FINAL TECHNICAL REPORT

WELLS IN DELAWARE: ALTERNATIVE MITIGATION FOR THE POLK TENANT SITE (N05221, 7NC-F-111)

U.S. Route 301 Mainline, Section 3:
Delaware State Line to North of Levels Road, St. George's Hundred,
New Castle County, Delaware

AGREEMENT 1539
VERSAR TASK 6

Prepared for:

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June 2016

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U.S. Route 301 Mainline, Section 3:
Delaware State Line to North of Levels Road,
St. George's and Appoquinimink Hundreds,
Town of Middletown,
New Castle County, Delaware

Parent Agreement 1539, Task 6

Prepared for:
Delaware Department of Transportation

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EXECUTIVE SUMMARY

Richard Grubb & Associates, Inc. (RGA) completed Phase II archaeological evaluation of the Polk Tenant Site (CRS N05221, 7NC-F-111) within the proposed U.S. Route 301 Mainline Section 3, in St. George's and Appoquinimink Hundreds and the Town of Middletown, New Castle County, Delaware. A Phase II archaeological evaluation was completed as part of the implementation of a Memorandum of Agreement (MOA) developed between the Federal Highway Administration (FHWA), the Delaware Department of Transportation (DelDOT), the Delaware State Historic Preservation Office (DESHPO), and the Maryland Historical Trust (MHT), executed in November and December of 2007.

The Polk Tenant Site was found eligible for the National Register of Historic Places, but was not considered a good candidate for traditional data recovery excavations. One of the features found at the site was a brick-lined well. In lieu of traditional data recovery at the site, DelDOT and the Delaware State Historic Preservation Office agreed on an alternative mitigation involving preparation of a technical report of the evaluation investigation and a study synthesizing current data on historical wells across the state.

In addition to writing up the site archaeology, Versar conducted a special study on wells in Delaware. Several of the sites along the Route 301 corridor had very well preserved wells, and while wells have been excavated at many sites across the state, there is still a lot we do not know about these important features. Creating a synthesis of this feature type from across the state provides an opportunity to expand what we know about how wells were built and used.

Versar archaeologists and historians gathered information on 58 previously excavated wells from across Delaware. Data collected included the shape of wells that have been found, the methods and materials used to construct them, and where the wells occur relative to houses, barns or other structures. Versar also examined the methods archaeologists used to excavate these wells. This report summarizes what is known about wells in Delaware and creates a research tool that other archaeologists will be able to use to see how wells they find compare to what has been documented previously.

Analysis of wells excavated in Delaware reveals a number of interesting patterns about these simple but vital features of the landscape. Wells in Delaware are nearly always very shallow (most less than 15 feet deep) and located very near a structure, sometimes the main occupation building of the site, sometimes an outbuilding. They are made with a variety of materials and construction techniques. There are wells made from brick, stone and stone and brick together. Wood-lined wells are mostly rectangular frame in construction, but can also be circular, or made with stacked barrels, and in one case, stacked hollow logs. Most of these technologies appear to have been used throughout most of Delaware's history, though the range of wood-lined wells (last quarter 17th century to 3rd quarter 19th century) is a little earlier than brick-lined wells (2nd quarter 18th

century to the present). Brick and wood wells are found in each of the three counties of Delaware, but stone-lined wells are found only in the northern part of New Castle County, the only part of the state in the Piedmont where building stone is common.

Analysis of wells excavated to date also shows some gaps in the existing literature. Most of the wells excavated so far have been from the northern part of the state: there are few excavated wells from Sussex County. Well depth is inconsistently recorded; archaeological excavation was frequently abandoned once the water table was hit. In addition to leaving the bottom depth of these wells unclear, it also makes it harder to determine the date at which the well was abandoned.

Although the overall problems with sample size and recording inconsistencies provide reasons to record in detail any historic well found on an archaeological site, it is possible to suggest some priorities. Evaluation of the information potential of a well should put emphasis on those with a good historical context. Wells located in sites with overall high physical integrity have more information potential than isolated wells. Wells from sites with evidence for the location of nearby structures, as well as the potential for meaningful soil chemistry will be able to better illustrate how the well feature functioned within the overall site, and potentially how safe the water from that well might have been. Conversely, wells that are not accompanied by other well-preserved features with clear functions, or that are on sites with little or no documentation, or that cannot be reliably dated, are not necessarily valuable archaeologically. If a site lacks good documentation or well-preserved features other than a well, the presence of even an intact well is probably not enough by itself to the make the site eligible, or warrant the expense of excavating the well feature.

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1.0 PROJECT BACKGROUND

Richard Grubb & Associates, Inc. (RGA) completed Phase II archaeological evaluation of the Polk Tenant Site (CRS N05221, 7NC-F-111) within the proposed U.S. Route 301 Mainline Section 3, in St. George's and Appoquinimink Hundreds and the Town of Middletown, New Castle County, Delaware. U.S. Route 301 is a proposed four-lane toll highway that will extend approximately 17.5 miles from near the Maryland-Delaware border to State Route (SR) 1 south of the SR 1 Bridge over the Chesapeake and Delaware Canal. The proposed U.S. Route 301 Mainline Section 3 extends north from near the Maryland/Delaware State Line in Maryland to north of Levels Road near Middletown, Delaware, a distance of approximately 4.5 miles. The Polk Tenant Site was identified during Phase IB archaeological survey of the proposed corridor conducted in 2009 and 2010 (RGA 2009, 2011a).

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The Polk Tenant Site was identified in the northern portion of the U.S. Route 301 Mainline Section 3 (Figures 1-1 and 1-2). The site was characterized by clusters of nineteenth-century artifacts located on both sides of a farm lane near the nineteenth-century Polk House, a National Register-eligible property formally referred to as the C. Polk House Estate (CRS N05221). As its name suggests, the Polk Tenant Site is considered a tenant house (RGA 2011a).

One of the features found at the site was a brick-lined well. In lieu of traditional data recovery at the site, DelDOT and the Delaware State Historic Preservation Office agreed on an alternative mitigation involving preparation of a technical report of the evaluation investigation and a study synthesizing current data on historical wells across the state.

