. below the surface but it contained only non-diagnostic redware and whiteware, bottle glass, and window glass fragments. Test Pit 5 contained very little in the plowzone, but sizeable amounts of redware, pearlware, and creamware in the subsoil suggesting that trash deposition may have occurred earlier here than in other areas of the East Yard Area.

A test pit grid in the east yard area: 1) located a previously unknown ash deposit buried beneath the plowzone, 2) relocated and identified the "stone feature" reported by Thomas (1980) as a stone rubble wall running east-west along the northern edge of the yard area, 3) verified that the east yard area was thoroughly disturbed through plowing and/or landscaping with the exception of a single intact deposit located beneath the disturbance (Feature 6). Excavations also provided distributional data on artifact concentrations within 5 ft. of the modern kitchen and along the buried stone wall.

To further identify and clarify the feature and artifact densities determined from shovel testing, Test Squares 16 and 18 were excavated in the east yard. Test Square 16 was placed adjacent to the southeastern corner of the foundation in an area of high artifact density (Figure 4). Heavy intermixing of soils and artifacts characterized the first 1.25 ft. below surface. Among the artifacts recovered were a prehistoric quartz side-notched projectile point, a ceramic pipestem fragment from circa 1850-1880, and twentieth century plastic fragments. Undisturbed soil was found from 1.25 ft. to 1.55 ft. below the surface and contained mid-nineteenth century hand and finger-painted pearlware and mid-nineteenth century shell-edge whiteware sherds.

Test Square 18 was excavated to identify the nature and extent of the trash pit/ash feature located in shovel tests. Located at the bottom on the 0.75 ft. thick plowzone was the previously identified 0.4 ft. thick ash layer (Feature 6). The bottom of the irregularly shaped feature contained numerous decomposed graniteware sherds, large redware sherds, and bricks resting on sterile subsoil. The deposition of this feature occurred after 1850, based upon the presence of a pipestem manufactured ca. 1850-1880 and hand-painted whiteware.

### North (Rear) Yard Area

The northern boundary of excavation was determined by the proposed right-of-way, and a series of test pits were excavated at 20 ft. intervals. Most of the test pits contained a mixture of nineteenth and twentieth century artifacts in the plowzone, which overlay a sterile subsoil. Approximately 75% of the artifacts recovered from the plowzone were from the nineteenth century and 25% were from the twentieth century.



Test Pits 9 and 10 (Figure 4), located in the northwestern corner of the north yard area, yielded a high density of artifacts compared to other excavations along the proposed ROW line. Almost all of these were twentieth century artifacts, including miscellaneous window and bottle glass and nail fragments. This area, being in close proximity to the chicken house and blocked from view of the main house, would have provided an ideal trash disposal area.

Test Pits 6, 7, and 8 were excavated to identify the extent and construction, as well as the associated soil stratigraphy, of a stone wall (Feature 10) running through this area. Test Pit 6 revealed that the wall was 1.5 ft. in width, 1.25 ft. in depth and composed of medium to large quartzite cobbles with loose mortar and brick fragments placed in the interstices (Figure 6). Excavation north of the stone wall was taken to 1.3 ft. below the surface and revealed a plowzone containing a mixture of nineteenth and twentieth century artifacts underlain by a sterile yellow-brown clay loam.

Test Square 5 was excavated northeast of the original back door (west section of house), approximately 3.75 ft. from the building's foundation corner. A heavy concentration of small rocks and bricks was distributed in a southwest-northeast trending band in the unit (Figure 7 - Feature 8). Artifacts were found on both sides of the stone feature to depths of 1.5 ft. below the surface. The majority of recovered material was nineteenth century ceramics with a lesser amount of nails and nail fragments. No twentieth century artifacts were found. The hypothesized function of the stone feature is that of a walkway connecting the rear hall door of the structure with either the well or another structure which existed in the area of the present kitchen and back porch. This walkway was already covered from view in the 1920s and is not within Jasper Lynch's personal memory or period of which he has knowledge (1860-present). Thus, it probably dates to an earlier occupation of the site.

#### West Yard

The purposes of archaeological excavation in this area were: 1) to completely excavate the stone feature identified by earlier testing; 2) to test for outbuildings or features; 3) to determine the location, integrity, and extent of the barn depicted on Beer's 1868 atlas and known to former residents. Test Pit 13 provided stratigraphic evidence to support the extensive filling hypothesized for this area. The soil was a homogeneous brown sandy clay which contained only four artifacts, suggesting a single episode of filling. Later archival and archaeological evidence indicated that this unit was within the limits of the demolished barn. Test Square 2 revealed a plowzone 0.8 ft. in depth which contained non-diagnostic metal fragments, brick, bottle glass, and wire and cut nail fragments. A sterile clayey subsoil extended to a depth of 2.0 ft. below the surface.

FIGURE 6  
Feature 10 - Robert Ferguson Site

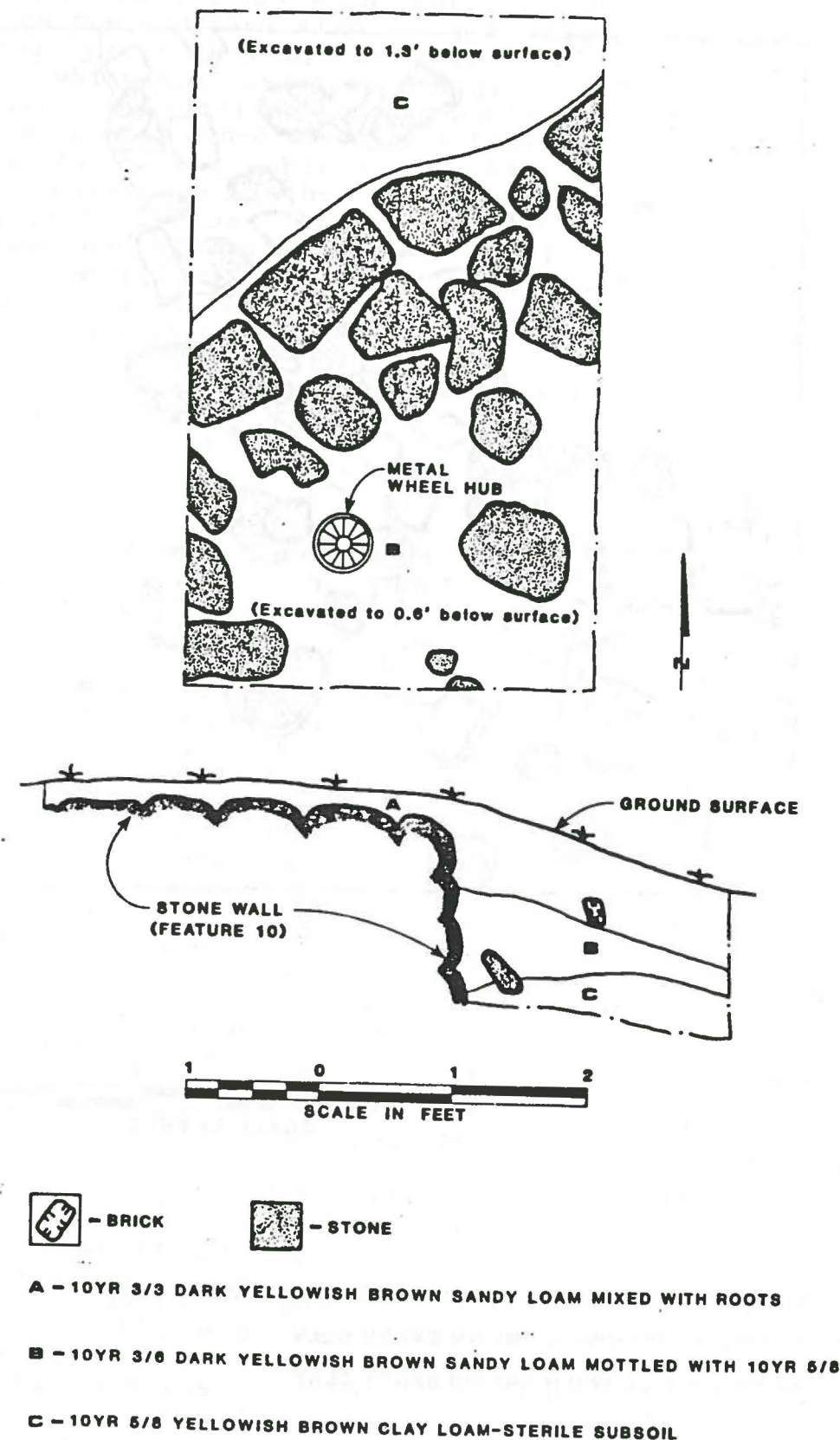
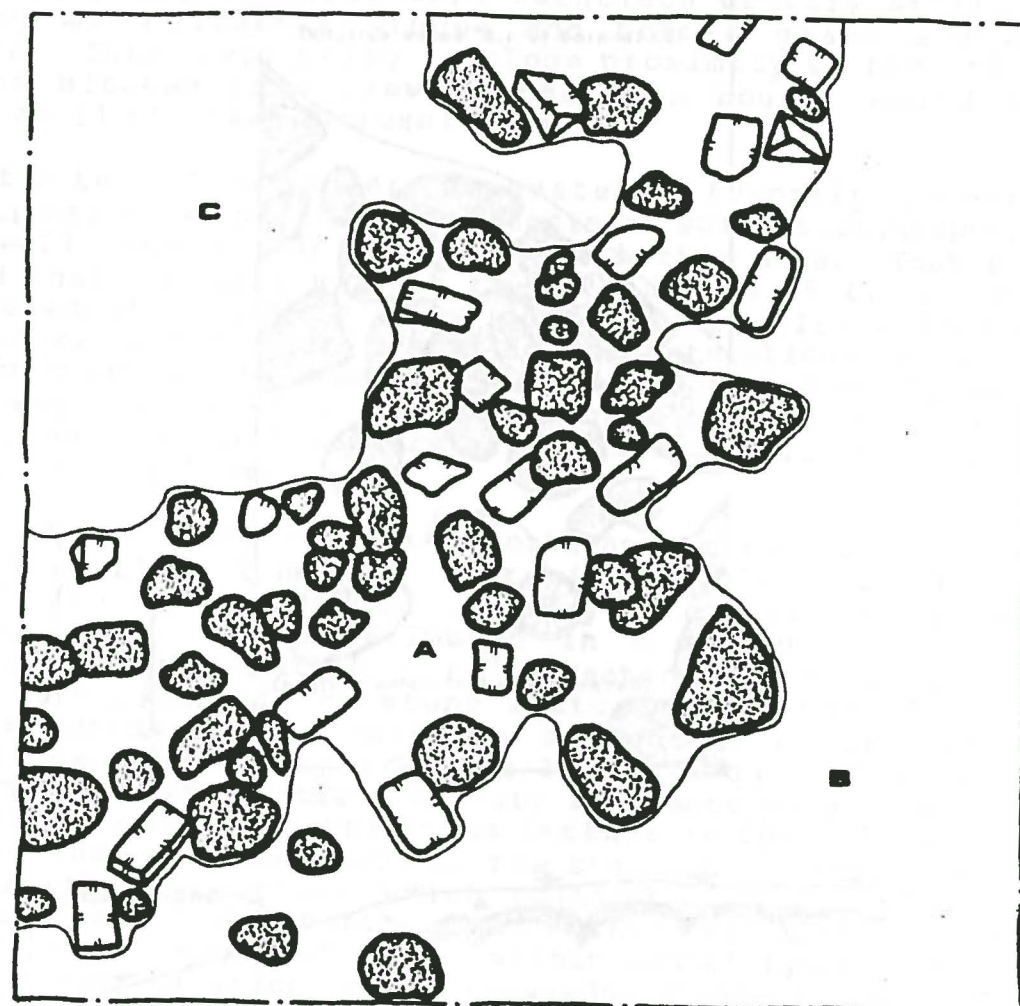
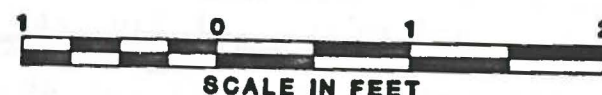
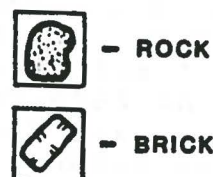




FIGURE 7  
Feature 8 – Robert Ferguson Site



KEY:



- A - 10 YR 4/6 MOTTLED DARK YELLOWISH BROWN SANDY CLAY  
B - 10 YR 5/4 YELLOWISH BROWN SANDY CLAY  
C - 10 YR 5/6 YELLOWISH BROWN SANDY CLAY

Test Square 1 was excavated in close proximity to an early postholer test, which had located foundation and building debris. In the northeast corner of the unit a wall was located at a depth of 0.45 ft. to 0.8 ft. below the surface. At the same level and adjacent to the concrete slab was a shallow, dish-shaped midden containing oyster shells, numerous metal fragments, and non-diagnostic whiteware, redware, and glass. The feature appeared to be reworked by water action and subsequent topsoil deposition. Sparsely scattered non-diagnostic artifacts were found to a depth of 1.6 ft. below the surface, the last 0.7 ft. consisting of clayey subsoil. To further identify features present in the vicinity of Test Square 1, Test Square 3 was laid out over a visible surface depression (Figure 4). Excavation identified an irregularly shaped soil disturbance approximately 3 ft. by 3 ft. and 1 ft. in depth. Artifacts contained within the feature were mostly of twentieth century origin.

The foundation remains identified in Test Square 1 were further investigated by the excavation of Test Squares 4 and 11 (Figure 4). The rubble wall located in Test Square 1 was also found in these units and was covered by a lens of ash and demolition debris containing very few artifacts. Below this was encountered a well-defined dry-laid stone wall, Feature 4, trending southwest-northeast through the squares. The ash deposit is interpreted to have been formed after 1943, when the structure on the foundation, a frame chicken house, was demolished.

In order to investigate an area of the site not previously tested, a grid system was established west of the extant garage and posthole digger tests were excavated at 5 ft. intervals. This located the foundation remains of a barn structure which informants (Alice Weber and Charles Lynch) and maps indicated was present ca. 1893-1940. Shovel tests located the foundation, which consisted of small cobbles loosely bound together by soil and mortar. Test Square 20 revealed that the foundation wall extended to 1.6 ft. below ground surface and consisted of quartz and quartzite boulders mortared together. No evidence of a builders trench was observed and artifacts located within the unit provided only a general interpretation of the time of construction. The structure appears to have been erected in the early to middle nineteenth century.

INTERPRETATIONS

The archaeological data base provided by excavation of the Ferguson House site proved generally unreliable for socio-economic or detailed temporal interpretation. It is apparent that the site had undergone extensive disturbance and mixing from plowing and twentieth century landscaping. With the exception of Feature 6, the east yard area was found to be totally disturbed by plowing and landscaping. The north yard area contained two features and squares comprised of poorly-stratified nineteenth and twentieth century deposits. A similar situation



was encountered in the west yard, where intact structural features were located. Unfortunately, these features were not associated with diagnostic artifacts.

Even though the site stratigraphy was disturbed, the mapping of selected artifacts by test units did define non-random deposition areas within the site (Figures 8-14). Seven general artifact types were mapped: creamware, pearlware, whiteware/ironstone, cut nails, wire nails, bottle glass, and window glass. It was hoped that the distribution of these artifacts would shed light upon the periods of construction and occupation of the three sections of the Ferguson House, as well as patterns of yard use. The following general statements can be made:

### Ceramics

Creamware (Figure 8). Sixty-two out of a site total of 70 sherds were found in Test Square 7 and 10, to the right and left of the back door of the western section of the house with the hall/passage plan.

Pearlware (Figure 9). Ninety-seven out of a site total of 214 pieces (45%) were found in Test Squares 5, 7, 10, in a location similar to that of creamware. Pearlware was also found in smaller quantities in Test Squares 16 and 18, and Test Pits 4, 7, and 8, east and north of east, or kitchen, section of the house. Pearlware is the first non-redware ceramics to show up in these units and could represent a redeposition of earlier materials when the eastern kitchen, section was constructed.

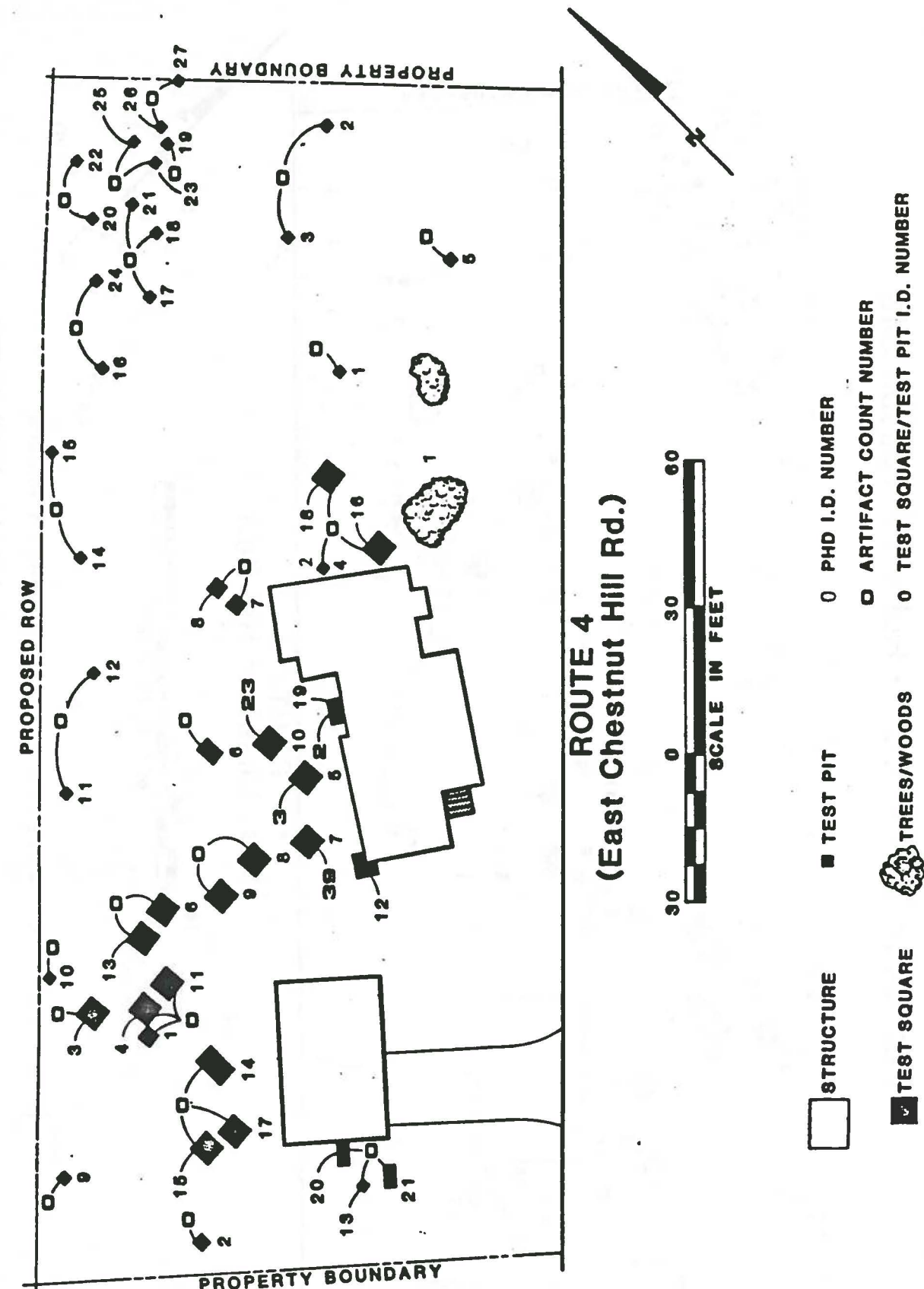
Whiteware/Ironstone (Figure 10). This ceramic type is very common and notable concentrations occur in Test Squares 9 (94 pieces), 16 (126 pieces), and 18 (53 pieces). Creamware/pearlware deposition and whiteware/ironstone deposition is concentrated farther from the house and in the east yard area near the east kitchen section. The location of the creamware and pearlware suggests it was being discarded a few feet out the back door of the western section, while the later whiteware/ironstone was being carried to a deposition point a little further from the house.

### Glass

Window Glass (Figure 11). Window glass is most common very close to the house and some distance from the house. Examples of the former are Test Squares 10 (98 fragments), 12 (270 fragments), and 19 (130 fragments). Examples of the latter are Test Squares 3 (90 fragments), and 13 (131 fragments). These high frequencies possibly represent broken windows and trash deposits.

Bottle Glass (Figure 12). Bottle glass occurs in almost all test units. The largest amounts occurred behind the original barn (Feature 13) and in Test Squares 3, 13 (including Feature 5), 15,

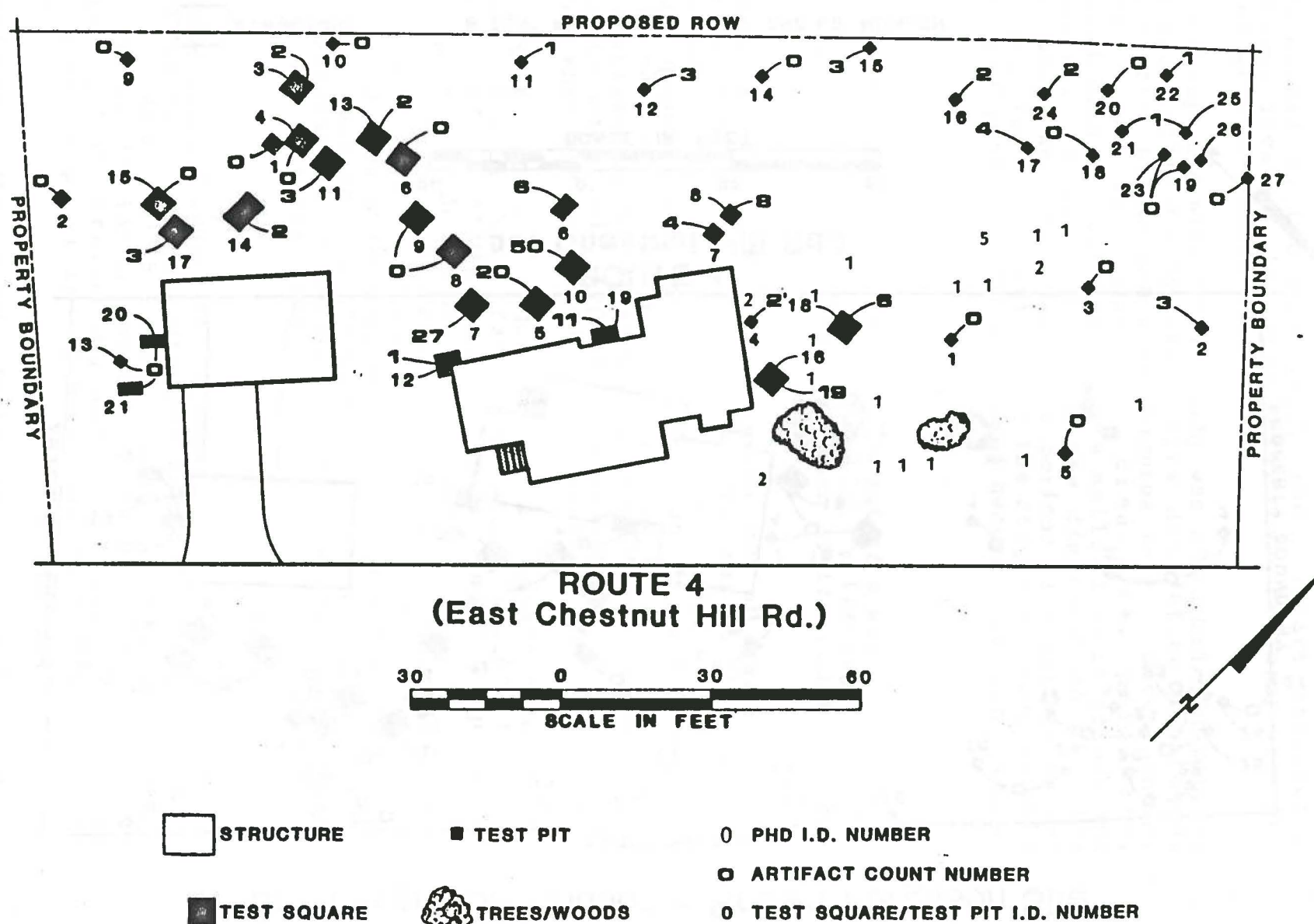
FIGURE 8  
Creamware Distribution - Robert Ferguson Site





35

FIGURE 9  
Pearlware Distribution – Robert Ferguson Site



36

FIGURE 10  
Ironstone and Whiteware Distribution – Robert Ferguson Site

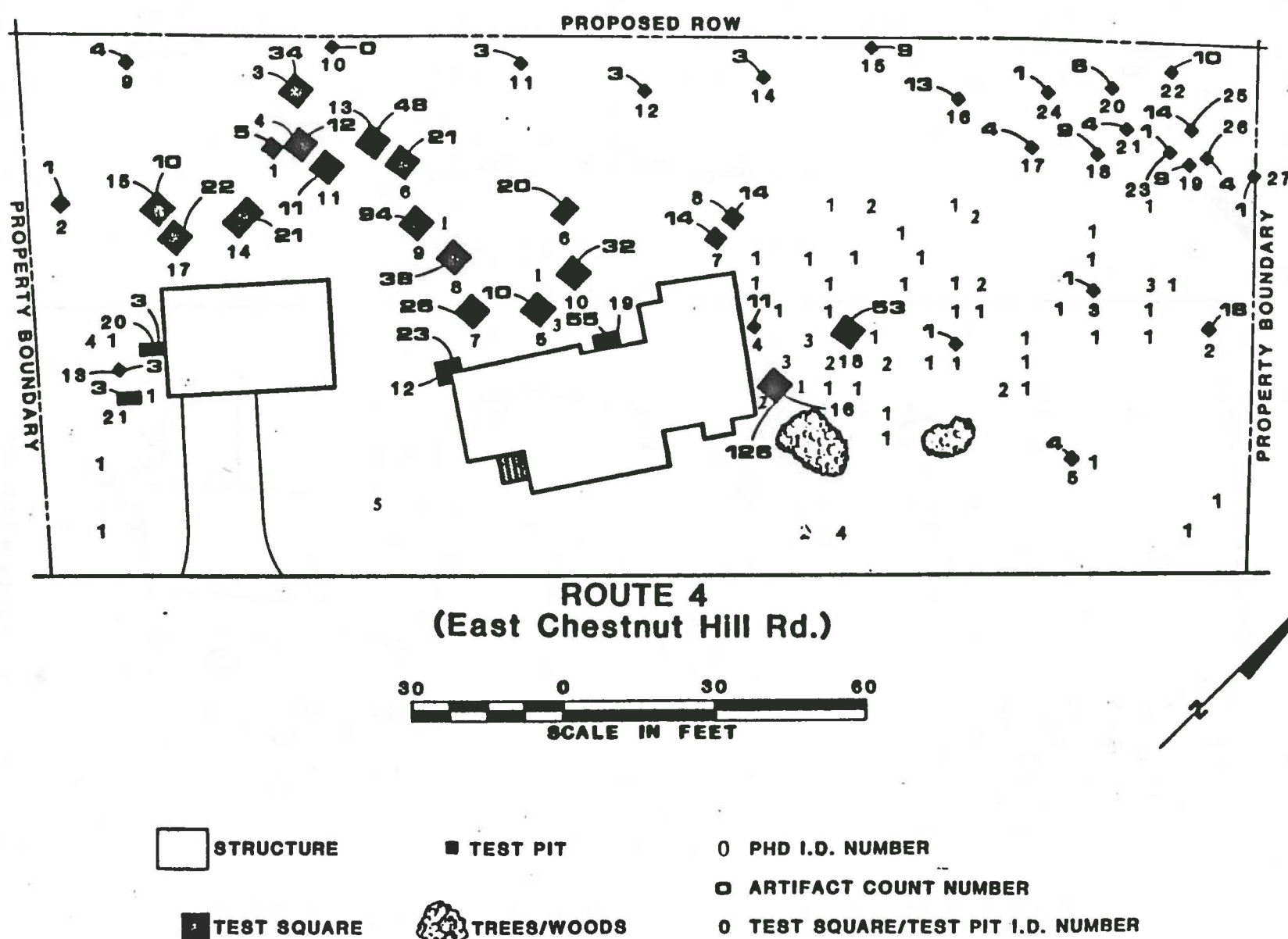
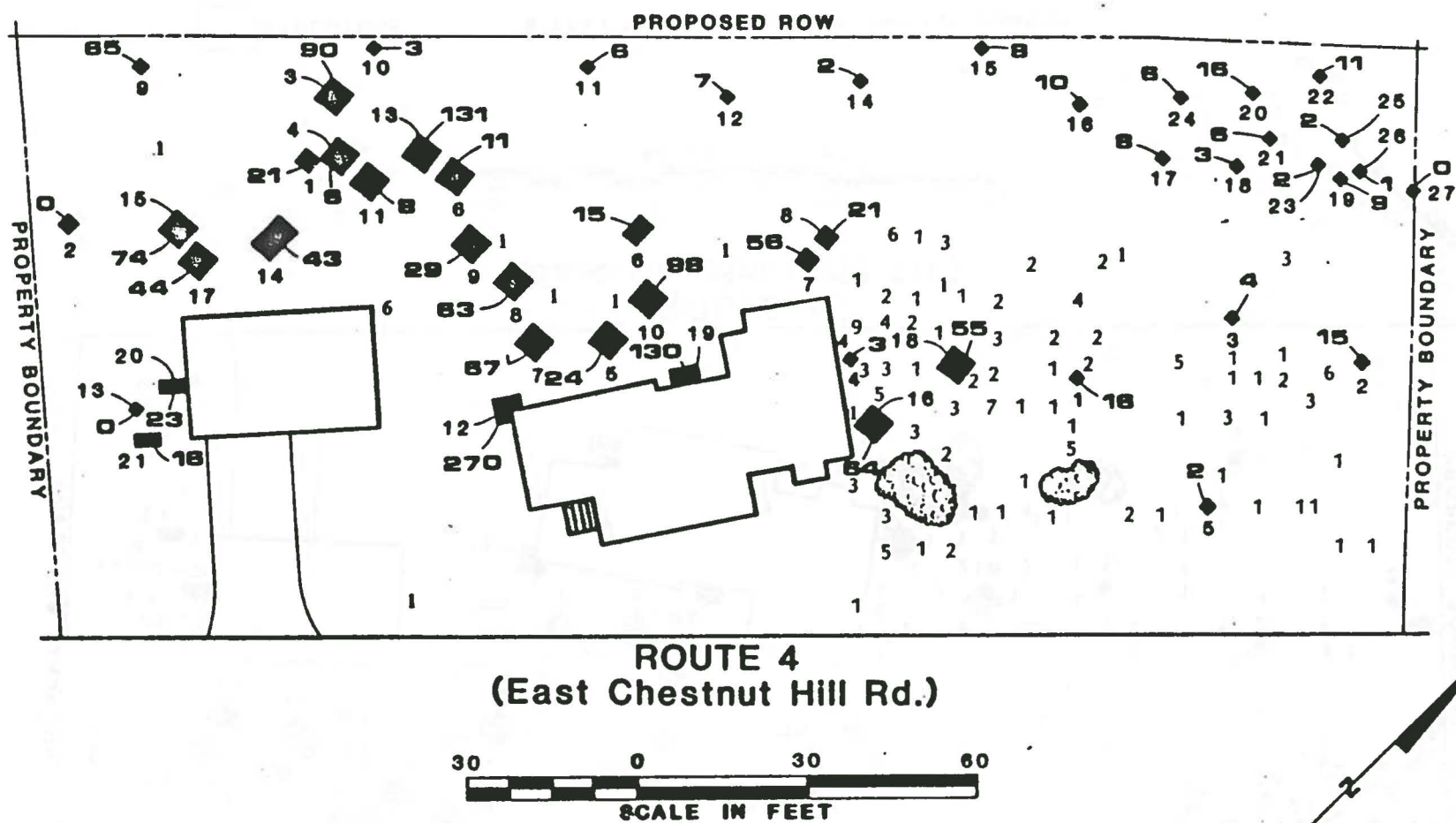
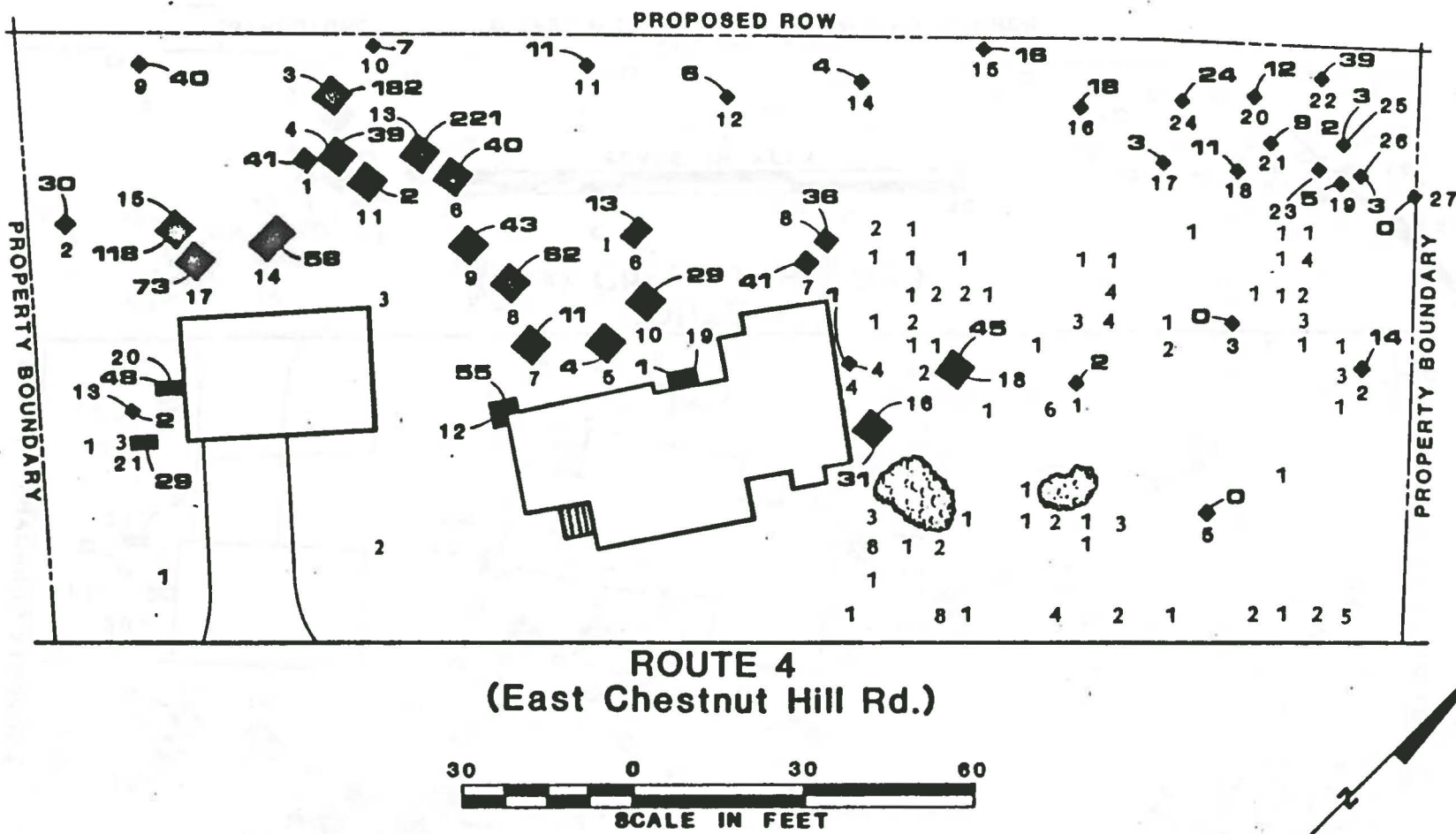


FIGURE 11  
Window Glass Distribution – Robert Ferguson Site



- STRUCTURE
- TEST PIT
- PHD I.D. NUMBER
- ARTIFACT COUNT NUMBER
- TEST SQUARE
- TREES/WOODS
- TEST SQUARE/TEST PIT I.D. NUMBER

FIGURE 12  
Bottle Glass Distribution – Robert Ferguson Site



- STRUCTURE
- TEST PIT
- PHD I.D. NUMBER
- ARTIFACT COUNT NUMBER
- TEST SQUARE
- TREES/WOODS
- TEST SQUARE/TEST PIT I.D. NUMBER



FIGURE 13  
Cut Nail Distribution – Robert Ferguson Site

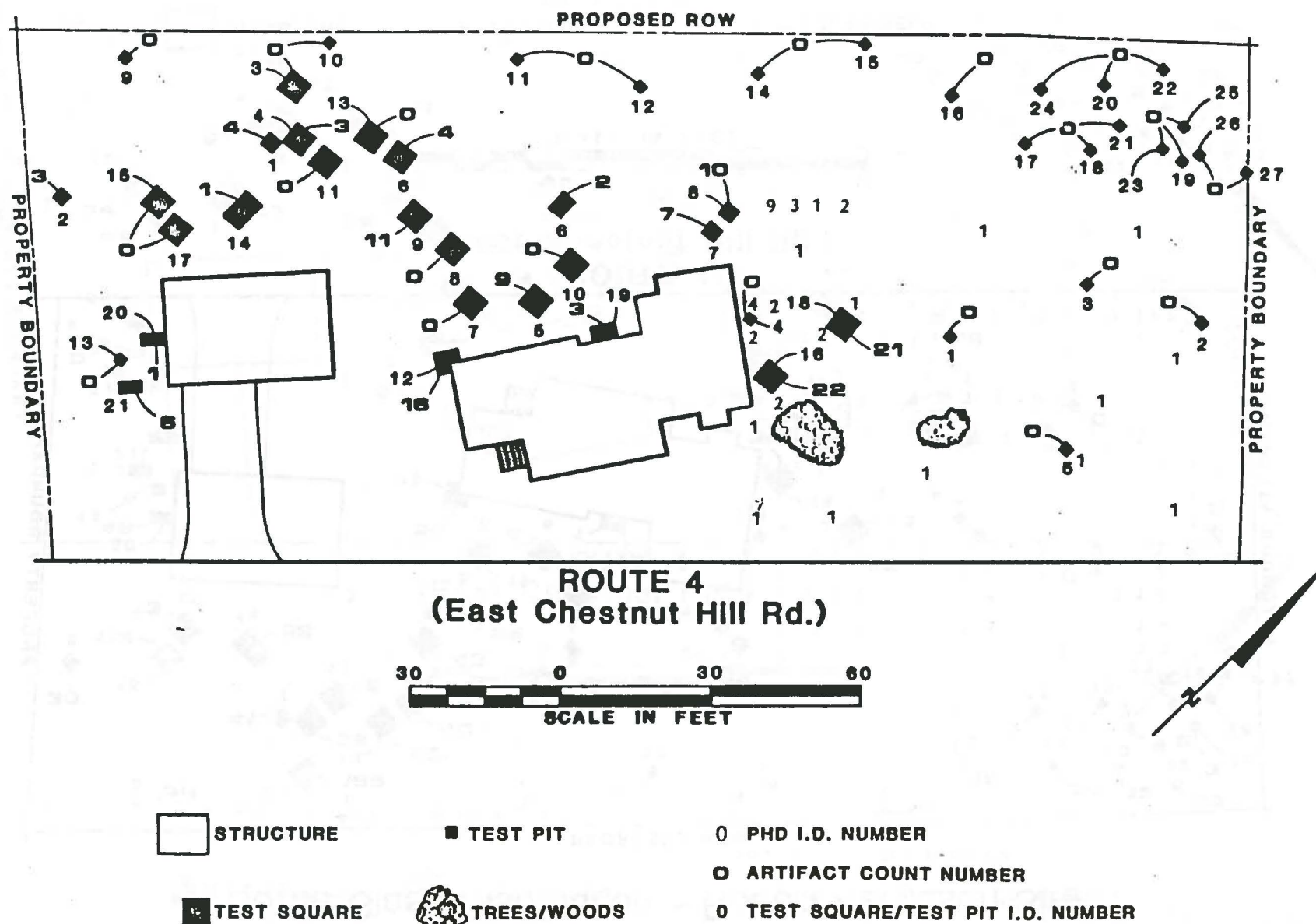
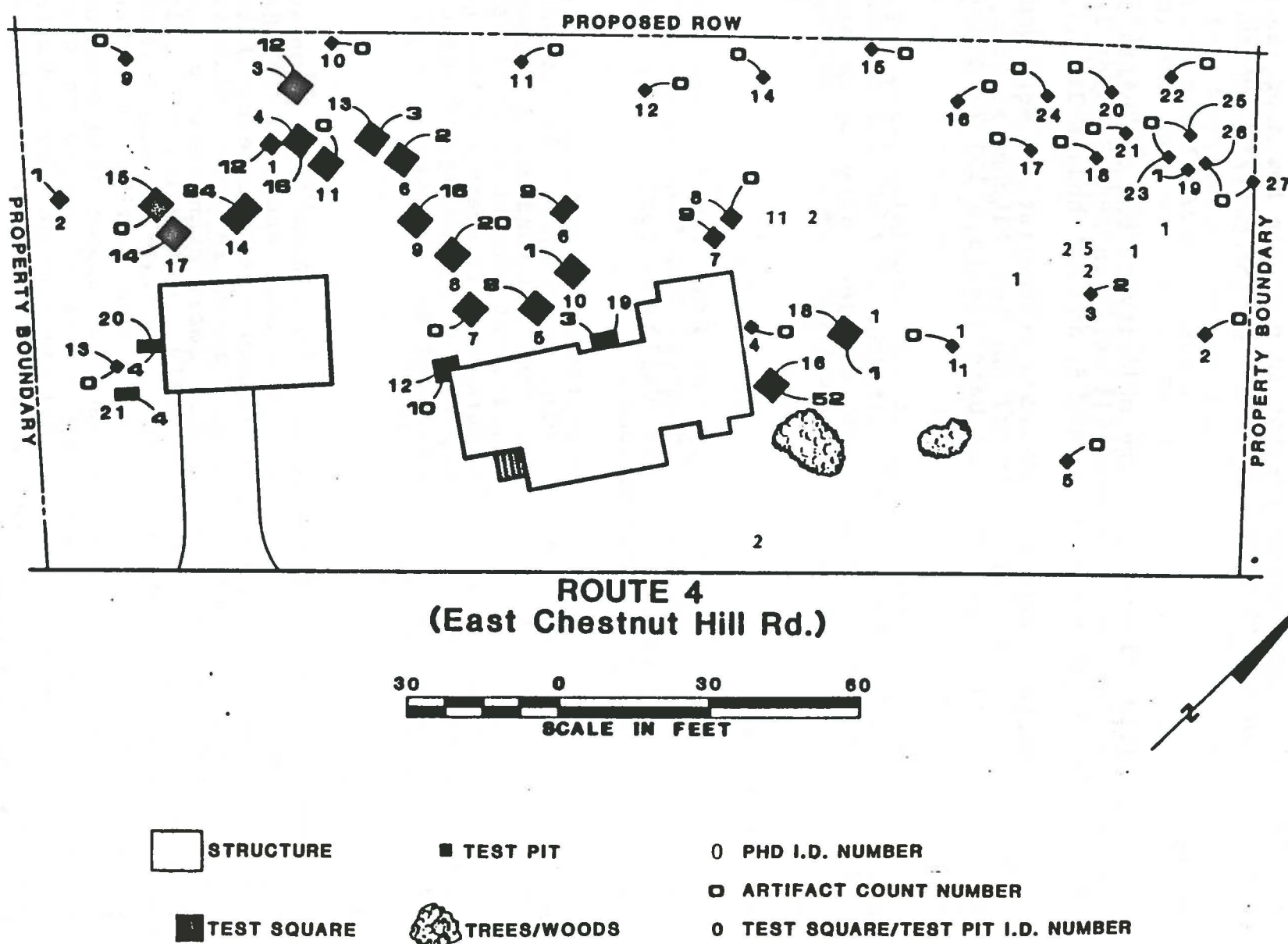


FIGURE 14  
Wire Nail Distribution – Robert Ferguson Site





and 17. The concentration present in posthole Row A of the east yard is brown bottle glass, apparently beer bottles thrown from Route 4.

#### Nails

Cut Nails (Figure 13). The majority of the cut nails occur within a few feet of the house, 64% being in Test Squares 5, 12, 16, 18, and 19, Test Pits 4, 7, and 8, and Posthole N-16.

Wire Nails (Figure 14). Notable concentrations were present in two places: Test Square 16 off the east kitchen section, and Test Square 14 behind the old barn (Feature 13) or standing garage.

Cut nails do not appear to be associated with any one building episode of the house, although they are not associated with Feature 13 and the extant garage. Wire nails may be associated with construction of east kitchen section (Test Square 16).

#### Faunal Remains

The faunal remains recovered from the Ferguson House excavation included domesticated cattle (*Bos taurus*), sheep (*Ovis aries*), pig (*Sus scrofa*), chicken (*Gallus gallus*), turkey (*Gallus maleagris*), and fish (unidentified).

The distribution was concentrated in the North (rear) yard area with 67% of all remains being found there. The remainder was equally divided between the other two yard areas. However, no one test unit revealed any significant concentration of faunal material. Rather, all remains were lightly scattered throughout each yard area. This can be explained by plowing and secondary soil deposition due to landscaping and construction of the various stages of the house itself.

#### Architectural

The architectural attributes of the Robert Ferguson House support the findings of the historical and archaeological research. Generally, the quality and type of internal framing found in the Ferguson House is common in house structures constructed for lower to middle socio-economically ranked families. The presence of previously used framing materials as noted in the center section is a well-known building characteristic for these structures. The flat-nailed exterior facing provides additional evidence to support this conclusion. Also concluded from the architectural research were a construction date of 1830-1850 for the west section and a late-nineteenth century date for the center section, both supported by the historical research.

#### Summary

Archaeological testing indicates that the integrity of the site has been affected by long term agricultural plowing, extensive twentieth century landscaping, twentieth century structure modification, construction of utilities and septic fields, and road widening. Excavations produced eighteenth, nineteenth, and twentieth century artifact types, located 13 archaeological and structural features, and provided interpretive data on artifact distribution patterns and yard area usage during the site occupation for about 150 years. The artifact distribution pattern of the early nineteenth century was found to be different from that associated with the deposition of late nineteenth and twentieth century materials, with the earlier disposal closer to the Ferguson House and the later materials deposited at some distance from it.

Archival research combined with informant data indicated that the first structure on the property was a log dwelling on the south side of Route 4, which was present by 1816. This was the Lynch farmstead, razed in 1955 for the construction of the Todd Estates housing development. A second, frame dwelling first appears on the property by 1837 and seems to be the Robert Ferguson house. The quantities and distribution of artifacts present on the site tend to support this contention. The majority of the artifacts recovered have dates of manufacture after 1820. A very small percentage of datable artifacts which may precede this time include creamware (1762-1820), pearlware (1780-1830), and one identifiable wrought nail (pre-1800).

The foundations of two outbuildings were revealed by excavation: a chicken house (Feature 4 in Test Squares 1, 4, 6, 11, and 13) and a 22 foot by 40 foot barn (Feature 13). These represent all of the known late nineteenth and twentieth century structures, as indicated by informants, photographs, and maps of the property. It is felt that this is an insufficient number of buildings to support a working farm of 140+ acres and thus probably represents the number of auxiliary structures required for a tenant farm dwelling. Information of the Lynch farmstead and economic status of the owners was not obtainable from the inventories of Reed and Bradford. Since the Lynch farmstead was totally destroyed by the construction of Todd Estates, comparative data are unavailable. It is recommended that any future study of a purported tenant farmhouse include architectural and archeological research on the owner's farmstead as well. In this manner, the relationship between the owner's and tenant's farmhouse may be better understood.



## ARCHAEOLOGICAL INVESTIGATIONS AT THE WELSH TRACT SCHOOL

Wade P. Catts and Kevin W. Cunningham

Intensive archaeological investigations at the Welsh Tract School were undertaken by Delaware Department of Transportation archaeologists and included pre-demolition survey, testing in the yard, and post-demolition survey under the driveway and garage associated with the Welsh Tract School. This work was conducted as part of the widening and upgrading project for Delaware Route 4. The school house site, approximately 1 acre in size, is located at the intersection of Routes 4 and 896 in Pencader Hundred, New Castle County (Figure 1). The property is a triangular area bounded on the west by Route 896, on the south by Route 4 and on the north and east by St. Paul's Evangelical Lutheran Church and School. Since 1939 the schoolhouse has been used as a private residence. The basic form of the original one-room structure was so altered that the Delaware State Historic Preservation Office saw no reason to preserve the building. However, proper recordation and archaeological investigation of the site were advised.

### Historical Overview

In 1701 the area known as the Welsh Tract, in which the schoolhouse is located, was first settled by Welsh colonists who had received a 30,000-acre land grant from William Penn. In this way, Penn was able to strengthen his claim on the local area which was disputed territory between Penn and Lord Baltimore (Owen and Owen 1973:4). The Welsh settlers were attracted to the area by large iron ore deposits in and around Iron Hill, Chestnut Hill, Grey's Hill (in Cecil County Maryland), and Sandy Brae.

The Welsh Tract area today is located partly in Pencader Hundred and partly in Maryland. Pencader Hundred is bordered on the west by Maryland, and on the east, north and south by White Clay Creek, New Castle, Red Lion, and St. Georges Hundreds. Throughout the eighteenth and nineteenth, and into the twentieth centuries, the Pencader region was predominantly agricultural, except for the Iron Hill area where ore was mined until 1884. Small villages such as Glasgow (Aiken's Tavern), Kirkwood, Summit Bridge, Cooch's Bridge and Porter's Station formed the centers of farming communities. Grist, flour, and saw mills were located on the major drainages of the Christina River and its tributaries, such as Muddy Run, Belltown Run and Iron Hill branch. The majority of the population were of English, Scotch-Irish, or Welsh descent, and the dominant religions in the seventeenth, and eighteenth centuries were Baptist, Presbyterian, and Methodist (Scharf 1888; Conrad 1908; Hoffecker 1977; Owen and Owen 1977; Munroe 1979).

Education in Pencader Hundred was rudimentary at best prior to 1829. Beginning with the arrival of the Swedes, church ministers were responsible for the education of the young and

this resulted in inconsistencies in the quality and quantity of education (Munroe 1979:111). In regions where there was no church school, neighbors would often rent or build a structure for use as a one-room schoolhouse, and hire a teacher. "Lay teachers" would sometimes rent a private room from a friend and set up a school for tuition-paying pupils. In the Pencader Hundred area there were several academies available for those who could pay the tuition (the Newark Academy, incorporated in 1769; the Wilmington Academy, incorporated in 1773; the Newark English Grammar School, incorporated in 1811; the Christiana School, incorporated in 1804; and the Glasgow School, incorporated in 1803). These institutions were usually run by a staff and board of trustees (Munroe 1979:111), and throughout the eighteenth and into the nineteenth century there were no state-supported public schools.

The Delaware state constitution of 1792 laid the foundation for public schools to be established, but it was not until February 1817 that the first step towards public education was taken by the State legislature. At that time a school fund of \$1,000 for each county was created for the education of poor children. Each school was to receive an allotted amount from its respective county fund. Four years later, in February 1821, a "Sunday School" fund was established which granted twenty cents to the school for each child taught. These were not religious schools, but schools for children who worked on farms six days a week (Mowrey 1974:3,4).

In 1829 Judge Willard Hall's "Free School Act", which divided the state into a large number of districts, was passed by the legislature. A district's radius was approximately 2 miles from the center of a given area of high population density. New districts could be created if there were an adequate number of pupils, usually about 35. A one-room schoolhouse could then be constructed within the district boundaries. In effect, the single, one-room schoolhouse was the district (Mowrey 1974:4). Each district could receive up to \$300 from the state, provided that it matched that amount with local taxes or private funds. The people within a district were free to decide how much money they wished to raise for education, or if they would raise any at all. Thus, schools were loosely organized and heavily dependent on private contributions. In 1833 there were 133 school districts in Delaware: 61 in New Castle County, 36 in Kent and 36 in Sussex (Delaware Department of Public Instruction 1969:15). The "Free School Act" was amended several times, but it formed the basis of the Delaware educational system for the next fifty years.

In Pencader Hundred there were originally five white school districts, numbered 54 through 58, each with its own one-room schoolhouse. In addition, eight more districts were created during the nineteenth and into the twentieth centuries; four more white schoolhouses and four black schoolhouses. (Blacks were not permitted to go to school in Delaware until after the Civil War.) These buildings were used as schools well into the twentieth century, the last schoolhouse being consolidated with the Newark



School District in 1965.

Beer's Atlas of 1868 shows there were six one-room schoolhouses within Pencader Hundred in the mid-nineteenth century. Of these, only one, No. 54, was located at a major intersection. Of the remaining five schoolhouses in the hundred in 1868, two (Nos. 56 and 57) were within a 0.2 to 0.3 mile of a major intersection, and three (Nos. 55, 58, and 83) were within a 0.6 to 0.8 mile of a major intersection. Thus, these schoolhouses, due to their locations, can be viewed as integral parts of their community, of considerable importance both educationally and socially. Several informants mentioned the social aspects of the schools such as box socials, inter-school district baseball games, and PTA meetings. One-room schoolhouses served to bring the local farming community together and to strengthen neighborhood domestic and social relationships.

By 1919, there were 14 schoolhouses in Pencader Hundred. All were located within the 0.2 to 0.8 mile radius from a major intersection. A study of one-teacher schools in Delaware in 1921 stated that the average New Castle County one-room schoolhouse was approximately 2.9 miles from a railroad station. The closest school to a railroad station was 1.4 miles and the farthest was 7 miles (Cooper and Cooper 1925:35). School enrollments were still about 35 pupils (average 31), with the majority of students being boys, and over 50% of the total enrollment comprised of farm children (Cooper and Cooper 1925:107).

If the Welsh Tract schoolhouse in Pencader Hundred can be considered to have been typical of one-room schoolhouses of the nineteenth-twentieth centuries, then it was located at the "...bleakest, noisiest, dustiest spot in the district,...on a public road and generally at the junction of two..." (Powell 1893:151). Few of the schoolhouses had porches, and they were heated by centrally located potbelly stoves. Open windows and doors were the only means of ventilation. The schools were usually, but not always, built of ungraded clapboard construction with sanitary facilities consisting of small frame outhouses (Hoffecker 1977:109). The school yard usually consisted of less than half an acre. The schoolhouse was lighted by windows at both ends of the building and constructed to let the pupils enter at one end while the teacher's desk was at the other. Both single and double desks were present, though usually by chance, not by design (Cooper and Cooper 1925:50). A small vestibule for coats, the water cooler, and lunches was located near the door. Pupils' grades ranged from the 1st through the 6th grades. Teachers were predominantly females who taught at the school from 1 to 5 years.

The Welsh Tract Schoolhouse fits the above description only partially. The structure was 27 ft. X 34 ft., constructed of cut stone gabbro obtained from nearby Chestnut Hill and the Christina Creek. The walls were whitewashed and were approximately 1.5 feet thick. There were six windows with deep

sills - two each in the east, south, and west walls, but none in the north wall. The front door was located in the center of the south wall, with a small frame vestibule for coats, hats, and lunches extending from the doorway. The building was oriented south towards the crossroads. Inside, the windowless north wall was covered by a slate blackboard. The teacher's desk was located up front, in the center of the room. Furniture by the end of the nineteenth century consisted of rows of double desks and benches. Cooch (1936:190) indicates that there were no chairs in 1851. The desks were arranged from the smallest in the front to the largest in the back, or from the younger to the older pupils, respectively. Six oil lamps were located on the walls, and a potbelly stove was located in the center of the room. The floor was wooden.

The schoolyard was a triangular piece of property about one-half acre in size (the original 1851 property deed specified 68.5 square perches). The yard was of dirt and grass, and a large maple tree was located at each corner of the property. A post-and-rail fence ran the length of the north property line, about 15 feet from the rear of the schoolhouse, and separated the schoolyard from the agricultural fields behind it. There were two frame privies (4 ft. X 4 ft.) - the boys' to the west and rear of the schoolhouse and the girls' to the east, close to the intersection of the property line with the Chestnut Hill - Ogletown Road (Route 4). A frame wood and coal shed (10 ft. X 10 ft.) was situated between the privies and behind the schoolhouse, with its north wall against the post-and-rail fence. All of the outbuildings were whitewashed. A flagpole stood close to the west wall of the schoolhouse.

Agricultural fields and pasture land surrounded the schoolhouse on all sides. The Newark-Cooch's Bridge Road bounded the property on the west, and the Chestnut Hill-Ogletown Road formed the southern boundary. The nearest farm complex was about 0.2 mile to the east (according to Beers' Atlas 1868, the J.W. Evans' farm, which by the early twentieth century was known as the Lafferty farm). Water was available at a spring to the west (in present day Silverbrook), at the tenant house of the Evans-Lafferty farm, and at a farmhouse about 0.5 mile south on Cooch's Bridge Road.

The student enrollment in 1912 was approximately 42 pupils; in 1916 there were 19 boys and 30 girls (Educational Annual 1916). Students were drawn from an area that extended from the Maryland-Delaware line to the border of White Clay Creek Hundred (approximately 2.5 miles), and from the Pennsylvania Central Railroad tracks to Cooch's Bridge (approximately 4 miles).

Activities in the schoolyard were both athletic and social. Athletics included baseball (played on three fields - one in the schoolyard, one south of Chestnut Hill-Ogletown Road, and one west of Cooch's Bridge), shooting marbles, and playing a variety of "schoolyard games": 'Andy over', 'Fox and Hounds', 'Rounders', 'Shinney' (similar to field hockey, but with homemade



equipment), 'Farmer-in-the-Dell', and more, depending on the ingenuity of the students. Little equipment was necessary for these games, and it was either brought from home or made on the spot. If something broke, such as a baseball bat, whenever possible it was repaired, not discarded.

Social activities were varied and included picnics (box socials, shadow socials, lantern socials), PTA meetings, Christmas parties, and family sing-alongs. At these functions it was not uncommon to have students perform in plays, recite poetry, or sing. With the exception of the PTA meetings and Christmas parties, most of the activities took place outside in the schoolyard. The biggest event of the year, the end-of-school picnic in May, was not held at the school, but at the Welsh Tract Baptist Church about one-half mile south.

The Welsh Tract Schoolhouse No. 54, was erected in 1851 at the request of the commissioners of District No. 54, Levi Cooch, F. C. Bradley, and J. W. Evans, on property that originally belonged to J.W. Evans (Deed Record M, Volume 6, Page 526). When commissioners purchased the property for \$50 on 27 December, 1851, the schoolhouse building was already present (ibid). Prior to that time, probably from 1829, with the implementation of Hall's "Free School Act" until 1851, the school had occupied a frame building about 1 mile east, near Wilson Station (Map 6). The exact location of this early school building is not known, but it reportedly burned sometime in the early twentieth century (Cooch 1936:190). However, it is known that this building also belonged to Evans; possibly, he rented it to the District until a more substantial schoolhouse could be built.

Schoolhouse No. 54 was listed as a school until August 1939 when it was consolidated with the Newark School District (Educational Annual 1939-40). Before that date the building had been gutted by a fire, which left the southeast, east, and northeast walls charred and fire marked. Informants date the burning of the school to about 1906. The schoolhouse was evidently rebuilt soon after that date.

After 1939, the building was used as a private residence. During that time, there were extensive building alterations to both the interior and exterior. A southern addition was constructed; two northern rooms, one a kitchen, were added; a garage and porch were built; indoor plumbing, heating, and a fireplace were installed; a full cellar was dug under the new kitchen; several interior room divisions were constructed; the exterior walls were stuccoed; the outbuildings were removed; and the building's orientation changed from south to west. At the same time, the property boundary was extended approximately 117 feet north to the present Lutheran Church Boundary (Deed Record D-37-312). This area had previously been agricultural fields of the Evans' farm. Also, at this time a great deal of landscaping was undertaken; ornamental trees and shrubs were planted and approximately one foot of fill dirt was placed over the yard.

## Archaeological Investigations

The major research question addressed was whether or not the schoolhouse occupation period (1851-1939) activity areas could be identified through the artifact patterning and shovel testing was used at the site to answer this question. The information gathered during this testing would then be compared with information compiled from interviews with former schoolhouse students. For that purpose, fifteen former students were contacted and questioned about schoolyard activities. Their time spans of attendance at the school covered the period from 1906 to 1934, twenty-nine years out of the 88 years that the building was used as a school.

Based on the present yard configuration, the site was divided into two sections: (1) the property area with the original schoolhouse and later residential structure, and (2) the landscaped area to the north of the original property, which was later acquired by the owners of the private residence (Figure 15). An approximate line dividing these two sections was placed along the row of apple trees running east-west. The location of this line was remarkably close to the original schoolhouse property line, which was approximately 15-20 feet from the rear of the structure.

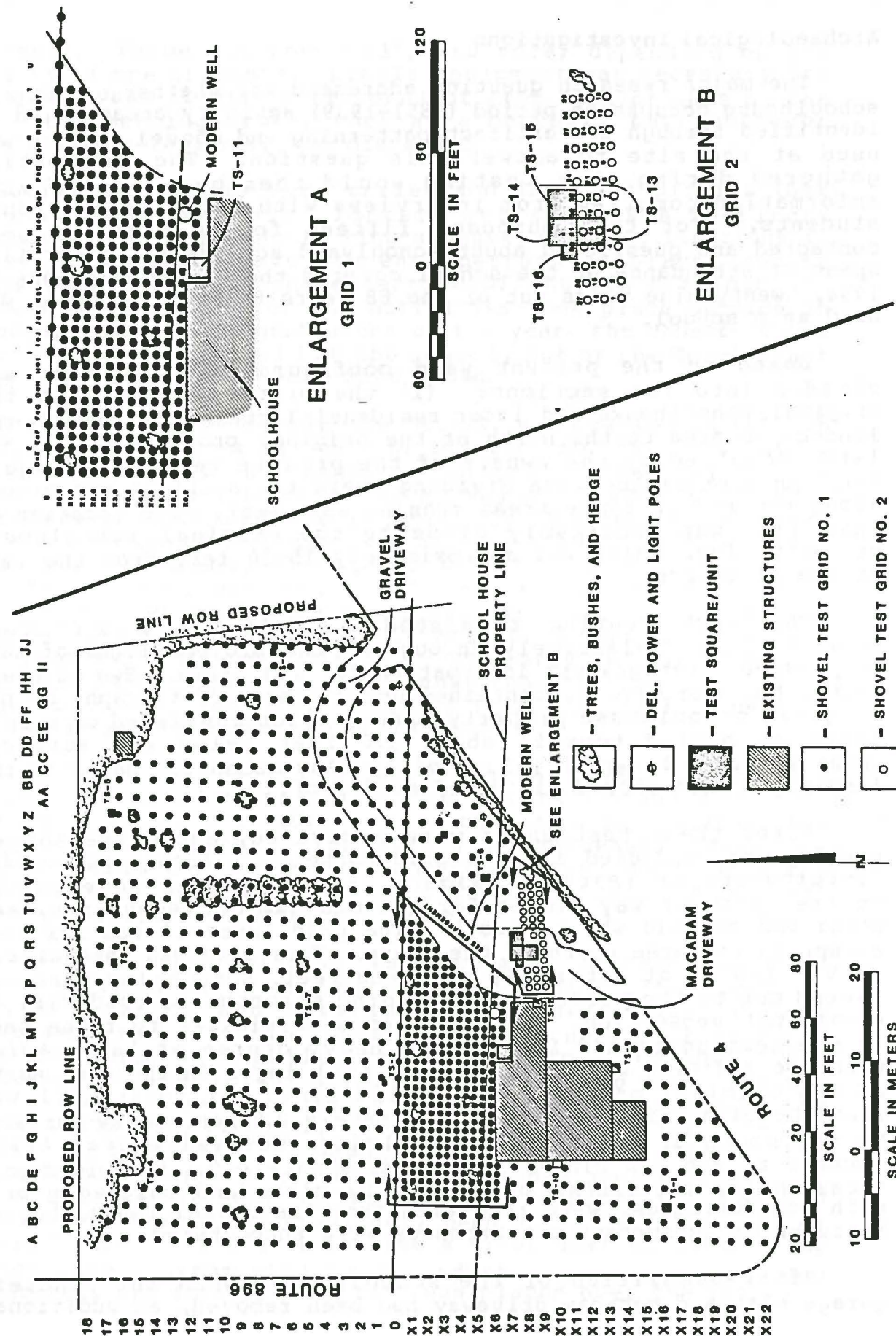
The first testing consisted of eight 2 ft. x 2 ft. test squares placed selectively throughout the project right-of-way, to provide stratigraphic information for all areas. Two of these units, No. 1 and No. 6, contained undisturbed stratigraphy of the original schoolhouse property area, which consisted of a thin layer of buried topsoil about 1.0 feet below the surface, underlain by a brownish yellow silty clay subsoil. Units in the landscaped area showed disturbed soil profiles.

After these test units were excavated, extensive shovel testing was conducted along a grid pattern to locate subsurface disturbances or features (Figure 15). The grid covered the entire right-of-way except for the macadam driveway area, and consisted of 1030 shovel tests. The grid interval was six feet except in the area north of the house. This area was intensively shovel tested at intervals of three feet. Some holes were not tested due to the presence of standing structures, roadways, or ornamental vegetation. The profiles were similar to those seen in the test units and indicated a heavy degree of landscaping with the addition of an orange clay fill layer in the area north of the original property. A well defined buried topsoil was found beneath this layer to approximately 0.8 feet below surface. To the south of the original building, several shovel tests located an ash and cinder layer approximately 0.8 feet in depth. Occasionally artifacts, predominantly clear and colored glass, with some ceramics, were recovered from the shovel tests, but no features or subsurface disturbances were encountered.

After demolition of the schoolhouse, when the concrete garage slab and macadam driveway had been removed, an additional



FIGURE 15  
Welsh Tract School Site Map



grid was laid out. This grid ran parallel to the original property line, to the east of the garage area, and consisted of 39 shovel tests. The artifacts recovered from this area were few, and artifact classes were similar to those from the original grid system. However, several shovel tests did encounter a brick and mortar subsurface feature. The stratigraphy of the driveway and garage concrete slab area was similar to that found throughout the rest of the yard, with the exception of a dense gravel and rubble fill found extending to a depth of approximately 0.4 feet directly beneath the driveway and garage slab.

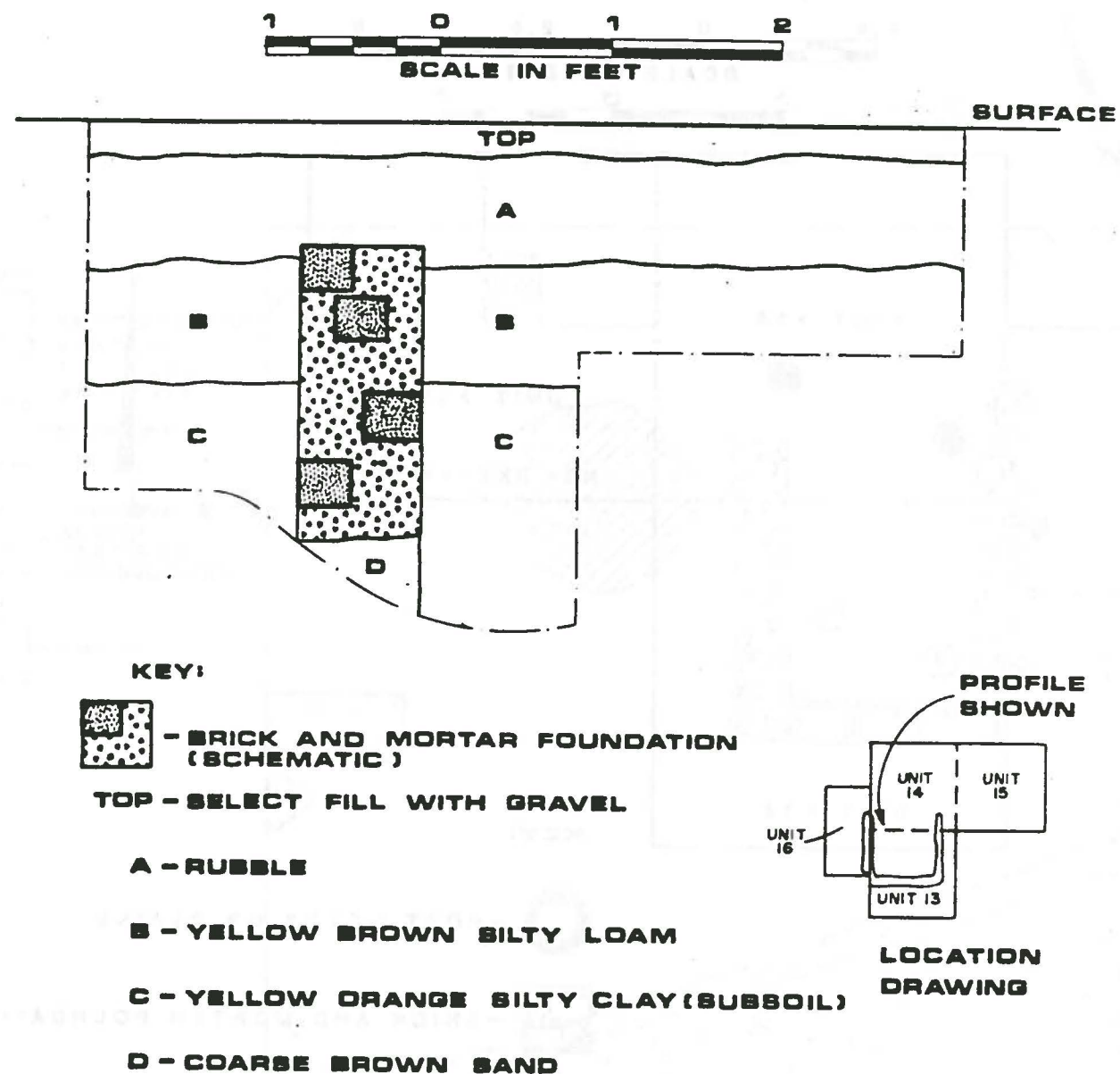
Two test units (Nos. 9 and 10) were placed along the south and west side of the original stone structure. Debris from stuccoing the exterior walls was encountered but no builder's trench was found. Artifacts, mostly bottle glass, nail fragments, and occasional ceramic sherds, were recovered from all levels and were similar to those found throughout the yard. In addition, three clay marbles were recovered.

After demolition of the schoolhouse a 5 ft. X 5 ft. unit (No. 11) was placed, in the area which an informant indicated was the location of the school's wood/coal shed. After removal of the gravel and rubble fill layer, a dark brown buried topsoil was found approximately 0.8 feet below surface. The topsoil level had large amounts of coal chunks and chips embedded in it. A coal layer found below the topsoil had been deposited in a rectangular concentration bounded by the organic rich buried topsoil. At a depth of 1.5 feet below surface, a feature was located at the interface of levels B and C, was excavated, and was found to be a soft circular dark brown mottled stain (Figure 16). It extended into level C approximately 0.5 feet in depth. Glass, metal, and ceramic were found within the feature. In the rest of test unit No. 11, artifacts were like those found throughout the property in other units, with a high proportion of window glass and nail fragments from levels A and B.

A series of 5 ft. x 5 ft. units (No's. 13 - 16) were excavated after initial testing had revealed a brick and mortar feature. An informant indicated this area was where the girls' privy was located during the schoolhouse occupation. Removal of the gravel base for the macadam driveway exposed a brick scatter in the configuration of a reverse L (from west to east), about 0.4 feet below the surface. Below the brick scatter was a brick and mortar U-shaped foundation with the open end facing northward (Figure 17). Soil stratigraphy (Figure 18) within the foundation was a yellow brown silty clay loam (Level A) extending to the vertical limits of excavation, approximately 2.0 feet below surface. Outside of the foundation, the soil stratigraphy consisted of a buried topsoil (Level B) beneath the gravel base underlain by subsoil. It was noted that the foundation continued to the north (the open wings of the 'U'), extending beyond the limit of Unit No. 13. Artifacts were recovered from Levels A and B, or above, and in association with the brick foundation, but none came from within the limits of the U-shaped foundation.



FIGURE 18  
Profile of Unit 14 - Welsh Tract School



Artifacts included three stoneware sherds, several pieces of bottle glass, and a large amount of nail and metal fragments below the top of the foundation.

#### INTERPRETATIONS

The data gathered from the excavations at the site confirm the definition of the two property sections, the original property and the north landscaped area. On the original property and northern landscaped area a buried topsoil layer was found which indicates a large amount of soil filling and landscaping. In addition to the spatial categories of the original property and landscaped area, the site occupation can be divided into two temporal categories based on archival research: the schoolhouse phase (1851-1939) and the private residence phase (post-1939). Recovered artifacts were not sufficient to aid in this division. Most artifacts recovered from all units appear to be primarily representative of the private residence phase. A total of 1566 artifacts were recovered and of this number, there were only 98 ceramic sherds. Of these, only 23 artifacts which could be considered diagnostic of the schoolhouse phase.

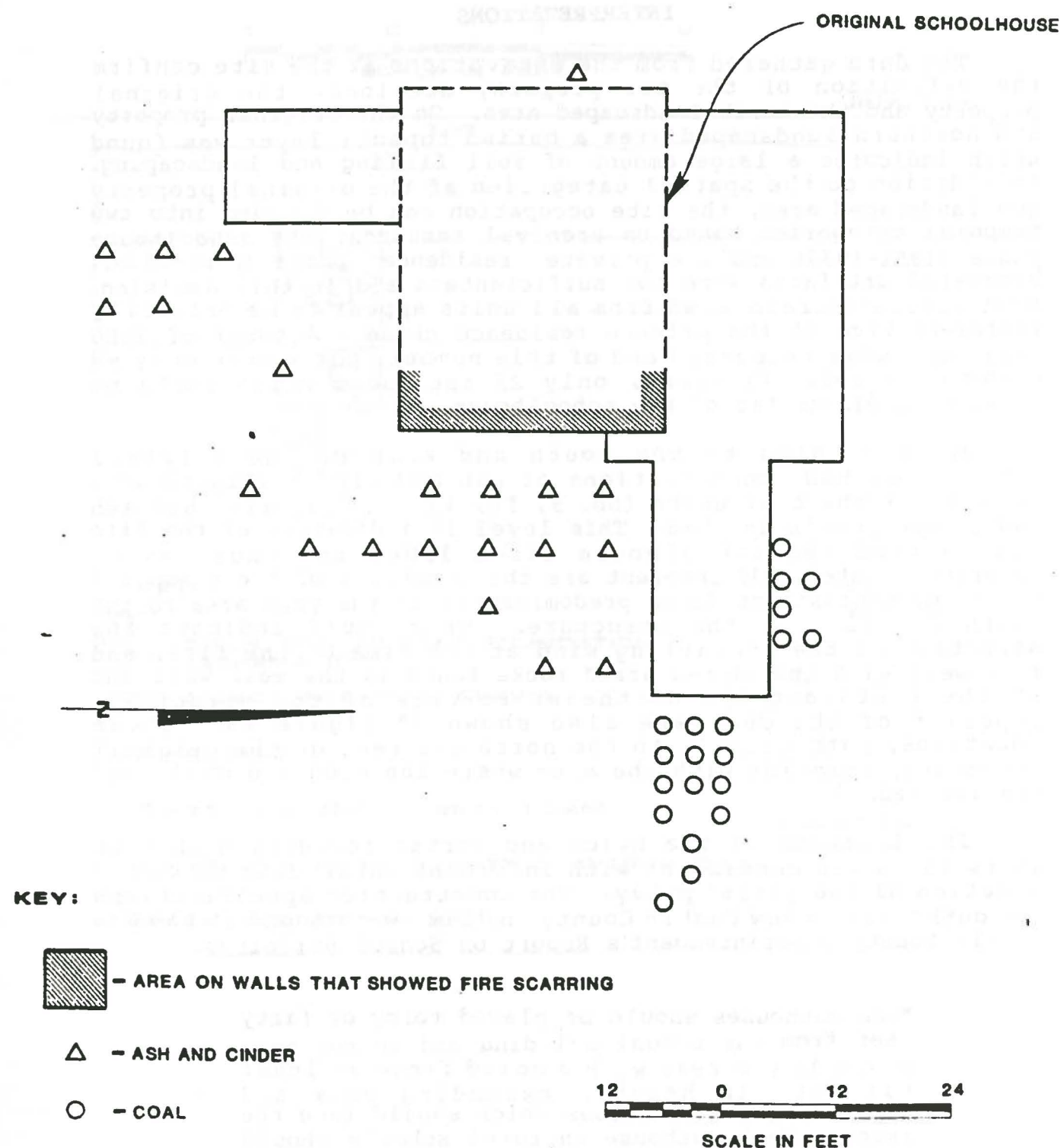
A large area to the south and east of the original schoolhouse had concentrations of ash and cinder (Figure 19). Several of the test units (No. 9, 10, 11, and 12) also had ash and cinder levels in them. This level is indicative of the fire that gutted the schoolhouse circa 1906, and thus can be accurately dated. Of interest are the locations of these ash and cinder concentrations found predominantly in the yard area to the south and east of the structure. This could indicate the direction of the prevailing wind at the time of the fire, and fits well with the fire-scarred rocks found in the east wall and at the southeast and northeast corners of the structure. Deposits of the coal are also shown of Figure 19. These locations, particularly to the north and rear of the original structure, coincide with the area where the wood and coal shed was located.

The location of the brick and mortar foundation in test units 13-16 was consistent with informant interviews as to the location of the girls' privy. The construction specifications for outhouses in New Castle County in 1912 were found in the New Castle County Superintendent's Report on School Buildings.

"The outhouses should be placed forty or fifty feet from the school building and in the most cases in the rear with a solid fence at least six feet in height, extending back and separating the outhouses which should face the fence. Each outhouse in rural schools should have at least three openings in each seat in the girls' closet and two for the boys. The urinal for the boys should be under cover but



FIGURE 19  
Ash, Cinder and Coal Distribution – Welsh Tract School



on the outside of the closet. The outhouses should be large and well lighted. The windows should be seven feet from the floor. They must be covered with strong wire screens. Outhouses should be supplied with toilet paper. The vaults should be built of cement, or of brick or stone and plastered with cement. The vault should be so constructed that it can be easily cleaned out at regular intervals. Doors to the outhouses should be locked and unlocked each day by the teacher" (Spaid 1912:5).

Much of this information was confirmed through the archaeological investigation and from a 1932 photograph of the schoolhouse.

The schoolhouse structure itself revealed little about its use as a school. The building had been too drastically altered during its conversion to a private residence. Little information concerning the social, economic, or political relationships of the region could be gathered from the archaeological evidence. These questions, cursory in nature, were answered by oral history interviews with fifteen former students of the school, many of whom still reside in the Newark area. The few artifacts diagnostic of the schoolhouse phase (toys, chalk, pencils) also confirm several statements that the students were not from high socio-economic backgrounds.

Based on the extreme intensity of the investigations undertaken at the schoolhouse, the data recovered appears to be reliable for interpretation. The entire yard was tested and results indicate that most evidence of site occupation, especially regarding artifacts and artifact patterning, came from the residential phase (post-1939). The girls' privy was reliably dated by two coins (a 1907 "Indian Head" penny and a 1927 "wheat" penny) found in the feature, and the wood/coal bin was located. From the archaeological and archival evidence now compiled, it appears that these were the only features still present at the site dating from the schoolhouse phase of occupation.

Several conclusions about the investigations at the Welsh Tract schoolhouse can be made. First, the lack of activity areas will affect future projects on similar schools in northern Delaware. Because many schoolhouses throughout the region were located at, or close to, intersections, and all were located along roads, it is of special importance to future cultural resource projects to know what can be expected at one-room school sites. The absence of activity areas (except for gender areas) within the schoolyard was primarily due to the policing of the yard by the students and to the rural nature of the site. Few artifacts were recovered, possibly because the students had few material items to lose. This could be indicative of rural schoolyards in general. The lack of activity areas might be expected at future schoolhouse sites, if investigated, and



therefore detailed testing may not be necessary. The historical archaeological investigations at the Welsh Tract Schoolhouse suggest that rural schools functioned as important foci for social and community activities in an agriculturally-based society. This hypothesis is supported by the statements of local informants and former pupils of the school that were interviewed, and by a recent similar study of the Harmony Schoolhouse, on Limestone Road in Mill Creek Hundred (Catts, Schaffer, and Custer 1986). This is significant, because although the archaeological record of a one-room schoolhouse will not be rich, the importance of the historical study of schoolhouses lies in their use as social and cultural centers in pre-industrial rural communities.

## ARCHAEOLOGICAL INVESTIGATIONS AT THE WILLIAM M. HAWTHORN SITE

Ellis C. Coleman, Wade P. Catts, and Kevin W. Cunningham

The purpose of this paper is to summarize the results of a Phase III archaeological data recovery program at the W. M. Hawthorn Site, 7NC-E-46. The fieldwork and preliminary research and analysis were undertaken by archaeologists of the Location and Environmental Studies Office, Division of Highways, Department of Transportation. Final archival research, artifact analysis, and report preparation were conducted by staff of the University of Delaware Center for Archaeological Research.

The site area investigated includes 3.4 acres of an 8.5 acre National Register parcel within the right-of-way (ROW) of New Churchman's Road (Figure 1). At the time of the excavations, properties in the area were undeveloped, consisting of fallow and cultivated fields and interspersed woodlands.

### Previous Archaeological Investigations

A Phase I archaeological survey of the proposed ROW expansion of New Churchman's Road corridor was conducted in April, 1981, and this survey located a cluster of eighteenth, nineteenth, and twentieth century historic artifacts and associated features which were thought to be the remains of a demolished farmstead (O'Connor et al. 1983). The Phase I test excavations consisted of two 3 ft. X 3 ft. and two 2 ft. X 2 ft. test squares and twenty-nine shovel/postholer tests. Three subsurface features were located and a circular, brick-lined feature was systematically excavated. A Phase II survey to determine the extent, integrity, and eligibility of the site for listing on the National Register of Historic Places was recommended for the historic resources.

The Phase II archaeological survey was conducted in 1982. The purpose of this survey was to evaluate the significance and integrity of the historic cultural resources located by the Phase I survey. The Phase II survey revealed the site to be the former W. M. Hawthorn farm, occupied from at least the early nineteenth century until the mid-twentieth century. In addition, testing uncovered the presence of a partially undisturbed prehistoric site with features and associated artifacts dating to ca. 4000 B.C. - A.D. 1000 (O'Connor et al. 1983). Custer and Bachman (1984; 1986) describe the prehistoric mitigation results.

The Phase II survey included excavations of test squares in those areas of the site which yielded a high density of subsurface artifacts and/or features during the Phase I survey. The Phase II research sought to delineate artifact distributions, to identify the dimensions of the structure, to establish the limits of the site, and to investigate other potentially sensitive areas of the site.



The test excavations consisted of four 5 ft. X 5 ft. units, one 3 ft. X 3 ft. unit, and two 2 ft. wide trenches. The Phase II work was able to locate three, and possibly four, intact subsurface foundations, and artifact distribution maps were constructed for the site. On July 2, 1982 the W. M. Hawthorn Site was determined to be eligible for inclusion to the National Register of Historic Places and the development of a data recovery plan for further mitigation of the site became necessary.

### Research Design

Research methods were designed to provide a comparative data base for historic archaeological site content and site structure and it was felt that this goal could best be met employing the artifact pattern concept developed by South (1977). The application of South's concepts have been shown to be useful for data base presentation and artifact analysis by South (1977), Wise (1978), Garrow (1982), and Foss, Garrow, and Hurry (1979). The results from the present research can thus be applied to studies of rural farmstead archaeological sites that may be excavated in the future and also with previously studied archaeological sites in the Middle Atlantic Region. A special attempt was made to direct archival research so as to provide a coherent regional historic context within which to interpret this site and other historic archaeological sites in northern Delaware. Consideration of local and regional issues in historic archaeology was additionally facilitated by focusing on topics concerning agricultural land-use and socio-economic patterning. These study topics were developed during the background research for this project and in part follow from statements on research designs in Middle Atlantic historical archaeology (H. Miller 1980).

Previous research at the William M. Hawthorn Site indicated that the site provided an excellent opportunity to gain a better understanding of the changing lifeways on a northern Delaware farm through time. The site was also thought to provide a unique setting to study the effects of historically documented urban and regional trends concerning agricultural land-use and socio-economic patterns on farmsteads in rural, yet not isolated, areas. General study topics focusing on patterns of artifact distribution and spatial utilization and purchase and consumption habits were developed to guide the field and laboratory investigations.

Based on work by South (1979) it can be expected that changing site function of the Hawthorn farmstead through time would have produced a site structure consisting of different associations of the varied groups of artifacts, structural remains, features, and strata which form the archaeological record. This study of site content can be focused on different distributions of varied classes of artifacts through time such as ceramic and glass refuse, agricultural-related refuse, and subsistence refuse. The artifact pattern concept states that

different artifact category percentages should be expected in areas of specific types of artifact disposal. An area can thus be characterized as having been an area of kitchen refuse deposition rather than an area with a combination of deposits related to demolition or repair activities. The presence of significantly different artifact patterns is assumed to be attributed to different discard mechanisms. Similarly, artificial changes in site landscape may have been accomplished as the activities as the farmstead changed (Handsman 1981).