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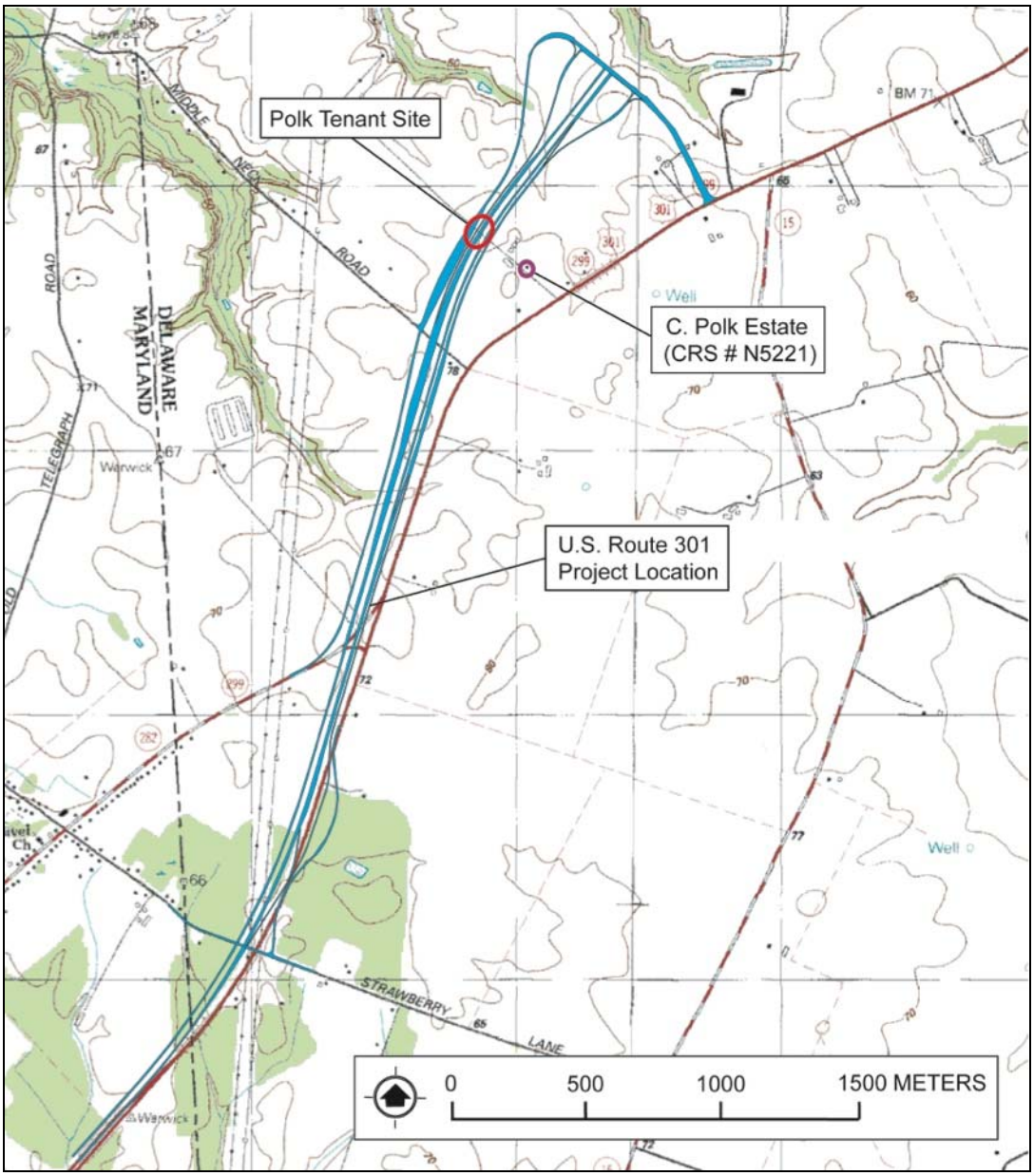

Figure 1.1: Location of the Polk Tenant Site.
(USGS 1993)

2.0 INTRODUCTION

2.1 Definition of the Problem

Wells are potentially valuable archaeological features, and fairly common on historical sites. More than 50 have been excavated at least partially in Delaware, including six along the Route 301 extension corridor, but there has never been a synthesis of the data or lessons learned from excavating these features. The present study is confined to wells, as opposed to all types of shaft features, partly to limit the scope of this particular investigation, and also because the construction and use of wells represents a cultural phenomenon distinct from cisterns and privies. Developing a synthesis of data collected about wells as archaeological features will facilitate future comparative analysis of well features. It will also allow us to assess what has been learned thus far, identify gaps in the archaeological record on wells, and support the development of management recommendations for the future excavation of these important features.

2.2 Hydrology

Water is critical to life—an obvious statement but one with important implications for archaeology. Water is found throughout the earth's surface in flowing streams, in springs, or in lakes and oceans. People have settled and lived near water from time immemorial. When looking for prehistoric Indian sites, one of the first things archaeologists look for is water, since settlements are usually found within easy distance of surface water. But water also occurs underground. European colonists took advantage of this source of water by digging wells. They could seek water below ground, allowing them to settle in locations that were sometimes far away from free-flowing streams.

The distribution of water on the planet is governed by what geographers refer to as the hydrologic cycle. This cycle is actually a complex series of physical processes that describes the movement of water in all its forms on the earth, from the formation of clouds to the rains that drain into rivers, lakes and the oceans. Researchers describe the cycle in terms of processes such as evaporation, condensation, precipitation, run-off, percolation and storage (NOOAA/NWRFC nd). Bernard Palissy, an early French scientist and land surveyor, who may be better known for his efforts in a different field entirely—his attempts as a potter to reproduce fine Chinese porcelain—was the first modern theorist to correctly describe the hydrologic cycle. Here is part of what he said in the late 1500s:

> "Rain water that falls in the winter goes up in summer, to come again in winter...And these waters, falling on these mountains through the ground and cracks, always descend and do not stop until they find some region blocked by stones or rock very close set and condensed….they flow out as fountains or brooks or rivers according to the size of the opening and receptacles…" (Discourse Admirables, Palissy 1580, in International School of Well Drilling (ISWD) 2004:5).

Palissy also correctly deduced the origin of artesian pressure in wells and the fact that wells near rivers could be connected to the rivers through "underground veins" (Palissy 1580, in ISWD 2004:5).

Water wells are structures designed to provide access to water that lies below the surface in these "underground veins," whether the veins be streams or aquifers (water trapped in deposits of sand, gravel or rock). Wells represent a reliable source of water, being less subject to the variations in weather that may affect surface water such as rivers, streams or even springs. Wells are part of an ancient technology that has been used in some parts of the world for millennia to tap subsurface water supplies. Wells were dug in Eastern Germany, for example, as many as 7,500 years ago in the Early Neolithic. These wells showed evidence of some of the earliest recorded wooden architecture in the world. Notched and pegged wooden cribbing was used to line the wells—the waterlogged wood has been preserved in anaerobic conditions (Tegel et al. 2012). The oldest recorded wells so far discovered are from western Cyprus, where a series of six wells were excavated between 9,000 to 10,500 years ago through hard, calcareous or chalky sediment to reach an underground stream that flowed atop bedrock (Peltenburg et al. 2001; Peltenburg 2003).

2.3 History of Wells

Early colonial period wells in eastern North America were often shallow, tapping aquifers that were relatively close to ground surface. These aquifers, sometimes referred to as perched or unconfined aquifers, were recharged by water directly from the contemporary ground surface and so were easily contaminated. Shallow wells with tainted water were often the source of fevers and more serious diseases. Deep wells may reach what are called confined aquifers, bodies of water that are located between impermeable geological layers such as rock or clay. Water in these cases may be very old and is usually not subject to surface contaminants. Confined aquifers often occur under pressure, in which case the wells tapping them are referred to as artesian.