In order to test this hypothesis, a major research task was to obtain a representative sampling of artifacts from various sections of the site and to further investigate the spatially distinct concentrations of late eighteenth and early nineteenth century artifacts. A sample of varied site areas such as front yard and back yard was obtained. These samples consisted of a series of test units (measured excavation units or postholer tests, depending on the depth and stratigraphy of the deposits) placed at regular intervals in transects across the known site area within special site areas. Information on architectural remains as well as fence lines and wall lines was also obtained. When any such remnants were encountered they were delimited and excavated to recover artifacts that could provide data on their age and function.

Cataloging and analysis of the artifacts from the excavations focused primarily on the description of form and function. The determination of attributes such as material and decorative motif allowed a more precise classification into artifact types. A full discussion of these methods can be found in South (1977, 1979). Diagnostic artifacts, South's Mean Ceramic Date Formula, and an inverse variance mean ceramic date formula (Kalb et al. 1982:10), were used to define chronological controls within the spatial analysis. The inverse variance formula takes into account the longer periods of production which would make this mean ceramic date (MCD) more accurate. An artifact pattern analysis was carried out based on Garrow's (1982) adaptation of South's analytical methods. The distributions and associations of varied types of artifact classes were also mapped and plotted. A series of maps were produced to show the presence or absence of changes in the spatial distribution of artifact deposition.

It is probable that regional and local socio-economic changes had affected the income of the site's inhabitants and, consequently, their purchase and consumption habits. These changes were probably the result of a change from a colonial, subsistence-oriented agricultural economy to a broader-based market economy which took place during the early to middle nineteenth century. A survey of agricultural economic histories by Bidwell and Falconer (1941), Lemon and Nash (1968), Lemon (1972), and Ball (1976) of southeastern Pennsylvania and northern Delaware highlights the conflicting conclusions concerning the timing and extent of these socio-economic changes when viewed in the context of the local agricultural economy. Presently unknown



are the specific effects on local farm economies of events such as the development of improved transportation networks, increased population densities, and settlement pattern shifts. Archival research was carried out in order to provide both subjective and analytical data to assess the covariation among these historically documented events and the site function and economic characteristics of its occupants through time. Archaeological analysis focused on artifact characteristics, and feature frequency and location as subjective indicators of economic scaling. Although it was hoped that G. Miller's (1980) economic scaling model for the nineteenth century could be applied, it was not used because the sample of excavated artifacts was found to be inadequate for this type of analysis.

In the northern Delaware area, local historical (Hoffecker 1974) and archaeological studies (Thomas et al. 1981; Cunningham et al. 1984 and Klein and Garrow 1984) of Wilmington, Delaware, which is less than fifteen miles from the William M. Hawthorn Site, indicate an emerging transportation and commercial center through the late eighteenth and nineteenth centuries. Economic-historical studies of the relationships of Philadelphia to its hinterland indicate the long-term influence of that city on the agrarian economy of the northern Middle Atlantic States. Previous research also indicates that in both Wilmington and Philadelphia, industrialization produced significant changes in residence patterns and complex alterations in land-use. The effects of these phenomena on a farmstead in a rural, but not isolated, setting were also analyzed.

The effects of industrialization, expanding markets, and improved transportation networks on rural farm economies and economic status, as exemplified by the William M. Hawthorn farmstead, were also considered. Both archival and archaeological research were used to analyze the economic status of the inhabitants through time and the impact of larger economic phenomena on the farmstead. The original archival research involved in determining the eligibility of the site for the National Register of Historic Places had suggested that, on the basis of the size of the farmstead and on tax assessments, the occupants of the Hawthorn Site during the mid-to-late nineteenth century were in the middle income range of the population and little change could be seen through time in their economic status. However, the initial research did not examine the late eighteenth and early nineteenth century's economic characteristics of the site's inhabitants and did not include a consideration of regional and local economic trends. A lack of an existing basis for comparison to other rural farm economies in northern Delaware made it necessary to undertake archival research to document both the comparative backdrops of regional and local agricultural economies, and the general bio-social environment against which the Hawthorn Site could be analyzed.

To provide this historical context, research was focused on both primary and secondary reference sources. Primary sources included property deed records, population and agricultural

censuses of the United States, tax assessments of White Clay Creek Hundred, and New Castle County Orphans Court and Probate Records. Additional information was gained from the past owner and local informants familiar with the farmstead. Secondary sources utilized included state and local histories, regional economic studies, agricultural histories, and eighteenth and nineteenth century travellers' accounts.

Based on successful documentary studies of socio-economic status by Main (1973) and Jones (1980) which employed probate records, similar techniques were utilized with the available inventories of the occupants of the Hawthorn Site. To allow for a more detailed socio-economic ranking within the local economy, here defined as White Clay Creek Hundred, a research technique was employed comparing the rate, over a period of 127 years, of the tax assessments of the occupants of the Hawthorn Site to all other taxables in White Clay Creek Hundred. Further, individual comparisons were made between the occupants of the Robert Ferguson tenant farm site (Coleman et al., this volume) and the William M. Hawthorn Site. These comparisons were based on probate inventories, agricultural censuses, and tax assessments.

Archaeological research also consisted of an artifact analysis to identify artifact types indicative of changing primary trade networks. The point of manufacture was determined mainly through the use of makers' marks on ceramics and glass. The evidence for participation in market economies that cover wider regions was determined in the archaeological record as signified by the proliferation of diagnostic ceramics, glasswares, agricultural tools, and household goods.

#### ARCHIVAL RESEARCH

It is known that Patrick Woodsgerald owned the tract upon which the future Hawthorn site would be located, having bought the land in 1697. However, deed records for the property are lacking for the period from 1697 to 1723. In that year, Rowland Fitzgerald sold the property, now consisting of 245 acres, to Morgan Morgan for 70 pounds (New Castle County Deed Book Q-1-557). Morgan Morgan sold the tract to Gerit Geritson in 1738 for L174, 10 shillings, because of a debt which Morgan was forced to pay (New Castle County Deed Book M-1-11).

Gerit Geritson held the property for only three years, and sold it to two brothers, William Peery and Jerrard Peery (also known as Ferrard Herron), in August 1741 (New Castle County Deed Book N-1-278). The tract had increased in size to 348 acres, and the Peerys purchased it for 195 pounds. Jerrard's date of death is unknown, but he evidently died intestate and the land passed to William. William Peery held the land until his death in 1789, at which time he willed the land to his sons, Jared and Thomas (New Castle County Calendar of Wills N-22). Both Jared and Thomas died "intestate and without issue", and the Peery tract



descended to William's daughters, Mary Peery and Sarah (Peery) Hawthorn (New Castle County Orphans Court Records K-1-244). Sarah was married to John Hawthorn, who deed research has shown to have lived in Ogletown. By profession, Hawthorn was an "artificer", an eighteenth century term meaning mechanic.

William Peery's will indicates that he was a farmer. The inventory of William Peery's estate, dated April 1790, is the first detailed information concerning the site. Peery's farm was valued at over 673 pounds and consisted of 348 acres. This size is much larger than the average found by Lemon (1972) and Ball (1976) for a comparable period in Chester County, Pennsylvania. In addition, thirty-four acres of the farm were planted in wheat and rye, which is a lower percentage of the property (only ten percent) than Lemon (1972) and Ball (1976) found for Chester County where these crops often accounted for 20% of a properties acreage. Peery was obviously a farmer of some wealth, for he had twenty-six head of cattle, thirty-two sheep, thirty-two hogs, and three horses. Lemon (1972) found that a larger amount of livestock was an indication of a better, wealthier farmer. Peery also had 200 bushels of wheat, 100 bushels of corn, and 700 pounds of bacon on hand at the time of the inventory, revealing that he was undoubtedly involved in the market economy of the region. Of particular interest is the information that this inventory reveals concerning Peery's labor force; he employed four bonded servants and owned three slaves. Not unexpectedly, most of Peery's inventory consists of farm tools or farm-related items. The inventory also shows that Peery was definitely a man of means. Three beds are among the most valuable items on his inventory, and in the eighteenth century beds were considered as prized possessions. Much of his furniture was made of walnut, a wood that around 1750 was very popular, but expensive.

Tax assessment records for William Peery for the period 1777 to 1789 show that Peery's income was valued at an average of 52 pounds annually and ranked in the upper four percent of White Clay Creek Hundred's taxable population. In comparison, the Samuel Bradford estate which included the previously investigated Ferguson House site (Coleman et al. 1983), was valued at an average of only 15 pounds annually for the same period, placing Bradford in the upper twenty-one percent of the White Clay Creek Hundred taxables.

Sarah Hawthorn and Mary Peery, the daughters and heirs of William Peery, held the estate until 1814. Sarah had died in 1799, and her children - Ephraim, Thomas, William, and Mary - were the heirs to her portion of the farm. With Mary Peery's death in 1814, court proceedings were begun by Thomas Hawthorn for the inheritance and equal division of the property among the heirs, in accordance with Delaware's intestate laws. However, Ephraim had died in 1813, having been "seized of an incurable malady" and "nourished and maintained for a space of ten years" by his brothers Thomas and William; William had died in 1815, leaving his wife Jane and four children. Thus, the property was to be divided three ways, but the heirs were now

Thomas Hawthorn, Jane Hawthorn and her children, and John and Mary Jordan (New Castle County Orphans Court Record K-1-229). In April 1816, the Peery tract of 307 acres was divided by the Orphans Court, with John and Mary Jordan receiving about 84 acres, Jane and her children about 111 acres, and Thomas Hawthorn about 111 acres. In additions, Jane Hawthorn's portion contained "the mansion house and all other improvements" (New Castle County Orphans Court Record K-1-244). A map drawn by the court-appointed surveyor in 1816, shows the division of the property, the "mansion house", stable, granary, and spring house.

The 1816 tax assessment for White Clay Creek Hundred lists Thomas Hawthorn as owning 123 acres "without buildings", forty of which were in woodland. Each acre was valued at \$22 for a property assessment of \$2706. With the addition of the tax for himself and his livestock, Thomas Hawthorn's property, recently acquired, was assessed at over \$3100. "William Hawthorn's est." was recorded as being "111 acres of land at \$25.00;" "71 improved with one log dwelling and barn and 40 woodland." The valuation of the land was \$2775, with the addition of Jane Hawthorn's livestock (valued at \$194.50). The total assessment of William Hawthorn's estate was over \$2969. This tax assessment for 1816 is the first documentary evidence of a dwelling house on the property.

An inventory of William Hawthorn's (I) estate was prepared in August 1815, and describes the "log dwelling" or "mansion home" in which the Hawthorns resided. The house probably was constructed on a one-room deep, two-room plan with a kitchen addition. The inventory is a room-by-room listing of Hawthorn's possessions, and indicates a "front room", "back room", and a "back kitchen". Although not mentioned, there was probably a second story garret or sleeping loft. The inventory reveals that the Hawthorns were still involved in home manufacture of clothing, as they had been in 1790, as evidenced by the "Lot of tow thread", "Lot of Flax thread", thirty seven yards of linen, twenty yards of flannel, and two "wheels and a reel." With regards to livestock, besides the "lot of cattle", "2 spring calves", and a moiety or a pair of oxen, there were seventeen sheep, seven hogs, seven shoats (young weaned pigs), and two horses. He was still producing grain for market because he had 100 bushels of oats, 125 bushels of corn, and 25 bushels of wheat on the property, and owned a moiety, probably with his brother Thomas, on an additional 100 bushels of wheat. A total of five beds are listed in this inventory, and information from the 1810 population census indicates that there were eight persons residing with William Hawthorn (I) in that year. Six of these inhabitants were family members, one was a free person, and the other a slave.

Jane Hawthorn had died by 1822, but it was not until 1829 that William Hawthorn (II) petitioned the New Castle County Orphans Court to divide her land among his siblings. The "five sufficient freeholders of the county" appointed by the court, found that the farmstead would "not bear any division without



prejudicing and spoiling the whole." Thus, ownership of the entire farm was offered to each of the heirs of William Hawthorn (I). John, the eldest son, and Jared, "refused to choose or accept the said Real Estate", and both received remuneration for their portions of the estate. William (II), the second son, did accept the property, and Emiline was apparently not even asked, although she received payment for her part (New Castle County Orphans Court Records N-1-273). The property was valued at over \$2,000 and the boundaries were still the same as those established in 1816. William Hawthorn (II) married Matilda Morrison in March 1830 (The Historical Society of Delaware, Marriage Records: vol. 11:15) and died intestate in 1840. Once again the New Castle County Orphans Court was consulted and this time they were required to: "estimate the yearly rental value (of the farm) and note the buildings, orchards, and improvements; the estimated portion of cleared land, woodland and of meadow or marsh, whether any or what part may be cleared; and whether any or what repairs are necessary to the tenantable condition of the premises, and the probable cost of such repairs" (New Castle County Orphans Court Records R-1-440). In 1841 the court-appointed freeholders made the following detailed review of the "lands and tenements of Wm. M. Hawthorn and George Hawthorn." After inspection of the property, they were able to estimate the yearly rental value at one hundred and fifty dollars.

On (the) said premises are a rough cast log house two stories high twenty nine by twenty-one feet in good order, one frame end adjoining twelve by twenty one feet one story high in good order, one frame kitchen twelve by seventeen feet one story high in good order, one log smokehouse nine by eleven feet in good order, one frame Spring House eleven by eleven feet one story high in good order, one plank granary fourteen by fourteen feet one story high in bad order (and) not worth repair, one log building twenty four by twenty one feet used for Barn and Stable in bad order (and) not worth repair. There is an apple orchard of about one hundred trees, there is no woodland that we think ought to be cleared (.) We estimate about eighty acres of clear land including five acres of meadow, the residue in woodland. We think a new barn with stabling, (a) Granary and (a) CornCrib (are) wanted for the farm(;) probable cost \$450 (New Castle County Orphans Court Records R-1-501).

An inventory of William Hawthorn's (II) estate taken in March 1840 gives additional insights into the log dwelling on the farmstead. Mention of a "parlor", "parlor chamber", "common room", "entry", "kitchen", and "entry downstairs" indicate that the house was a hall-parlor plan of at least two stories with either a central or sidehall entrance. The frame end and frame kitchen recorded in the Orphans Court description of the farm

imply that at least one addition was constructed onto the log core, possibly the common room and kitchen. The information gathered from this inventory compares favorably with the William Hawthorn (I) inventory of 1815. The "front room", "back room", and "back kitchen" arrangement of 1815 is similar to the hall-parlor plan described in 1840, suggesting that the frame addition may have already been in place as early as 1815. The inventory of 1840 is noteworthy in that, although it doesn't specifically state the fact, it appears to be a room-by-room recording of the contents of the Hawthorn farmstead; house, stable, barn, granary, smokehouse, and springhouse. The appraisers seem to have begun their survey in the parlor chamber, or upstairs bedroom, then progressed downstairs to the parlor, common room, and kitchen, and finally outside to the barn, granary and other dependencies.

Several other points concerning this inventory should be made. From the entries listing 300 bushels of oats and 300 bushels of corn "subject to the expense of getting out and delivering to market", and the "378 pounds of pickled pork, hams, shoulders, and fletches", it is clear that Hawthorn was still involved in the regional market economy. Home manufacture at the Hawthorn farmstead had lost some of its importance as shown by the lack of any flannel, tow cloth, or linen in the inventory, and by the listing of "a lot old spinning wheels". Hawthorn was still the owner of a considerable amount of livestock, including a yoke of oxen (his only means of plowing), thirteen "muleys" (i.e., hornless cattle), two heifers, two steers, one bull, three calves, and an "old pale red and white cow". The pickled pork mentioned previously is obviously related to the "shoats" listed on the inventory. Transportation for Hawthorn and his family was provided for by four horses - two mares, a horse, and a colt. The inclusion on the inventory of the terms "ironware" and "cedar and earthenware" are indicative of the types of ceramics and perishable wood objects that were used by the occupants of the site in the mid-nineteenth century.

The population census of 1840 shows that there were seven people residing with Matilda Hawthorn in that year. Of the seven residents, two are male children - William and George. In addition to Matilda, two adults are listed, one male in his 40s and a female in her 20s. These were probably hired hands and servants for the farm, a practice that continues on the Hawthorn farmstead for quite some time. The census also indicates that there were two slaves, one male and one female between the ages of ten and twenty-four.

Tax assessments for the period between 1816 and 1840 (the time span that William Hawthorn (II) resided on the property) show that the farmstead's average valuation throughout the period was close to \$2,000 per year. Throughout that period Hawthorn was assessed as being in the upper seven per cent of the taxables in White Clay Creek Hundred. Thus, William Hawthorn's (II) inventory for 1840 reveals the farmstead of a wealthy, productive farmer of New Castle County involved in the market economy of the Philadelphia region.



The recommendations made by the Orphans Court freeholders in 1840 concerning a new barn and corncrib were evidently carried out by 1845, for the tax assessment of that year recorded a frame barn as being on the property, replacing the log barn. Seven years later, the assessment recorded a frame house on the property, which raised the value of the land from \$2775 in 1845 to \$3330 in 1852. It seems likely that a completely new house was not constructed to replace the log house. Perhaps the log house was simply framed-over with planking, leaving the original log structure intact.

Throughout the period 1850 to 1870, William M. Hawthorn's farmstead appears to have been predominantly a dairy farm. The United States Agricultural Censuses for those years show that Hawthorn's number of milk cows ranged from seven to four, and only in 1860 were there any other cattle listed on the census. Hawthorn produced during this period an average of 583 pounds of butter for market. The farm was also producing wheat, oats, buckwheat, Indian corn, Irish potatoes, and, in 1870, sweet potatoes.

By 1850, Hawthorn was not producing any market garden goods, nor was he engaged in home manufacture. The census indicates that he was growing a small amount of orchard products which fluctuated in market value from a high of \$60 in 1860 to a low of \$15 in 1870. The later agricultural census for 1880 records the farm as having twenty-seven apple trees on a one acre plot, which produced forty bushels of apples per year. These orchard products were valued at \$20, a similar figure for that seen in 1850. In any case, Hawthorn's orchard was probably small and was not a main cash crop for his farm.

Tax assessments for the period 1850 to 1870 record an average value of the farmstead as over \$4300, a doubling of the recorded value between the years 1816 and 1840. It is interesting to note that the agricultural census for the same period (1850-1870) listed the average value as \$6533 for the farm, indicating that the tax assessment values given are probably lower than actual market values.

Official records such as tax assessments and censuses are valuable in the reconstruction of a farmstead such as the William M. Hawthorn property, especially when private or personal accounts, such as letters, diaries, journals, and daybooks do not survive. However, the lack of personal information is unfortunate because, official records do not reveal the triumphs and tragedies of the people involved. This failing becomes obvious in the case of the William M. Hawthorn farmstead in 1872. In that year, William, his wife Emma, and his brother George were forced to sell their farm for \$2500 to James Springer (New Castle County Deed Book D-10-489). This action was caused by a "certain debt of one thousand five hundred dollars" incurred in 1866 to Springer by the Hawthorns, which the Superior Court of Delaware ruled should be levied out of the Hawthorn farm. Thus, although

all official records indicated a prosperous, well-run farm, definitely not in any financial or economic difficulties throughout the 1850s and 1860s, the truth of the situation was entirely different. The farmstead, which had belonged to a Hawthorn since 1816, and to their relations, the Peery's, for 60 years previous to that, passed out of the family.

Springer held the title to the property until 1874, when he and his wife Sarah M. and Matilda Henry (the Widow of William Hawthorn (II) ) sold the 111 acres to Arnold Naudain, Senior, of Mill Creek Hundred for \$4000 (New Castle County Deed Book G-10-38). Naudain continued to farm the land and graze livestock, but the agricultural census for 1880 valued the property at only \$6000, a loss of \$4000 from its market value in 1870 when William M. Hawthorn still owned it. Naudain had introduced sheep to the farm by 1880, but dairy farming was still the major agricultural occupation; it was recorded that Naudain produced 1,000 pounds of butter in 1880. The tax assessments for the 1874-1898 period show that the farm buildings consisted of a frame house and frame barn. The average value of the property for that period was about \$4500. Throughout this period, the Naudain farm rated in the upper twelve percent of the taxables in the Hundred.

An inventory of the estate was prepared in 1898 when Arnold died. No description of the house is given, only an entry for "goods in house". Livestock on the property included four horses (all named), four hogs, and four shoats, and no milk cows, but an entry of "dairy fixtures" indicated the major produce of the farm. Most of the inventory is devoted to farming tools and machinery, and is a good example of the mechanization of a turn-of-the-century small farm. Grains were still being produced, evidenced by the entries for corn, wheat, and oats. The barn, house and a two-story granary were the only structures mentioned in the inventory. The total valuation of the property was \$1040. In regards to the frame house and whether or not this was a new structure or a framed-over log house (see above), the tax assessment for 1899 is most illuminating. Ellen T. Naudain, daughter of Arnold Naudain, Sr., was recorded as the owner of the property, and a "frame log house and barn" were listed for the farm. Obviously, the log farmhouse of the early nineteenth century and possibly late eighteenth century was simply planked over in 1852, as had been surmised, and was still in use at the end of the century.

In August of 1899 Ellen, Annie, and Elizabeth Naudain sold their farm to their brother Arnold, Jr., and to Jonas and Mary Klair, and McCoy and Susan Yearsley. Arnold, Jr. owned the farm southeast of his father's farm, on the Christiana-Stanton Road. The purchase price at this time was again \$4000 (New Castle County Deed Book A-18-393). The new buyers appear not to have occupied the house, but instead leased the property to tenants, a practice Bausman (1933) stated was increasingly common in the late nineteenth and early twentieth centuries. The house was thus occupied when it burned in 1902, destroying the log



dwelling. A frame house was erected soon thereafter, partly on a new brick foundation and apparently incorporating portions of the older stone foundation. The house had a full cellar in the stone foundation section, and was a center hall, two room plan with a back kitchen ell. It was two stories high with an attic.

The Naudains, Klairs, and Yearsleys sold the farm to Oliver C. Lynam for \$6000 in 1917 (New Castle County Deed Book Z-26-108). He purchased the property for his son Raymond, who resided there with his family until about 1928. From that time until 1940 the property was in the tenancy of William Morrison. In 1940, Richard C. Lynam became the tenant, and he and his family lived there and worked the land until 1961 when they moved to Appoquinimink Hundred. In 1962 the heirs of Oliver C. Lynam sold the farm to the Magnus Shopping Mart, Inc. for over \$300,000 (New Castle County Deed Book U-69-400). Three years later, in 1965, the now abandoned farm was purchased by the Welfare Corporation, Inc. (New Castle County Deed Book K-75-31).

### EXCAVATION RESULTS

The final data recovery concentrated on areas known from the Phase I/II research to contain high artifact density and/or an abundance of subsurface features. The project limits were restricted by the proposed ROW, an area which was found to coincide with the main activity area of the site. Thus, while the areal extent of sampling the site was limited, the area most informative concerning artifact patterning and activity areas was intensively excavated. The sample obtained is thus assumed to represent the range of disposal areas and structural features present at the site.

Approximately 16.5% of the National Register site south of New Churchman's Road was directly impacted by the present road widening project and within this area the site's content was intensively excavated by fifty-five excavation units and 108 shovel/postholer units. The eastern extent of the site within the ROW was completely identified by this Phase III project and related excavation of the prehistoric component. The western extent of the site within the ROW was sufficiently tested and the limits identified on the basis of stratigraphy combined with the relatively low artifact counts encountered in shovel/postholer units. The southern one-third of the site, based on the National Register boundaries was not within the project ROW. Historic research indicates the existence of an extensive agricultural outbuilding complex in this area, including a barn, granary, wells, and other miscellaneous support buildings. The below ground remains of these structures are undisturbed and were not affected by the present project.

### Site Structures

Prior to beginning the Phase III unit excavation, the project area of the site within the National Register boundary was divided into two areas based on the results of the artifact distribution revealed by the shovel/postholer excavations. Each

was studied by a different sampling strategy. The most intensive excavations were conducted in what was known to be the backyard area of the disturbed main house foundation (Figure 20). Within an area approximately fifty feet square, a total of twenty-one 5 ft. X 5 ft., 3 ft. X 3 ft., 2 ft. X 10 ft., 3 ft. X 4 ft., and 2 ft. X 5 ft. units were excavated. This provided a 15% non-random sampling of this intensively occupied area. The statistically reliable sample obtained was determined to be necessary in order to effectively test South's (1977) refuse disposal patterning, and to address chronological concerns i.e., the dating of features and occupation levels stated in the research design. In distinct contrast to this intensive investigation of a limited area, the downslope areas of the site were non-randomly excavated solely in order to locate suspected archaeological features. Both measured 2 ft. X 2 ft. and 5 ft. X 5 ft. units to delineate the extent of the identified features.

### Stratigraphy

The examination of the complex stratigraphy of the site was obtained from the total of 108 shovel/postholer units and 55 excavation units. A composite southeast-northwest profile is shown in Figure 21.

The composite profile illustrates that the upslope part of the site was composed of a trough-shaped area of deeply buried deposits, dense artifact concentrations adjacent to a cobble foundation (Feature 4) located in the Phase I/II research (O'Connor et al. 1983), and a ridge top main house area covered by a yellow/gray mottled gray fill exhibiting much local variation in stratigraphy. The downslope areas of the site seen in Figure 21 show the three downslope historic anomalies and, in the eastern section of the site, the presence of the buried plowzone levels. Generally, the stratigraphy in this downslope one-half of the site included four soil horizons. Horizon I is a dark brown loam representative of very recent slope wash along the toe of the slope. Horizon II is a brown sandy loam formed through a mixture of recent plow-disturbed soils and sediments derived from numerous episodes of slopewash that occurred prior to the episodes that deposited Horizon I. Horizon III, a dark brown loamy sand, is representative of a buried plowzone that includes both historic and prehistoric artifacts in a disturbed context. Finally, Horizon IV is a reddish brown sandy loam and indicates a buried B horizon that has been intact for up to 5,000 years (Wagner 1982).

In sum, the late eighteenth and early nineteenth century topography on the Hawthorn site suggests a house site situated on a hillock, sloping sharply to the west and east. From the onset of occupation, considerable erosion occurred, which rapidly filled in an existing trough-shaped basin to the west. Erosion also caused considerable amounts of soils to be deposited as slopewash to the east of the hillock. The lack of any depositional basin allowed these soils to spread out over a very large area. Through time, continued movement of slopewash to the



FIGURE 20

# Site Map - Hawthorn Site

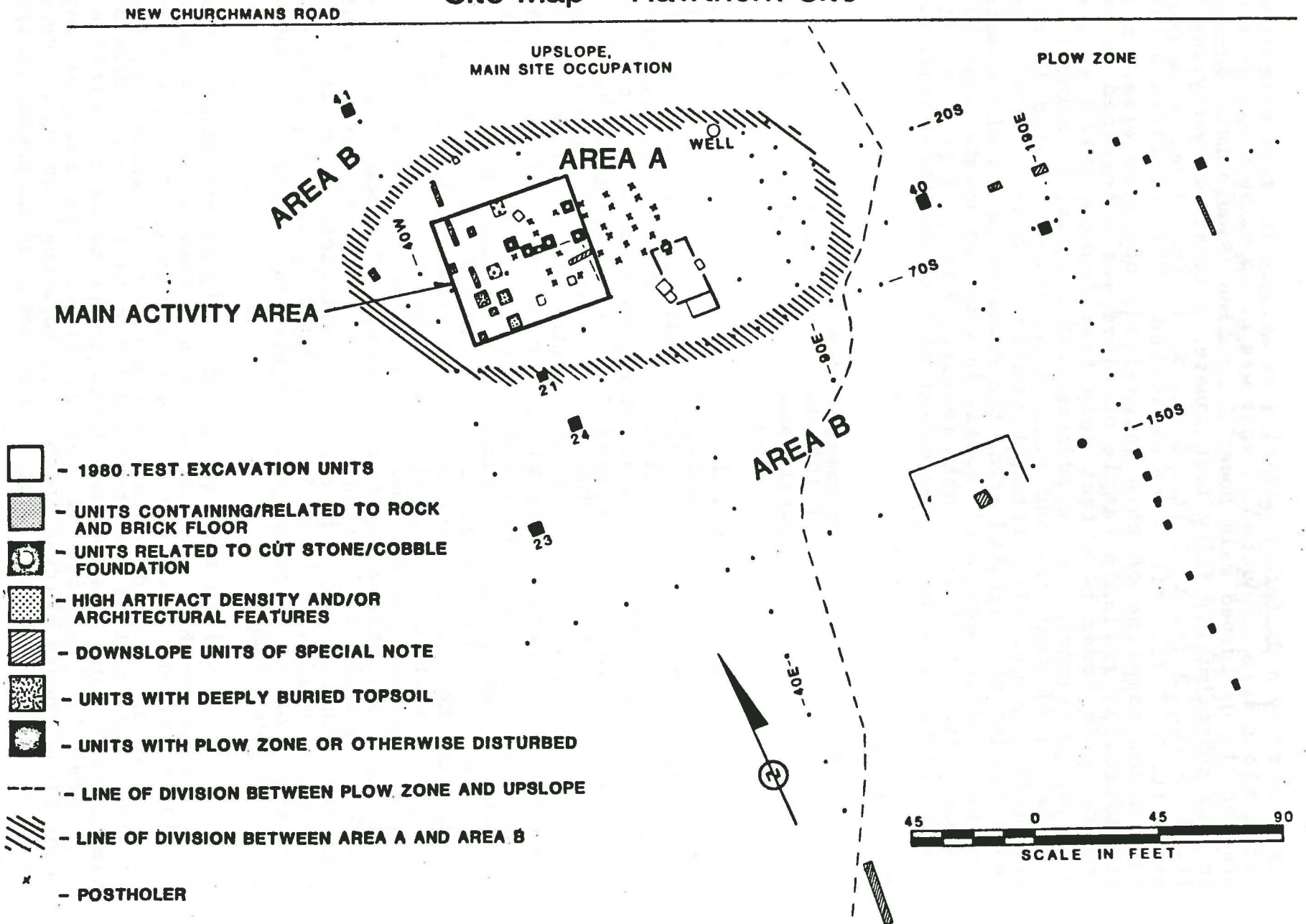
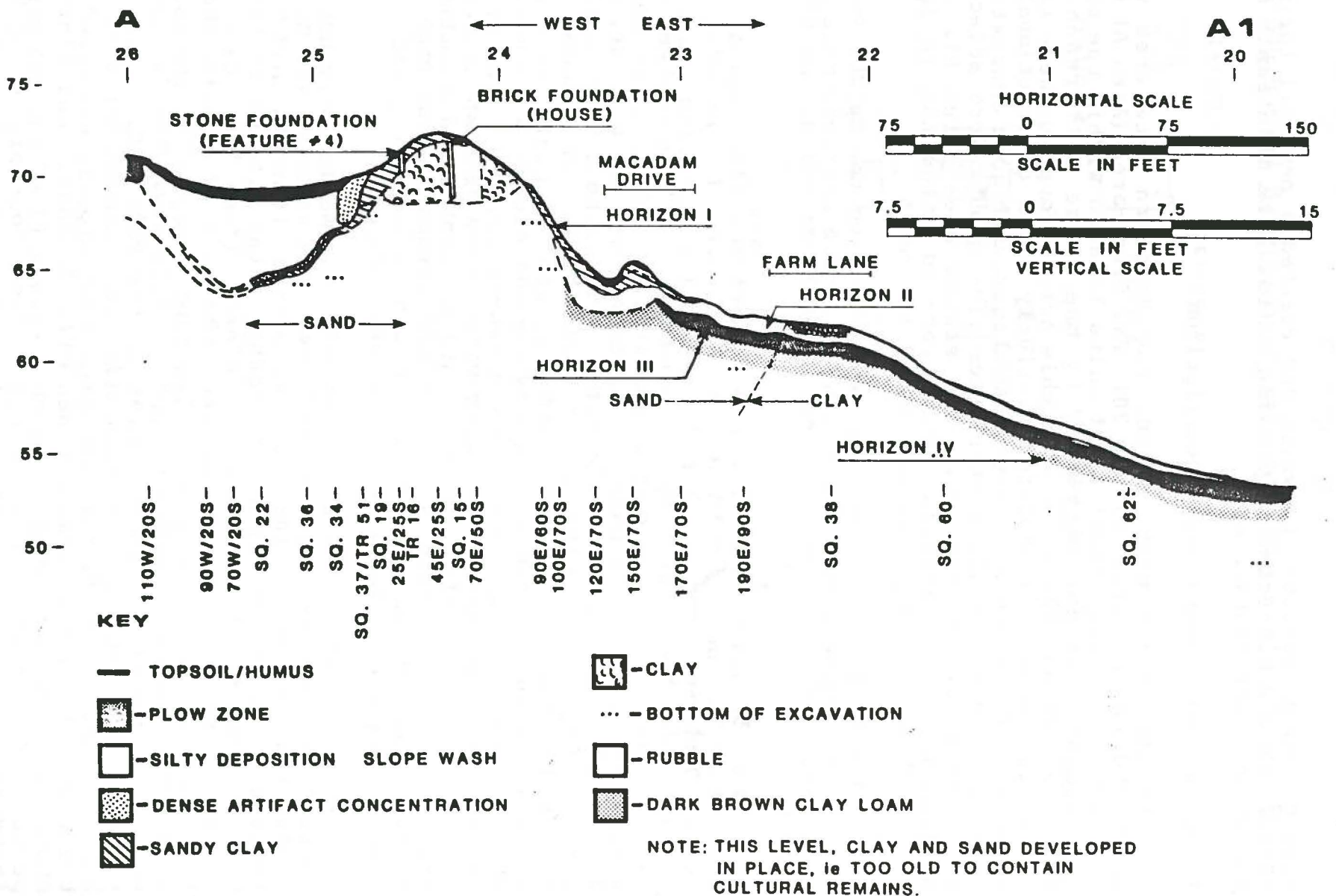


FIGURE 21

## Composite Profile - Hawthorn Site





east buried an earlier plowzone and created a new soil horizon (II) which was subjected to plowing in the late nineteenth and early twentieth centuries.

#### Excavation Units and Feature Descriptions

To facilitate description, the Hawthorn site area was divided into two areas (Figure 20). The first area (Area A) the main activity area, consists of units located within the main occupation area as identified by the Phase I/II research (O'Connor, et al. 1983). Within this area, groupings were made of excavation units containing similarly dated or functionally related features or artifact assemblages with good contextual integrity. Based on these attributes five groups were selected for discussion (Figure 22). The second area (Area B), was defined by the excavation units located below the 70 foot contour line, downslope and peripheral to Area A.

A total of 19 features were exposed during the DelDOT Phase I/II test excavations and the Phase III data recovery program. Each feature is described in Table 1 and locations are noted in Figure 21.

Using documentary evidence, a conjectural floorplan of the circa 1840 log-and-frame house was constructed (Figure 23). The County Orphans Court Records described the dwelling house as measuring twenty-one feet by forty-one feet, with a twelve foot by seventeen foot frame kitchen addition. Although chimney, window, door, and stair passage placements are not certain, the inventories of 1815 and 1840 verbally describe a house with a room configuration similar to that shown. The house was originally a side-hall, one-room deep log structure, that was later enlarged (at least by 1815) by the addition of a frame wing and kitchen ell. The log core was two-story, while the frame sections were one-story, probably with a shed or lean-to style roof. It should be noted that the house apparently had a southern orientation. While this is not the most frequent house exposure found in the Middle Atlantic, it was by no means uncommon (Bernard Herman, personal communication, 1983).

Figure 24 shows the floorplan of the same Hawthorn house, based on the archaeological evidence. The results are quite remarkable in their coincidence with those found by archival research. The house dimensions found at the site match those presented above. Located during the excavations (Test Unit 12, and Test Trenches 17 and 18) were the east and north stone foundation walls of the original log core, and part of the south wall. The foundation here was approximately four feet in depth; this area had served as a cellar in the post-1902 house. A twenty foot section of stone foundation was located, (Squares 58, 59, and Test Trench 16) one foot deep, that closely conformed to the west wall of the frame kitchen ell. An additional line of stones was found extending along the north wall of the log core, perhaps remains of that structure's stone foundation, or the foundation of the post-1902 kitchen ell. Also shown in the

FIGURE 22  
Floor Plan and Archaeological Features – Hawthorn Site

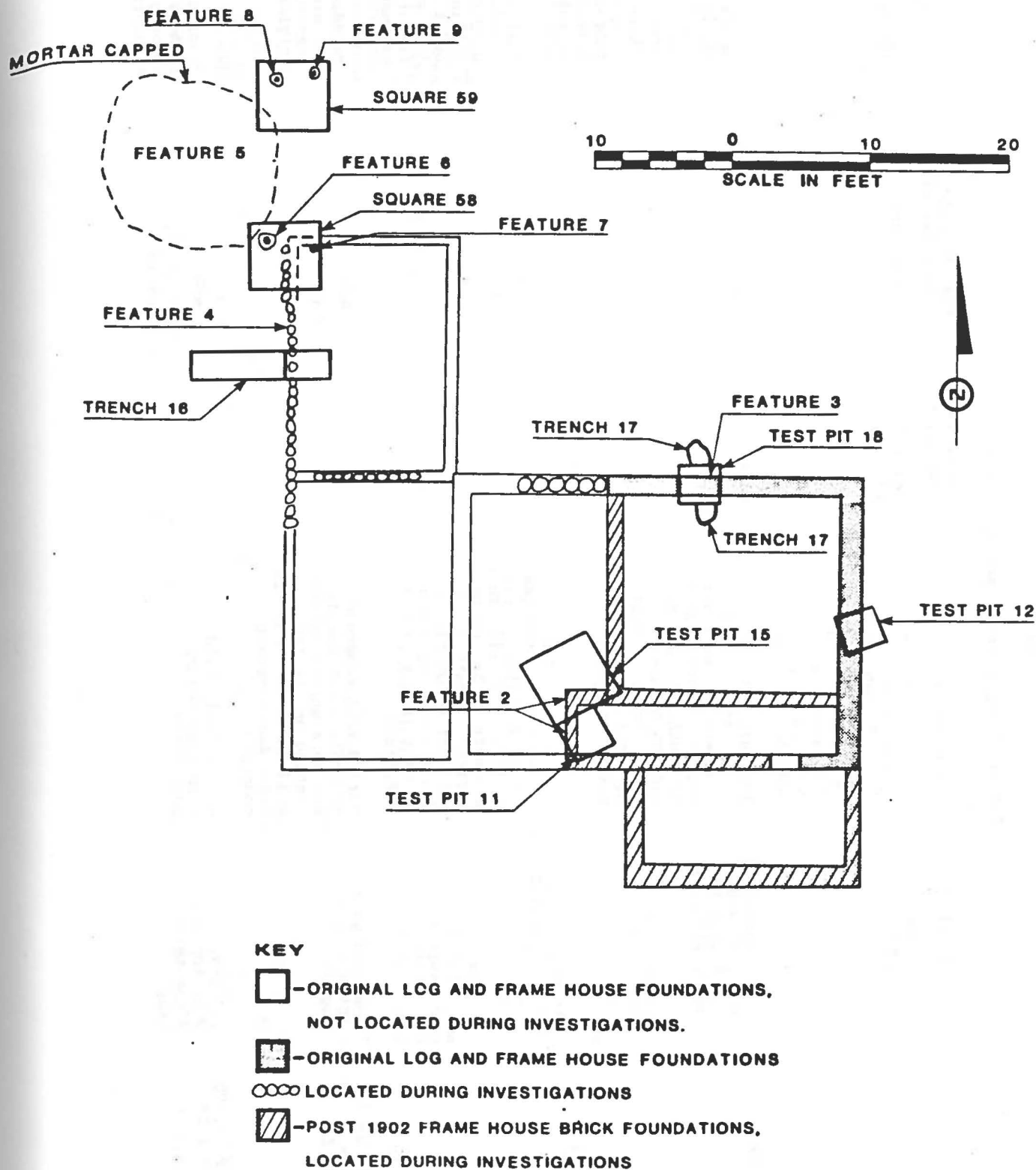




TABLE 1

Feature Description - Hawthorn Site

No.	Location	Dimensions	Description	Terminus Post Quem	Mean Ceramic Date (yl,y2)	Interpretation
1	3S, 80E	38" diameter 42" depth	Circular, brick-lined. Asbestos tile drainage pipe protrudes through SW wall, 12" b.s. Excavation revealed sterile sand at 42" b.s.	Level 7-1900	1812-1855	French Drain
2	TP 15	West foundation wall, 6" wide; North interior wall, 24" wide	Two walls composed of mortared bricks intersecting at right angles. Within walls to south, 35" accumulation of demolition rubble. Archaeological deposit mixed throughout	1943	N/A	Brick foundation walls forming the north corner of an outside basement entrance. Filled with 20th c. demolition rubble. Entrance closed by addition of interior brick wall ca. 1902
3	TP 17/18	3' in length, 1 1/2' in width	Buried wall composed of large uncut cobbles set in a mortar matrix. Resting on sterile soil at depth of 58" below surface. South of wall artifact deposition of demolition rubble mixed with 18th & 19th c. artifacts		N/A	Part of north foundation wall used for both original and rebuilt structures. Area south of feature is within basement
4	TP 16 & 19, SQ 58 TR 51	L-shaped wall, 20' N-S, 13' E-W	Buried wall composed of small uncut cobbles set in a mortar matrix. Resting on sterile soil at a depth of 18" b.s. Low artifact counts.		N/A	Foundation wall for wing or lean-to added to original structure
5	TP 19, SQ 58 & 59	12' E-W, 11' N-S, approx. 3' in thickness	Horizontally laid slab composed of soft mortar		N/A	Floor or wing or lean-to addition to original structure

TABLE 1 (con't.)

Feature Description - Hawthorn Site

No.	Location	Dimensions	Description	Terminus Post Quem	Mean Ceramic Date (yl,y2)	Interpretation
6	SQ 58	Posthole-1.0' in diam. Postmold-0.3'X 0.8'	Posthole containing distinct postmold in matrix of mortar and ash		N/A	Support post related to original structure
7	SQ 58	Posthole, 1.2' X 0.6', 1.2' in depth	Posthole containing wooden post <u>in situ</u>	whiteware, ca. 1820	N/A	Part of 20th century fence enclosure system shown on 1955 DelDOT map
8	SQ 59	Posthole, 1.2' N-S X 0.85' E-W, depth 1.4'; Postmold, 0.5' in diameter	Rectangular shaped posthole	ca. 1820	Fill = 1812	Major structural support post related to original structure
9	SQ 59	Posthole dimensions same as Fea. 8	Rectangular shaped posthole	ca. 1820	Fill = 1794	Major structural support post related to original structure
10	SQ 37	5' E-W, 0.9' N-S, 0.55' in depth (top of feature 2.0' below original ground surface)	Irregularly delineated trench-shaped concentration of artifacts in dark brown soil matrix	ca. 1820	1820	Drainage or disturbed area related to features 4 & 5
11	SQ 37	1.7' E-W, 1.1' N-S, 2.25' deep	Large, flat-bottomed posthole intruding into sterile soil. Fill composed of mortar, cobbles, & brick in a sterile soil matrix	N/A	N/A	Major structural support post related to original house structure
12	SQ 30 & 35, TR 61	9.0' N-S, 9.0' E-W, approx. 0.35'-0.60' thick	Dense pavement of uncut rocks, brick frags., mortar frags., containing charcoal, window glass, cut nails, and melted glass			Flooring for support structure



TABLE 1 (con't.)  
Feature Description - Hawthorn Site

No.	Location	Dimensions	Description	Terminus Post Quem	Mean Ceramic Date (y1,y2)	Interpretation
13	SQ 30	Posthole: 1.1' E-W, 0.7' N-S; Postmold: 0.4' in diameter 0.9' in depth	Posthole and mold originating 2.6' below ground surface	1903 (dated ceramic makers mark from posthole)	1841	Post support for structure cover- ing area of Fea. 12
14	SQ 22	0.65' in diam. 0.50' in depth	Posthole stain con- taining charcoal flecks intermixed with topsoil			Part of fence enclosure system
15	TR 39	Posthole: 1.2' in diameter; Postmold: 0.9' tapering to 0.3' square			1874	
16	SQ 31	Posthole: 2.0' N-S, 1.7' E-W; Postmold: 0.55' square, 1.0' in depth	Originates at 2.25' below surface and extends to 3.50' below surface. Located 2.0' north of Fea. 17		1808	This feature and #17 are part of same fence en- closure. Close distance between #16 & #17 sug- gests gate post
17	SQ 31	Posthole: approx. 1.2' in diameter; Postmold: 0.4' in diameter, 1.3' in depth	Posthole filled with loosely con- solidated organic debris	17 ca. 1860	1821	See # 16 interpretation
18	SQ 34	Posthole: 0.7' in diameter, 1.6' in depth	Posthole filled with topsoil	18 ca. 1820	1845	Part of fence enclosure system
19	TR/SQ 38	7.5' wide, approx 1.0' deep	Horizontal deposit of medium-sized cobble intermixed with topsoil beneath a cobble fill			Driveway for farmstead in use before 1955

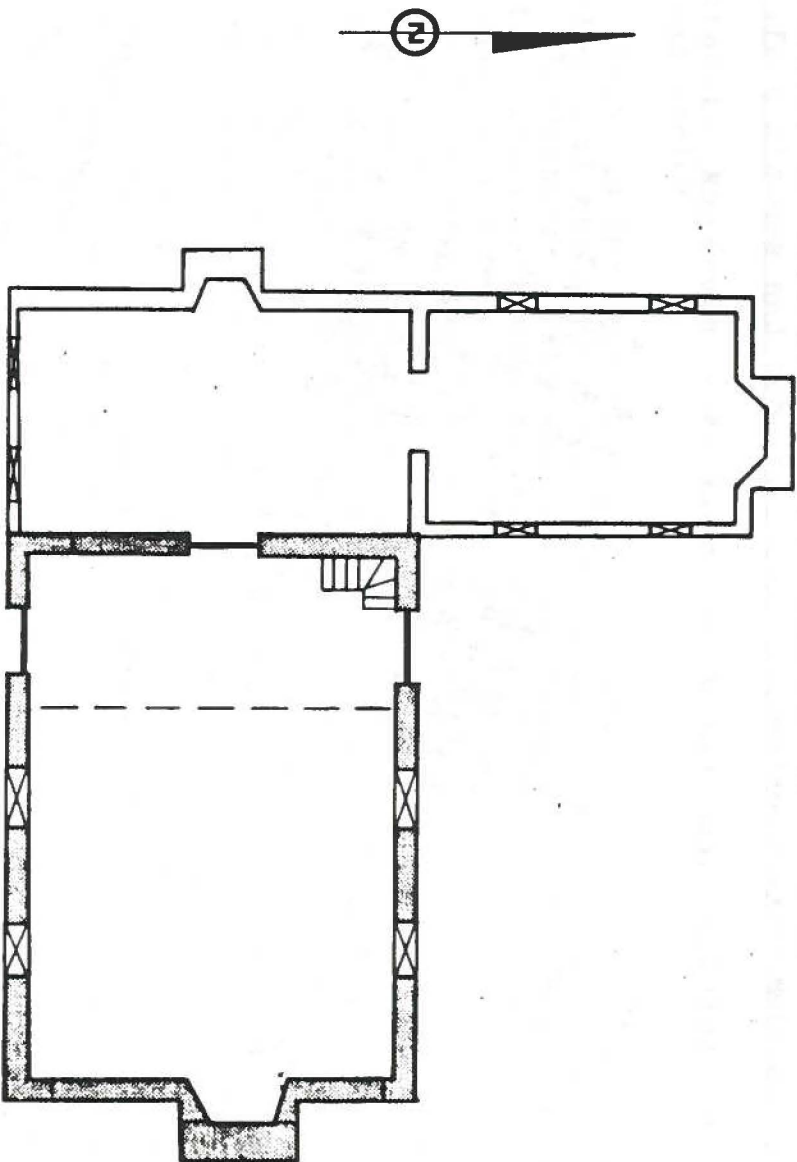


FIGURE 23  
Conjectural Floor Plan - Hawthorn Site



FIGURE 24

# Creamware and Redware Distribution in Postholer Units – Hawthorn Site

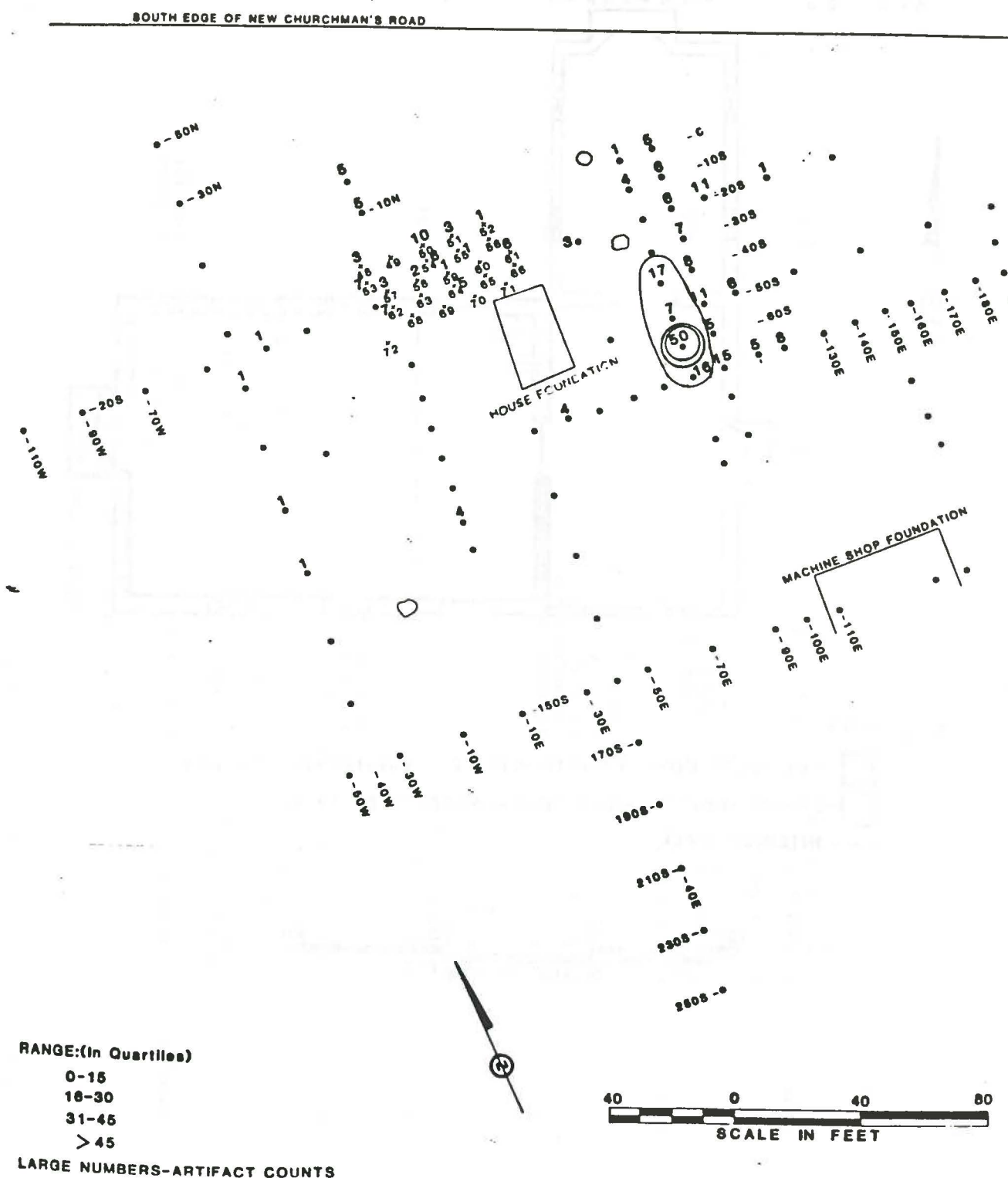


figure is the location of the brick foundation of the post-1902 house structure, found by the excavation of Test Units 11 and 15. Thus, the Phase III excavations were able to locate and identify the original mid-eighteenth century log house foundation, and show it to have been reoriented from south to east in 1902. This information, derived from documentary and archaeological evidence, is also supported by the intrasite distribution of artifact classes and groups.

## Intrasite Analysis – Artifact Distribution, Artifact Area Determination

Prior to the determination of activity areas at the site, an analysis of the artifact density distribution obtained by the shovel/postholer units was accomplished. The shovel/postholer units studied were located west of the division line between the plowzone and the main occupation area of the site. The main excavation area was analyzed separately due to differential artifact densities and excavation techniques. Ninety-seven shovel/postholer units were thus included. For the purposes of this study, all of these units were assumed to be of equal volume and depth. Based on the raw artifact counts obtained from these units, eight artifact distribution maps were prepared (Figures 24-31). Density contours were manually plotted on these maps, revealing areas of the site that contained high concentrations of functionally or chronologically significant artifact types or groups. The density contours were visually interpreted for each map to define specific intra-site differences within artifact classes and groups. Using intra-site comparisons between classes and groups and an analyses of the density or dispersion of contours, the presence or absence of interrelationships between architectural and archaeological features were revealed.

Two major areas of high artifact density were located, one on each side of the house foundation rubble pile. To the north and west of the house, one concentration was centered around shovel/postholer units 10E/20S and 57, and contained large amounts of ironstone and whiteware (Figure 26), wire nails (Figure 28) and kitchen related artifacts (Figure 30). North of this area was a concentration of building material around shovel/postholer unit 10E/10N (Figure 29). To the west of these was a low concentration of building material, and architectural group artifacts (Figures 29 and 31). In the vicinity of 10E/50S was a significant architectural group concentration (Figure 31). All of these concentrations were located in the rear or side yards of the post-1902 house, and are representative of generalized activity areas associated with the mid-nineteenth to twentieth century occupation of the site. Continual occupation of this area has obscured any functional differences that may have existed in this area. It is noteworthy that no large densities of eighteenth century artifacts appeared in this area.

The second major artifact concentration was located east of the house foundation. This concentration consisted of three, and possibly four, areas of high artifact density. Three of these



FIGURE 25

# Pearlware and Yellowware Distribution in Postholer Units – Hawthorn Site

SOUTH EDGE OF NEW CHURCHMAN'S ROAD



FIGURE 26

# Ironstone and Whiteware Distribution in Postholer Units – Hawthorn Site

SOUTH EDGE OF NEW CHURCHMAN'S ROAD

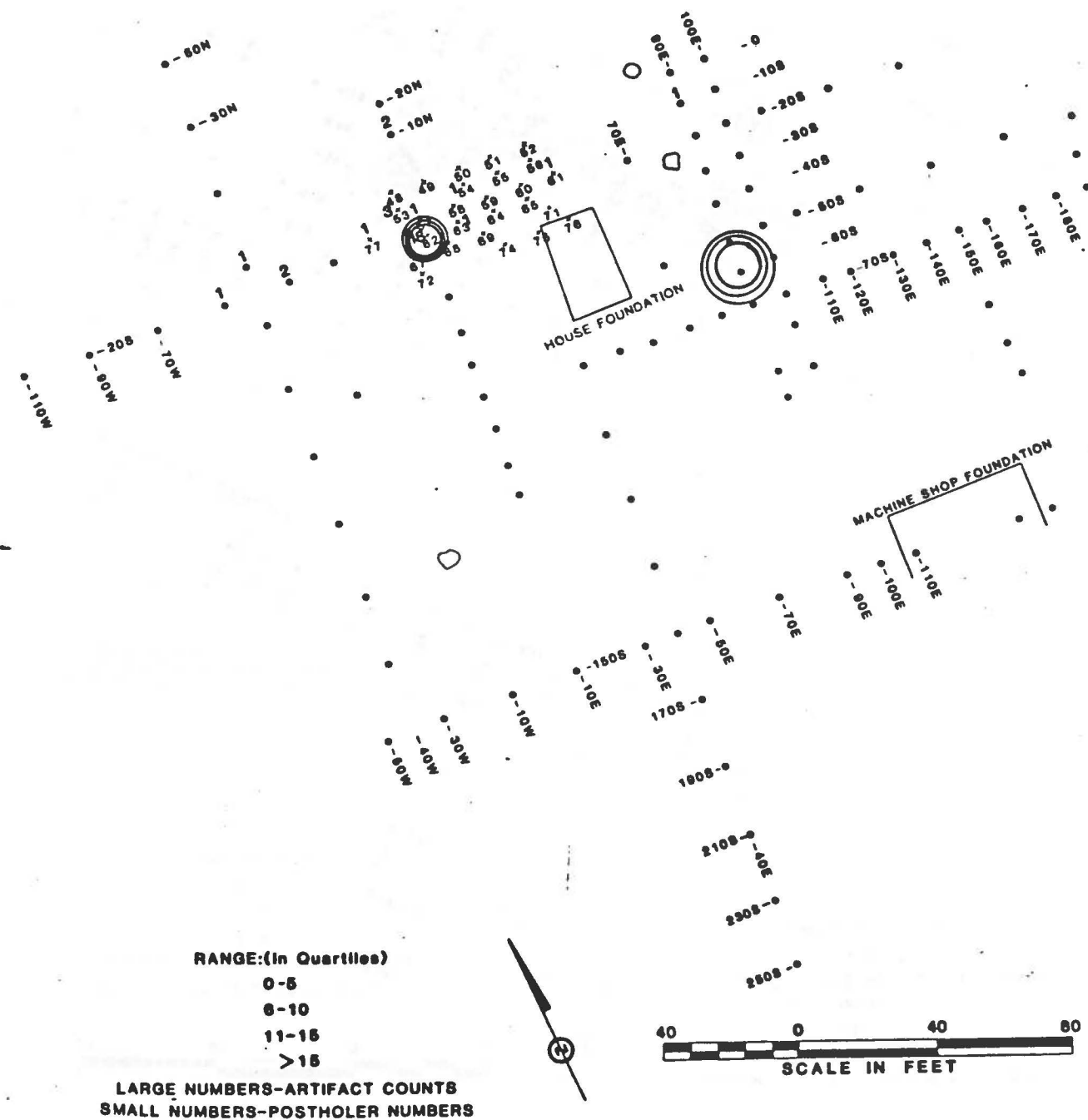




FIGURE 27  
Cut and Wrought Nail Distribution  
in Postholer Units – Hawthorn Site

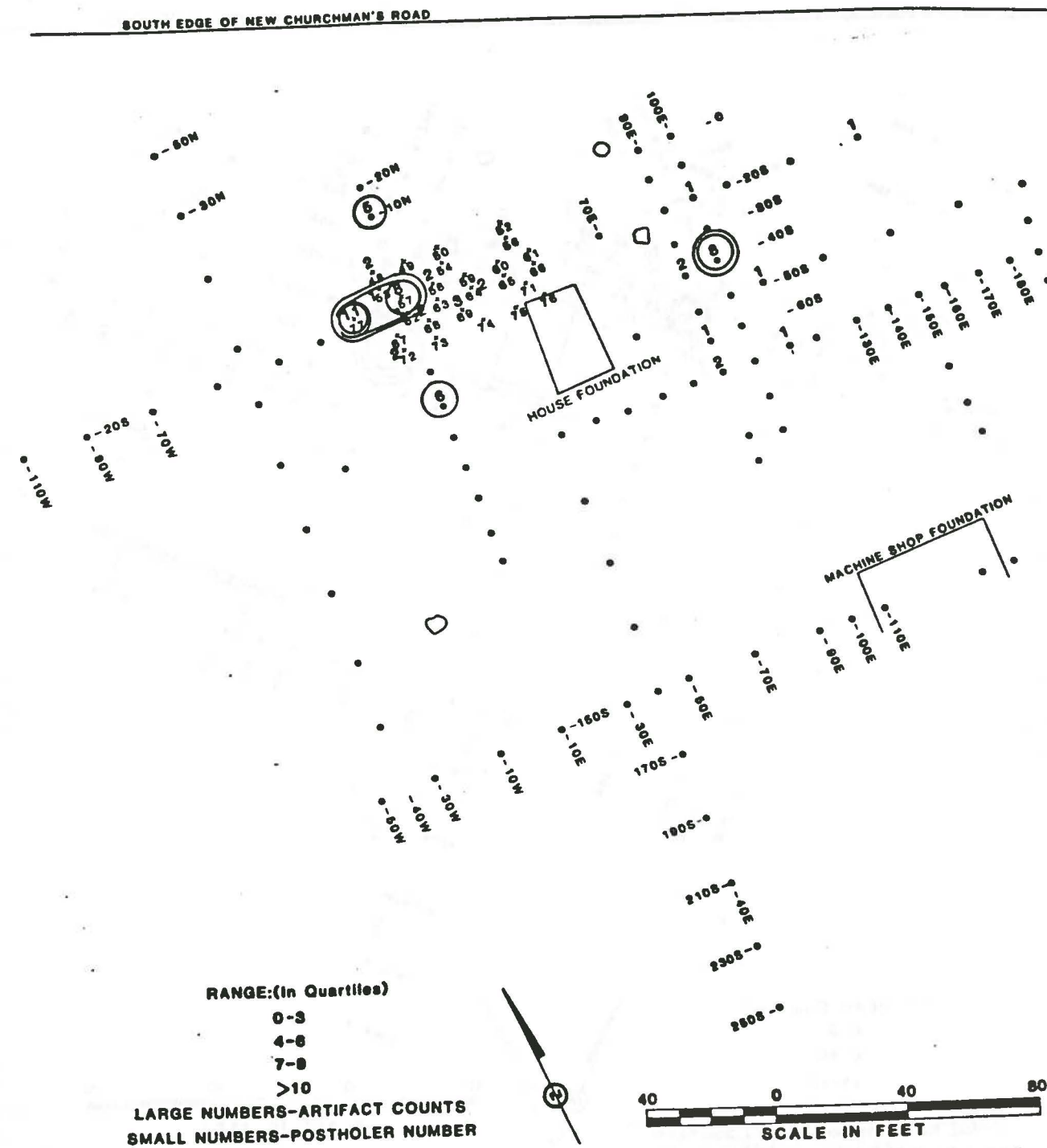


FIGURE 28  
Wire Nail Distribution in Postholer Units – Hawthorn Site





FIGURE 29

# Building Material Distribution in Postholer Units – Hawthorn Site

SOUTH EDGE OF NEW CHURCHMAN'S ROAD

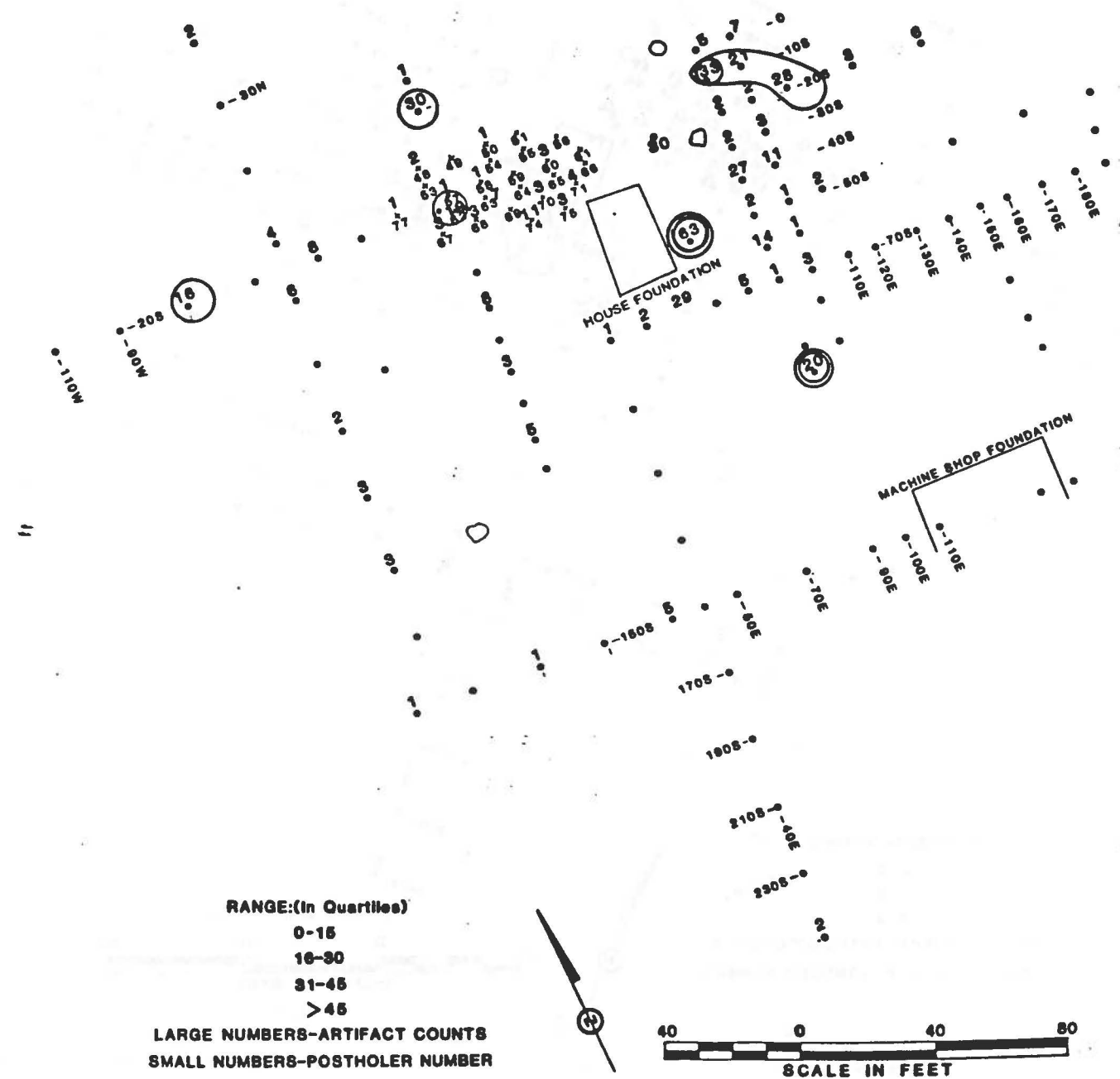


FIGURE 30

# Kitchen Group Distribution in Postholer Units – Hawthorn Site

SOUTH EDGE OF NEW CHURCHMAN'S ROAD

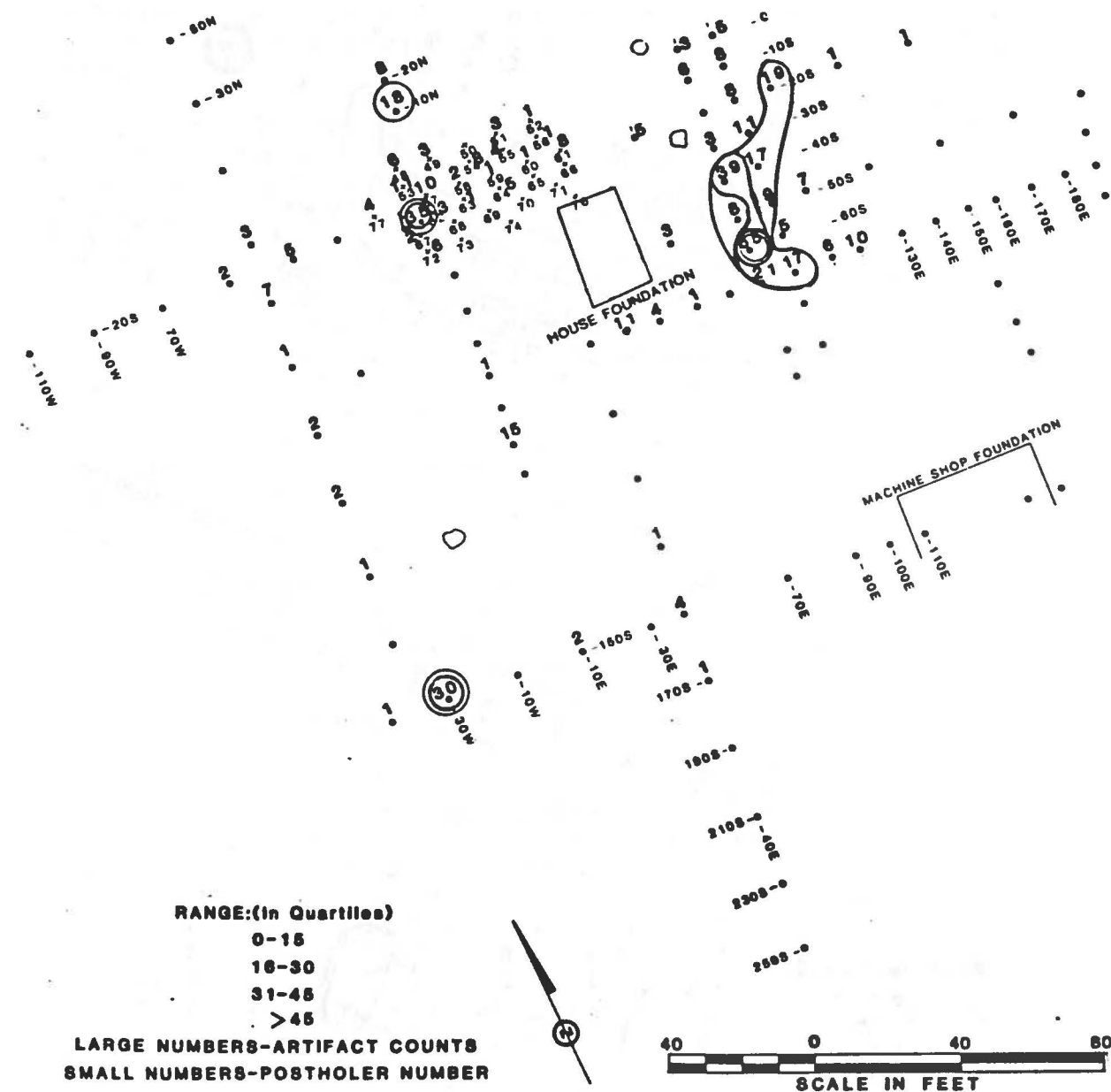
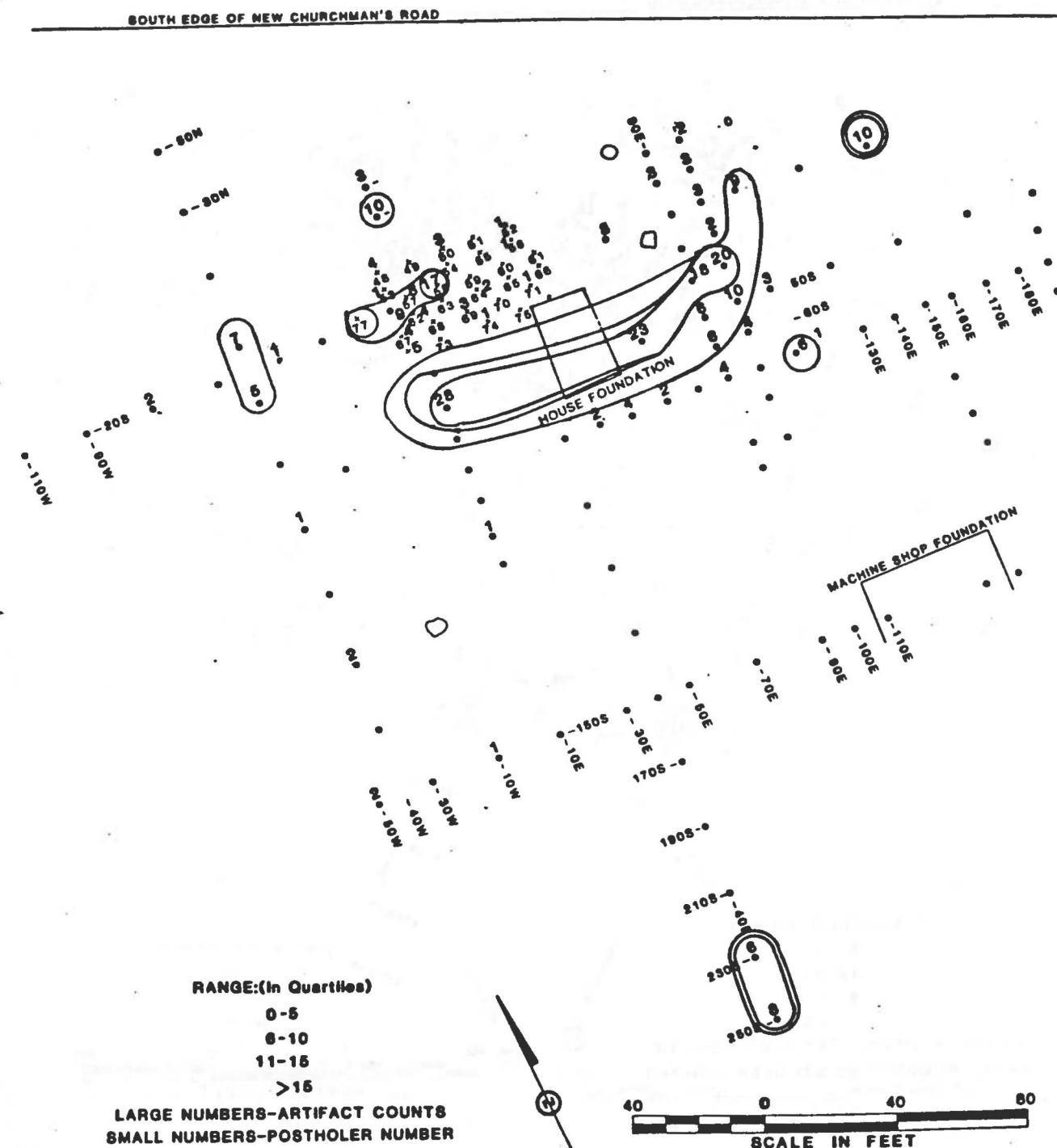




FIGURE 31  
Architecture Group Distribution  
in Postholer Units – Hawthorn Site



were located approximately thirty to forty feet east of the foundation, in the vicinity of the 90E/60S to 90E/40S transects, and contained high densities of creamware and redware, kitchen group material, and building material (Figure 24, 30, and 29). The final, smaller concentration was found centered on shovel/postholer unit 70E/20S, and was primarily a concentration of building material (Figure 29). The artifact concentrations in this area would all have been located in the side yard of the original, south-facing log house. Again, spatially discrete functional areas had been lost through long-term occupation and use of this area. The largest concentration of creamware and redware came from this area, which represents a yard area or activity area associated with the loghouse occupation of the site.

After the completion of the distribution analysis of the shovel/postholer units for the entire site, a similar analysis of a main activity area approximately fifty feet by fifty feet was undertaken (Figures 21 and 32). Within this area, intensive testing in both the Phase I/II and Phase III excavations had combined to produce a 15% sample. Through the analysis of this area, different patterns of artifact disposal for the late eighteenth to early nineteenth centuries, and the mid-nineteenth century to the present, could be studied further and compared.

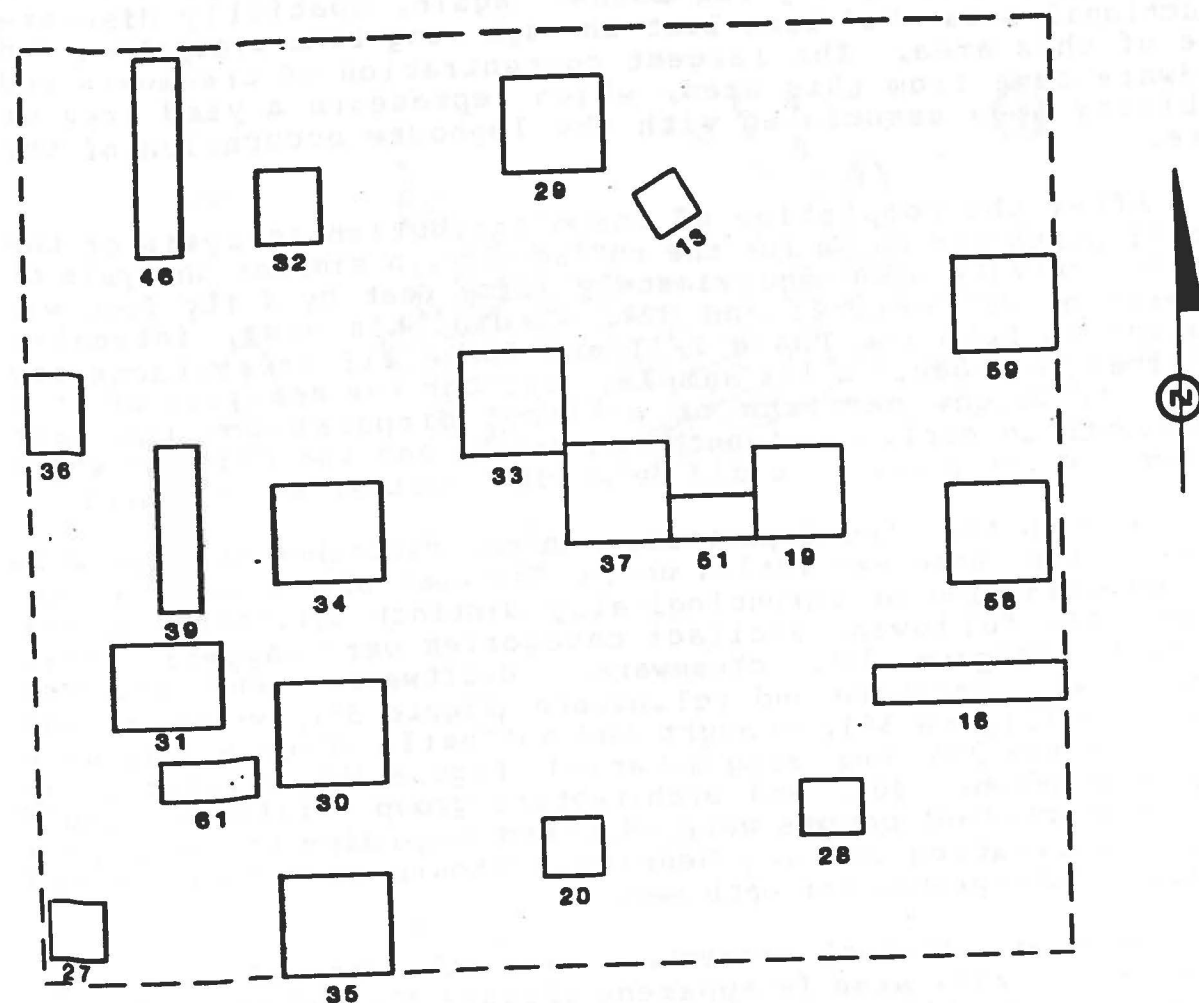
As with the shovel/postholer units, distribution maps were prepared for these excavation units. The goal of the analysis was the determination of chronologically distinct artifact disposal areas. The following artifact categories were mapped: total artifacts (Figure 33), creamware, delftware, and redwares (Figure 34), pearlware and yellowware (Figure 35), whiteware and ironstone (Figure 36), wrought and cut nails (Figure 37), wire nails (Figure 38), building material (Figure 39), kitchen group artifacts (Figure 40), and architecture group artifacts (Figure 41). Raw artifact counts were adjusted according to the volume of the excavation units. Density contours were plotted and visually interpreted for each map.

One major artifact concentration in the central section of the main activity area is apparent (Figure 33) and it contained large concentrations of creamware and redwares, pearlware and yellowware, ironstone and whiteware, wrought and cut nails, kitchen group artifacts and architectural group artifacts. (Figures 34, 35, 36, 37, 40, and 41). An additional concentration of kitchen group artifacts is noted in the southwest corner of the main activity area (Figure 40). A high density of wrought and cut nails and some architectural group artifacts, (Figures 37, and 41) is also present to the southeast of main concentration area.

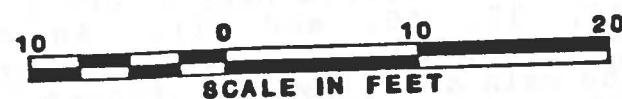
The results of analysis of the main activity area artifact distributions confirmed the interpretations presented by the Phase I/II investigations (O'Connor et al. 1983). The main artifact concentration shown centering around units 13, 19, and 37 was probably associated with the late eighteenth to early



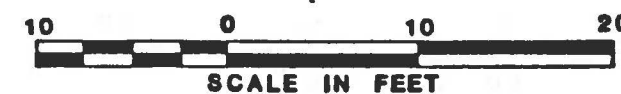
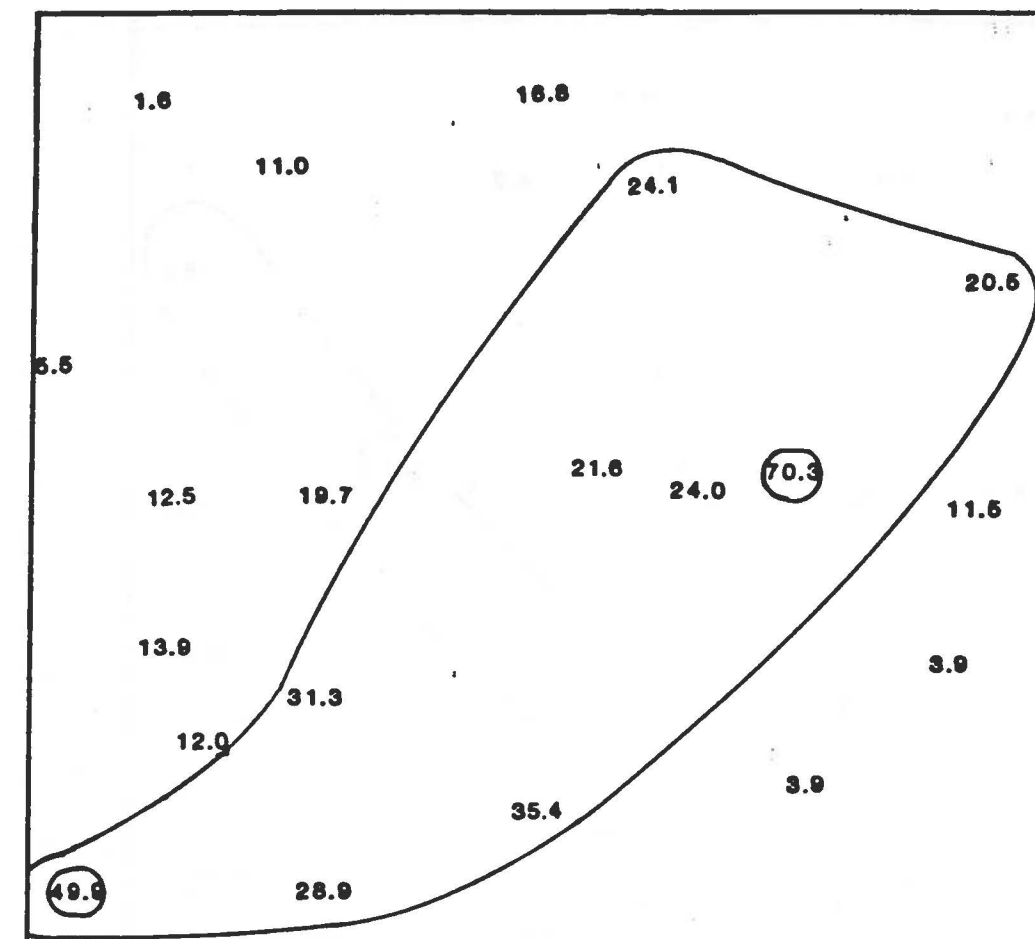
**FIGURE 32**  
Main Activity Area Excavation Units – Hawthorn Site



0 - Identification number for excavation units



**FIGURE 33**  
Total Artifact Distribution – Main Activity Area – Hawthorn Site



**NOTES:**

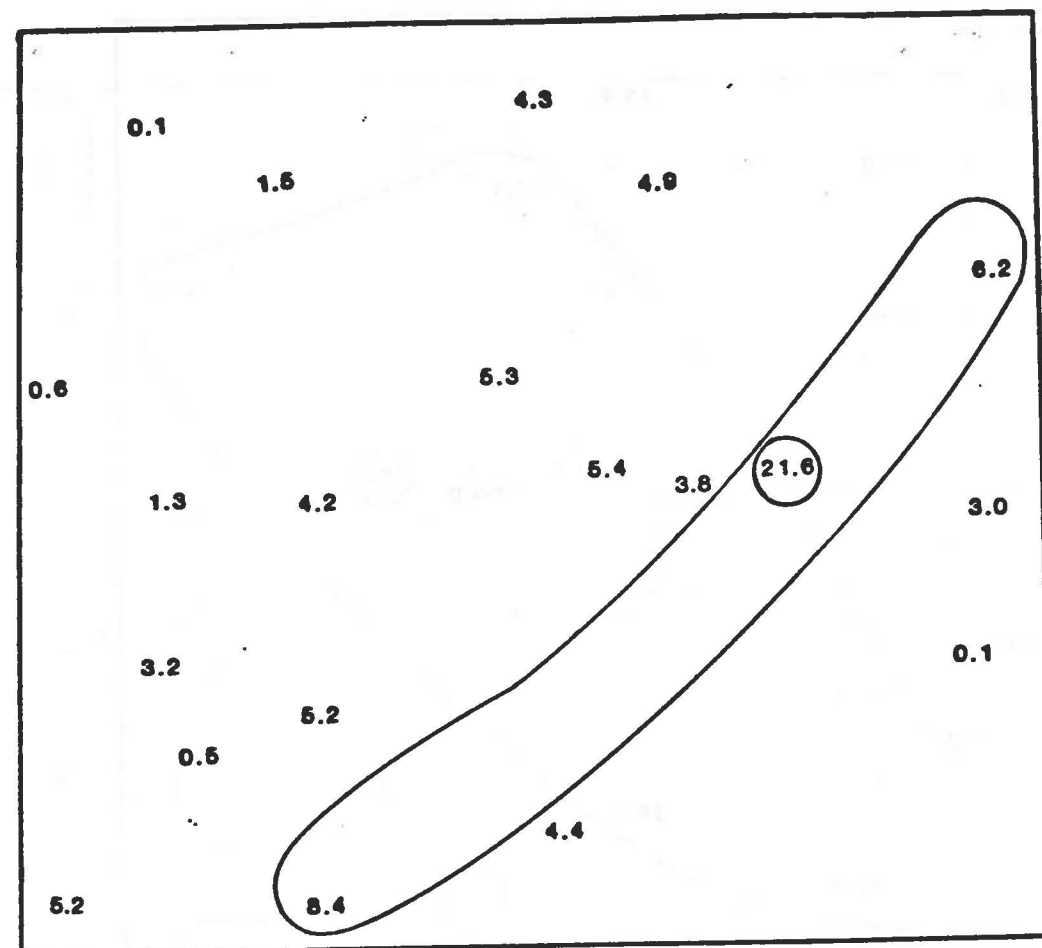
- 1-COMBINED PROVENIENCES USED FOR EACH UNIT.
- 2-COUNTS REPRESENT DENSITY OF ARTIFACTS PER CUBIC INCH.
- 3-RESULTS ROUNDED TO NEAREST TENTH.