When we think of a well we frequently picture a wide, brick-lined structure. To be functional, however, a well need only be large enough in diameter to allow water to be drawn from it. Driven wells, in which an iron pipe was pushed or driven into the ground to reach the aquifer, began to appear in some parts of the country by the mid-19th century (Thomas 1869:220). The pipe that was used was pointed and had holes drilled in it to allow water to be drawn in. Driven wells were best suited for shallow, sandy or gravelly aquifers within 30 feet of the ground surface, however, and were not common (Bowman 1911; Dick 1968). Modern wells that are mechanically drilled are, like driven wells, only the diameter of the pipe leading down to the aquifer. Historically, early techniques for drilling water wells in this country were developed as part of the salt mining industry around the beginning of the 19th century. The wells were dug to collect the salt found in brine water, which was used in preserving foods in the days before widespread refrigeration. The drilling process may be more rightly referred to as percussion drilling: a heavy chisel-like tool was dropped down the narrow shaft of the drill to crush hard rock or sediment. A by-product encountered in of some of these wells in Pennsylvania was at

first considered undesirable, but eventually became a profitable commodity: "…sometimes a good well would be fouled with the intrusion of unsought and unwanted oil. The rainbow sheen and pungent smell of oil was bad news to brine drillers" (AOGHS 2010).

Many domestic water wells in Delaware would have been hand dug, however, often through relatively soft sandy soils. They represented a substantial effort to construct. Being excavated by hand, a well would have been large enough in diameter for a person to enter in order to dig to the aquifer. The well shaft would be dug until incoming water at the base exceeded the digger's bailing rate (Waller 1994:14). Some form of lining was usually required to support the shaft during and after excavation and to keep debris out of the water. Unlined shafts would be unworkable and impractical; if found archaeologically they probably represent abandoned shafts from which the lining has either collapsed or been robbed for use elsewhere.

Some of the earliest wells were wood-lined; barrels were often used for this purpose since they were already fashioned in a usable size and shape. Barrels were used to line the wells excavated at 16th-century colonial Spanish Santa Elena, in South Carolina (South 1991). Stone and brick were also commonly used as liners, sometimes in combination with wood in some form. A wide wooden ring, called a curb, was often used at the bottom of the well excavation as a base for the lining, to help keep it level and from sinking into the soft, waterlogged sediments. In cases where the ground was very soft, the initially excavated shaft might be made larger than the desired well diameter. The excavation would be cribbed, like a caisson, providing a clear space within which to work. The well lining would be constructed within the cribbing and the intervening space eventually backfilled (Wigginton 1977). Regardless of the type of lining or how it was constructed, its purpose was to support the shaft. It was not watertight, however, but was designed to allow water from the underground stream or aquifer to flow into the base of the well shaft providing direct access to the water from the surface.

2.4 Well Technology

Wells are, of course, primarily used to extract groundwater. Once a well was dug, there was still the matter of getting water out of it regularly and conveniently. Many shallow wells were pumpless. Water could be lifted directly by a combination of bucket and rope, often aided by a pulley mechanism (Ewbank 1842). This technique is practical to depths of as much as 100 m, but would be a chore in wells more than 45-50 m deep. For this reason the simple bucket-and-rope was not typically used for deep wells (Olley 2008). A pulley could be given additional mechanical advantage by the addition of a small winch or windlass (Ewbank 1842).

Another mechanism used for drawing water from shallow wells was a well sweep (or in England a swape). Called a shadouf in the Middle East, where the technique may have originated, the sweep consisted of a long wooden arm with a rope and bucket attached and a counterweight at the opposite end (Ewbank 1842). Sweeps were common in

Delaware, but were replaced in the late 19th century with water pumps (Lanier and Herman 1997).

Pumps are more complex mechanisms than ropes, pulleys and winches, but they can extract water from a well with less physical effort. A pump employs the physical properties of water to lift it up the well shaft to the surface. Water is a substance that cannot effectively be compressed—it cannot be forced into a smaller volume. It can, therefore, be pushed or displaced. Pumps use this characteristic to their advantage, operating on the principles of lift and suction. A pipe, sometimes called a tube or a stock, is extended to the water at the base of the well. The water is then either pushed up by a piston plunger, or drawn up by the suction created as the piston is pulled up the pipe. Pumps also take advantage of leverage in the way the handle is set up, and thus they require less physical effort overall than a simple rope and pulley. Use of a pump also allows the well to be covered or even sealed, lessening the risk of direct contamination down the open shaft. Pumps may, however, be relatively complex, requiring a certain level of basic technical knowledge for their construction, maintenance and repair.

Most simple pumps used in wells in Delaware worked by drawing water up the pipe with a piston and pushing it out the top through a spout. To do this, the pumps used two valves, one at the foot of the pump and one on the piston. Valves are mechanisms that control the flow of water, in this case allowing it to move in only one direction. The valves used in these simple pumps were a basic form known as a check valve. They consisted of a flap of heavy but supple leather that allowed water to pass only one way—upward into the pipe. The valve would be held closed by water pressure, keeping the water from falling back down the tube. As the pump drew the piston up through the pump stock or pipe, the valve on the piston would remain closed. The piston was tightly fitted within the pump stock and thus it created a vacuum in the pipe as it ascended. Water was drawn up behind the piston—in fact this was in response to atmospheric pressure pressing on the underground water.

In a wooden pump, the pipe or pump stock was made from the bole of a straight tree, sometimes in two or three sections or stocks, depending on the depth of the well and the sizes of the trees available. Amos Long, in his extensive description of the workings of a traditional Pennsylvania farm (1972) recommended oak for the stocks. Elm was also commonly used, since it was durable when wet (Oertling 1984). At the Whitten Road Site (Shaffer et al. 1988), the stocks were made from sweet gum. Long straight tree boles were sought. The stocks were bored to the proper diameter with an auger using successively larger bits. The ends were tapered and reamed for a watertight and airtight fit.

Water entered through holes drilled through the stock near the base. The force of the water being drawn upward opened the foot valve at the bottom of the stock. On the down stroke, the check valve on the piston opened allowing water to pass through as the piston descended, while the weight of the water in the pump stock closed the check valve on the foot of the tube, keeping it from draining out. On the next up stroke, the piston valve again closed and the foot valve opened. When water was drawn high enough to reach the

piston, the piston would push the water above it up the tube and out the spout, while at the same time drawing water from below as it continued to create a vacuum while traveling upward.