**RANGE: (In Contours)**

- 1-20
- 21-40
- 41-60
- > 60



**FIGURE 34**  
**Creamware and Redware Distribution –**  
**Main Activity Area – Hawthorn Site**



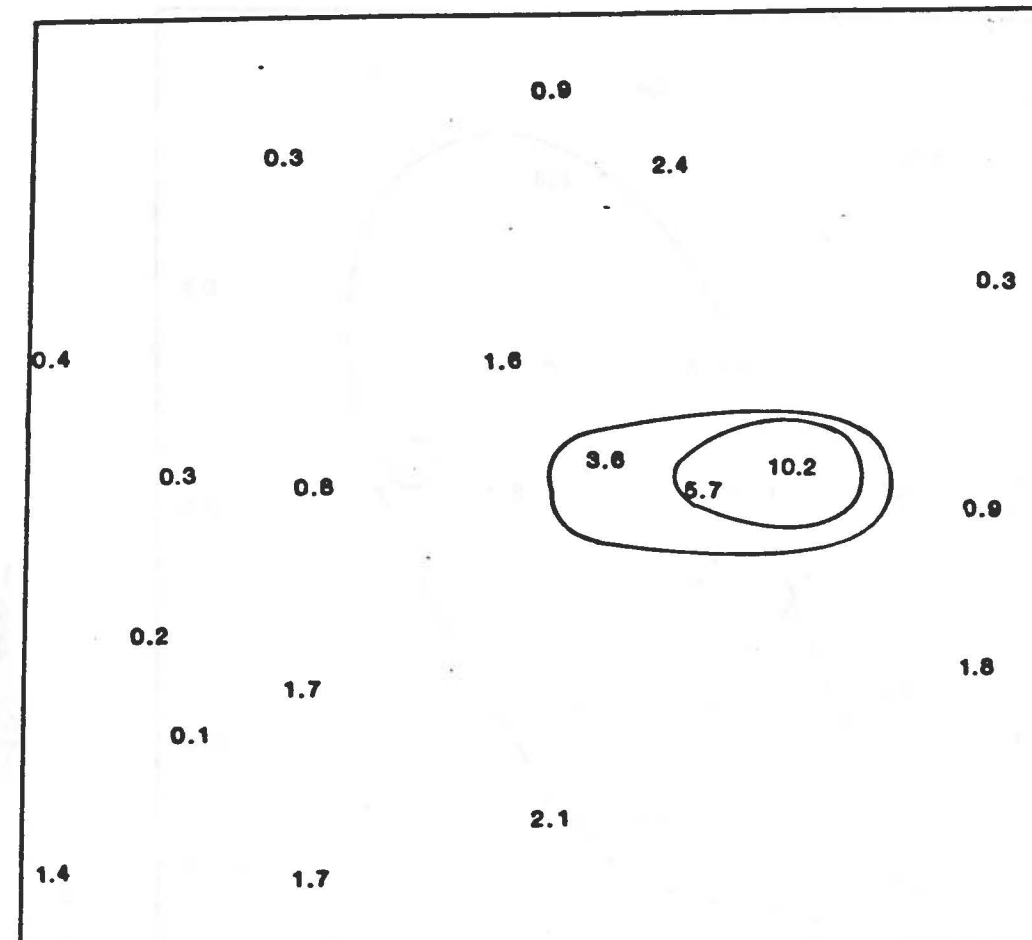
**NOTES:**

1-COMBINED PROVENIENCES  
 USED FOR EACH UNIT.  
 2-COUNTS REPRESENT DENSITY  
 OF ARTIFACTS PER CUBIC INCH.  
 3-RESULTS ROUNDED TO NEAREST  
 TENTH.

**RANGE:(In Contours)**

0-5  
 6-10  
 >10

**FIGURE 35**  
**Pearlware and Yellowware Distribution –**  
**Main Activity Area – Hawthorn Site**



**NOTES:**

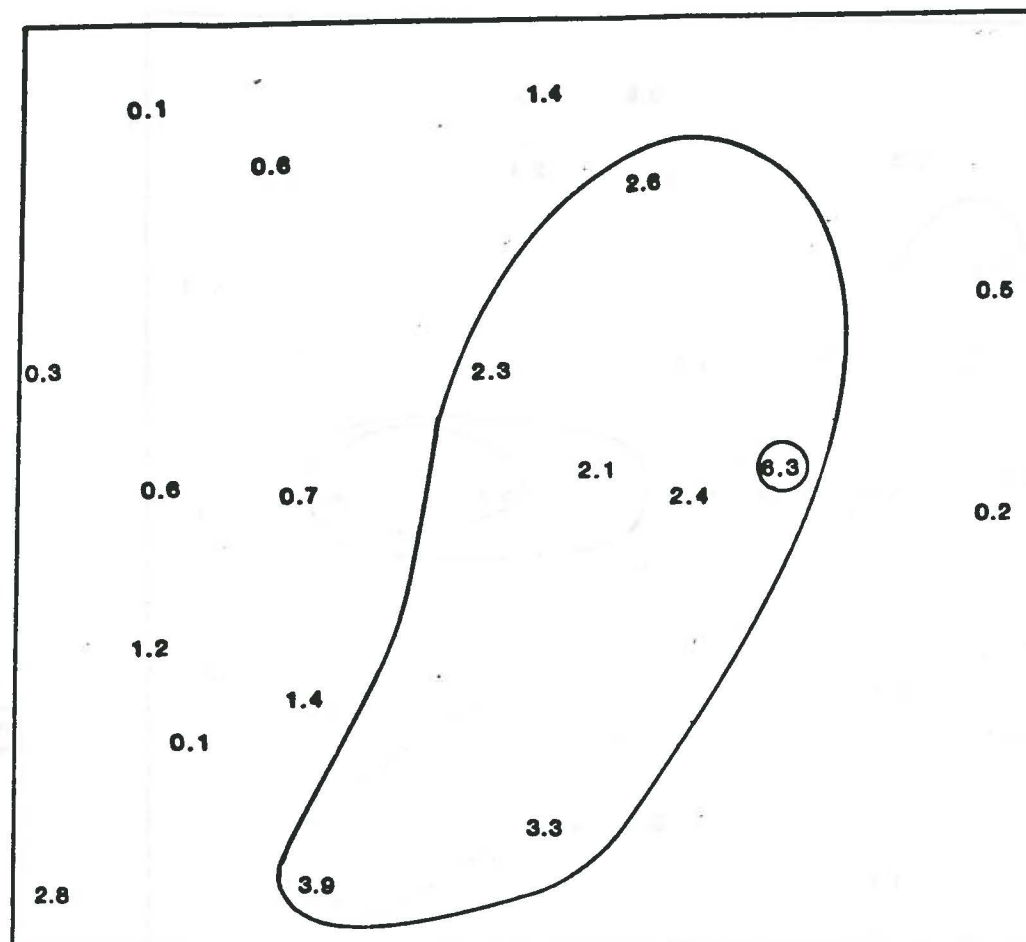
1-COMBINED PROVENIENCES  
 USED FOR EACH UNIT.  
 2-COUNTS REPRESENT DENSITY  
 OF ARTIFACTS PER CUBIC INCH.  
 3-RESULTS ROUNDED TO NEAREST  
 TENTH.

**RANGE:(In Contours)**

0-2  
 3-4  
 >4



**FIGURE 36**  
**Ironstone and Whiteware Distribution –**  
**Main Activity Area – Hawthorn Site**



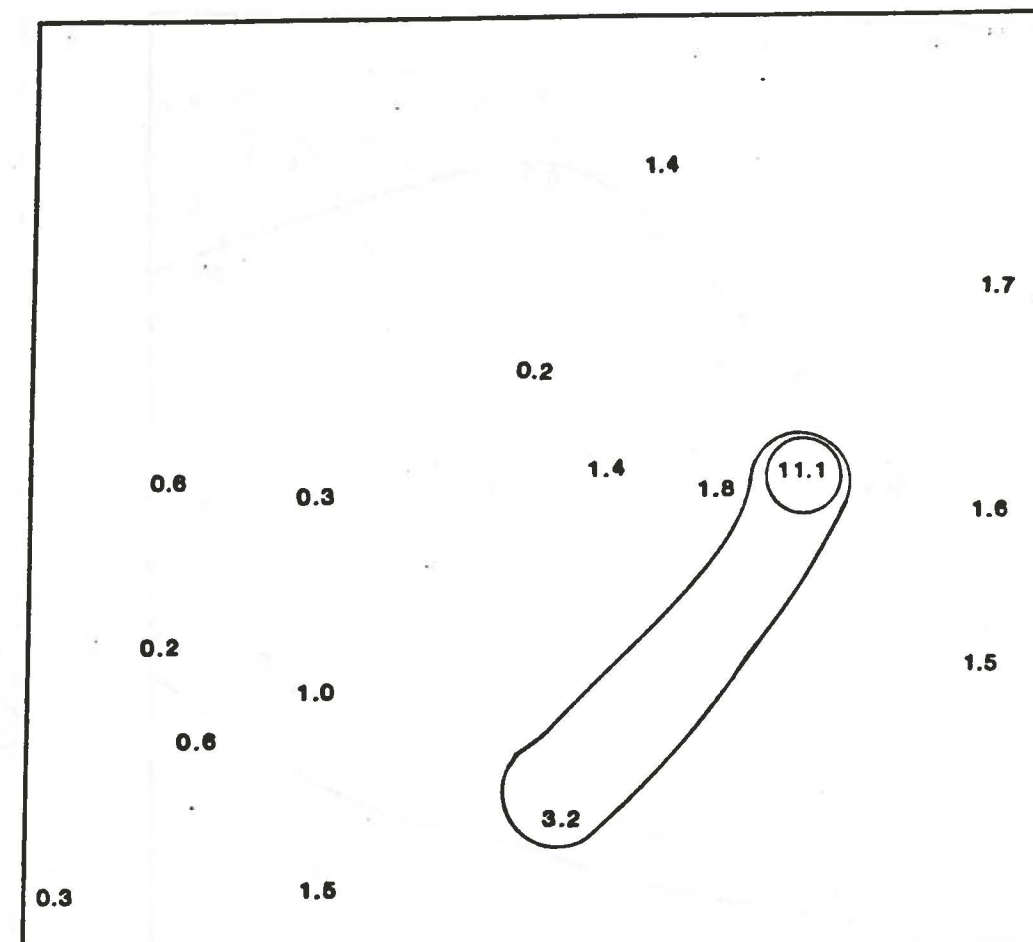
**NOTES:**

- 1-COMBINED PROVENIENCES  
USED FOR EACH UNIT.
- 2-COUNTS REPRESENT DENSITY  
OF ARTIFACTS PER CUBIC INCH.
- 3-RESULTS ROUNDED TO NEAREST  
TENTH.

**RANGE:(In Contours)**

- 0-2
- 3-4
- >5

**FIGURE 37**  
**Wrought and Cut Nail Distribution –**  
**Main Activity Area – Hawthorn Site**



**NOTES:**

- 1-COMBINED PROVENIENCES  
USED FOR EACH UNIT.
- 2-COUNTS REPRESENT DENSITY  
OF ARTIFACTS PER CUBIC INCH.
- 3-RESULTS ROUNDED TO NEAREST  
TENTH.

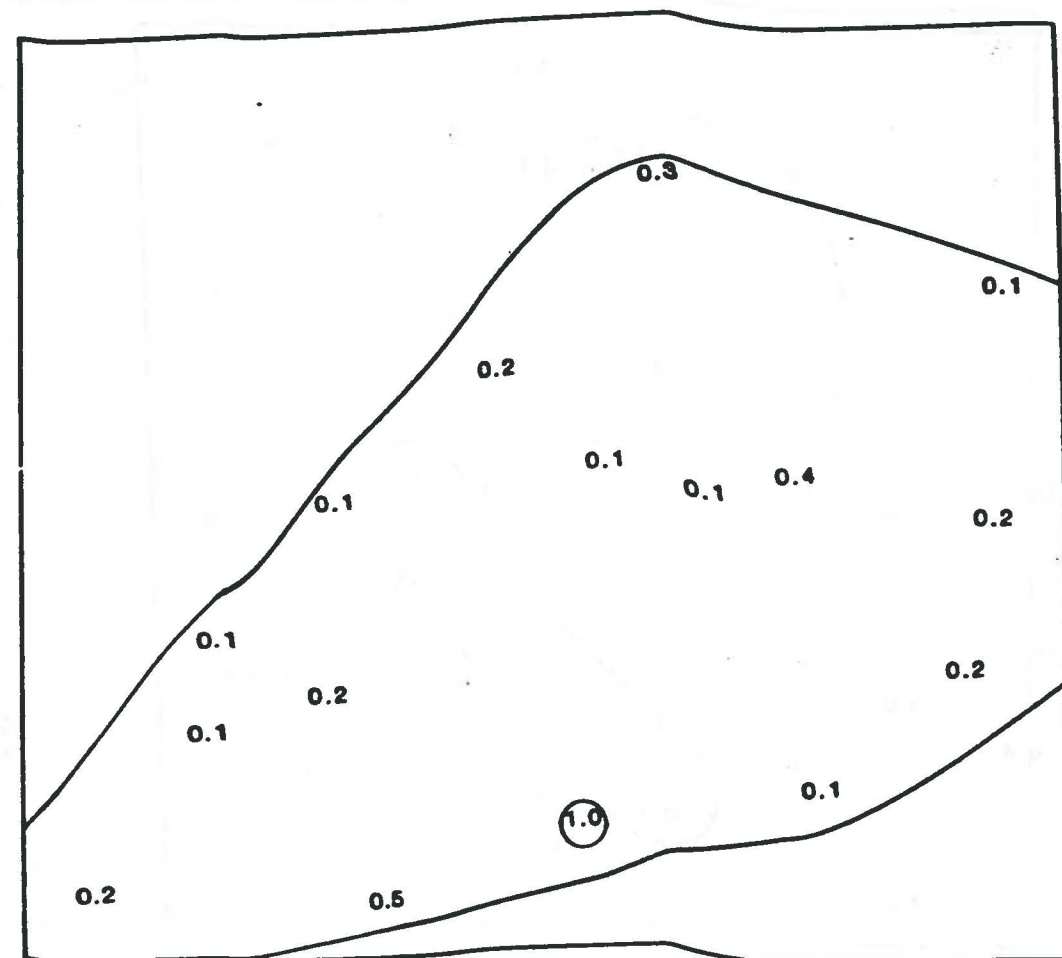
**RANGE:(In Contours)**

- 0-2
- 3-4
- >5



FIGURE 38

Wire Nail Distribution - Main Activity Area - Hawthorn Site



NOTES:

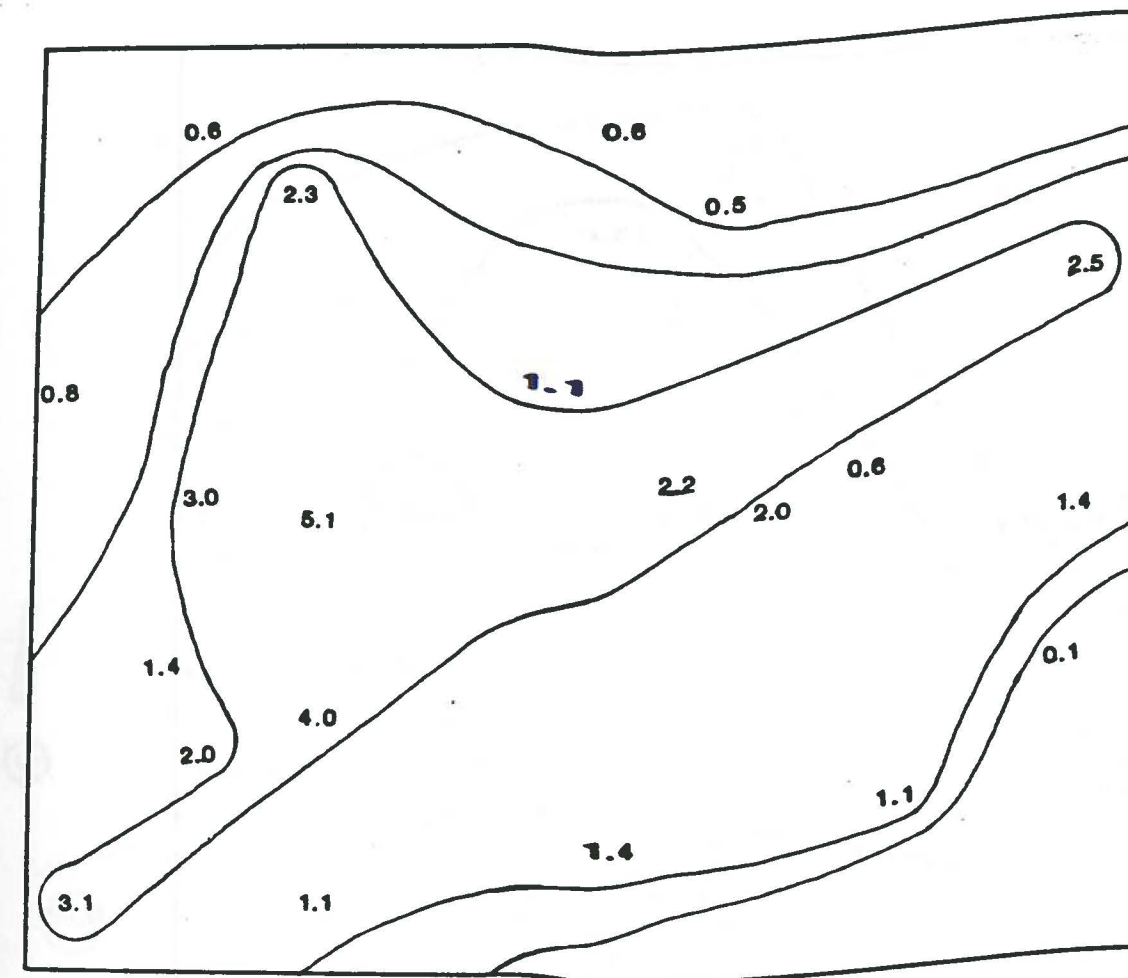
- 1-COMBINED PROVENIENCES  
USED FOR EACH UNIT.
- 2-COUNTS REPRESENT DENSITY  
OF ARTIFACTS PER CUBIC INCH.
- 3-RESULTS ROUNDED TO NEAREST  
TENTH.

RANGE:(In Contours)

0-0.5  
0.6-1.0

FIGURE 39

Building Material Distribution -  
Main Activity Area - Hawthorn Site



NOTES:

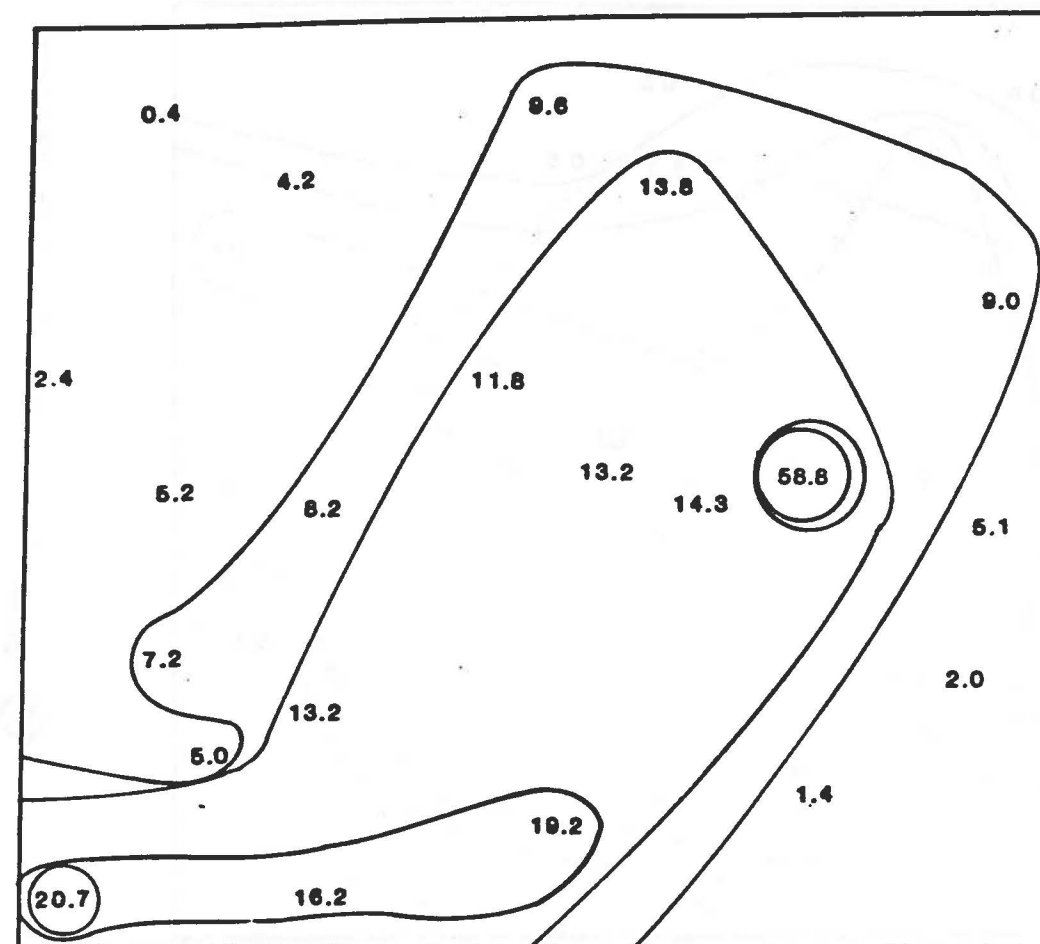
- 1-COMBINED PROVENIENCES  
USED FOR EACH UNIT.
- 2-COUNTS REPRESENT DENSITY  
OF ARTIFACTS PER CUBIC INCH.
- 3-RESULTS ROUNDED TO NEAREST  
TENTH.

RANGE:(In Contours)

0-0.5  
0.6-1.0  
1.1-2.0  
> 2.0



**FIGURE 40**  
**Kitchen Group Distribution –**  
**Main Activity Area – Hawthorn Site**



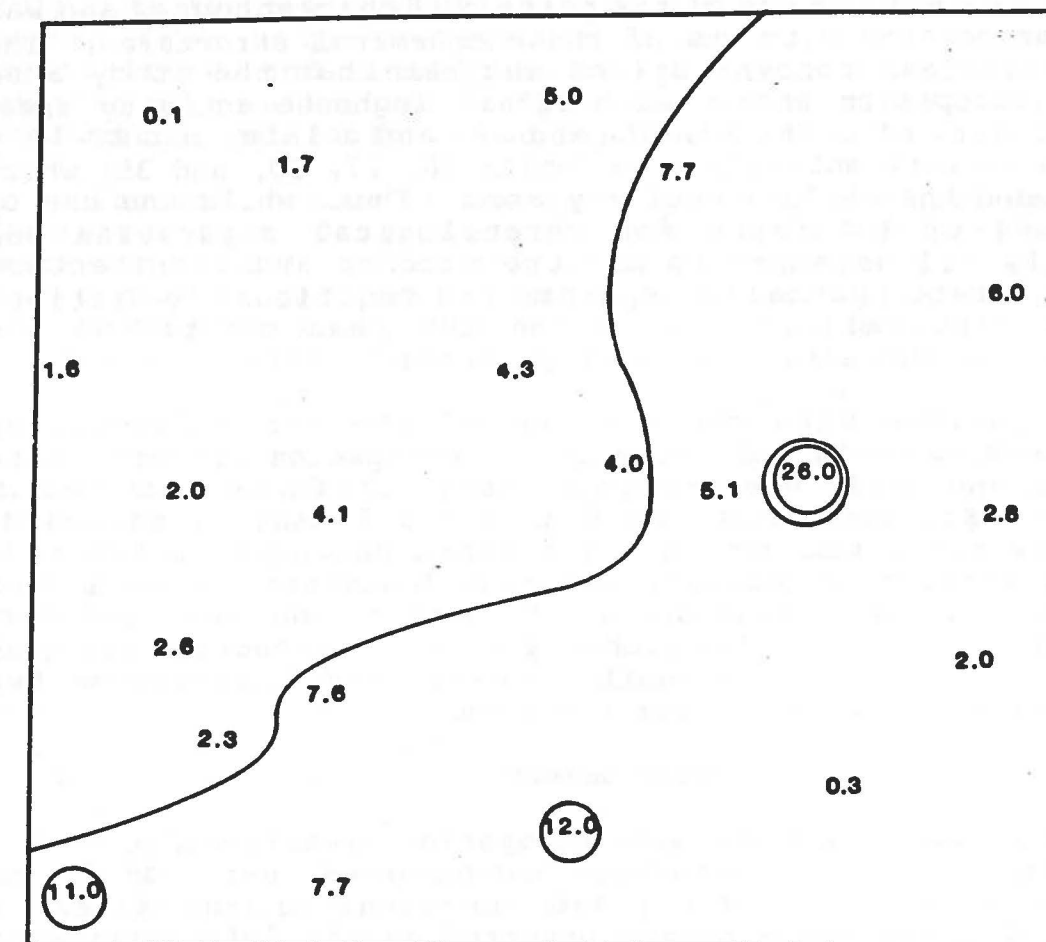
**NOTES:**

- 1-COMBINED PROVENIENCES  
USED FOR EACH UNIT.
- 2-COUNTS REPRESENT DENSITY  
OF ARTIFACTS PER CUBIC INCH.
- 3-RESULTS ROUNDED TO NEAREST  
TENTH.

**RANGE:(In Contours)**

- 0-5
- 6-10
- 11-15
- 16-20
- > 21

**FIGURE 41**  
**Architecture Group Distribution –**  
**Main Activity Area – Hawthorn Site**



**NOTES:**

- 1-COMBINED PROVENIENCES  
USED FOR EACH UNIT.
- 2-COUNTS REPRESENT DENSITY  
OF ARTIFACTS PER CUBIC INCH.
- 3-RESULTS ROUNDED TO NEAREST  
TENTH.

**RANGE:(In Contours)**

- 0-5
- 6-10
- 11-15
- >15



nineteenth century frame kitchen ell and the largest amount of creamware and redwares recovered came from this area. These units also had evidence of the longest occupation at the site. The concentration near units 20, 30, and 35 was associated with the mid-to-late nineteenth century cobble pavement discussed previously, and perhaps represent both an interior activity and deposition area and an exterior activity area. Finally, unit 27 was in the vicinity of one of the post-1902 chickenhouses and was probably associated with one of those ephemeral structures. The distributions and concentrations suggest that the study area shows two occupation areas: an original loghouse activity area, in the vicinity of units 13, 37, and 19, and a later mid to late nineteenth century activity area (units 20, 27, 30, and 35) which also included the earlier activity area. Thus, while the use of the classes of artifacts for chronological separation was successful, all attempts to use the kitchen and architecture groups to locate spatially separate and functionally distinct areas met with failure due to the 200 year occupation and disturbance of the site's artifact patterns.

A comparison with the results of the shovel/postholer distributions supports this view of two occupation periods. Late eighteenth and early nineteenth century artifacts occurred in their heaviest concentrations from units 13 and 19 eastward, passing the house foundation. Artifacts dating from the mid-nineteenth century to present, although found near units 13 and 19, were most often recovered from the area to the south and west of the foundation. This was probably due to the reorientation of the house circa 1902 from south to east, and illustrates two distinct occupational areas for the site.

### Conclusions

Excavations within the main occupation area revealed that a major change in the site structure had occurred over time due to changing spatial utilization and functions of the site. A distinct and large scale change occurred in the late nineteenth to early twentieth centuries, signified by a shift in agricultural support buildings and activities from close to the house site to areas separated from the house by yard areas. These yard areas were identified by anomalous, low artifact densities in locations which one would expect to contain much higher frequencies. Earlier changes in spatial utilization were also identified. In particular, the rebuilding and reorientation of the house site circa 1902 provided a distinct benchmark and control over the changes noted in artifact distribution. Two main artifact density areas were identified that were associated with the house site. The first was related to the depositional behavior at the time of the log house occupation, and the second was related to the depositional behavior of the later post-1902 frame house occupation. The concentration of diagnostic ceramic assemblages of the late eighteenth and early nineteenth centuries was suggested to have been deposited in the side or rear yard contexts. A change in artifact dispersal behavior in the mid-to-late nineteenth century was identified in a change in the density

distributions to locations as rear and side yard areas of the circa 1902 structure.

Archival and archaeological research documented the effects of regional socio-economic trends on the occupants of the site. While never actually subsistence oriented in their outlook, the occupants of the Hawthorn site did adapt their agricultural output to the regional economic trends of the period. Thus, they moved from a grain-based economy to a more diversified agriculture, and finally to dairy-oriented production. These changes were influenced by the demands from urban centers such as Wilmington, Philadelphia and Baltimore.

Economic status of the inhabitants of the site was found to be higher than originally hypothesized. The occupants of the site were found to rank in the upper four to twelve percent of the taxable local population through time. Although G. Miller's (1980) economic scaling of artifacts was not possible, subjective comparisons with the Robert Ferguson tenant house assemblage revealed no significant differences in the artifacts.

An analysis of the faunal collection recovered in the Phase I/II and Phase III excavations provided little information on changing subsistence or consumption habits through time. Generally the faunal remains were recovered from disturbed contexts and no features containing significant remains were encountered. The results of this analysis do allow several general statements on food consumption in rural, northern Delaware. First, as with the faunal remains recovered at the Robert Ferguson House, domestic cattle (*Bos taurus*), sheep (*Ovis aries*), and pig (*Sus scrofa*) are represented by a high percentage of teeth, head, and foot elements, indicating at-home rearing and butchering of these animals. However, there is a notable lack of butchering or saw marks on food source bones. It is assumed that these large numbers of uncut bone indicate the preparation of wholesale meat cuts for marketing. There is a definite absence of evidence for the purchasing of meat cuts from retail establishments. Especially absent are cross-sectional cuts indicative of higher quality steaks and roasts. The suggested use of inferior cuts for stews and soups is another fact previously identified on both rural sites and urban sites occupied by persons of lower economic status. That such patterns are present in a higher economic class occupation site shows that food consumption habits may not always vary with socio-economic status. Secondly, wild food sources were absent in all classes of identifiable bones from the Hawthorn Site. This provides a further impression of the settled nature of northern New Castle County, even in the late eighteenth century.

In sum, the absence of significant differences between the Ferguson (tenant) farmhouse and Hawthorn (individual family-owned farmhouse) and the absence of high quality meat parts at a household in the top 4-12% of the taxable households for White Clay Creek Hundred, a productive agricultural area, suggest that there may be few, if any, archaeological correlates of



differential socio-economic status in rural northern Delaware. The residents of the Hawthorn site did not change their purchase and consumption habits as markets changed. Agricultural production was reoriented toward emerging urban markets and the Hawthorn Site residents prospered. However, high quality meat cuts from on-site butchering seem to have been salable surplus, while lower quality cuts were consumed at home. A major reorientation of the house structure was also undertaken. This reorientation was indicative of changing transportation networks, which in turn were related to changes in the local market economy. Landscaping, rebuilding of the house, and restructuring of the farm complex building layout all occurred. Yet, several material culture patterns remain the same and there were no changes in material culture indicative of changes in lifeways or socio-economic status. It may be that artifacts' and ecofacts' characteristics were not themselves keys to changing nineteenth century lifeways. Spatial changes in site structure, which can be identified archaeologically, may be more important in delimiting changes in past lifeways (see Handsman 1981). Traditional and conservative values regarding food consumption, use of food surplus, and purchase of items of personal use may be more resistant to change than patterns of spatial utilization.

## ARCHAEOLOGICAL INVESTIGATIONS AT THE WILSON-SLACK SITE

Ellis C. Coleman, Wade P. Catts, Kevin Cunningham, and  
Jay F. Custer

### INTRODUCTION

This paper presents a summary of the findings of intensive Phase II test excavations at the Wilson-Slack Agricultural Works Complex, Chestnut Hill Road-Route 4, Newark, Delaware. The Wilson-Slack site was located within Pencader Hundred, New Castle County, approximately 500 feet west of the intersection of State Routes 4 and 72. Prior to the widening and dualization of Route 4, the site had retained a rural character, even though it was surrounded by encroaching residential developments, gas stations, and a shopping mall. A two-story frame dwelling, a barn, and an agricultural works shop were demolished in September 1983. At the time of demolition, other nineteenth century structures no longer extant were a machine shop, grist mill, smaller barn, chicken house, granary, smoke house, privy, and several small sheds. The site had been occupied for approximately 130 years by members of the Wilson family, who had retained extensive nineteenth and twentieth century family and business records. The most informative and interesting are ledger books pertaining to Alexander Wilson's wheelwright and blacksmithing business (1851-1896) and the grist mill and blacksmithing business operated by his son, John T. Wilson, from 1898 to the 1920's.

The initial historic research on the Wilson-Slack site was an economic historical research project performed by Stephen Del Sordo under the direction of Bernard Herman of the Department of Urban Affairs and Public Policy, University of Delaware. The study analyzed a collection of business records and account books kept by Alexander Wilson during the period 1853-78. The basic thrust of the study was: 1) to compare Wilson's income and real estate evaluation with other local manufacturers through use of the Census of Manufacturers Returns for 1850-1880, 2) to study the family's genealogy using U.S. population censuses, 3) to analyze A. Wilson's ledger books in order to compare his official and unofficial income reporting characteristics, and 4) to track the growth of his business through time. Also briefly discussed was the extant physical remains of Alexander Wilson's shop and main house. It was mainly through this initial study that the significance of the Alexander Wilson-Slack site was recognized.

Following this research and in conjunction with cultural resource management responsibilities for the Delaware Route 4 reconstruction, DelDOT conducted a Phase I and partial Phase II archaeological survey. The Phase I investigation consisted of oral interviews of site occupants, a surface reconnaissance of the project area, and limited test excavations. These excavations confirmed the presence of an intact foundation of the former grist mill and the existence of considerable fill levels over a nineteenth to twentieth century buried topsoil north of



the support structures. Units placed along the northern boundary of the domestic area indicated that this area had been disturbed through plowing activities. The strata cuts on the west railroad bank uncovered a mortar slab pavement 20 to 24 inches below the ground surface buried by a coal/cinder layer assumed to be associated with nineteenth century railroad activity.

Preliminary Phase II test excavations by DelDOT were designed to further determine the horizontal extent of the grist mill foundations located in the Phase I survey, and to determine the Wilson-Slack site's eligibility for nomination to the National Register of Historic Places. Four 5 ft. X 5 ft. test units were excavated to further define the former grist mill's context. The results showed that while the entire foundation was intact, there was a conspicuous absence of artifacts both inside and outside of the foundation walls. Permission for complete testing in the yard areas was denied by the property owner. Archival research accumulated substantial information on the business activities of families associated with the site. DelDOT recommended, and the SHPO concurred, that additional Phase II test excavations should be completed before road construction.

Prior to the present, and final, Phase II test excavations, two Historic American Buildings Survey recordations were performed by the College of Urban Affairs and Public Policy, University of Delaware. In 1982 the frame blacksmith/implements works shop was recorded, and in 1983 the remaining extant buildings on the site were recorded (Herman and Ames 1983). Finally, during the Summer and Fall of 1983, the final Phase II testing of the site was completed by the University of Delaware Center for Archaeological Research. This report presents the total findings of the Phase II research.

The primary goal of the final Phase II research was the gathering of archaeological data necessary for a determination of eligibility of the Wilson-Slack site for listing on the National Register of Historic Places. While most of the fieldwork was oriented toward data description, it was still possible to discuss numerous research questions. The analysis of the data from this site provides important comparative data from which to interpret other historic sites in New Castle County. The Phase I/II cultural resource survey at the Wilson-Slack Agricultural Implements Works and Farmstead brought forth a situation relatively unique in historical archaeology. Available to the researchers were: 1) the business records of Alexander Wilson for 1850-1875 and his son J. Wilson for 1910-1912; 2) the architectural remains of his agricultural implements works and the family domestic residence and support buildings; 3) a living descendent of A. Wilson, his granddaughter, Mrs. Norman (Sarah) Slack, and 4) archaeological remains in partly undisturbed context dating to the industrial use of the site. The fieldwork was guided by the recommendations made in the preliminary Phase I/II report (Bachman et al. 1984) and by consultation with the SHPO staff and all decisions were made in order to provide data

to satisfy the ongoing research questions developed for the Route 4 Corridor.

Thus, in addition to providing National Register eligibility information, the research methods were designed to provide a comparative data base on archaeological site content and site structure. While the artifact pattern concept of South (1977) has been widely used, and employed on previous DelDOT archaeological sites, it was felt that the artifact sample obtained from this testing was not suitable for this type of analysis. Rather, the artifact information from the excavations was analyzed for its distributional information and to determine the date and function of the features encountered. In general, the variety of cultural information available for the site was amenable to a more broadly-based interpretative framework for pattern recognition than offered by South.

Previous research at the Wilson-Slack site indicated that the site would provide an excellent opportunity to gain a better understanding of the changing lifeways of a northern Delaware businessman and entrepreneur. Three general study topics were developed to guide the field and laboratory investigations of the DelDOT project:

- 1) Patterns of artifact distribution and spatial utilization
- 2) Purchase and/or consumption habits
- 3) Covariation of change between topics 1 and 2

Because of the limits to the extent of archaeological testing, archaeological data could not be gathered to satisfy the data requirements to archaeologically test all hypotheses concerning the above topics. However, the wealth of documentary evidence left by A. Wilson allows these questions to be addressed.

Research on Topic 1 focused on archaeological data and was mainly concerned with studying the distribution of various artifact classes across the site. Consequently, a 10 ft. X 10ft. postholer/shovel test grid was excavated across all undisturbed areas of the site. Similarly, test units were excavated adjacent to known standing structures and projected locations of structures no longer extant. These excavation units helped to clarify functional areas and also to further study the context and function of the structures.

The research questions involved in Topic 2 assessed the effects of industrialization, expanding markets, and improved transportation networks on a rural manufacturing economy and the economic status of the proprietor of such a business. Because of the small sample of the archaeological data, mainly archival data were used to address this question. In order to best accomplish this task, study of the actual business documents was combined



with an analysis of tax assessment data using methods previously employed at the William M. Hawthorn Site (Coleman et al, this volume). It appears that both of these data sources provide a more reliable base for interpretation than the use of probate inventories employed by Carr and Walsh (1980), Jones (1980), and others. Account books, unlike probate inventories, allow us to observe merchants and consumers in the prime of their economic life (Wilson 1981). Also necessary to interpret properly the economic status of the sites occupants was some general understanding of regional and local economic trends. Additional research was undertaken to further study the development of manufacturing and industry in eighteenth and nineteenth century northern Delaware.

Besides tax assessment comparisons for Pencader Hundred, the U.S. Census of Manufacturers for 1850-1880 was employed to provide an economic ranking scheme for manufacturers in Pencader Hundred and surrounding hundreds. Data as obtained on individuals engaged in the same general occupation as Alexander Wilson, and their incomes, wages, and products were compared. These subjective rankings provide an added dimension within which to interpret the archaeological, architectural, and documentary evidence. This same data base was used by Del Sordo (1981), and the results of his analysis were also used for the present study.

To further study the rural community concept and the effects of increased industrialization, one additional research avenue was pursued using the idea of the sphere of business and the catchment area of A. Wilson's business. The idea of catchment area has previously been employed by prehistoric archaeologists to define the area within which people travel to procure food and other resources. A given catchment area usually possesses well defined boundaries, such as a single river valley rimmed by high ridges, that restrict movement. In the historic context the factors that restrict this area also might include natural barriers, ie. a river, but would also include artificially imposed ones created by ethnic, racial or political factors. Previous research has shown that one of the primary limiting factors in early colonial trade and communication was the distance that a horse and rider could effectively cover in a single day. The present research attempted to identify other variables controlling purchasing and settlement pattern structure by plotting the locations of A. Wilson's customers on contemporary maps. In a way, this approach to the study of settlement and purchasing patterns was quite different from traditional approaches. Most historic settlement pattern studies seek to predict site locations and have met with only mixed success. Cleland (1983) points out that in general archaeologists have uncritically borrowed models developed by and for geographers designed to describe, not explain the observed patterning. On the other hand one of the most important factors in elucidating the process by which the interaction patterning forms, are the boundary conditions that restrict the flow of goods. Through the use of the business records of A. Wilson it was hoped that some of the controlling variables of this interaction could be

recognized through analysis of empirical data. This type of analysis of large-scale interaction spheres is thought to be helpful in explaining local influences on the cultural processes which stimulate and constrain the flow of goods across behaviorly bounded space (Cleland 1983:42).

In the same way, the catchment area of A. Wilson can be studied. This catchment area is the geographical area within which Wilson's raw material goods were purchased and could be examined in this project through examination of a collection of documents known as the Alexander Wilson Papers. The result of these analyses produce a much different picture of a site's context than could be produced by the usual site specific reports. Also, the process of social interaction in a community also seems to be of more interest to the general public. As Leone (1983) states, the anthropological historical archaeologist should understand that the questions he asks and answers must be interpreted for a mass audience. If historic research is presented in this fashion, the general public can gain some understanding of their own historic background so that their present values and other features of their everyday lives can be better shaped. Especially interesting about the present research is the fact that it focused on a active individualistic entrepreneur in the most complete sense. This is one of the unique characteristics of American capitalism originating as early as the seventeenth century and still active today.

#### Archival Research

Archival research indicates that 1843 is the earliest possible occupation date for the Wilson-Slack site. On this date a small parcel of land was sold by Thomas Armstrong to John R. Hill. This land was part of a larger parcel that Armstrong had bought from John R. Evans in 1803 and it is assumed that the parcel was in agricultural production prior to 1843. However, tax assessments for the property in 1845 note that a frame dwelling and "shop" were present on the property at this time. The 1849 Rea and Price Map also shows three buildings on the property associated with Hill's business.

Alexander A. Wilson, the next occupant of the site, was probably an apprentice to Hill. He was born in Cecil County in 1829 and came to the Hill business shortly after it began. The U.S. census of 1850 (Table 2) lists Alexander Wilson, William Rankin, and Henry Clarke as residing with the Hill family. In 1851, Wilson took over Hill's business, possibly through a lease arrangement as he did not purchase the property until 1853. The purchase at this time was made possible by a generous inheritance from Wilson's grandfather in the Spring of 1853 (Cecil Co. Will Book B-9-493). The deed indicates that, for a little over two acres with buildings, Wilson paid \$1,500 to Hill who was at that time living in Cecil County, Maryland (New Castle County Deed Record Q, Volume 6, Page 27). Mrs. Sarah Slack, Alexander's granddaughter, states that the Hill and Wilson families had shared the house, with the Hills occupying the western half and



TABLE 2  
U.S. Census of Population 1850-1900  
Wilson-Slack Site

Pencader Hundred Name	Age	Sex	Occupation	Place of Birth
John R. Hill	38	M	Wheelwright	Maryland
Catherine A. Hill	36	F		Maryland
Sarah I. Hill	10	F		Delaware
John H. Hill	6	M		Delaware
James R. Hill	4	M		Delaware
William Rankin	48	M	Blacksmith	Pennsylvania
Alexander Wilson	21	M	Wheelwright	Maryland
Henry Clarke	17	M	Wheelwright	Delaware

1860

Alexander Wilson				
Sarah Jane Wilson				
3 Children 6 Years Old				
John Robins	25		Wheelwright	
Margaret Clendenin	19			

1870

A. Wilson				
Sarah J. Wilson				
John Wilson				
Elizabeth Wilson				
William Wilson				
Mia Townsend	6			
_____ Holland	16	F	Domestic Servant	
_____ Chambers			Blacksmith	
William Kelly			Blacksmith	
James Jones			Wheelwright	
William Worrell			Wheelwright	

1880

Name	Color	Sex	Age	Relationship	Occupation	Months Attended School	Birth Place	Father's Birth Place	Mother's Birth Place
Wilson, Alexander	W	M	50		Machinist		MD	MD	MD
Wilson, Sarah	W	F	48	Wife	Keeping Hse.		PA	PA	PA
Wilson, John	W	M	26	Son	Machinist	12	DE	DE	DE
Wilson, Lidia J.	W	F	24	Daughter	At Home		DE	MD	MD
Wilson, Wm.R.	W	M	22	Son	Mechanic		DE	MD	PA
Townsend, Mary	W	F	16	Servant	Servant		MD	MD	MD
Bonsall, Levi	W	M	13	Servant	Errand Boy		DE	DE	DE
Cleaver, Henry	W	M	18	Boarder	Blacksmith	12	PA	PA	PA
Albert, Reed					Blacksmith				

1900

Name	Relationship	Month	Year	Age	Birth Place
Wilson, John T.		Nov.	1853	46	Delaware
Wilson, Ida	Wife	Dec.	1872	27	Delaware
Wilson, Annie	Daughter	Jan.	1898	2	Delaware
Wilson, Sarah	Mother	Mar.	1832	68	Pennsylvania

the Wilsons the eastern half. Cooking facilities in the basement were apparently shared (Del Sordo 1981:3).

According to data from the 1860 Census of Manufacturers, Alexander Wilson called himself a blacksmith and had in his employ a wheelwright and one other worker (Table 3). His capital investment, payroll and raw material expenditures, and production worth seem meager when compared to today's standards, but Del Sordo's (1981:4-5) analysis indicates that Alexander Wilson's business assets and overhead could be ranked among the top four blacksmiths/wheelwrights in Pencader and White Clay Creek Hundreds. This finding generally holds true for the remainder of Wilson's career, according to Del Sordo's analysis. Wilson's account books show that during the seven year period covering 1863 to 1869, he served over 200 separate customers (Del Sordo 1981).

By 1860, Alexander Wilson's household consisted of seven individuals (Table 2). In addition to his immediate family of wife and three young children, his wife's sister and one of his employees shared the house (1860 Census of Population). The increase in the size of Wilson's household over the preceeding years may have influenced him to enlarge the house to its present size by this time (Del Sordo 1981). On Beer's 1868 Atlas of Pencader Hundred Alexander Wilson's complex is shown with two structures, One presumably his residence, the other labelled "W.W. & B.S. Sh.". This letter is the standard nineteenth century mapmaker's notation for "Wheelwright and Blacksmith Shop." Only two structures are shown on the property. It is not expected that all outbuildings, especially the smaller ones, could logically be included on a map of this scale, and no conclusions on the make up of the site should be drawn. The 1868 map also shows the proposed route of the Avondale, Newark, and Delaware City Railroad to the east of the complex. The railroad was, in fact, not built on this location, but was put through just to the west of Wilson's property several years later (Cooch 1936:28, 115). The change in the position of the right-of-way was but a foreshadowing of the events that followed for the railroad company and for many of the branch lines built in the late nineteenth century (Clayton 1948).

The charter for the construction of the railroad line passing north-south adjacent to the Wilson-Slack property was granted in February 26, 1857, to the Delaware and Pennsylvania Railroad Company. The purpose for the construction of the line was to provide a connection between the western Pennsylvania coal fields and the port of Delaware City, Delaware. It was thought that this would be a profitable venture for coal transportation as the crowded and more expensive port of Philadelphia was avoided and also because the Delaware City port, unlike other ports, remained ice-free during the winter months. The idea was to ship coal mined in western Pennsylvania through the Chesapeake and Delaware Canal to Delaware City where it could be re-shipped to all points on the Atlantic seaboard. The Pennsylvania and Delaware Railroad was to have been used for the transport of the



TABLE 3

Alexander Wilson Business Data  
(from Del Sordo 1981)

Year	A. Wilson Occupation	Capital Investment	Raw Material Costs	Number of Employees	Wages Amount Paid	Value of Goods Produced	Annual Profit
1860	Blacksmith	\$ 450	\$ 302	2	\$ 720	\$1180	\$ 150
1870	Machinist, Wheelwright, Blacksmith	\$4000	\$2240	6	\$1400	\$5000	\$1360
1880	Machinist, Blacksmith, Wheelwright	\$8000	\$3200	7	\$3000	\$7600	\$1400

FIGURE 42

# Railroad Passenger Schedule - Ca. 1885

NEWARK AND DELAWARE CITY RAILROAD.											
Pas.	Pas.	Pas.	Mls	December 14, 1884.				Mls	Pas.	Pas.	Pas.
	P. M.	A. M.		[LEAVE]		[ARRIVE]			A. M.	P. M.	
	46 23	48 46	0	Newark		12 40		12	40	541	
	6 26	8 47	1	Junction		11 4		11	4		
	6 30	8 49	1	Wilson		11 35		11	35	8 35	
	6 35	8 53	3	Cooche		9 31		9	31	8 31	
	6 40	8 57	4	Keency		8 27		8	27	8 27	
	6 43	8 59	5	Glasgow		7 25		7	25	8 24	NO N
P. M.	7 03	9 03	7	Porter		5 22		5	22	8 20	12 05
100	7 08	9 08	8	Corbitt		4 12		4	12	8 08	12 00
112	7 12	9 12	10	Reybold		3 07		3	07	8 05	11 56
118	7 18	9 18	12	Delaware City		0 18 00		0	18 00	15 00	11 58
P. M.	P. M.	A. M.		[ARRIVE]		[LEAVE]			A. M.	P. M.	A. M.

coal when the canal was frozen over during the winter months (Hayman 1979:62). Due to difficulties with the construction, financing, and legislation, the railroad was not completed until 16 years after its charter.

From its inception, the railroad operated for both passenger and freight traffic. By 1885, a small three sided frame shed ie. passenger station had been constructed on the southwest corner of the intersection of the railroad and Route 4 (Chestnut Hill Road). The station was not listed and it is assumed that it had not been built in 1875 when a guide to the Pennsylvania Railroad was published (Sipes 1875). Figure 42 shows a passenger handbill from circa. 1885, and gives an example of the local service provided to the new station. Known as "Wilson's Station", it provided local residents with a means of connection travel with the main line at Porter's station. Passenger service was never very prosperous and was eventually discontinued in 1928 (Every Evening 1928). By 1948 only the segment between Newark and Delaware City remained in use, the Avondale to Newark segment having ceased operation in the early 1900's.

By 1870 Alexander Wilson had also enlarged his business considerably. He listed himself in that year's Census of Manufacturers as machinist, wheelwright, and blacksmith and stated that included among his equipment are three lathes, one circular saw, two other saws, and a 15-horsepower steam engine used to power his machinery. Wilson reported that he employed six men and produced \$5000, although the records indicate he did work amounting to only \$2,771.89 worth of goods for the year (Table 3). Census figures show that his assets, overhead, and profit had increased an average of about 398% over the previous decade. Del Sordo (1981) states that Wilson's was "by far the



largest operation" in both Pencader and White Clay Creek Hundreds. From 1869 to 1873, Wilson recorded over 350 individuals for whom he performed work, which shows a 75% increase in the number of customers served over the period 1863-1869. Wilson's account books however, do not reflect such a marked increase in dollar value of work performed, even though Wilson employed more workers. In fact, Del Sordo found that Wilson's prices varied little during this period. Wilson's day books indicate that his business operated six days a week and, occasionally, on some holidays.

Figures in the 1880 Census of Manufacturers indicated that Alexander Wilson's business had continued to grow (Table 3). He employed seven men and his assets and overhead increased about 72%. Despite this investment, his profits increased only 3% over those of a decade earlier. Del Sordo notes that "in terms of total investment versus return, other shops in Pencader and White Clay Creek Hundreds were just as profitable, if not more so", despite Wilson's larger investment and overhead. In 1881, Alexander Wilson advertised his business for the first time as the A. Wilson Agricultural Implements Works (Del Sordo 1981), suggesting a shift in the focus of his work. Agricultural implements that Wilson may have manufactured or repaired include plows, harrows, threshers, hay rakes, hoes, shovels, and other tools and equipment used in farming.

Alexander Wilson's household, according to the 1880 Population Census (Table 2), consisted of seven individuals. In addition to himself, Wilson's two sons, John and William, are listed as machinists and probably worked for him. Wilson's daughter Lidia (Eliza?), Mary Townsend, a servant, and Levi Bonsell, errand boy, are also members of the household.

In 1884 Alexander Wilson commissioned a traveling artist to paint a picture of his complex. The view was taken looking northwest from in front of the grist mill and shows a coal shed in the house's east yard. The buildings depicted in the back yard represent the granary, privy, and storage shed. The function of the grist mill, open to the front, is clearly identified, depicting several types of agricultural machinery and men working inside. One worker is feeding stalks of corn into one of these machines. Mrs. Slack mentioned that before the building was torn down in the 1940's she remembers that it was equipped with a corn sheller, and that it had a "patio" in front. In the painting, a wagon stands in front of the machine shop, with several men working on it. While there is no archival information on the grist milling aspect of Alexander Wilson's business, the painting indicates that by 1884 he was operating a steam-powered grist mill, at least on a small scale. The steam engine was used also to power wood and metal saws and lathes.

Alexander Wilson's surviving ledgers do not cover the 1880's Census of Manufacturers. Baist's 1893 Atlas of New Castle County shows the Alexander Wilson Agricultural Implements Works on two acres, depicting three structures identified as "A. Wilson Res."

(Residence), "B.S.S. & W.W.S." (Blacksmith and Wheel wright Shop), and "Machine Shop". The relative positions of these three structures correspond to the standing house, the standing shop building (which the Slacks refer to as the machine shop), and the non-extant building the Slacks call the grist mill. Since this latter building was being referred to as a machine shop, while the 1884 painting shows it as a grist mill, milling operations may have constituted only a small portion of the work performed in the building.

Alexander Wilson died in 1896, reportedly after having suffered 13 strokes, one in each of the 13 years preceeding his death (Del Sordo 1981). Alexander's son John did not continue the Agricultural Implements Works business, but rather concentrated on the grist mill operations. According to Mrs. Slack, John Wilson used to haul corn into Wilmington, and continued in this line of work until the early 1920's. As the young Sarah Wilson, Mrs. Slack received her schooling at the Welsh Tract School #54 (Catts et al. 1983). When she married Norman Slack in 1926, he came to live with her in the Wilson home.

Mrs. Slack provided some valuable insights into the socio-economic standing of the Wilson household. Both Alexander Wilson and his son John served on the Levy Court, and John's wife frequently entertained members of the court. Mrs. Slack maintained that both Alexander and John were quiet, modest men who were highly respected by the community. Despite the fact that Mrs. Slack felt that everyone in the area, including the Wilson family, was "poor", she emphasized that the Wilsons owned their property while everyone else rented, thereby implying that the Wilsons were, or had been, a little less "poor" than their neighbors. Mrs. Slack stated that she had had a sheltered upbringing. She was not expected to perform domestic duties since they had servants, and she had no contact with the business side of the complex. These comments suggested that the Wilsons perceived their position in society to be slightly above that of the majority of their neighbors. This is probably so for at least the twentieth century, and may hold true for the latter part of the nineteenth century as well, since social attitudes are often conveyed, consciously and unconsciously, by the preceeding generations.

## EXCAVATION RESULTS

### Stratigraphy

The previous Phase I/II excavations had shown that the Wilson-Slack site contained several different stratigraphic sequences. North of the extant outbuildings a buried topsoil horizon was present 12 to 24 inches below the present ground surface (Figure 43). Farther to the west and north of the rear yard area only a 4 to 6 inch plowzone remained. Other shallow, but well stratified deposits were encountered south of the agricultural works shop. To the east of the shop the deposits



FIGURE 44

# East-West Stratigraphic Profile – Wilson-Slack Site

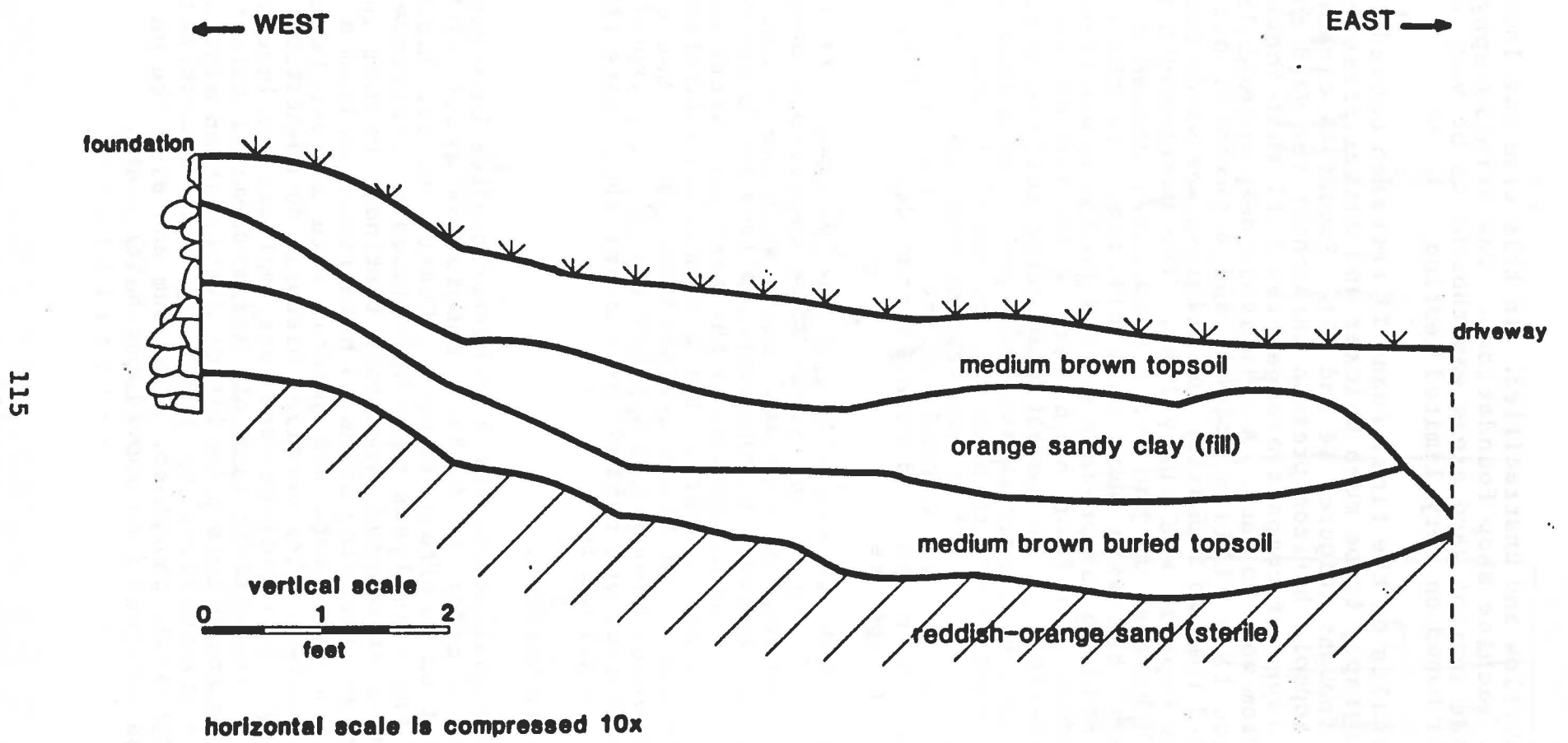


FIGURE 45

# North-South Stratigraphic Profile – Wilson-Slack Site

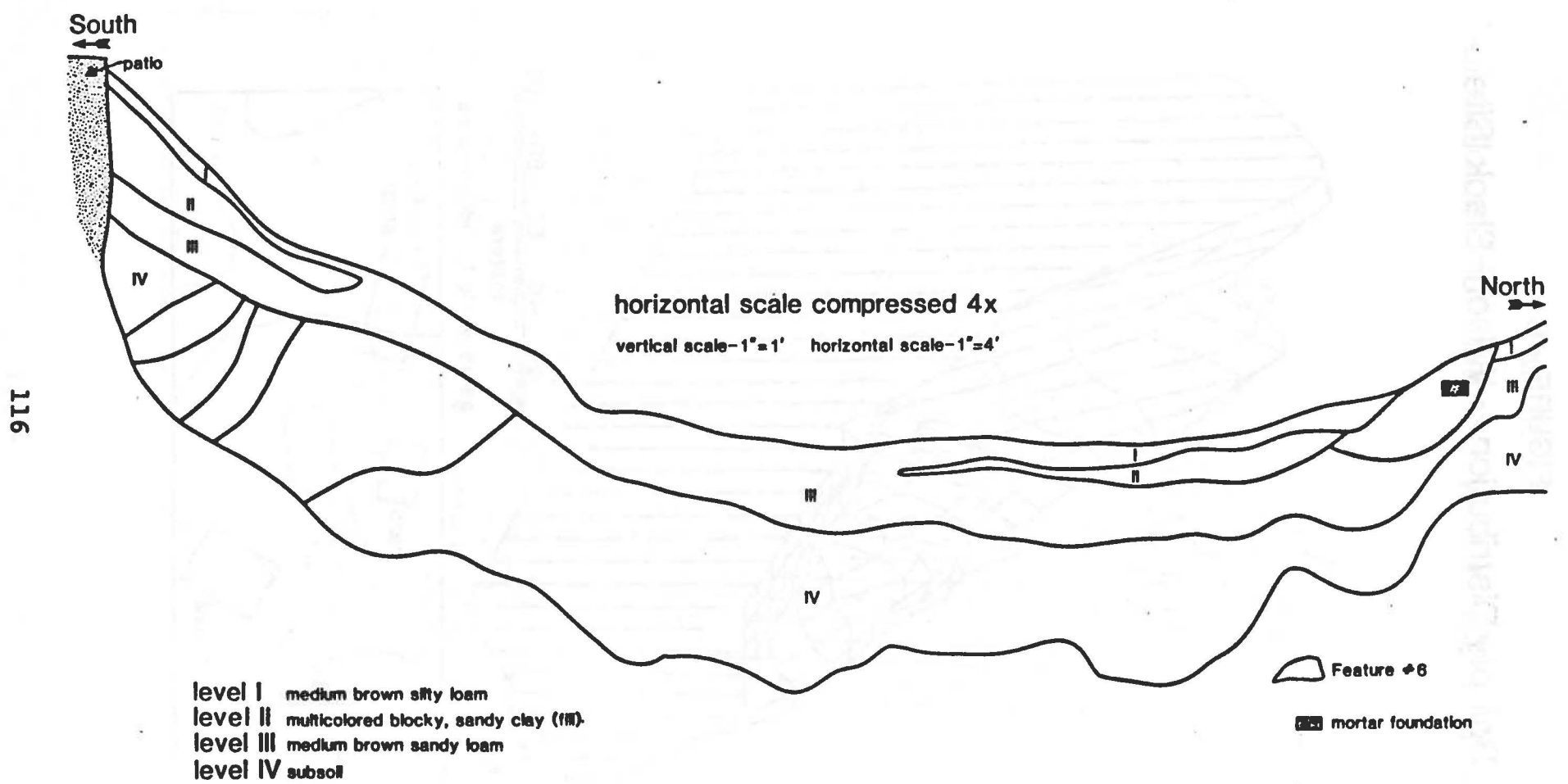




FIGURE 46  
Soil pH Distribution – Wilson–Slack Site

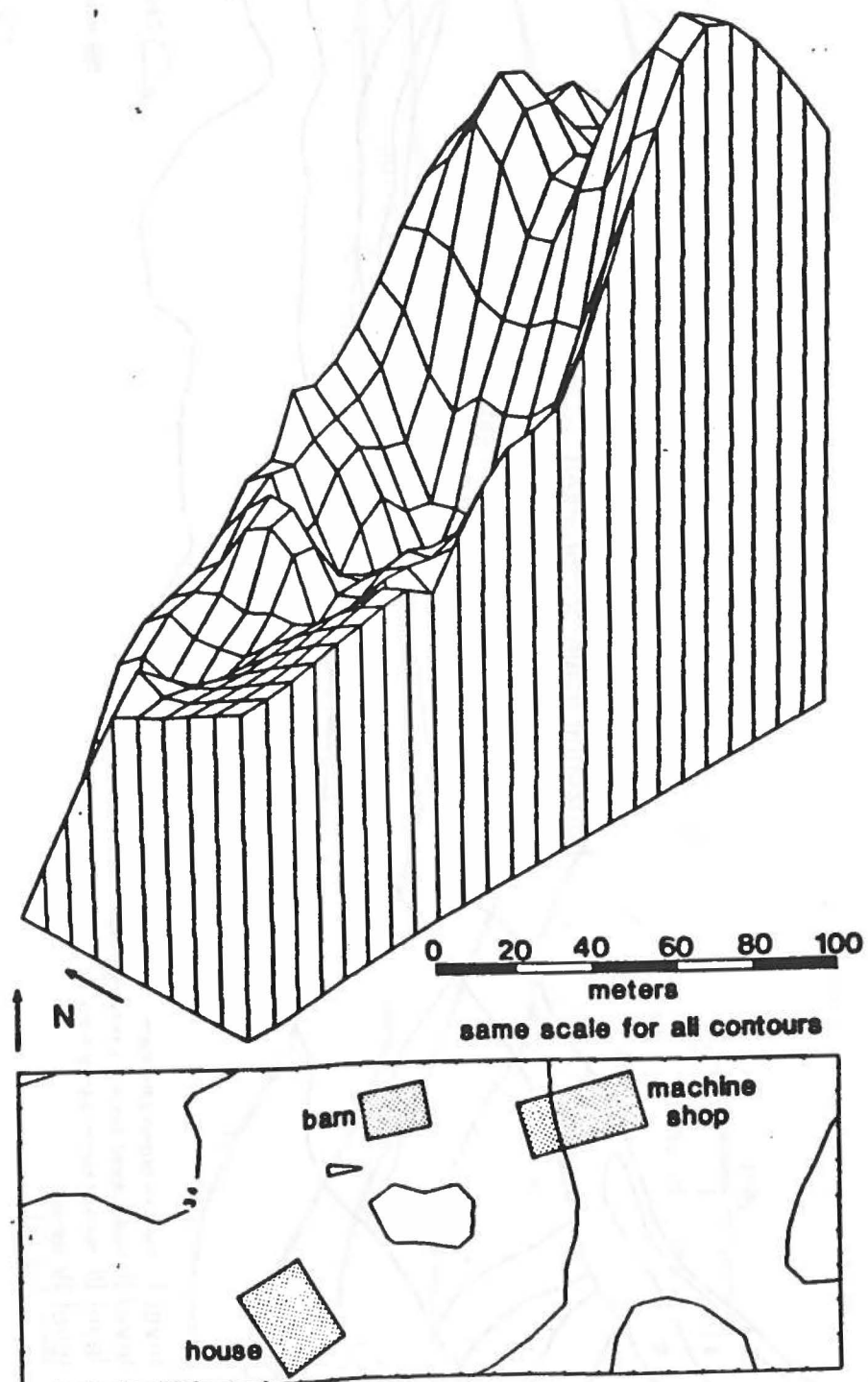


FIGURE 47  
Soil Calcium Distribution – Wilson–Slack Site

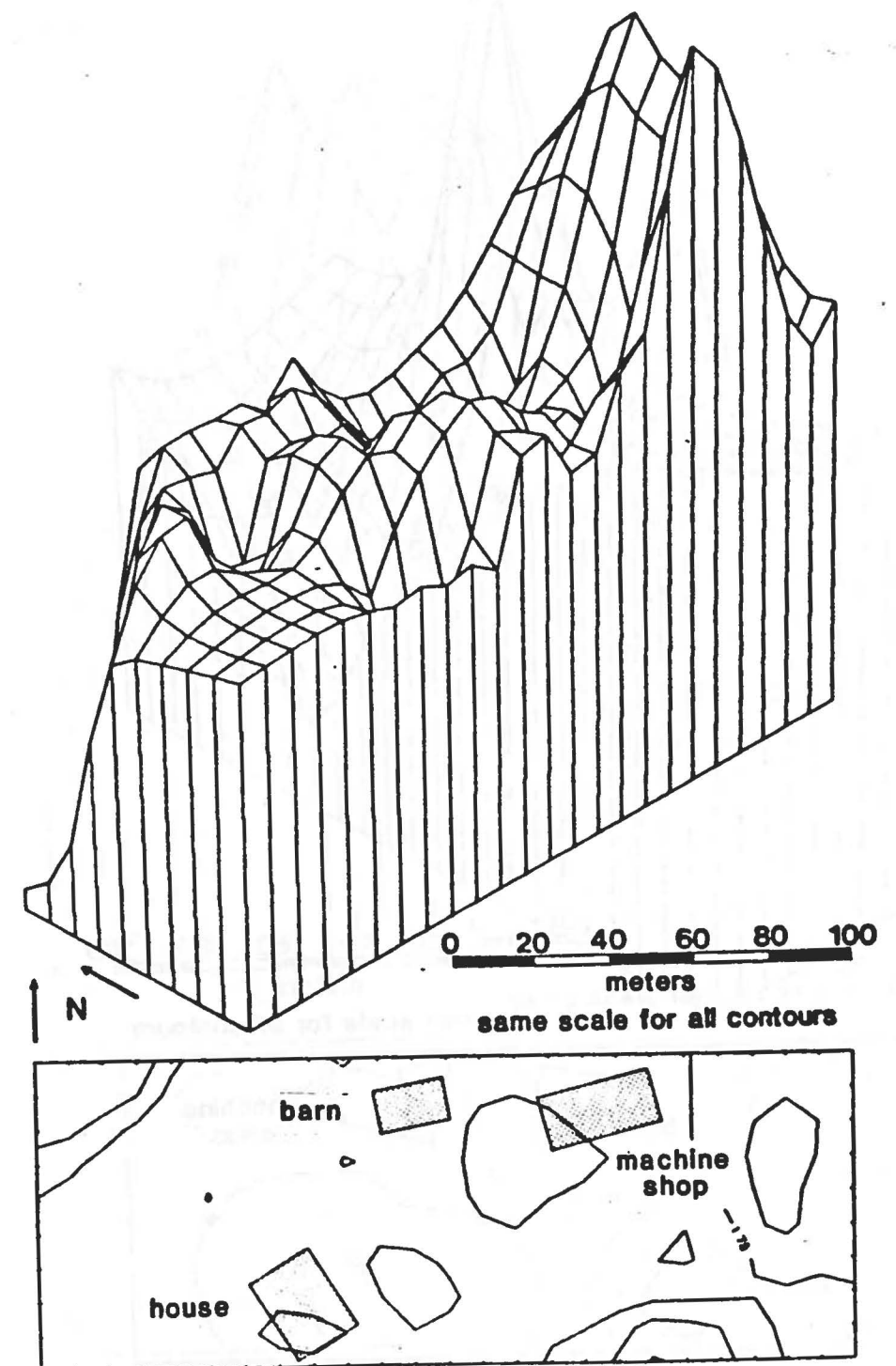




FIGURE 48  
Soil Magnesium Distribution – Wilson-Slack Site

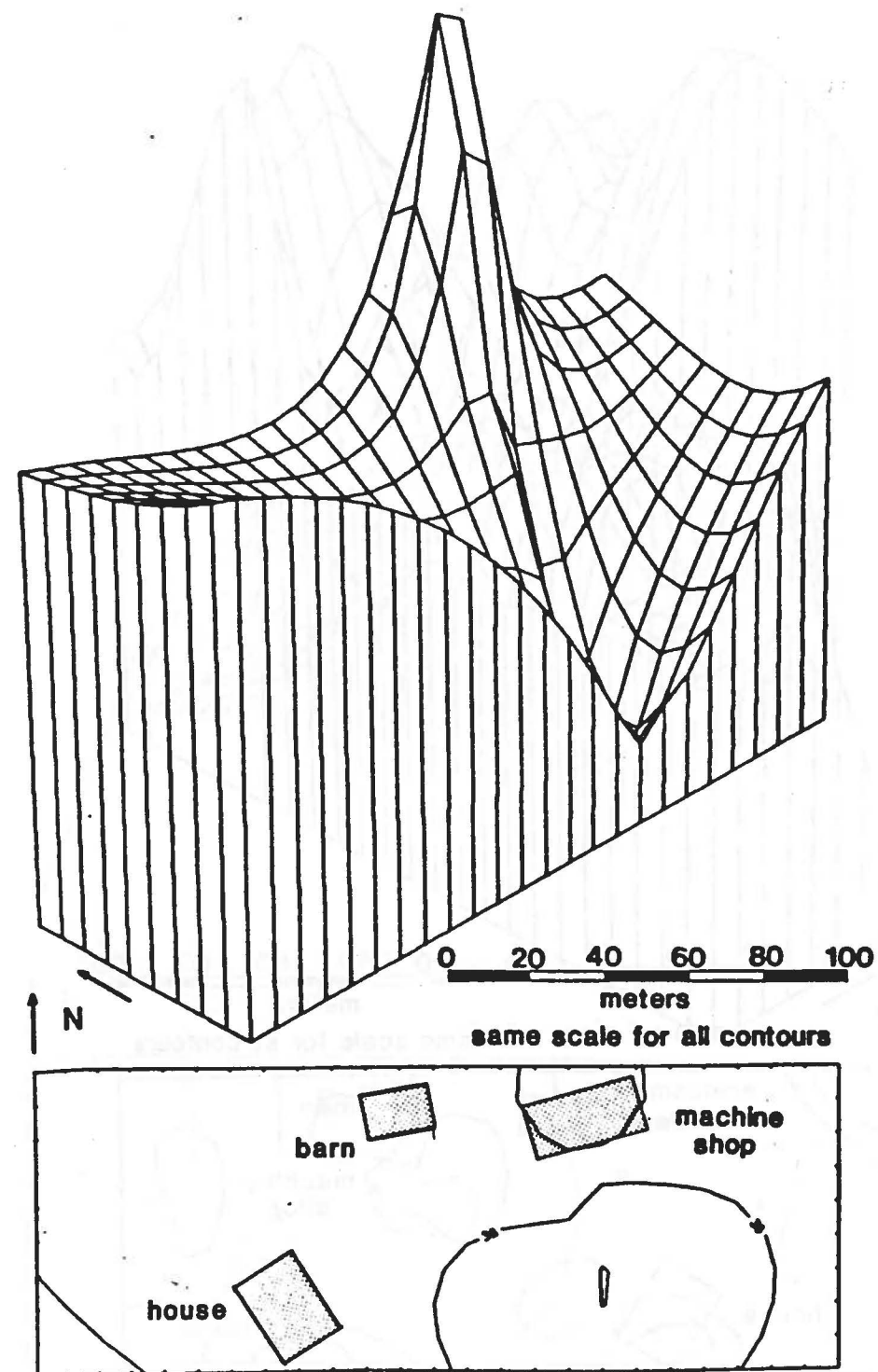
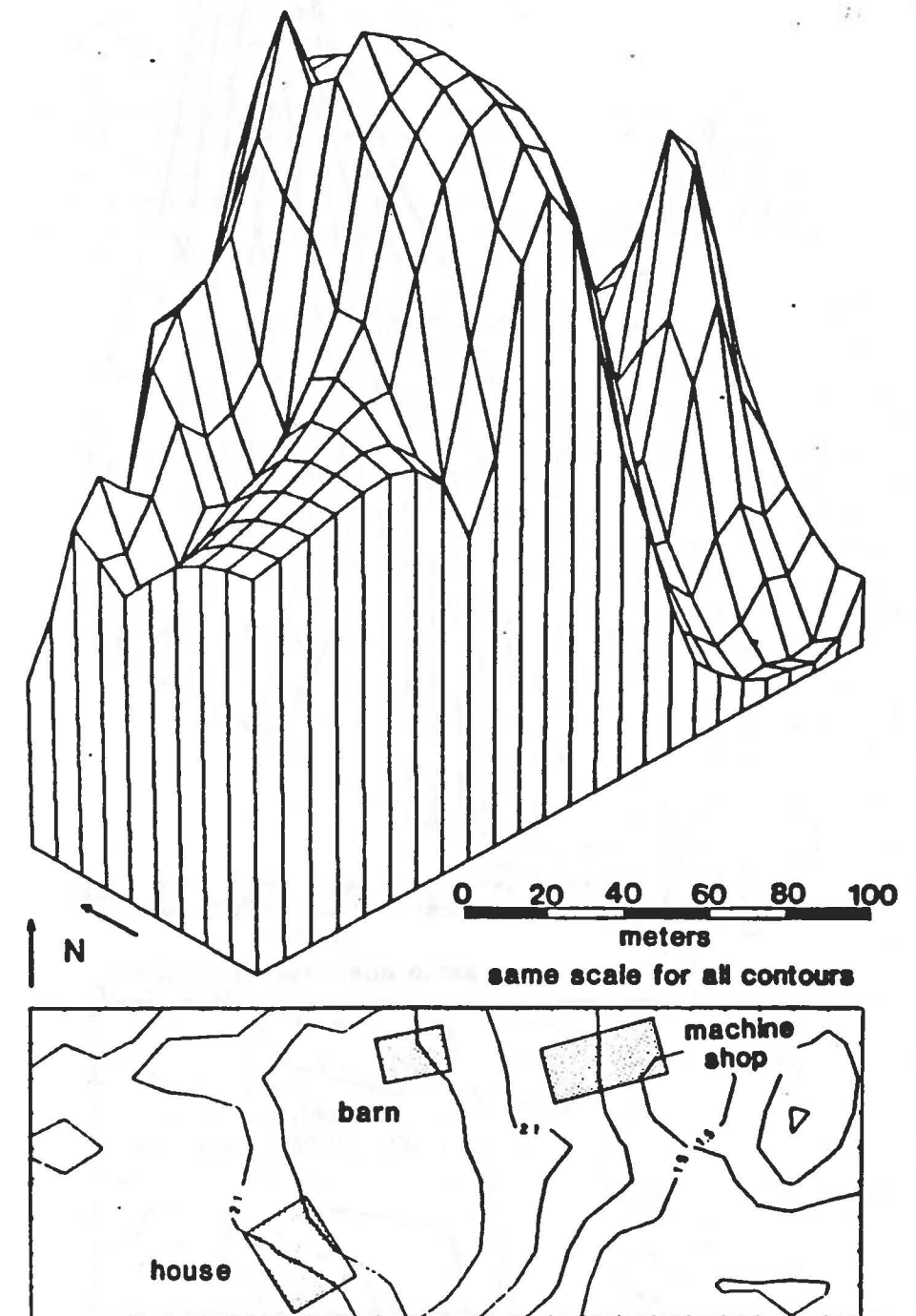
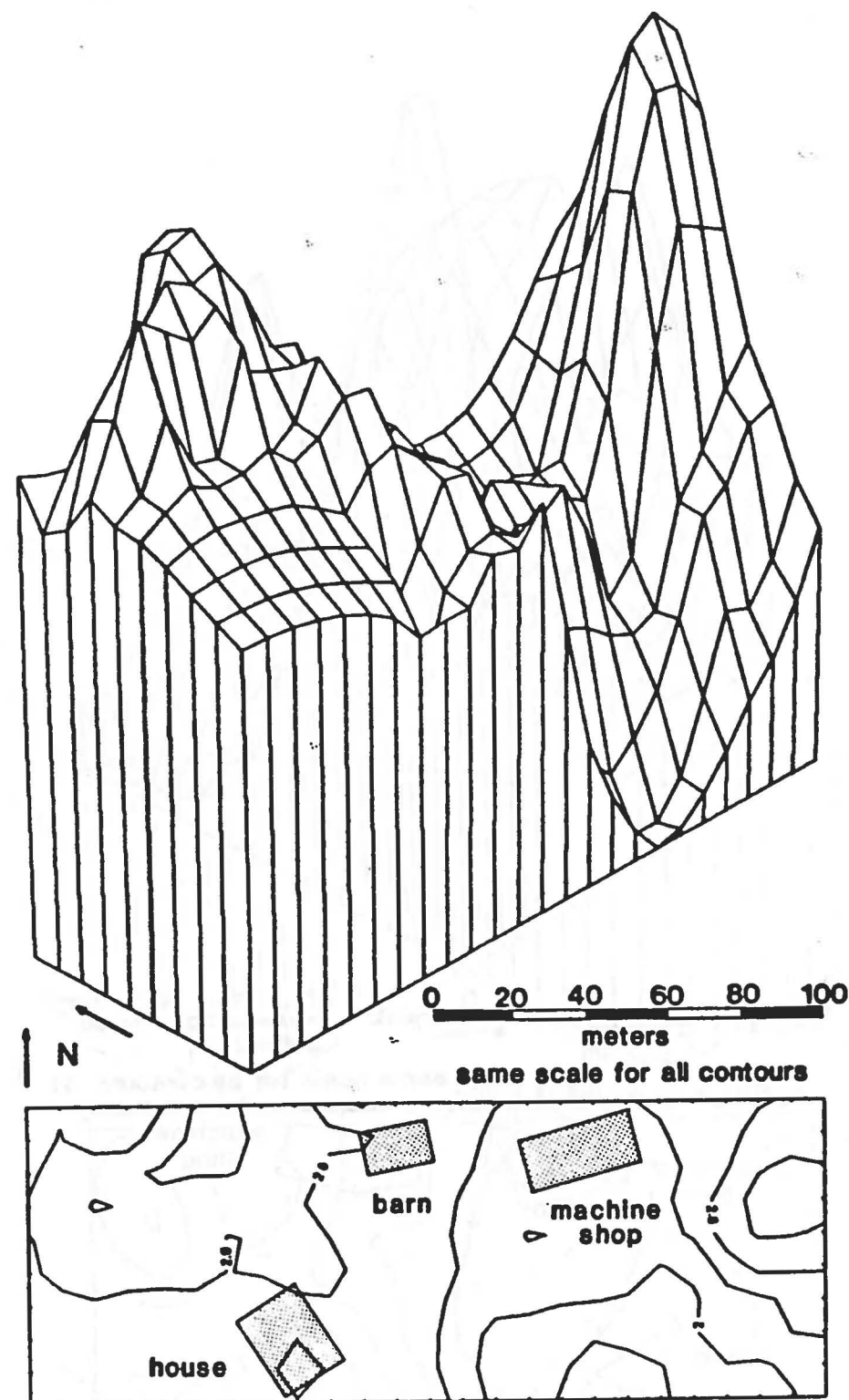


FIGURE 49  
Soil Phosphorus Distribution – Wilson-Slack Site





**FIGURE 50**  
**Soil Potassium Distribution – Wilson-Slack Site**



Each of the chemicals plotted are informative of past processes acting on the archaeological record. Relatively high levels of phosphate are known to be derived from the deposition of organic wastes through purposeful manuring or due to the presence of an area where animals were confined either by fences or by a structure. Elevated concentrations of potassium are derived from the deposition of wood ash through surface burning or by the dumping of fireplace or stove ash. Calcium concentrations result from agricultural liming, the deposition of oyster shells, or the existence of building materials such as mortar or cement. Magnesium concentrations are affected by most of the processes controlling calcium concentrations and magnesium is especially elevated if dolomitic limestone had been applied as fertilizer. With the pH of a soil sample, readings greater than 7.0 indicate alkaline soils and less than 7.0 indicate acidic soils. Delaware soils are naturally acidic, and readings above 6.0 generally agricultural liming.

At the Wilson-Slack site certain areas were expected to produce distributions of chemicals characteristic of yard functions known through historic research. Within the north yard area, a division of the agricultural area from the domestic area should be present, reflected in a difference in phosphate values. The area of the site that was used for manufacturing and blacksmithing should have an unknown, but characteristic signature. It was expected that this would most likely be reflected in increased potassium levels. The garden area in the east yard area and the agricultural fields surrounding the north yard area should be differentiated by their calcium and/or magnesium levels.

To make further use of the soils data, the patterning of soil chemical concentrations was examined to study the correlation with the observed artifact distribution. It was suggested that the spatial chronological variation identified by diagnostic artifact types might co-vary with one or more of the soils chemical distribution. Discussion of these correlations will be provided in the later discussion of intra-site patterning.

#### Excavation Unit and Feature Description and Interpretation

For the purpose of discussion of the archaeological findings, the Wilson-Slack site was divided into an industrial and a domestic area based on the arrangement of standing structures. Descriptive emphasis was placed on: 1) determining the integrity of all levels and features, 2) determining the variety of the archaeological material, 3) Assessing the variation of the quantity of artifacts recovered from various units, and 4) developing a culturally relevant summary of depositional processes operating at the site through time.