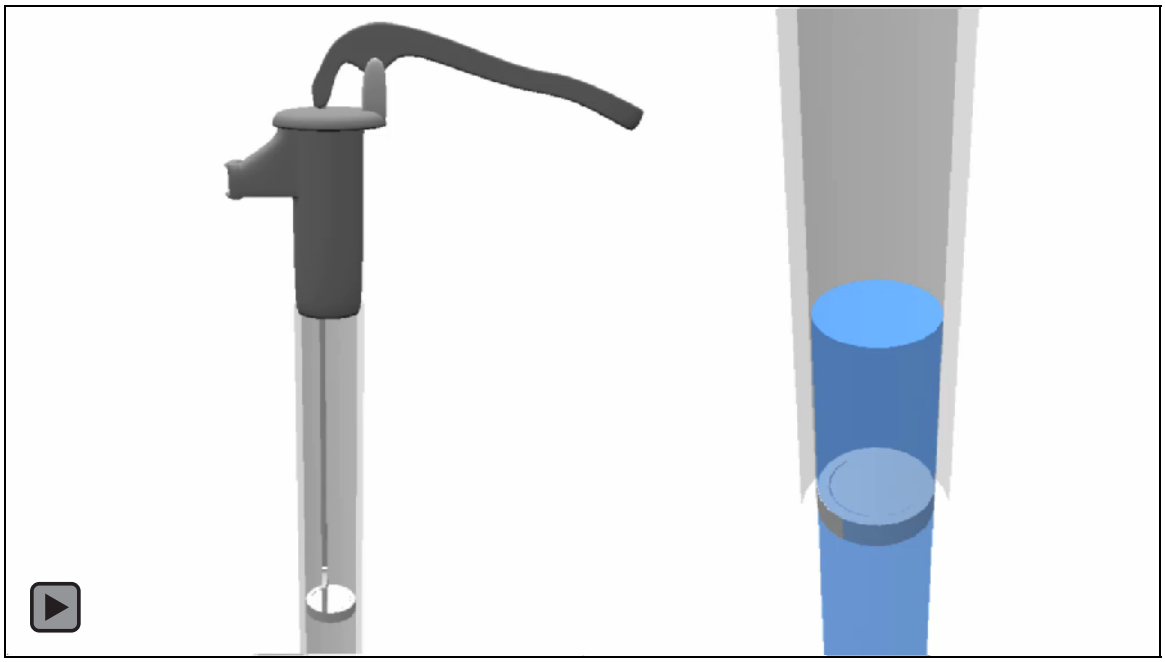

Figure 2.1: Animation of example suction pump. Click play to run animation.

The base of the pump stock was closed with a wooden plug to keep out sediment. The holes at the base of the stock that let water in were located high enough from the bottom of the well to keep sediment from being drawn up with the water. In some pumps, such as the one documented at Whitten Road, the base of the pump stock was surrounded by a box containing sand to further filter the incoming water.

Pumps operate on the principles of suction and lift. Table 2.1 lists types of pumps and their physical limitations. Suction is the vertical distance between the water and the pump, while lift is the vertical distance between the pump and the top of the well. The depth from which a hand pump can lift water is limited by atmospheric pressure to an operating depth of less than 7 meters. Within this range, the lifting capacity is generally governed by the size of the pump (a small diameter pipe can achieve more lift than a large diameter pipe) and the strength of the operator.

Some bilge pump tubes were essentially long, narrow boxes constructed of planks bound with hoops, a type apparently used by the U.S. Navy in the early 19th century (Oertling 1984:22). Some of the descriptions of pump stocks from Delaware wells refer to “square wooden” structures (e.g., Thomas Williams Site in Catts and Custer 1990:123). At the Armstrong Rogers Site, the dairy well pump was formed from a single hollowed log. The 7.5 foot long surviving portion weighed nearly 400 pounds.

Table 2.1: Types of Well Pumps	
Types:	**Limitations**
Suction and lift hand pumps	about 7 meter depth limit (23 feet).
Direct action – water pulled up directly by a pumping rod. Easy to install and maintain,	physical limit of about 15 m depth (50 feet).
Deep wells –	hand pumps for deep wells entail some form of mechanical assistance, such as a lever or flywheel.

The base of the tube differs between bilge pump and well. A bilge pump was designed to remove water from the bilge or bottom of a ship and had inlets or limber holes cut at the bottom of the tube where it butted against the hull planks. A metal screen or sieve was often used to keep debris from being pulled up and clogging the pump valves. In contrast, wells tapped groundwater that was usually at the base of a sediment-filled excavation. The pump stock had intake holes drilled some distance above the bottom of the well to keep sediment from being drawn up with the water, a little over a foot above in the case of the Armstrong Rogers pump (Figure 2.2).

Figure 2.2: Intake hole on the pump stock from the Armstrong Rogers House site, Delaware. Click to launch 3D model view.

A narrow construction shaft was associated with Feature 17, a box-lined well at the Whitten Road site (Shaffer et al. 1988:113). The remains of a wooden pump stock were documented at its base. The stock was surrounded by inner cribbing and the space between the well box and inner cribbing was packed with sand, presumed to be a filtration system. Shaffer et al. (1988:127) reported two other locations with the remains of pump stocks, one in Wilmington and the other in Landenberg, Pennsylvania.

As archaeological features

Unless badly disturbed, most wells are easily recognizable by their typically round shape and regular size—usually about 4-6 feet in diameter. The lining is often preserved and easily identified, particularly if it is stone or brick. Wells are also for the most part easy to distinguish from cisterns. The term cistern comes from Latin (*cista*) and Greek (*kiste*) words meaning box. A cistern is a wide, covered reservoir for holding surface water, in contrast to a well, which is a narrow shaft designed to gain access to underground water. A cistern is typically an above-ground feature and considerably wider and shallower than a well. The structure is sealed (consisting, for example, of mortared or parged masonry) in order to contain water, whereas a well is designed to let water pass through (consisting of dry-laid masonry). There is also a marked difference in water quality between the two types of feature—cisterns often stored rain water, which was soft, while well water typically contained minerals that made it hard.

The above-ground features of wells—pumps, sweeps, caps, shelters—are seldom preserved intact archaeologically. Occasionally, there are below-ground remains of associated features. Our sample of 58 excavated wells included 14 that had postholes or brick foundations nearby indicating that there had been some kind of a structure covering the well at one time. In addition to covering a well or housing a pump, such structures might have facilitated secondary use of a well as a form of cold storage. Milk and cream or other perishable items would be lowered in a bucket to a level just above the surface of the water where the air was cool (Dick 1968). Care had to be taken not to spill the contents of the bucket while lowering or raising it, however, lest the well be contaminated. Excavated wells also sometimes include remnants of internal pumpstocks (as did 4 wells in our sample) as well as occasional lining materials such as lime or clay. These details can help date well features and elaborate what is known about the well technology in use.

Wells can tell us about how people lived, how they organized the space in which they lived, their technologies—both those that were available to them and those they actually used. More than one contemporary well, for example, might imply a certain degree of affluence or might indicate the function of the site, one well being for domestic use, the other specifically for agriculture or animal husbandry.