A total of 9 features were exposed during the data recovery excavations at the Wilson-Slack site. Each feature mentioned below in the unit description is listed in Table 4 and Figure 43



TABLE 4  
Feature Descriptions

No.	Location	Dimensions	Description	Terminus Post Quem	Interpretation
1	Test Unit 18	Trench #1 .8' X 3.4' Thickness 2.5' Depth 0 2.5' Trench #2 1.2' X 5.0' Thickness 1.5' Depth. 1.1' .6' Trench #3 1.0' X 5.0' Thickness 2.0' Depth 8' 2.8'	Three trenches Containing Pipes #1 Trending NW-SW #2 Trending N-S #3 Trending E-W	1 ca. 1920 2 ca. 1880 3 N/A	Trench 1 - Crosscuts both 2 & 3 - Most Recent Trench 2 - First emplaced- cut off by digging of #3 Trench 3 - Second in sequence of placement. All pipes used for bringing water into the house
2	Test Unit 19	8' X 5.0' Thickness .6' Depth. 9' 1.5'	Faint soil stain containing mortar cobbles, redware & glass	ca. 1870	Builder's Trench used in construction of rear addition
3	Test Unit 20	2.2'X.7' Thickness 2.9' Depth 1.0' 2.9'	Irregularly shaped dark soil stain adjacent to foundation. Contains large ceramic fragments	Gaudy white- ware ca. 1920	Trench excavated out during rennovation of foundation
4	Test Unit 24	.80' in diam. Thickness 2.10' Depth 1.30' 3.40'	Approximately circular soil stain in plan view, barrel shape in profile w/ flat bottom. Filled with al- ternating soil and ash layers	1920	Trash pit

TABLE 4 (con't.)  
Feature Descriptions

No.	Location	Dimensions	Description	Terminus Post Quem	Interpretation
5	Test Unit 25	#1 Hole 1.3' in diam. Mold .5' square Thickness .48' Depth 1.77' 2.25' #2 Hole 2.6' in diam. Mold .7' triangular Thickness 1.90' Depth 1.80' 3.70'	Two postholes, & molds, both originating at bottom of buried topsoil	ca. 1870	Part of mid-19th century fence system
6	Test Unit 29	2.2' E-W 2.1' N-S Thickness 1.4' Depth .5' 1.9'	Roughly circular shaped soil stain containing archi- tectural debris & large artifacts deposit thickens to west	ca. 1930	Previously existing midden deposit buried by mid-20th century burning of shed structure
7	Test Units 31 & 32	Privy fill - 2.6' E-W 1.9' N-S Thickness 1.80' Depth 1.40' 3.20'	Amorphous - shaped gray soil stain enclosed within rock and brick piers	ca. 1860-1920	Mixed deposition of privy fill
8	Test Unit 32 & 33	.7' N-S X 7.5' E-W Thickness .5' Depth 1.50' 2.00'	East-West trending trench filled with med. brown topsoil. Well defined at bottom & filled with pebbles	ca. 1840	Mid-late 19th century midden adjacent to privy/granary
9	Test Unit 33	Hole 1.4' square Mold .6' in diam. Thickness 1.0' Depth 1.05' 2.05'	Posthole & Postmold		Part of fencing system related to livestock penning



shows their location. Several test units were placed adjacent to or within previously identified structures at the site. Test units 18 and 19 were located to archaeologically date the construction of the main block and the rear addition of the residence. These units were also located to retrieve the greatest frequency of artifacts, assumed from previous excavations to be adjacent and peripheral to door passages and window openings. The excavation results of Unit 18 identified an area of intensive midden deposition adjacent to the doorway opening into the basement cooking area. At the bottom of the excavation unit were located a cluster of three pipe trenches. Soils above the pipe trenches yielded a high density of bone refuse intermixed with artifacts diagnostic of both the nineteenth and twentieth centuries. An original ground surface dating to the mid-late nineteenth century was identified approximately 1.0' below the present surface.

Unit 19, placed against the foundation wall of the rear addition, located a narrow builder's trench. This feature, No. 2 contained an intact embossed advertising bottle dated to circa 1880. Otherwise the artifact assemblage consisted of equal percentages of metal, glass, and ceramic artifacts. An intermixture of orange sand and medium brown sandy loam represented the original, but disturbed ground surface. In the northwest corner was a thin block of mortar and brick .75' below the ground surface. This architectural feature was confirmed to be a part of the former walkway system leading to the granary/privy complex.

Unit 20 located the buried topsoil level adjacent to the western doorway of the extant red barn structure. The original ground surface had been buried by clay fill after the remodeling and raising of the foundation. Like the fill in previous units, the soil was an orange very sandy clay containing no diagnostic artifacts. Adjacent to the foundation and associated with the rebuilding was Feature No. 3. This feature was filled with large fragments of whiteware and porcelain dating to the early twentieth century. Throughout the unit was a thick ash/coal layer from 1.4' to 1.8' below the ground surface. The unit showed stratigraphic changes across the unit with orange fill present on the north and west wall profiles, but none on the south wall. Prior to the deposition of the ash/coal level a north-south trending depression had existed along the south wall. Parallel and adjacent to the depression was a 3'4" fence rail that had functioned to retain the ash/coal deposit. Elsewhere, clay fill had been placed in order to level the ground surface to the top of the ash/coal fill. Besides the accumulation of artifacts in the builder's trench (Feature 3), the upper levels of the unit contained a large percentage of 22 calibre shell casings and metal buttons dating to the late nineteenth and early twentieth century. None of the artifacts in any of the levels dated to earlier than ca. 1880. Similar features were encountered in Units 21-25.

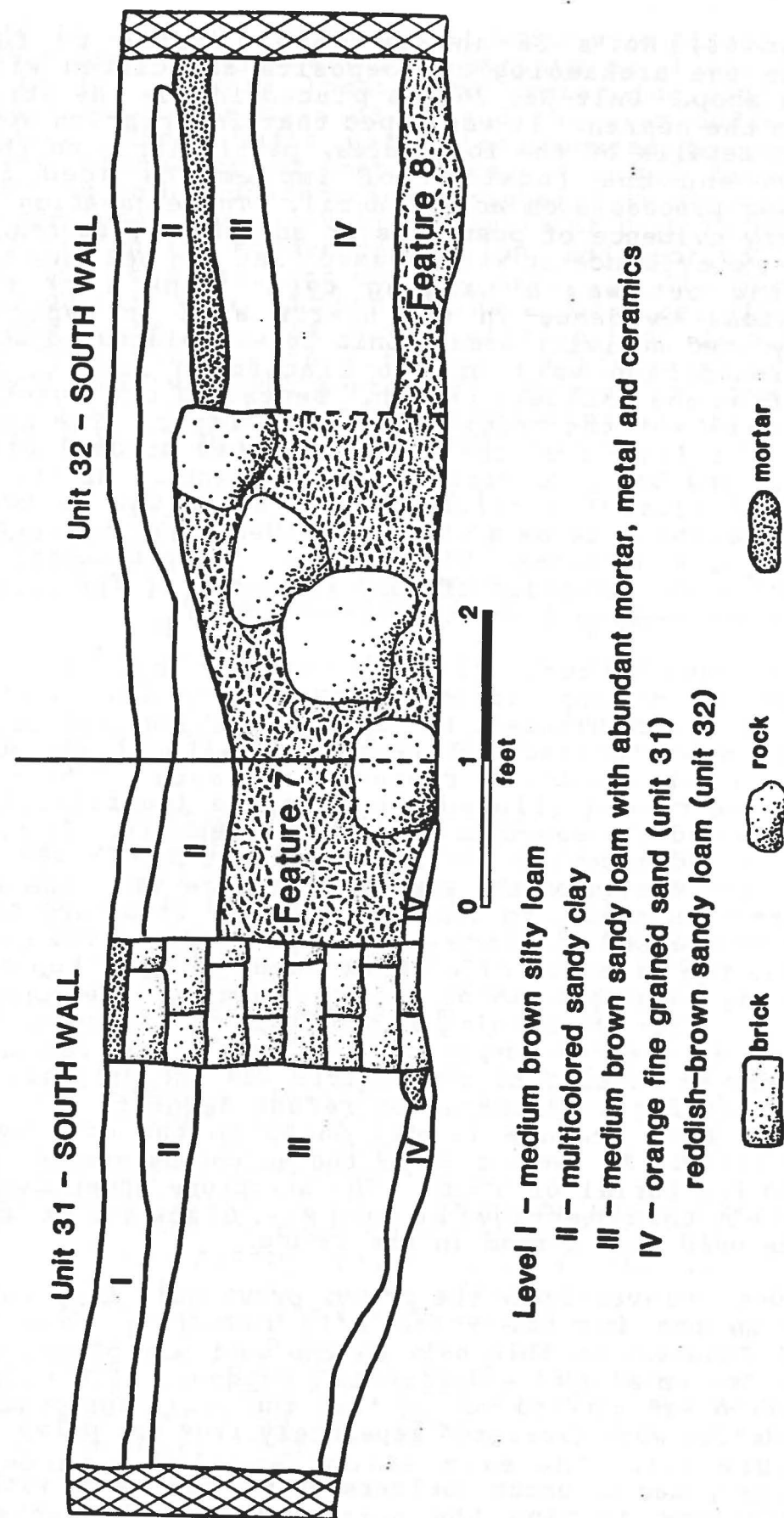
Two units, No.'s 26 and 28 were located to further investigate the archaeological deposits associated with the blacksmith shop. Unit No. 26 was placed inside the structure adjacent to the hearth. It was hoped that information would be provided on details of the forge area, particularly on the type of bellows and the location of implements used in the blacksmithing process such as the anvil. The excavation failed to locate any evidence of postmolds or any other features. From this negative evidence it was assumed that the bellows was not freestanding but was a hanging type. The lack of any archaeological evidence in the hearth area is typical for intensively used activity area. Unit 28 was placed adjacent to the west foundation wall of the blacksmith shop to sample artifacts from the builders trench. Beneath a .25' thick layer of orange fill was the original topsoil layer. The artifact content of all levels of the unit consisted predominately of window glass and badly oxidized metal fragments. At the bottom of the buried topsoil a circular soil stain was noted, that excavation revealed to be a straight sided, flat bottomed pit, approximately 1.5' in depth. The fill of this pit contained few artifacts with the exception of wood fragments at the bottom and small rocks and pebbles found throughout the pit.

The artifact concentrations in the rear (north) yard were also tested by the excavation of measured units. During the excavation of Trench Transect No. 1, a foundation just below the surface had been located and associated with it was a dense concentration of twentieth century artifacts. The profile created by the trench allowed the complete identification of Feature No. 6 and the associated artifact deposit. In order to fully define and excavate the feature, Unit No. 29 was placed adjacent to the trench on the east side (Figure 43). The results of the excavation seemed to indicate that the structure had been burned and collapsed in place on the foundation. The evidence for this was the presence of a thick layer of dark topsoil and ash containing large amounts of plaster, mortar, wire screen, and sheet metal. After the burning a thin layer of orange sandy clay had been placed over the deposit. Included in the feature fill and excavated as level 2 of the feature was the original ground surface containing a sparse sheet refuse deposit. All of the artifacts in both feature levels dated to the mid-twentieth century or later. At the bottom of the amorphous shaped feature, was located the burial of a cat. The structure under discussion is most likely that described by both Mrs. Slack and her son as a small frame shed that burned in the 1950's.

In order to investigate the privy, previously only partially excavated in the initial Phase I/II research, Unit 31 was excavated. Adjacent to this unit on the west was placed Unit 32 to provide for an adequate horizontal exposure of the feature. The excavation was carried out so that the soils surrounding the privy foundation were excavated separately from the privy feature fill (Figure 51). The excavation revealed a three-sided foundation composed of uncut boulders on the west side with brick pier foundations forming the northwestern and southeastern



\*FIGURE 51  
Unit 31 and 32 Profiles - Wilson-Slack Site



corners. While the eastern side of the foundation had no continuous foundation, this fact did not signify the door location, which was known to have faced to the west. Another interesting finding of the excavation of Unit 31 was the presence of an eastern extension of the feature, formed through the periodic cleaning out of the privy. This cleaning process had been previously reported from other rural archaeological sites in the Route 4 Corridor (Coleman et al. 1983). The feature was identified as an oblong shaped stain containing a mixture of buried topsoils and artifacts different than those found within the privy. Throughout the 1.2' deep deposit were found asbestos tile fragments indicating a poorly stratified deposit. The privy fill itself yielded few artifacts, as had been expected, and was found to consist of a relatively shallow, oblong hole. During the excavation of this feature, an informant interview was conducted with Clifford Slack, a cousin of Mrs. Slack who had rebuilt the privy shortly after the beginning of his employment. It was he who had installed the brick piers, placing them in narrowly dug shafts. At this time Mr. Slack advised that a mortar walkway had been located in an alleyway between the west wall of the privy and the east wall of an adjacent structure which served as a granary.

In the furthering of the research goal of locating all non-extant structures, Unit 33 was placed adjacent to Unit 32 and excavation of the unit revealed the mortar walkway .3' below the surface. This unit abutted on the west a substantial foundation composed of 9' X 5' X 2' mortared bricks. Further excavation of the unit revealed a deep midden beneath the mortar sidewalk deposited in a southward dipping depression. This stratigraphic situation had been duplicated in the excavation of the western half of Unit 32 where a midden deposit was present sealed by a mortar layer. The artifacts recovered from both areas of the midden deposit dated to the mid-to-late nineteenth century. At the bottom of this midden deposit was Feature 8, an east-west trending trench. The exact function of this trench was not determined but it appeared to represent the remains of a robbed foundation wall. The rich artifact deposit in this feature and in the surrounding midden soils allowed the bracketing of these deposits to the mid-nineteenth century (1840-1860). Another feature, No. 9 was located in the northern corner and had also been sealed by the mortar sidewalk. Shovel scraping was carried out to uncover the entire foundation wall of the structure. This excavation defined a rectangular 18' N-S by 12' E-W structure. In the southwestern corner the backhoe exposed the contents of a trash feature located adjacent to the foundation. A large number of artifacts were collected from this feature including a name plate of A. Wilson. The excavation of Unit 34 did allow for a partial sampling of the interior of the structure. Also located was a westward extension of Feature 8, which based on stratigraphic evidence predates the construction of the granary in the late nineteenth century.



### Summary of Site Limits, Archaeological Context and Integrity

The limits of the site were completely defined by the final Phase II research. The definition of the western limit of the site, a goal of the final Phase II research, was determined and the site was seen to be completely disturbed in this area. This disturbance was found to be the result of both mid-twentieth century and 1983 construction activity. The mid-twentieth century disturbance, in the northwestern corner of the site, resulted from the operation of a borrow pit by Mr. Norman Slack in the 1950's and 1960's. The 1980's disturbance, in the southwestern area of the site was also due to soil mining. The eastern and northern limits had been defined by the preliminary Phase I and II research (Bachman et al. 1984). Archival research determined that from the initial occupation of the site, Chestnut Hill Road (Route 4) had formed the southern boundary of the site.

The context and integrity of the archaeological remains within the site were also determined by the present research. The integrity of the eastern domestic yard area was found to have been severely disturbed by plowing activity as a result of the use of the area as a vegetable garden. Subsequent to the plowing, the yard had been filled by the deposition of a thick layer of orange sandy clay. The present ground surface, existing since the 1950's, had been used as a formal, landscaped yard area. The context and integrity of the northern domestic yard area was found to be extremely variable. The yard area between Units 20 and 30 had been disturbed by the excavation of a cesspool system in 1932 and a septic system in 1960. The integrity of the yard area west of Trench Transect 1 was excellent but the artifact density was very low. East of Trench Transect 1 and in the area of Units 31-34, both architectural and archaeological features were encountered. The archaeological features in these units yielded the only sealed and undisturbed deposits dating to the initial mid-nineteenth century occupation of the site. Otherwise, the results of the archaeological testing located early to mid-twentieth century features, No.'s 3, 4 & 6 or features containing very low artifact densities (feature No.'s 1, 2, and 9). The excavation in the industrial area produced no indication of the presence of significant archaeological remains. This was especially apparent in light of the extensive archival materials which in combination provide more of a cultural interpretation than could be derived from the archaeological materials. In sum, except for the privy/granary complex area, there was a lack of significant, undisturbed features or levels related to either the domestic or the industrial area. No further excavations were necessary because the absence of significant intact archaeological deposits precluded the site's eligibility for listing on the National Register of Historic Places.

### Intra-site Artifact Distribution

In a preliminary stage of the analysis, site limits were defined through the construction of density distribution maps

based on artifact counts from extensive shovel/postholer testing. The entire, undisturbed portion of the site within the project area was tested. The testing identified areas of high concentrations of artifacts suspected to be significant archaeologically, and worthy of further excavation through measured units. The data in itself that was produced was found to be very useful in presenting or investigating artifact patterning present at the site.

In order to determine if activity areas were present at the site, an analysis of the artifact densities was accomplished. A total 335 shovel/postholer units were used in the study. For the purposes of this study, all of the units were assumed to be of equal volume (or depth). Based on the raw artifact counts obtained from these units, six artifact distribution maps were prepared (Figures 52-57). Density contours were plotted on these maps, revealing areas of the site that contained artifact concentrations for the specific artifact class or group. The interpretation of the data consisted of intra-site comparisons among these artifact classes and/or groups and further comparison with other known cultural features such as architectural foundations or fence lines. Thus, this analysis determined the presence or absence of interrelationships between archaeological and architectural features. The relationship between artifact distributions and soils chemical concentrations was also examined.

The maps prepared included one map of the total artifact counts, excluding those measured in grams, distribution maps of two of South's (1977) functional groups (kitchen and architecture), and two plots of artifacts thought to be chronological indicators. The separate plot of the distribution of coal was accomplished because of its abundance over the site as a distinct deposit in the form of lenses and layers. It was thought that the disposal pattern for coal might be different than for the other classes and groups of artifacts.

In general, the result of the distribution map of the total artifacts (Figure 52) shows that over time both the rear (north) yard and the east yard were used for the disposal of trash with the subsequent formation of a midden consisting of both yard scatter and purposefully dug trash pits. High concentrations were noted adjacent to the front door of the grist mill, the western door to the blacksmith shop, and within and surrounding the granary, chicken house, privy, red barn, and the small shed in the northwestern corner of the site. The very low densities surrounding most of the blacksmith shop and gristmill were not expected and are probably the result of non-deposition in these areas rather than any type of post-deposition disturbance to existing deposits. From the artifact patterning it appears that the majority of blacksmithing and repair work was done within the confines of the building rather than in the yard area in front.

A comparison of the kitchen and architectural groups' density distributions show both overlapping and separate disposal



FIGURE 52

Total Artifact Density Distribution - Wilson-Slack Site

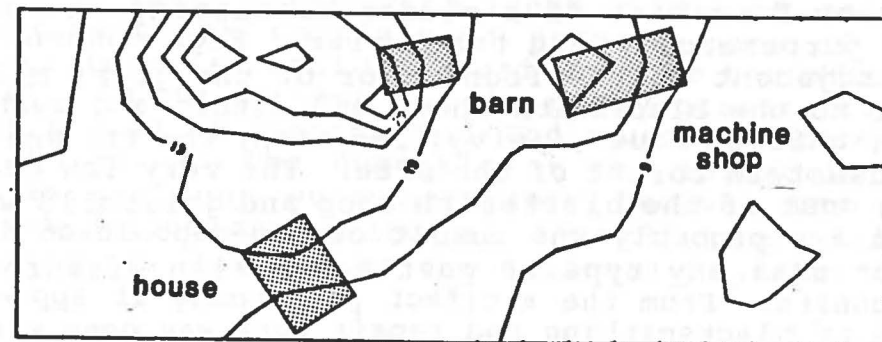
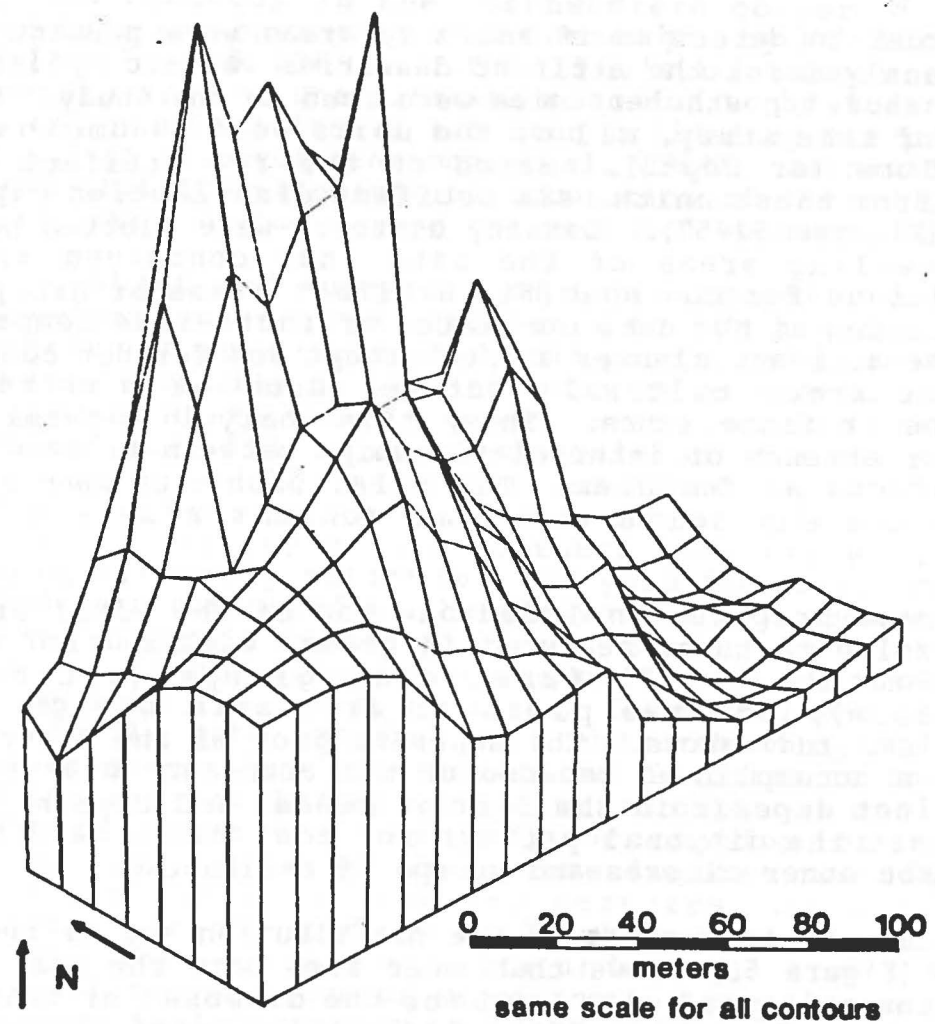


FIGURE 53

Kitchen Group Density Distribution - Wilson-Slack Site

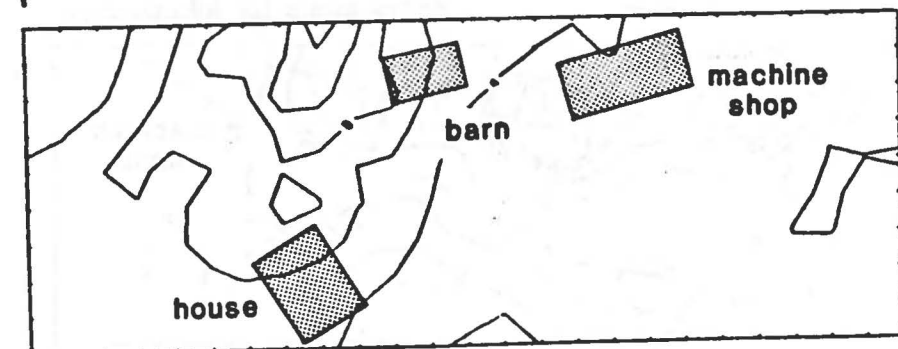
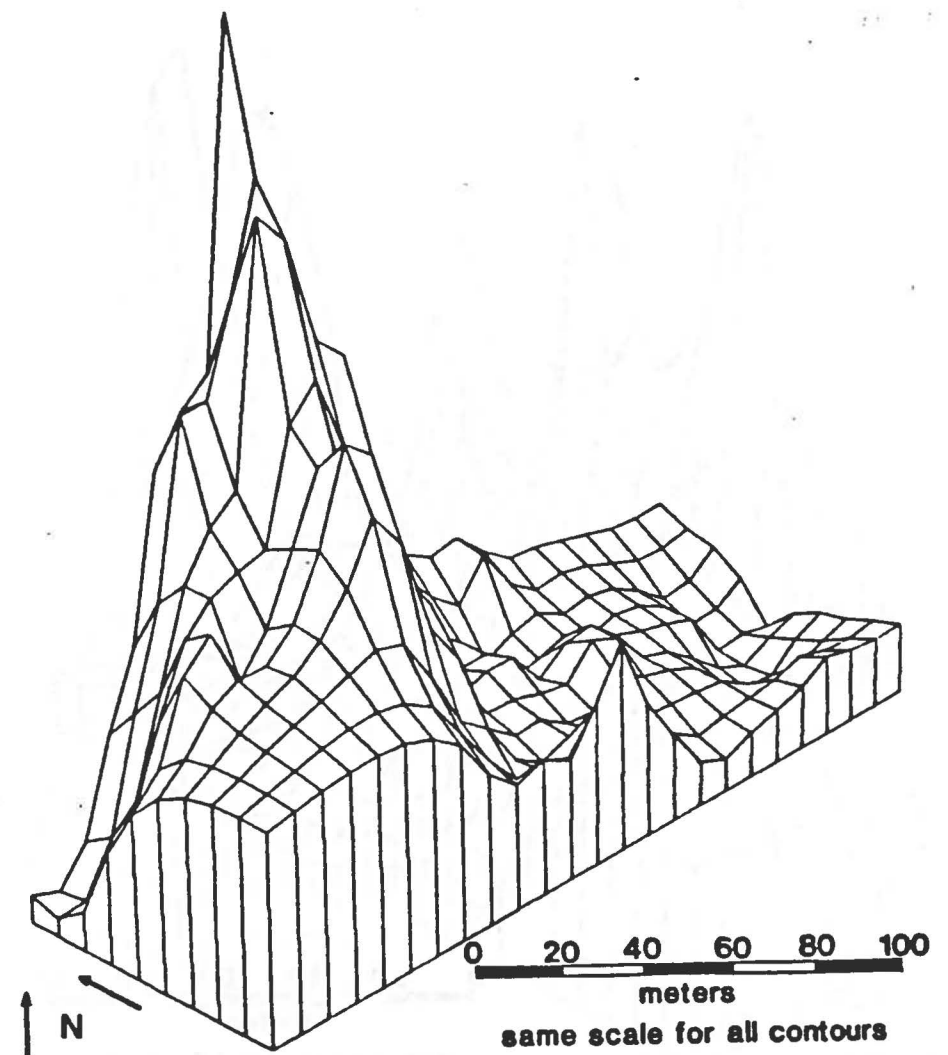




FIGURE 54  
Architecture Group Density Distribution – Wilson-Slack Site

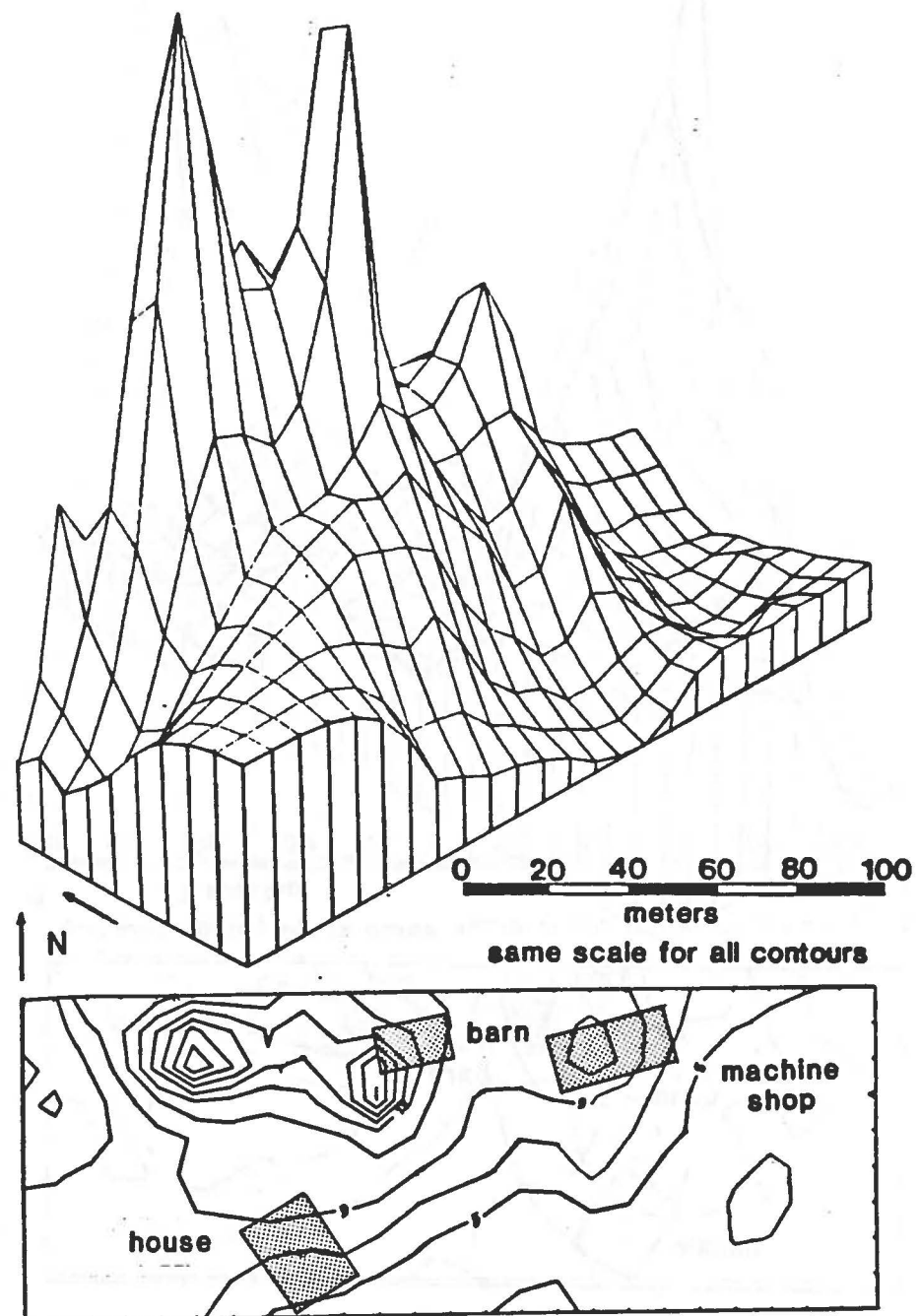


FIGURE 55  
Pearlware, Yellowware and Redware Density Distribution – Wilson-Slack Site

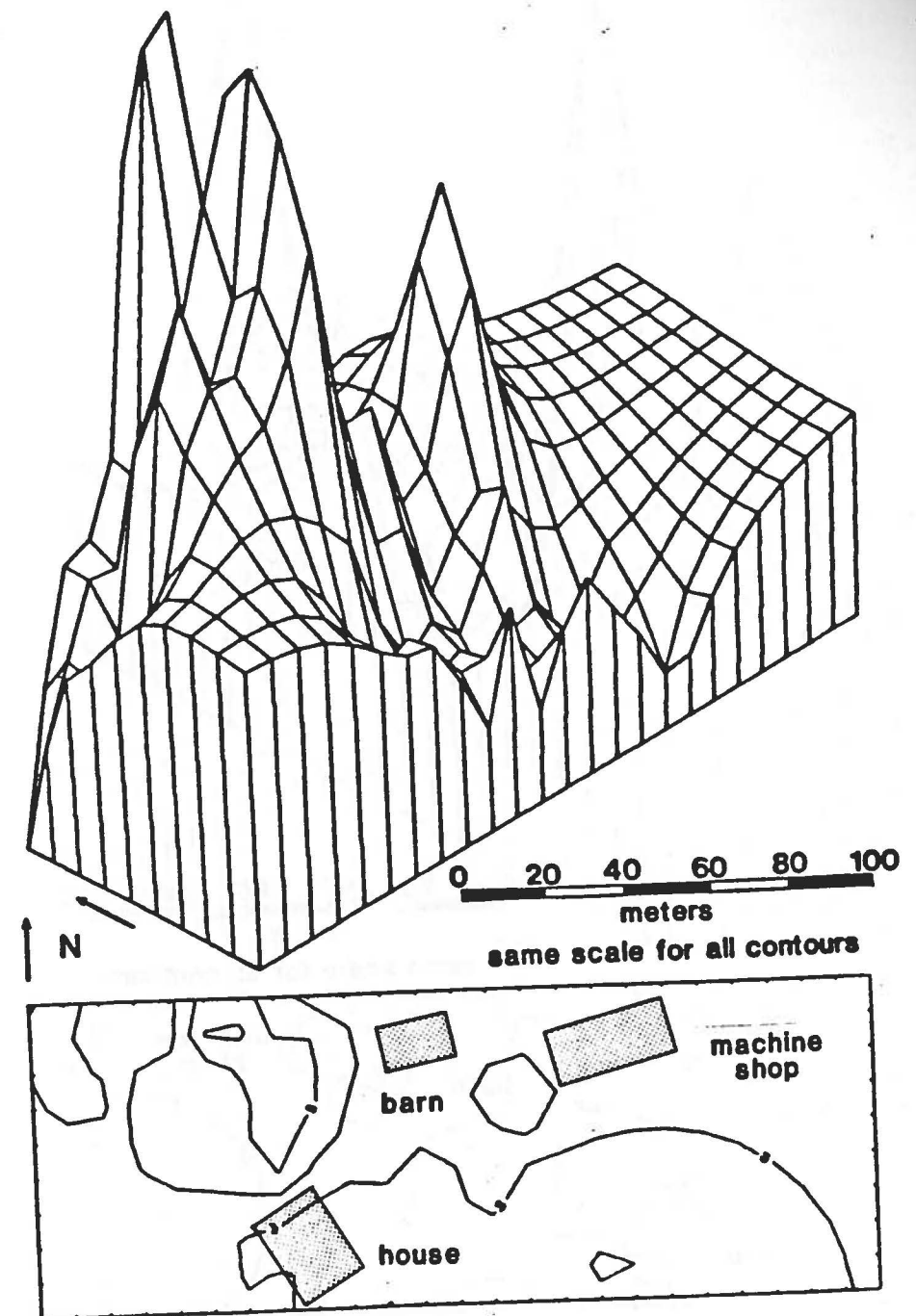




FIGURE 56

Whiteware/Ironstone Density Distribution – Wilson-Slack Site

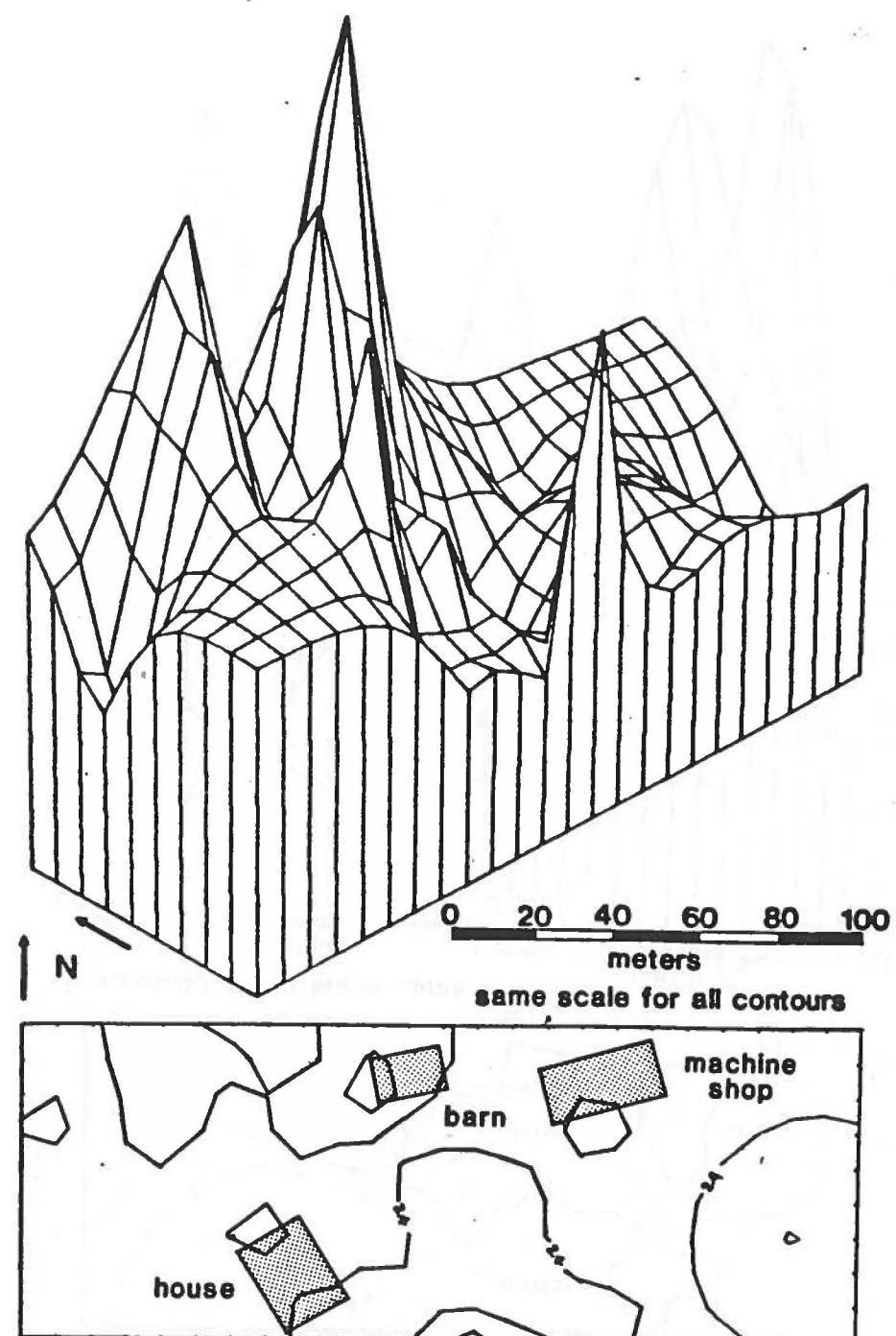
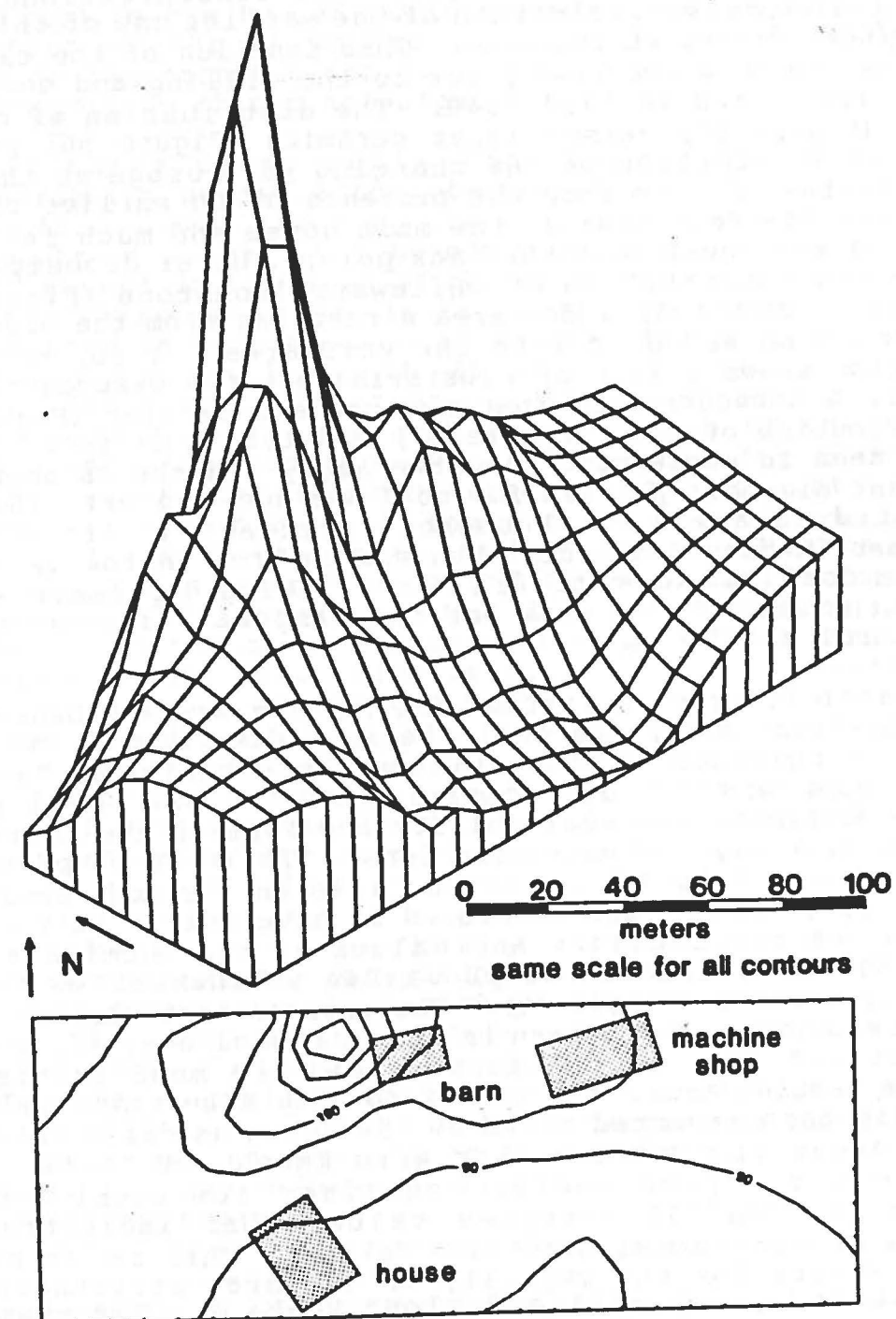


FIGURE 57

Coal Density Distribution – Wilson-Slack Site





patterns for these artifact groups (Figures 53 and 54). The distribution of the kitchen group corresponds perfectly with what was called the domestic yard area and was confined to that area. The distribution of the architecture group, on the other hand, was neatly clustered around the location of extant and non-extant buildings. The presence of significant concentrations in the east yard provides an indication of the earlier use of this as an activity/work center at the site. This function of the east yard was assumed to have occurred prior to the filling and conversion into a formal yard in 1930-1940. The distribution of earlier ceramics (Figure 55) versus later ceramics (Figure 56) provides additional information on the changing yard usage at the site. Generally, the results show the presence of an earlier disposal pattern out the rear door of the main house and much less so to the east of the house (out the back porch). Later deposition, as shown by the distribution of whiteware/ironstone (Figure 56), shows a major disposal/midden area stretching from the side porch to the red barn and east into the yard area. Also, the later distribution shows a lack of clustering out the basement cooking area door, a concentration that was present earlier (Figure 55). The distribution of coal (Figure 57) and total artifacts (Figure 52) were seen to correspond almost exactly and the assumption of a different disposal pattern for coal was not proven. Thus coal was treated as any other household artifact in its disposal except that in many instances when encountered in the excavation units the coal was used to fill in existing depressions, etc. prior to the use of the area for the disposal of household or architectural artifacts.