The location of a well relative to other yard features could be critical to its safe and effective functioning. Bacterial contamination and other pollution effects might result from proximity to privies or from septic-tank effluent or barnyard run-off (Waller 1994:22). Thus the placement of a well on an archaeological site may provide information about the contemporaneity of features—a well located next to a privy, for example, might suggest they were from different occupations or periods of site use.

Wells represent a further interest to archaeologists in that when they were exhausted (dry) and abandoned, they usually became convenient receptacles for trash disposal. One regional researcher has observed that:

> "It sometimes surprises people to learn that wells, which required so much effort to dig, were commonly used as trash pits. In the days before steel

> pipe and concrete culverts, however, wells were never expected to last forever, and wood-lined wells had particularly short life expectancies. The lining at the bottom rotted—even brick, which was not nearly as hard in the eighteenth century as it is today, rotted when it lay in the water—the bottom of the well started to silt up or even collapse, and after a certain point it was cheaper and safer to dig a new well that to keep trying to repair the old one. An abandoned well was both a safety hazard and a perfect place to throw trash, so most abandoned wells were soon filled" (Bedell et al. 1999:44).

And since archaeologists study the material remains of past cultures—which is another way of saying that they deal in other people's trash—wells as trash pits are often of great interest. A wide variety of things get thrown down an old well, probably leading at least in part to the old saying "out of sight out of mind." Occasionally we get lucky and the bottom of a well is not dry or has not stayed dry for long after it was abandoned. Waterlogged sediments tend to be anaerobic—without oxygen. Oxygen sustains bacteria, and bacteria are a major factor in the decomposition of organic material. So, preserved at the base of a wet well we sometimes find artifacts made from materials that usually deteriorate quickly, such as leather (shoes, belts, book bindings), bone (knife handles, brushes, decorative items, the remains of meals), or even cloth. A famous example was one of the wells from the early English settlement at Jamestown, Virginia, that contained a halberd with part of the wooden staff intact. A halberd was a pole axe, a weapon that by the early 17th century was generally only used for ceremonial purposes. This example bore two griffin heads from the De La Warr family crest on its blade, and thus probably belonged to Sir Thomas West, the Baron De La Warr, who arrived at Jamestown on June 10, 1610. Also, found were butchered horse bones, indicating the coming time of starvation for the English colonists as they began eating their domestic stock (Historic Jamestown nd; Popular Archaeology 2011).

If a well remained open during successive site occupations, the debris in it may be layered. Careful excavation of the well's contents may show us how the various people living at the site changed through time, how their diet and consumption patterns varied, for example. The Narbonne House well, in Salem, Massachusetts, was filled in over the course of a short period of time, based on the dates of the artifacts recovered from it—the span was not much before 1865 and not after late-1869 (Moran et al. 1982:242). Mended artifacts were found in various levels, but the mends generally occurred within 6-18 inches of each other vertically. This finding suggested that overall, the deposits were not stratified, which in turn implied rapid filling of the well shaft. Many mends and the comparative absence of extraneous (unmended) sherds were interpreted as evidence that the fill included little yard debris. Dates from the artifacts aligned with archival evidence—municipal water service began in Salem in 1869, following which the well would not have been needed, corresponding with the end of the artifact date range.

"It's clear that archaeologists who dig wells are more often preoccupied with contents than with containers" (White 1994:46). Nevertheless, wells in and of themselves can be informative. In a paper published in the mid-1990s, White enumerated a series of

attributes by which he sought to characterize wells as built features, regardless of their archaeological contents. The characteristics he identified included quantitative variables such as the diameter of the shaft, wall thickness, depth, and distances to other features or structures on site, and several nominal or qualitative variables involving such things as construction materials and workmanship. Through examination of these characteristics, he argued that the researcher can determine function—distinguishing between wells and cisterns, for example; type—domestic versus stock or agricultural wells, by the workmanship; or time period—variations in depth, material, or workmanship (White 1994:44). He further noted that some of the variables can be used as a basis for inferences about the occupants of the property—affluence, social standing—and even to distinguish the work of individual well diggers.

White noted which attributes are most often documented archaeologically based on reports from 26 sites on which wells were recorded (he was not specific as to the geographic locations). The inside diameter of the well shaft and the construction materials were the most consistently recorded variables. Depth was recorded if the well was fully exposed, and location and distance to structures could usually be obtained from site maps. The other attributes, which require varying amounts of qualitative assessment, were inconsistently reported.

White's assessment is one of the only published works on wells that concerns itself with their physical characteristics as archaeological features rather than focusing on their contents. It points up the difficulty in surveying the literature on wells: i.e., there is little if any consistency in what is recorded. This situation is partly the fault of the individual researchers, who typically opt for the obvious or easy analysis—the artifacts in the fill. And in fairness, the artifact data are often voluminous, requiring a substantial amount of time and resources to analyze, not leaving much for the features themselves. But the inconsistencies in documentation are also related to practical difficulties in recording wells in the field. They are in many ways as difficult and dangerous to investigate archaeologically as they were to excavate originally. Most wells tend to be excavated the same way archaeologically for reasons of safety and economy—the uppermost surviving portions, usually to a depth of 4-6 feet, are hand excavated, the rest sampled with a backhoe. The part that is most carefully excavated is often the least interesting from the perspective of structural and construction characteristics, since the upper part is the most likely to be disturbed and thus to be a better record of what has happened to the feature since the site was abandoned than of its original makeup. As an example, the wells at the McKean/Cochran Farm Site, in New Castle County, were as fully documented as most archaeological examples in Delaware:

> "The excavation of the wells on the site was not entirely successful. The technique employed was to excavate the upper 4 to 5 feet of the well by hand, without shoring. In the case of Feature 29, the earlier well, substantial numbers of artifacts were still being recovered at that depth, so a backhoe was employed to enlarge the excavation in order to continue it to a greater depth. By a depth of 6 feet the fill had become sterile, and augering showed that it was still sterile at 12 feet, so excavation of the

> well was abandoned. However, 12 feet was probably nowhere near the bottom of the well…" (Bedell et al. 1999:136-137).

The physical attributes of wells that relate to their construction and primary function of providing water are the principal focus of this study. It is hoped that this project will contribute to an understanding of the different types of wells used in Delaware, and their temporal and geographical distribution. By compiling data related to wells already excavated in the state, we hope to elaborate on what we have already learned, and what substantive or methodological gaps may exist in the current dataset. From these, best practices for excavation may be derived along with priorities for future research.