In order to provide further information on past behavior at the Wilson-Slack site, the soil chemical distribution maps were analyzed in relation to the artifact distributions. The first analysis done was the determination of the pH. Soil pH was tested to determine the availability and form of the phosphorus, potassium, calcium, and magnesium ions. The range of pH values, which was from 4.6 to 7.8 and which falls in the moderately acid to weakly basic range, was concluded to have only a very limited effect on the availability and values of the chemicals being tested. The distribution of pH values in themselves yielded interesting results (Figure 46). The extreme northwestern corner of the site, known to have been in agricultural use, did not show any effects of liming, and instead had the most acidic soil within the testing area. The east yard area also contained soils more acidic than expected based on the known use as a vegetable garden. Areas of the site that were known not to have been intensively occupied and/or contained low total artifact densities (Figure 52) revealed values that indicated some correction of the natural acid-base balance. This can be seen in the high values for the majority of the area surrounding the blacksmith and grist mill and along Route 4. The anomalous readings between the house and the red barn were closely associated with the later ceramic distribution and were probably contaminated or altered by the contents of the midden deposit.

Two of the chemicals selected, calcium and magnesium, provided results that were much less informative (Figures 47 and 48). The distributions for both were extremely similar. High concentrations were seen along the road edge, and were the result of processes not related to the archaeological site. An interesting concentration was apparent in the front and the rear of the grist mill. The reason for this concentration most likely was related to the buried building materials resulting from the demolition of the structure in the 1940's. A corresponding density in the architecture group artifacts in the same location lends support to this conclusion.

The three other soils chemicals each show specific characteristics amenable to interpretation. The phosphorus map (Figure 49), showed the suspected division between the domestic and industrial areas. The boundary between the two was sharply defined except in the area of the driveway opening in the fence line. The sharp division was caused by the fence line known to have existed in this area based on the 1884 painting and on the results of excavation Unit 25 which located a north-south trending fence row. The concentration east of the blacksmith shop coincided perfectly with the location of the no longer extant grist mill/machine shop. The processing of foodstuffs high in carbohydrates and other organic components, as would have occurred during milling and storage operations, was responsible for the elevated values. Historical and archaeological research provided an explanation for the high concentration northeast of the house. The area partially coincides with the midden deposits located between the house and the red barn. The phosphorus density probably indicates that a part of the midden received a higher percentage of raw garbage and other organic wastes versus other areas of the midden. The distribution of phosphorus did not show the sharp distinction that was expected in the rear (north) yard resulting from animal penning. It was especially anticipated that high concentrations would be present in the area of the chickenhouse and to the rear of the granary and privy.

The potassium results provided a unique set of concentrations with the exception of a similar high set of values around the non-extant machine shop (Figure 50). Previous soils research has shown that potassium concentrations were caused by the deposition of wood ash. In the one area of known burning in the north yard no elevated levels were noted. The patterning shown did allow the division of the domestic and industrial areas to be made. From the results it appeared that potassium as well as phosphorus could be used as indicators of human activity. There also appeared to be a slight correlation between high potassium values and a lowered pH. This was especially evident in the area southwest of the blacksmith shop. The anomaly was probably caused by the purposeful dumping of ash in the driveway so as to raise and even out the surface.

In sum, the results of the soils analysis proved to be valuable indicators of human activity. The concentrations



predicted both the location of the non-extant buildings and the location of the midden deposits. The association between these features and the soil concentrations was not as precise as anticipated. The associations noted between some of the soils chemicals and any artifact type or class were similarly vague.

### Intra-Site Economic Analysis

A total of eight of Alexander Wilson's business ledgers survive in the possession of his granddaughter, Mrs. Norman Slack. Also surviving are two business ledgers of Wilson's son, John T. Wilson. These documents are of three types: (1) day books which note the work performed, for whom the work was performed, and the cost of the work covering the period 1852-1877 for A. Wilson; (2) account books, which organize the day book information into specific customers' names and the work performed for them, cover the period 1850-1878 for A. Wilson and the period 1894-1899 for J. T. Wilson; and (3) ledger books that contain personal credit and debts and cash paid for the period 1862-1873 and 1876-1878 for A. Wilson. The body of data contained in these business records combined with that from the Census of Manufacturers and his business correspondence provided extensive information on Wilson's business.

Del Sordo (1981) provided the first analysis of the business records. His study concluded that the income figures in Wilson's account books did not agree with that reported to the Federal census takers for the years 1860-1870. Another topic discussed by Del Sordo was the growth of Wilson's business through time. Several interesting facts were brought out by Del Sordo. The day books indicate that Wilson operated his business six days a week and even worked, on occasion, portions of major holidays such as the Fourth of July and Christmas. Another interesting point is that up until 1860, Wilson ended his business year in March. This was common practice until the calendar changed in the mid-eighteenth century in the English colonies. After 1752 the year ended in December though some still continued the practice of starting their year in March as this time of year was the beginning of the planting season. Since Wilson's business was so heavily tied to the agricultural industry it was only natural that he would follow their cycle. For the most part, monies owed were paid in cash and not by a barter system employed by other local merchants.

Del Sordo also made several statements based on his interpretations of the business records. One of these was questioned and addressed during the present study. This concerned the statement that the price of services and goods did not change through time. Examples chosen to test this assumption were the prices of "moves and removes" or in other words the changing of wagon wheels. From 1852 to 1872 the price remained at 15 cents, but in 1876 the price had dropped to 12 cents. Another item, steel-toed shoes were priced at 44 cents each in 1872, 31 cents each in 1876, both prices representing an increase over the 1867 price of 25 cents each. The cost of new shoes

varied from 25 cents each in 1852 to 22 cents each in 1853 to 25 cents each in 1862 to 44 cents each in 1867 to 37 cents each in 1872.

This same body of data can be used to give a very good indication of the daily routine of Wilson and adds to those facts brought out by Del Sordo. From the sample Wilson was responsible for the manufacturing of nails, hinge hooks, a fire poker, a grub hoe, hedge knives, corn knives, gate hooks, strap hinges and miscellaneous bolts, staples and nuts. Other activities performed with some regularity by Wilson included the manufacturing of horseshoes and the sharpening of agricultural implements such as ploughs, shears and post spades. By far the most profitable daily work for Wilson was his repair work on wagons and carriages. These tasks consisted of putting new spokes in wheels, installing new rims and balancing wagon wheels, replacing wooden seats and sides and bottoms in wagons, and the painting of wagon bodies. One final segment of business that Wilson engaged in frequently was the mending and manufacture of chain and single and double trees (used to harness the animal to a wagon or machine).

The picture of the business of A. Wilson that one receives was one of a true blacksmith participating in numerous, but very small paying, manufacturing and repair jobs. That Wilson was indeed a manufacturer of small agricultural implements was also certain from this study. What was not possible to pick up from the day books and account books is the frequency of manufacture or new wagons, carriages and sleighs that Wilson's business produced. These are noted in the presentation of the census of manufacturers' records. Also not available for analysis from the account books was the significant business income Wilson received from his dealership in large agricultural implements such as reapers and threshers.

The account books of J. T. Wilson for the period 1894-1899 allow for a glimpse into his business practices which were similar to, but, also different from, A. Wilson's. One of the major differences from the business of A. Wilson was the method of payment that J. Wilson would accept for his work. Instead of requiring payment in cash, he accepted such items as vegetable plants, corn grown by others, stove wood, strawberries, planking, credit for a days work, credit for use of horses and credit for a load of manure. Another difference was in the type and variety of work performed by J. Wilson. While he did not completely give up blacksmithing work, the largest income by far was the result of his sale of grain, hay, and coal. On a percentage basis 25 percent of his income was derived from machining and blacksmithing, and 75 percent was derived from the sale of grain, hay, and coal. Another segment of his business was the custom grinding of grain and the sawing of lumber for others. The types of grain that were sold included: cracked corn, shelled corn, cornmeal, feed corn and oats mixture, white meal, bran, and flour. J. Wilson also seems to have sold his goods regularly to a much larger geographical area than A. Wilson, having numerous



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customers in Port Penn, Delaware City, and Wilmington. He also operated a regular, large volume business in coal that supplimented his grain sales during the off months. Wilson sold coal to many of the larger and more important businesses in the area. An example of this was his extensive sales to the proprietor of the Deer Park Hotel, Mr. John E. Lewis. The only large scale blacksmithing manufacturing done during this period by J. Wilson was the sale of over 500 pounds of spikes to New Castle County. Very infrequently in the records was there mention of Wilson actually manufacturing anything, except for the occasional nut or bolt. The mention of electric welding, a late nineteenth century invention, does appear in J. Wilson's account book. The only wheelwrighting that J. Wilson did consisted of the hooping of wagon wheels. The rates charged by Wilson during this time period reflect little variation in price. For example in 1894 the cost of grinding a bag of grain was 7 cents and in 1899 was still 7 cents a bag.

#### Catchment Area Study

The goal of this research was to determine the geographic area from which Alexander Wilson obtained both raw materials and replacement parts and also whole machines (implements). Because the day and account books do not contain the type of information needed, a collection of business correspondence from the period 1853-1886 held at Morris Library, University of Delaware was studied. Due to the quantity of the collection, approximately 1,000 items, only a sample of the entire collection was used. The index to the collection was used to separate the correspondence into two types, personal and commercial. Generally, the boxes and folders with personal letters were not sampled as it was assumed that the letters concerning business

matters and the index provided the information needed, such as geographic location. For the total collection of 78 folders, every 4th folder was sampled providing a 25% sample. Other folders of special interest were also chosen so that the total sample approximated 40% of the total. The commercial correspondence included queries and complaints, receipts, bills and monthly statements, and tax statements and business licenses.

The personal correspondence did provide the researchers with subjective and other information to enrich the personal history of Alexander Wilson and his family. During the period from 1873 to 1877 Wilson served on the New Castle County Board of the Trustees of the Poor. This body was composed of persons of upstanding reputation in the community, and much of the correspondence concerns individuals promoting themselves for appointment to the board. Also included in the correspondence were requests to Wilson to release monies previously allotted to certain families.

As regards the commercial correspondence, the majority of the material is for the 1870's, and from these data these years would seem to rank as his most profitable. This period

corresponds to a rapid increase in the value of products produced by A. Wilson. Some of the letters from his personal customers provide insight into the quality and punctuality of A. Wilson. For instance, B.D. Bowers of Elkton, Md., stated that the "jack made by Wilson was no use at all". A Timothy Slack of Oxford, Pa., asked in several letters, "where is his drill?"

The following is a listing of personal correspondence on business matters:

- |                        |                         |
|------------------------|-------------------------|
| 1) Robert Alexander    | Elkton, Md.             |
| 2) H. Baumgardner      | Lancaster, Pa.          |
| 3) R.M. Black          | Glasgow, De.            |
| 4) E. Mortimer Bye     | Wilmington, De.         |
| 5) D. Cope             | Kemblesville, Pa.       |
| 6) H.A. Perkins        | Odessa, De.             |
| 7) Barney Reybold      | Near Delaware City, De. |
| 8) John Ries           | Glasgow, De.            |
| 9) Timothy Slack       | Oxford, Pa.             |
| 10) Elijah Thompson    | New London, Pa.         |
| 11) J.G. West          | Kimbleville, Pa.        |
| 12) John Best          | Lancaster, Pa.          |
| 13) William Reynolds   | Baltimore, Md.          |
| 14) B.D. Bowen         | Elkton, Md.             |
| 15) George Howard      | Elkton, Md.             |
| 16) George Jackson     | Near Wilmington, De.    |
| 17) George C. Marshall | Dinnewiddie County, Va. |
| 18) Fairlawn Church    | Richmond, Va.           |
| 19) J.R. Hill          | Middletown, De.         |
| 20) Adrian Cornell     | Newtown, Pa.            |
| 21) C.B. Ellison       | Bellevue, De.           |
| 22) N.C. Jones         | Dow Run, Pa.            |
| 23) H.H. Kimble        | Fair Hill, Md.          |
| 24) William Webb       | Summit Bridge, De.      |
| 25) George Williams    | Newark, De.             |
| 26) B. Everitt Hill    | Newark, De.             |

The following is a listing of companies and/or individuals from which A. Wilson purchased goods or services.

- 1) Newark Iron Foundry (Lewis L. Allen)
- 2) C.W.Blandy & Brothers, Newark, De. - Iron Founders - Castings
- 3) George W. Bush & Sons, Wilmington, De. - Coal Dealers - Sm. Stove Coal
- 4) Casho Machine Company, Newark, De. - Machnists, Agricultural Implements
- 5) W. R. & H. Cause, Wilmington, De. - Hardwoods
- 6) Cranston & Newbold, Newport, De. - Lumber & Grain
- 7) Gawthrop & Brother, Wilmington, De. - Plumbing, Gas, & Steam
- 8) Ferris and Garrett, Wilmington, De. - Plummers and Gas Fitters
- 9) B. Fritsch, Wilmington, De. - File Manufacturing



- 10) Kent, Garrett and Co., Wilmington, De. - Iron, Steel, Hardware, and Coach Material
- 11) Garrett and Son, Wilmington, De. - Iron and Hardware Dealers
- 12) Geiser Mfg. Co., Waynesboro, Pa. - Grain Separator, Cleaner, and Bagger
- 13) B. Gill & Son, Trenton, NJ. - Agricultural Works
- 14) Emlen, Graham and Passmore, Philadelphia, Pa. - Seeds and Farm Machinery - Steel Plow
- 15) Hilles and Jones, Wilmington, De. - Machinists
- 16) Hoffman and Son, Baltimore, Md. - Iron Dealer
- 17) D. H. Kent and Co., Wilmington, De. (Formerly Garret & Kent)
- 18) L. H. Lee and Brother, Baltimore, Md. - General Agents for "Champion" Reapers and Mowers
- 19) Campbell Longcope and Co., Baltimore, Md. - Anthracite and Bituminous Coal
- 20) McConaughy Bros., Georgetown, De. - Lumber
- 21) Wm. McNiece, Philadelphia, Pa. - Excelsior Saw Works
- 22) J. Marshall and Co., Newport, De. - Rolling Mill
- 23) New Jersey Agricultural Works, Trenton, NJ - Mfg. of Horse Powers, Threshing Machines
- 24) New Jersey Steel and Iron Co., Trenton, NJ - Castings
- 25) Phoenix Iron Co., Philadelphia, Pa. - Casting
- 26) William H. Pierson, Wilmington, De. - Building Materials
- 27) Jones Pusey and Co., Wilmington, De. - Ship Builders
- 28) A. M. Quimby and Co., Wilmington, De. - Lumber
- 29) Morley Springer, Wilmington, De. - Gause
- 30) Charles Stewart, Wilmington, De. - Iron Founder
- 31) E. C. Stotensberg and Sons, Wilmington, De. - Iron Founders - Castings, Bar Iron, Pulleys
- 32) John A. Wilson, Wilmington, De. - Cumber Wood Pumps
- 33) H. B. Wright and Co., Newark, De. - Hardware Store - Pig Iron
- 34) Nathan Zeigler, Newark, De. - Stoves and Tinware
- 35) Pennsylvania Agricultural Works, York, Pa.
- 36) Joseph Dean and Son - Lumber
- 37) Wheeler and Melick Co., Albany, NY

Thus, Wilson obtained raw materials and supplies within an area ranging from Baltimore, Maryland, northward to Albany, New York. Of the above businesses the Wilmington firm of Garret, Kent and Company received the largest amount of business. During the period from 1865 to 1872 it appears that Wilson bought most of his raw and finished metal goods from this firm. With the change in ownership of the firm in 1873, the relationship of the company and A. Wilson changed. In July 1873 the owners sent Wilson a rather abrupt and urgent request for the money owed them in the sum of \$255.62. It is assumed that Wilson paid the bill owed since his dealings with the firm continued well after this date.

The most informative records pertaining to the notion that A. Wilson was a manufacturer of agricultural implements was found in his business correspondence. A series of letters between Wilson and Messrs. J. P. and W. H. H. Cobb of Dudley, N.C., sheds much light on this subject. In January of 1871 a contract was drawn up for the manufacture of plows for the Cobbs. Evidently, A. Wilson had big plans for this endeavor as one of the prime reasons for the agreement was that in the future the Cobbs would give Wilson "Best references in this state". By February the Cobbs were inquiring "how long before 200 man plows or vegetable cultivators are ready and can you make 100 right and ready?". By all appearances it seems that Wilson's business was on the verge of becoming a major manufacturer. Later correspondence reveals first, that many of the plows, shipped by rail, were broken in transport. The major blow for Wilson, however, was the fact that payment for the goods was not received. The correspondence continued for a period of two years between Wilson and his lawyers in Goldsboro, North Carolina. Finally in 1873 Wilson received most of his investment in a judgment reached against the Cobbs. The marketing of finished manufactured goods to the southern states was one practiced by a large number of the companies in Wilmington (Hoffecker 1974). The fact that small concerns outside the city engaged in such commerce has implications for research into the consumption and trade of goods in Northern Delaware and shows the wide ranging effect the railroad had in the area of consumer behavior. This process would have allowed Wilson to orient his work to the production of much higher priced goods while maintaining his day to day local business. It was noted that much of the business with persons outside of the regular business area was also in large ticket items such as new carriages or wagons. These persons were not picked up in the business area study because they would not be located on the Delaware maps used for the analysis. This data thus serves to supplement the results of the following section of the business/service area of A. Wilson.

#### Business/Service Area Study

The goal of this study was to determine the geographic area which was serviced by A. Wilson's business. The day and ledger books of A. Wilson were used as data sources. These were completely searched to recover all of the names of the individuals who did business with Wilson for three different time periods; 1852-1864, 1864-1869, and 1869-1878. The number of names that were recorded in the books was judged to be too large to allow for the use of the complete listing. Thus, a random sample was taken of the complete list. For each period, a 15% sample was taken through the use of a random numbers table. In the selection process, names with incomplete or unsure spellings were eliminated and new numbers with corresponding names were selected. Maps used to plot the residences of the individuals sampled were the Rea and Price Map of New Castle County (1849) and Beers' Atlas of the State of Delaware (1868). White Clay Creek Hundred and Pencader Hundred were found to be the most



FIGURE 58

Catchment of Business Customer Sample (1869-1878) –  
Wilson-Slack Site

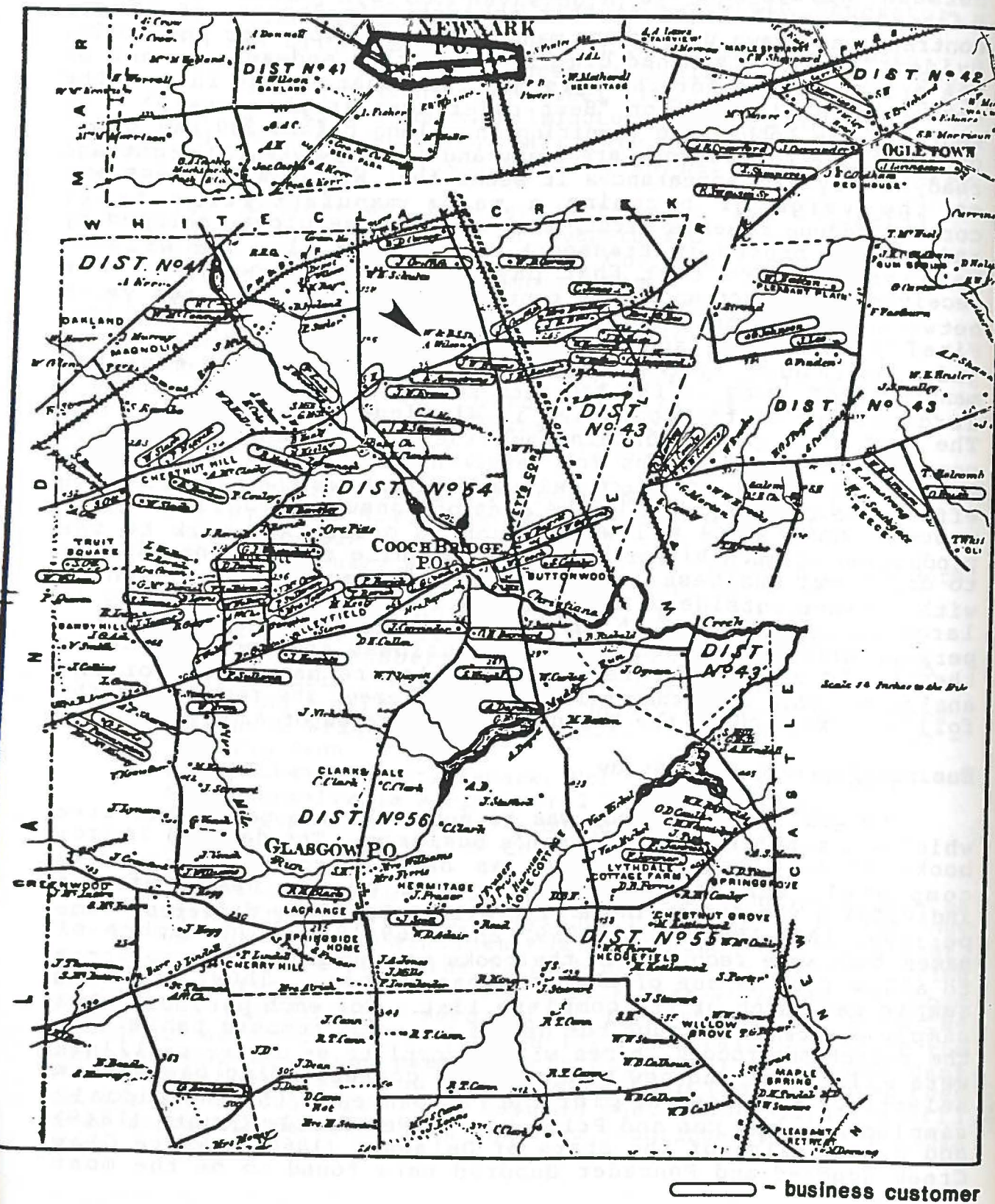


FIGURE 59

Maximum Extent of Rural Community  
Defined By Business Study – Wilson-Slack Site

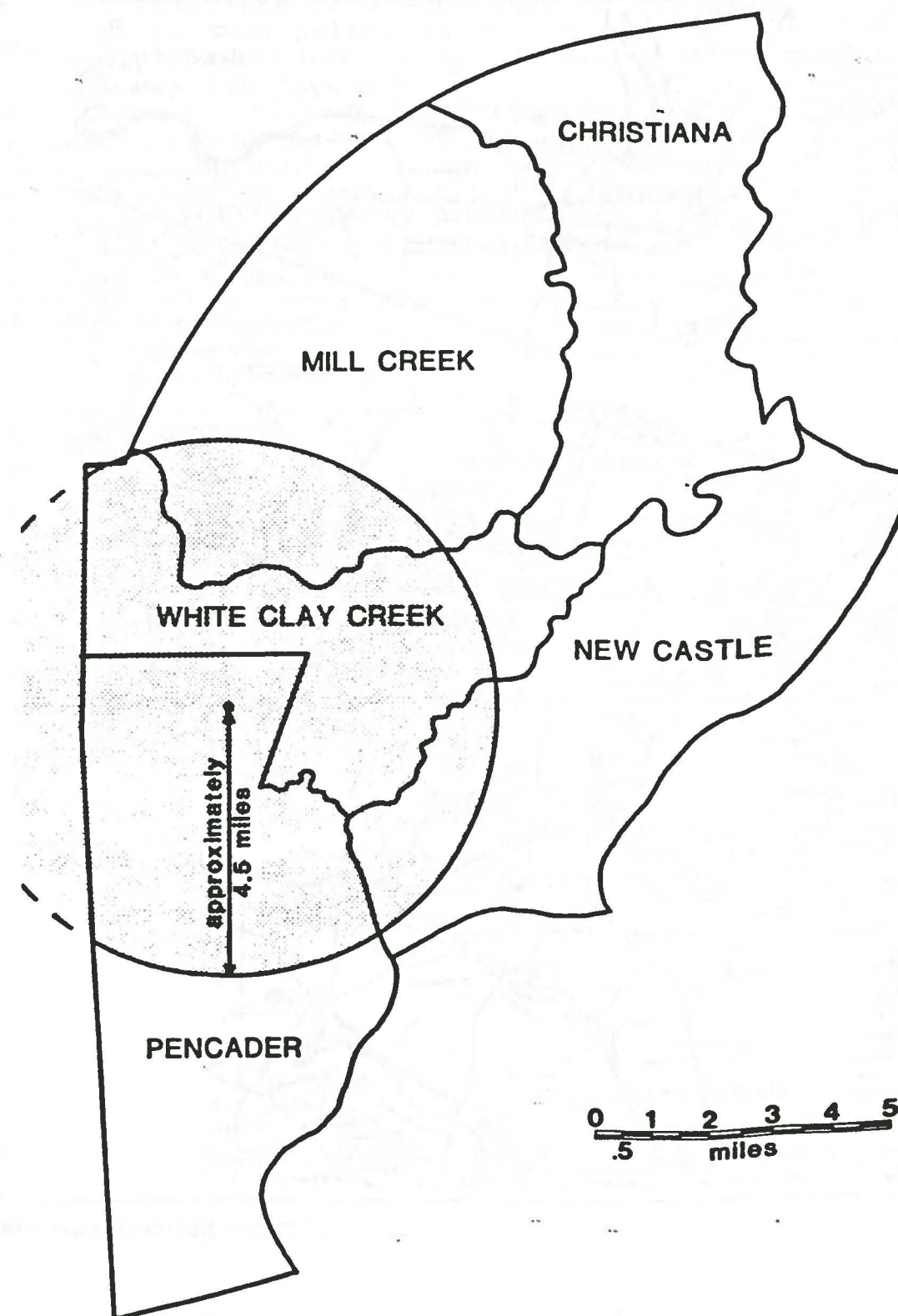
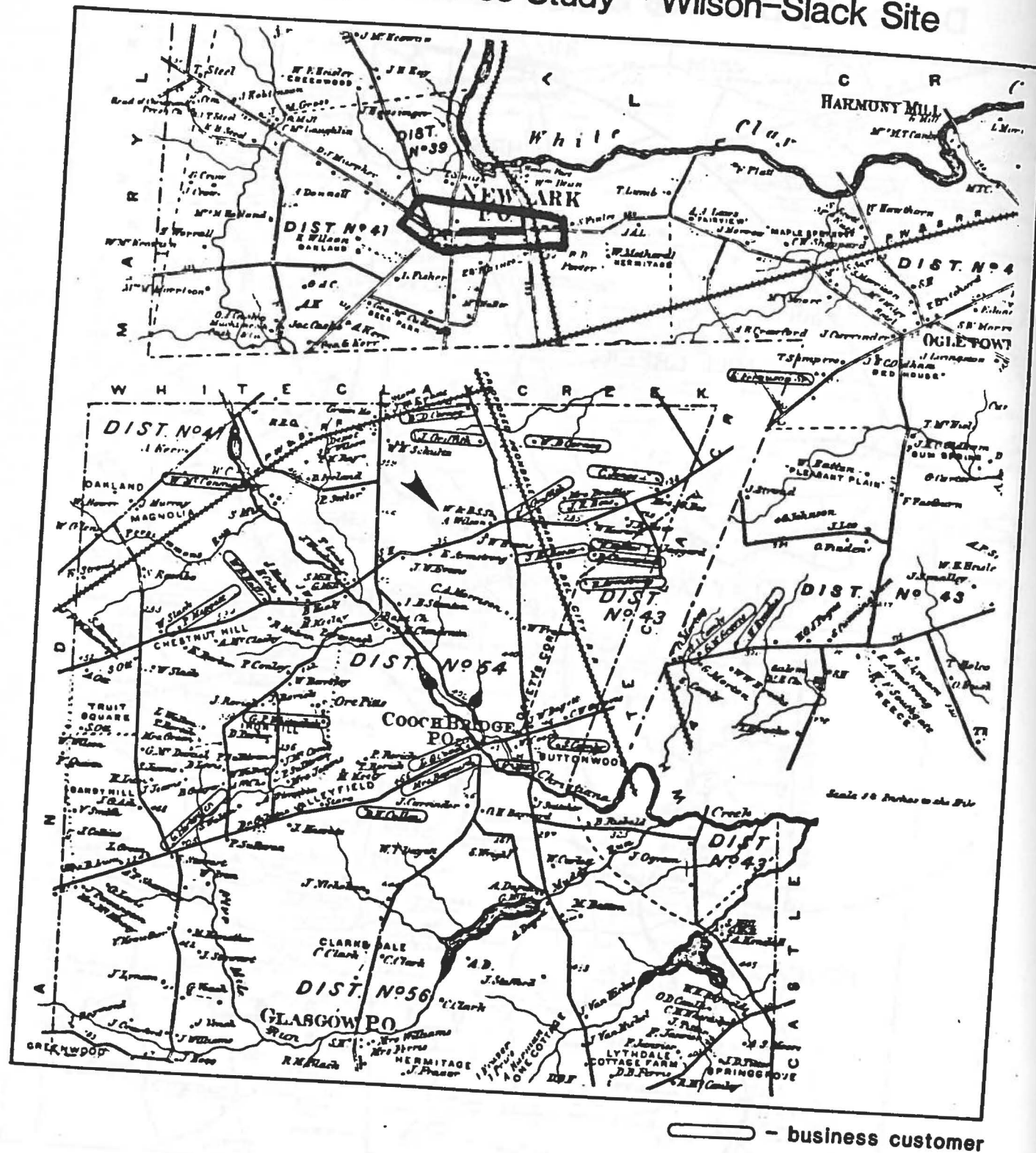




FIGURE 60  
Minimum Extent of Rural Community  
Defined by Business Study - Wilson-Slack Site



useful for locating the data points. Figure 58 shows the results of the map plots.

One of the conclusions drawn from this study was the fact that in spite of the use of a random sample, almost every family in the immediate area was found to frequent Wilson's shops. Related to this point, it became obvious that each area of northern Delaware had its own blacksmith that serviced a segment of the population, which could be used to define separate communities. Murdock (1949) had defined a community as "the maximal group of persons who normally reside together in face-to-face association." Through this geographical analysis the boundaries of an historic rural community could thus be defined on two levels. Figure 59 presents the cumulative results of the geographic analysis. For most persons using Wilson's services regularly, close proximity to his shop seems to have been the most important variable. Wilson had an especially strong clientele southeast of his shop. By considering Wilson's clients as his shops' "resources", the catchment area shown in Figure 59 with a radius of about 4 1/2 miles represents the maximum area that Wilson serviced, and thus is the largest area which could be termed a community.

Figure 60 was based on a plotting of individuals who were Wilson's best i.e., most frequent, customers. These names were chosen from the 1869-1878 account book index (the only book to contain an index). A correspondence between the number of entries of an individual and the frequency of business of that individual was assumed. Thus an individual recorded in more than five entries was assumed to have done "regular business" with Wilson. Figure 60 shows the locations of the residences of these individuals, and presents an area within which daily interactions with Wilson were common.



# OVERVIEW AND FUTURE RESEARCH DIRECTIONS

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The excavations at the Ferguson House, the Welsh Tract School, the Hawthorn site, and the Wilson-Slack site are difficult to compare because artifact yields were low. Nonetheless, some interesting patterns can be noted. For example, an intersite comparison was made for the artifact patterns from the Hawthorn site, the Robert Ferguson site (Coleman et al. 1983), and South's Carolina Artifact Pattern (1977). Data from the Wilson-Slack and the Welsh Tract School were not included due to low artifact frequencies. The specific intersite comparison of the artifact classes within groups was not possible due to the lack of comparable nineteenth century data. However, the present comparison will provide a data base for future intersite comparisons by using artifact classes adapted from those developed by South (1977). It should be noted that within this data base, brick fragments, mortar fragments, wood, plaster, asbestos, shingle and pipe were not included. The presence of these objects was not due to normal patterns of disposal, but was mainly the result of the modern demolition of related structures. The counts for the Hawthorn and Ferguson sites shown in Tables 5 and 6 are adjusted counts which exclude the above-mentioned building materials from the analysis. In Table 6, the Carolina Pattern artifact counts represent South's (1977:105, Table 6) total counts. The range of values that distinguish artifact groups as characteristic of the Carolina Pattern are also given for comparative purposes.

TABLE 5

Comparison of the W.M. Hawthorn Data with the Carolina Artifact Pattern

Artifact Group	Carolina Pattern		Hawthorn - (Adjusted Counts)	
	Percentage	Range	Percentage	Count
Kitchen	63.1	51.8 - 69.2	62.45	14,258
Architecture	25.5	19.7 - 31.4	32.60	7,445
Furniture	.2	.1 - .6	.05	11
Arms	.5	.1 - 1.2	.12	29
Clothing	3.0	.6 - 5.4	.19	44
Personal	.2	.1 - .5	.05	11
Tobacco Pipes	5.8	1.8 - 13.9	.12	28
Activities	1.7	.9 - 2.7	4.42	1,009
Totals	100.0		100.00	22,384

TABLE 6

Comparison of Artifact Groups from the W.M. Hawthorn Site with the Robert Ferguson Tenant Farm Site and the Carolina Artifact Pattern

Artifact Group	Hawthorn		Ferguson		Carolina Pattern	
	Count	Percent	Count	Percent	Range	Count
Kitchen	14,258	62.45	4,383	50.02	51.8 - 69.2	47,521
Architecture	7,445	32.60	3,999	45.64	19.7 - 31.4	20,596
Furniture	11	.05	29	.33	.1 - .6	208
Arms	29	.12	30	.34	.1 - 1.2	165
Clothing	44	.19	17	.19	.6 - 5.4	2,416
Personal	11	.05	0	-	.1 - .5	207
Tobacco Pipes	28	.12	55	.63	1.8 - 13.9	5,225
Activities	1,009	4.42	250	2.85	.9 - 2.7	1,272
Totals	22,834	100.00	8,763	100.00		77,610

The percentage values for South's artifact classes from the Hawthorn and Ferguson sites, and South's composite Carolina Artifact Pattern, were compared to see if significant differences were present. The difference-of-proportion test (Parsons 1974:445-448) was applied to assess the degree of difference among the percentage values. It is necessary to apply this test because the sample sizes among the three assemblages are quite different. These differences in sample size can make percentages that are truly different, appear to be similar and vice versa. The difference-of-proportion test considers the differences in sample size and notes which pairs of percentages are significantly different. Table 7 shows the percentages and differences-of-proportion test statistic. Test statistics with associated p-values less than .05 can be viewed as significantly different and are marked in Table 5.

The results of this study showed several statistically significant, different variables. In the comparison of the Hawthorn and the Ferguson sites, there were more kitchen group artifacts at the Hawthorn site than at the Ferguson site, and more architectural group artifacts at the Ferguson site than at the Hawthorn site. Likewise, in the comparison of the Carolina Pattern with the Ferguson site, there were more kitchen related artifacts in the Carolina Pattern than at the Ferguson site, and more architectural related artifacts at the Ferguson site than in the Carolina Pattern. Finally in the comparison of the Hawthorn site to the Carolina Pattern, the Hawthorn assemblage had more kitchen, architecture, and activity related artifacts than the Carolina Pattern.



TABLE 7  
Difference-of-Proportion Tests for the Artifact Assemblages from  
the W.M. Hawthorn Farmstead, the Robert Ferguson Tenant Farm  
site, and the Carolina Artifact Pattern

Artifact Group	H	H vs P	T	H	H vs C	T	P	P vs C	T
Kitchen	.6244	.5001	14.62* (p .001)	.6244	.6123	2.61* (p .05)	.5002	.6123	14.51* (p .001)
Architecture	.3260	.4563	13.83* (p .001)	.3260	.2654	10.00* (p .01)	.4563	.2653	24.49* (p .001)
Furniture	.0005	.0033	.22 (p .75)	.0005	.0026	.15 (p .75)	.0033	.0026	.01 (p .75)
Arms	.0012	.0034	.19 (p .75)	.0012	.0021	.09 (p .75)	.0034	.0021	.14 (p .75)
Clothing	.0019	.0019	.001 (p .75)	.0019	.0311	1.24 (.75 p .50)	.0019	.0311	.72 (.75 p .50)
Personal	.0005	0	.001 (p .001)	.0005	.0026	.15 (p .75)	0	.0026	.001 (p .75)
Tobacco Pipes	.0012	.0063	.43 (.75 p .50)	.0012	.0673	1.56 (.25 p .10)	.0063	.0673	1.87 (.10 p .05)
Activities	.0442	.1285	1.13 (.75 p .50)	.0442	.0163	4.43* (p .05)	.0285	.0163	1.33 (.25 p .10)

H = Hawthorn  
P = Ferguson  
C = Carolina  
T = Test Statistic  
P = Confidence Statistic

\* - Significant Differences (p .05) (Note - these are the only differences that are really significant.)

The abundance of kitchen related artifacts in both the Hawthorn and Carolina Pattern assemblages when compared to the Ferguson site is probably indicative of length of site occupation. The Ferguson site was a mid-nineteenth century site, while the Hawthorn site and the sites used in the derivation of the Carolina Pattern had earlier occupations. In other words, the earlier sites had more time to accumulate kitchen remains. The larger percentage of architectural group artifacts at the Ferguson site when compared to the Hawthorn and Carolina Pattern assemblages is probably due to the site's mid-nineteenth century origins, and the attendant rise in the amount of metal and construction materials that would be associated with such a site. This result is much different than what was predicted, as demolition activities at the Hawthorn site were expected to greatly inflate the architectural group percentages.

In the comparison of the Hawthorn assemblages with the Carolina Pattern the most important factor to consider is the age of the sites under study. The sites used in the derivation of the Carolina Artifact Pattern were all predominantly eighteenth century occupations, with no consideration of late nineteenth to twentieth century data. The Hawthorn site, and the Ferguson site too, were both occupied well into the twentieth century. Thus, the large percentages of kitchen, architecture, and activities related artifacts at Hawthorn are probably due to the longer occupation and the subsequent contribution to the data base of the site. It should be noted that, had the building materials listed earlier, such as brick, plaster and asbestos, etc., been included in the counts for the Hawthorn assemblage, the comparison would not have been with South's Carolina Pattern, but with South's (1977) Frontier Artifact Pattern. This pattern does not accurately reflect the regional or site specific development of the Middle Atlantic area, when considering the occupation period of the William M. Hawthorn Site. That the data could be interpreted in this manner points to the need for further research into not only the mechanics, but also the archaeological reality of South's patterning.

Because the artifact assemblages from the Wilson-Slack site were quite small, detailed comparisons to artifact assemblages from other sites in the Route 4 Corridor were not possible. Nevertheless, it can be noted that on an impressionistic basis, there do not seem to be any apparent, significant differences among the artifact assemblages from the Wilson-Slack, Ferguson, and Hawthorn sites (see Coleman et al. 1983; Coleman et al. 1984). Although the Wilson-Slack site did have more manufacturing debris than the other sites, as would be expected, the domestic ceramic assemblages among the sites are quite similar in composition. Artifact disposal patterns are also very similar in content and location among the three sites.

Faunal remains are scarce at the Wilson-Slack and Hawthorn sites and non-existent at Ferguson. Nonetheless, one difference in butchering patterns can be observed between the Hawthorn and Wilson-Slack sites in spite of the small samples. At Wilson-



and the domestic structure. Also, a shift in agricultural outbuildings occurs around the same time. These changes seem to occur as the Hawthorn site occupants are drawn into an emerging local market economy in the nineteenth century. In many ways, the changes at the Hawthorn site seem to be more planned, while the changes at the Wilson-Slack site seem to be more incremental and not a product of planned growth. These changes mirror patterns in the archival data for the Wilson-Slack site in that one gets the impression that the Wilson-Slack business ventures grow in response to changes outside of the participant's control. It is interesting to note that Manning (1983) found similar patterns among nineteenth century farmsteads on New Jersey's Inner Coastal Plain. By way of another contrast, the Ferguson site (Coleman et al. 1983), a tenant farm site, does not show any spatial reorientation or changing spatial utilization through the nineteenth century. This absence of change probably is related to the tenant nature of the site's occupation and to the reduced effects of emerging market economies on non-landholding tenant farms.

The results of comparative analyses of the Wilson-Slack site and other local sites raise some interesting issues about general historical archaeology methodologies. Standard analytical techniques such as those developed by South (1977, 1979) have not generally proven to be useful in analyzing rural sites in northern Delaware either because there are insufficient data or because the results are at best trivial (Coleman et al. 1984). Furthermore, most general analyses of artifact categories, such as ceramics, show no differences among sites which obviously experienced very different patterns of artifact deposition and which were the products of very different lifeways according to archival data. In some cases this absence of differences may be due to the small size of most samples from good contexts which could be subjected to some of the more interesting non-traditional analyses (eg. - Miller 1974). In other cases, the traditional methods of historical archaeology seem to fail to produce meaningful, non-trivial results.

Two methodological alternatives are to focus on: (1) faunal remains, and other ecofacts indicative of diet, and food processing and consumption habits, and (2) use of space. Both of these topics are usually not directly considered in the archival data, and their consideration provides insights to past lifeways that can be discovered only through archaeology. Their study and intergration with archival data requires some different uses of written records, such as the catchment analysis described here but these new uses provide interesting data. Continued consideration of these two topics will also require some adjustment of field excavation methods. Sampling of middens for food remains will be important in future studies as will be systematic sampling of broad areas of sites.

The comparative approach has also been useful in studying past lifeways and cultural processes. This comparative approach requires comparable data and it is hoped that future studies in

the region will use comparable methods and produce comparable data. It should also be noted that the comparability of methods should apply to both archival and archaeological analyses.

From a narrower perspective, certain local research requirements that would aid the methods and directions of future historical archaeological investigations became apparent from the analysis of the sites in the Route 4 Corridor discussed above. For example, a sampling of additional sites of different, known socio-economic settings would greatly benefit our ability to compare the northern Delaware area, and the Middle Atlantic region as a whole, with other regions of the United States. This study would also provide further information to investigate the conclusion noted above concerning the lack of consistent correlation between a site's ceramic assemblage and the archivally determined socio-economic status of the site's residents. At present archaeological investigations, funded by DelDOT, are being conducted on a number of historic sites in New Castle County. The sites under study include residences and commercial establishments within small hamlets and town, such as Ogletown, Christiana, Stanton and Mill Town, owner-occupied and tenant dwellings in both rural and urban settings, and commercial properties such as blacksmith shops, taverns, wharves and stores. Chronologically, these sites range from the seventeenth century through the nineteenth century. Historical and archaeological investigations of these sites will provide information of the social and economic lifeways of the past peoples of northern Delaware, and will provide the basis for future archaeological studies in the region.

In conclusion, important changes in nineteenth century life took place in northern Delaware and these changes shaped our lives. Archaeological and historical analysis of sites like the four discussed in this volume can help us to understand these changes and learn more about our past.



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