3.0 METHODS

3.1 Archival Methods and Research Design

A literature review was conducted to investigate historical wells as an archaeological feature type in Delaware and to gather available data pertaining to previously excavated historical wells. The literature review was conducted at the DESHPO archives in Dover and through online sources such as DelDOT's public report database and the Library of Congress. Full technical reports for sites with investigated wells were obtained in electronic format from DESHPO and DelDOT. International, national, and regional journals were reviewed for historical context and articles pertinent to historical wells in the Middle Atlantic region including *Historical Archaeology*, the *Journal of Middle Atlantic Archaeology*, and the *Bulletin of the Archaeological Society of Delaware*. Field records and management summaries for well features with unpublished site data were reviewed at the DESHPO curation facility (e.g., Thompson's Loss and Gain and Webb's Landing sites) or through personal communication with the site investigators (e.g. Avery's Rest Site and recent Route 301 data recovery investigations). Individuals with extensive experience in historical archaeology in Delaware were contacted to solicit recommendations and insights regarding particular studies, site reports or repositories. Those contacted included DESHPO staff, active members for the Archaeological Society of Delaware, University of Delaware faculty, and current DelDOT consultants.

Site data were used to populate a table listing selected attributes for each well feature identified during the literature review including provenience information, environmental setting, construction methods and materials, pertinent measurements, and archaeological excavation methods employed (Table 3.1). The data from 58 excavated wells and 12 unexcavated wells were compiled in MS Access to facilitate organization and analysis and then exported to MS Excel for presentation and distribution. The field entries within the data table were largely obtained from narrative descriptions, feature summary tables, photographs, or plan and profile figures presented within the technical reports. In several cases, the technical reports for particular sites contained insufficient information to populate all data fields.

Table 3.1. Historical Wells Data Table Fields

Field Name	Description	Source
Well ID	Unique identifier for each well	Combination of site and feature number (i.e., 7NC-J-175/F171)
Site Number	State trinomial	DESHPO
CRS Number	Survey Number Assigned	DESHPO
Site Name	Common or local name or other designation	Technical report/field records
Site Type	Domestic, industrial, agricultural, etc.	Technical report/field records
Site Description	Brief site description/summary	Technical report/field records
County	County in which site is located	Technical report/field records
Hundred	Hundred in which site is located	Technical report/field records
Watershed	Watershed in which site is located	Technical report/field records
NRCS Soil Type	NRCS soil type for site/feature area	NRCS web soil survey

Table 3.1. Historical Wells Data Table Fields		
Field Name	**Description**	**Source**
Feature Number	Number or other designation used during archaeological investigation	Technical report/field records
Well Lining	Lining type (i.e., brick, stone, barrel)	Technical report/field records
Well Shape	Shape of well excavation (i.e., round, square)	Technical report/field records
Well Setting	Feature setting within site (i.e., rear yard, work yard)	Technical report/field records
Construction Method	Notes on methods and materials used	Technical report/field records
Feature Notes	Excerpts/paraphrased notes pertaining to construction and conditions	Technical report/field records
Period of Use	Date range well was in use	Technical report/field records
Dates_Occupation	Date range for site occupations	Technical report/field records
Dates_ Fill	Date range for well fill	Technical report/field records
Dates_Builders	Date range for builders trench	Technical report/field records
Chronology Notes	Basis for use, occupation, fill, builder's trench dates	Technical report/field records
Nearest Water	Name or description of nearest permanent water source	USGS 7.5 minute topographic map
Distance to Water	Distance in feet to nearest permanent water source	USGS 7.5 minute topographic map
Distance to House	Distance in feet from well to main domestic structure[1]	Technical report/field records
Distance to Kitchen	Distance in feet from well to kitchen	Technical report/field records
Distance to Outbuildings	Distance in feet from well to outbuilding, and outbuilding type	Technical report/field records
Excavation Methods	Excavation methods used (i.e., hand or mechanical)	Technical report/field records
Excavation Methods Notes	Brief narrative of methods or additional information on methods	Technical report/field records
Special Analyses	Special analyses conducted on well materials (i.e., brick or soil chemistry)	Technical report/field records
Depth	Total depth of well in feet	Technical report/field records
Excavated Depth	Depth of well as excavated, if not fully excavated (in feet)	Technical report/field records
Diameter Exterior	Dimensions of well opening, exterior (n-x-n)	Technical report/field records
Diameter Interior	Dimensions of well opening, interior (n-x-n)	Technical report/field records
Contents	Brief summary of well contents	Technical report/field records
References	Full citation of technical report	Technical report/field records

Using the collected data, a geographic information system (GIS) was developed with ESRI ArcGIS 10.1 software to facilitate analysis of the data and to prepare a map showing all sites in Delaware with excavated wells. Base map data such as state, county, hundred, and watershed boundaries were obtained from the Delaware Geospatial Data Exchange (DTI 2012). Site location data were obtained in GIS shapefile format from DESHPO. Soil data were downloaded from the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), Web Soil Survey (USDA-NRCS 2013). The identification of the nearest permanent water source to each site

[1] distances from wells to related structures were calculated between the center points of the features

represented in the data table and distance to water calculations were performed in the GIS using a USGS 7.5 minute topographic map layer (ESRI 2013). Modern water table data were obtained from the Delaware Geological Survey (2005 a, b, and c) and from the USDA-NRCS Web Soil Survey. To preserve site location confidentiality, only center-point data for each site displayed on a statewide-scale map were used to present results of analyses conducted in support of the alternative mitigation.

4.0 TABULAR RESULTS

Versar reviewed more than 100 archaeology reports prepared for DelDOT over the last 30 years. That review found 70 wells that have been identified across the state as a result of archaeological research conducted in advance of highway improvements. Of these, 58 were subjected to intensive excavation. Wells have been found on historical home sites, farmsteads, dairy farms, stores, and blacksmith shops dating from the late 1600s through mid-1900s. Table 4.1 shows the data and observations about each of the wells included in this study. Complete results are included in Appendix A and B.

Table 4.1: Summary of Excavated Wells

Site Number	Site Name	Feature Number	Well Lining	Approx. Date
7NC-F-128	Cardon/Holton	104	wood box	1725-1750
7S-K-118	Laban Rogers House	219	wood tube	1775-1825
7S-K-118	Laban Rogers House	269	wood box/barrel	1775-1800
7S-K-118	Laban Rogers House	777	brick	1775-1800
7K-B-23	Bloomsbury	5	unidentified	
7K-B-23	Bloomsbury	182	wood box	1750-1775
7K-C-203C	Richard Whitehart Plantation	495	unidentified	1675-1700
7K-C-203H	John Powell Plantation	39	wood box	1675-1700
7K-C-362	Benjamin Wynn Tenancy	94	wood box/barrel	1775-1800
7K-A-101	John Darrach Store	2	brick	1775-1800
7K-A-101	John Darrach Store	82	barrel	1775-1800
7K-A-101	John Darrach Store	99	brick/barrel	1825-1850
7K-A-117	William Strickland Plantation	108	unidentified	1725-1750
7K-A-117	William Strickland Plantation	93	brick	1725-1750
7K-B-23	Bloomsbury	180	wood box	1775-1800
7K-C-362	Benjamin Wynn Tenancy	80	wood box/barrel	1750-1775
7K-C-375	Wilson-Lewis Farm	123	barrel	1850-1875
7K-C-375	Wilson-Lewis Farm	127	barrel	1850-1875
7K-C-380	Moore-Taylor Farm	90	brick	1875-1900
7K-C-380	Moore-Taylor Farm	285	unidentified	1850-1875
7K-C-380	Moore-Taylor Farm	274	wood plank	1825-1850
7K-C-380	Moore-Taylor Farm	273	barrel	1800-1825
7K-C-380	Moore-Taylor Farm	2	barrel	1825-1850
7K-C-383	W. Eager Farmstead	23	wood	1850-1875

Table 4.1: Summary of Excavated Wells				
Site Number	**Site Name**	**Feature Number**	**Well Lining**	**Approx. Date**
			box/barrel	
7K-F-154	Webb's Landing	0	unidentified	
7NC-B-11	Weldin Plantation	25	stone	1775-1800
7NC-B-45	Pierce/Talley House	0	stone	1850-1875
7NC-B-6	Grant Tenancy	8	stone	1775-1800
7NC-E-84	Hollingsworth	5	stone	1850-1875
7NC-D-100	Whitten Road	17	wood box	1775-1800
7NC-D-102	Bernard Glatz House	21	stone	1775-1800
7NC-D-128	William E. Heisler House	1	brick	
7NC-D-130	Thomas Williams	2	brick	1775-1800
7NC-D-203	Springer/Ward/Little Farm	918	stone	1850-1875
7NC-D-68	A. Temple House	28	brick	1800-1825
7NC-E-127	Forrest Street Shaft Feature	0	brick	1850-1875
7NC-E-83	Heisler Tenancy	8	brick	1850-1875
7NC-E-88	Bethel Church	1	brick	1775-1800
7NC-E-89	Clayton Farm	1	stone/brick	1850-1875
7NC-F-111	Polk Tenant	7	brick	1875-1900
7NC-F-13	McKean/Cochran Farm	27	unidentified	1800-1825
7NC-F-13	McKean/Cochran Farm	29	unidentified	1750-1775
7NC-F-135	Armstrong-Rogers	52	wood box	1750-1775
7NC-F-135	Armstrong-Rogers	14	brick	
7NC-F-139	Houston-LeCompt	697	wood box	1800-1825
7NC-F-139	Houston-LeCompt	687	brick/barrel	1850-1875
7NC-F-139	Houston-LeCompt	578	wood box	1775-1800
7NC-F-94	Wilson Farm Tenancy	34	brick	1875-1900
7NC-G-169	Boyd's Store and House	147	brick	1825-1850
7NC-G-7	Robinson Plantation	7	unidentified	1750-1775
7NC-G-7	Robinson Plantation	82	unidentified	1750-1775
7NC-J-175	Buchanan-Savin Farm	171	unidentified	1825-1850
7NC-J-204	Jones	156	brick	1850-1875
7NC-J-204	Jones	268	barrel	1750-1775

Table 4.1: Summary of Excavated Wells				
Site Number	**Site Name**	**Feature Number**	**Well Lining**	**Approx. Date**
7S-G-26	Bay Vista	2	wood plank	1675-1700
7S-G-57	Avery's Rest	11	wood box	1675-1700
7S-G-57	Avery's Rest	7	wood box	1675-1700
7S-G-60	Thompson's Loss and Gain	78	wood box/barrel	1700-1725

Table 4.2: Summary Unexcavated Wells			
Site_Number	**Site_Name**	**Feature_Number**	**Well_Lining**
7NC-F-64	Jacob B. Cazier Tenancy	`	unidentified
7NC-E-126	Horrace Burr House	`	unidentified
7K-C-379B	Blue Anchor Tavern	`	unidentified
7NC-B-58	Vandever-O'Neal House	`	stone
7NC-D-69	Thomas Ogle Site	`	brick
7NC-J-207	Buckson Site	`	brick
7K-C-119	C. Kimmey Tenant Farm	63	brick
7NC-G-112	G.W. Townsend Farm	126	brick
7NC-E-54	Upland Victorian	`	unidentified
7NC-C-10	J.G. Hanby House	`	unidentified
7K-F-169	Soulie Gray House Site	8	unidentified; concrete cap
7NC-D-256	Pyle Tenant House	`	brick; electric pump

5.0 ANALYSIS AND CONCLUSIONS

5.1 Well Construction

Material

Wells in the sample were lined with brick, stone, wood planks, wood barrels, and in one case, a hollow log (Table 5.1). There were also a few wells that combined materials (2 lined with brick, but with a barrel at the bottom, 1 brick well with 4 courses of stone at the top, and 5 wood-framed wells with barrels at the bottom). Well types based on materials in the sample include the following:

- **Brick-lined:** wells lined entirely by brick. These were generally single wythe (one brick wide) and un-mortared.
- **Brick/barrel-lined:** wells lined mostly with brick, but that had a barrel at the bottom of the well.
- **Brick/stone-lined:** wells that employed a combination of brick and stone for lining. There was one such well in the sample; it was primarily lined with brick, but the upper courses were of stone.
- **Barrel-lined:** wells lined entirely by stacked barrels. The barrels have had their tops and bottoms removed, and are stacked one on top of the other within the well to provide a lining.
- **Stone-lined:** wells with linings made entirely of stone.
- **Wood box-lined:** wells with rectangular wood frame linings.
- **Wood box/barrel-lined:** wells primarily lined with a rectangular wooden frame, but with a barrel at the bottom.
- **Wood plank-lined (circular):** circular wells lined with vertical wooden planks.
- **Hollow log:** a well consisting of a hollowed-out log.
- **Unidentified:** owing to the state of preservation, a number of well features were not identifiable by lining type or material. These were most likely lined with perishable materials such as wood frames or barrels. But it is also possible that they could have been lined with brick or stone that was salvaged when the well was abandoned.

Brick-lined wells were overall the most common, followed by wood-lined, and stone-lined. Brick-lined wells were all single wythe (1 course thick), and mostly made with ordinary bricks. The well at Boyd's Store and House used bricks with glazing. The description of the wells at the Darrach Store site mentioned “specially shaped ‘well bricks’ (which are wider at one end than the other)” (DeCunzo et al. 1992:102). Curved, or radial bricks, are sometimes used when a smooth curve is desired in a masonry wall (Perlman 1993). The bricks at the Narbonne House well, in Salem, Massachusetts, were curved in this way (Moran et al. 1982:41). However, the well at the Darrach store is the only well in our sample to use these. Most of these wells were circular in shape, with the exception of wells lined with wood box structures.

Most of the wood-lined wells were rectangular, though there were also two circular wood plank lined wells, and one that consisted of stacked, 2-foot diameter hollowed out larch logs (Feature 219 at 7S-K-118, the Laban Rogers Site). Feature 11, the earlier of two wood-frame wells at 7S-G-57, the Avery's Rest site, had square corner posts driven into the subsoil with wood plank framing. This well at the site appears to have been repaired by inserting a deeper, narrower frame inside the first (Figure 5.1). The barrel wells usually consisted of three barrels with the top and bottom removed stacked on top of each other (Griffith personal communication 2014; Figure 5.2).

Table 5.1: Well Types and Frequencies

Well Lining	*Excavated*	*Unexcavated*	*Total*	*Freq.*
Brick-lined	15	5	20	29%
Brick/barrel-lined	2	0	2	3%
brick/stone-lined	1		1	1%
Barrel-lined	6	0	6	9%
Stone-lined	6	1	7	10%
Wood box-lined	10	0	10	14%
Wood box/barrel-lined	5	0	5	7%
Wood plank-lined (circular)	2	0	2	3%
Hollow log	1	0	1	1%
Unidentified	10	6	16	23%
Total	*58*	*12*	*70*	

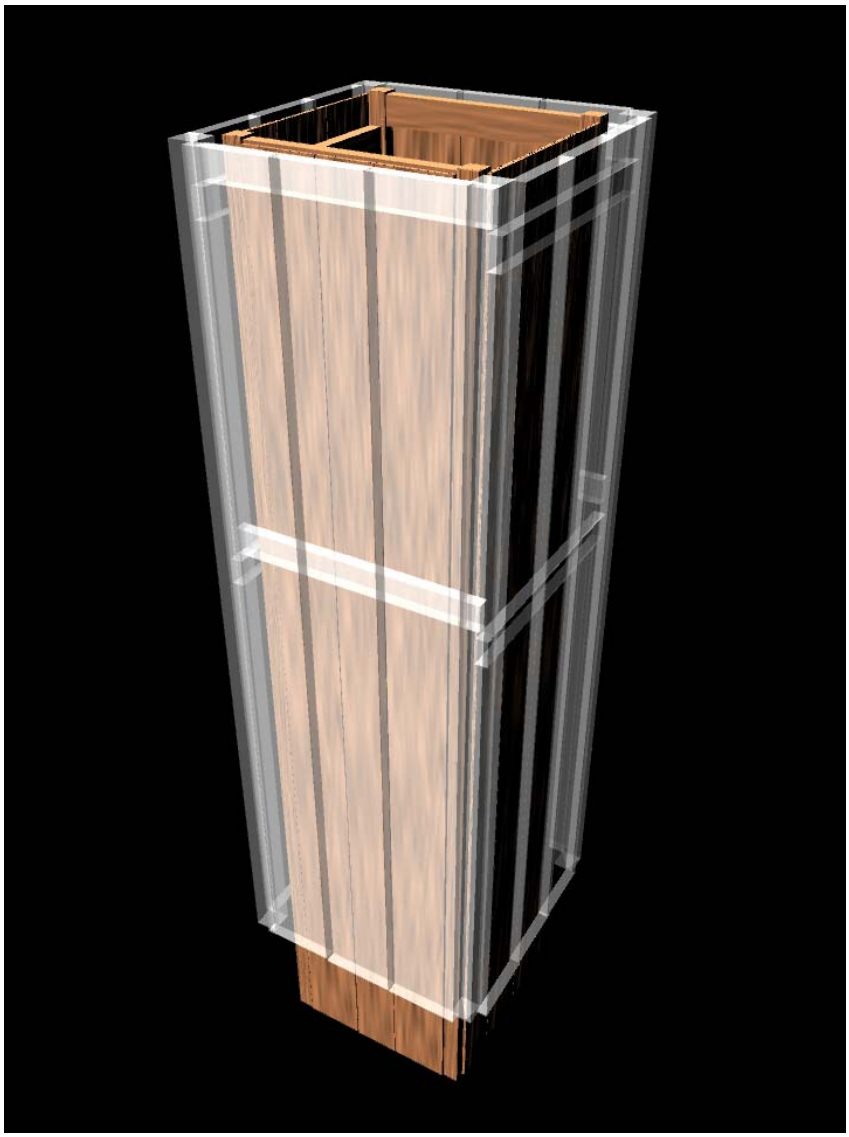

Figure 5.1: Feature 11, 17th-century wood frame well from the Avery's Rest Site, showing outer and later inner frame linings.

Figure 5.2: Feature 268, Barrel Well from 7NC-J-204, the Jones Site.

In a few instances, excavated wells appeared to have the remains of associated structures as indicated by postholes or masonry (Table 5.2). These have been interpreted as evidence of well coverings or a small shed. Such coverings would have helped to keep foreign matter out of the well, and could have housed buckets, pulleys, or pumps to help bring water out of the well. Four wells in the sample included the remains of a pump, Feature 5 at the Bloomsbury Site (7K-B-23), Feature 17 at Whitten Road (7NC-D-100), Feature 2 at the Thomas Williams Site (7NC-D-130), and Feature 14 at the Armstrong-Rogers Site (7NC-F-135). The Armstrong Rogers well also may have included the remains of a curb, a wide wooden ring used at the bottom of the well excavation as a base for the lining, and in this case possibly a support for the pump stock (Figure 5.3). There were two wells, both made of wood, which appeared to use linings to help control or purify water: lime in Feature 697 at the Houston-LeCompt Site (7NC-F-139) and clay in Feature 2 at the Bay Vista Site (7S-G-26).

Figure 5.3: Reconstructed cutaway of pump stock and supporting curb from the Armstrong Rogers site.

Table 5.2: Wells with Associated Covers				
Site Number	**Site Name**	**Feature Number**	**Well Type**	**Associated Features**
7K-A-117	William Strickland Plantation	108		3 Postholes
7K-A-117	William Strickland Plantation	93	brick	4 Postholes
7K-C-362	Benjamin Wynn Tenancy	94	wood	7 Postholes
7K-C-375	Wilson-Lewis Farm	123	barrel	7 Postholes
7K-C-375	Wilson-Lewis Farm	127	barrel	7 Postholes
7K-C-383	W. Eager Farmstead	23	Wood	5 Postholes
7NC-E-127	Forrest Street Shaft Feature	0	brick	Brick Wall
7NC-E-83	Heisler Tenancy	8	brick	Brick Wall
7NC-F-13	McKean/Cochran Farm	27		Postholes

Table 5.2: Wells with Associated Covers				
Site Number	**Site Name**	**Feature Number**	**Well Type**	**Associated Features**
7NC-F-13	McKean/Cochran Farm	29		Postholes
7NC-G-169	Boyd's Store and House	147	brick	Brick drain from house leads to well
7NC-G-7	Robinson Plantation	7		5 Postholes
7NC-J-175	Buchanan-Savin Farm	171		Postholes indicate 8 x 16 foot shed structure
7S-G-60	Thompson's Loss and Gain	78	wood	Postholes

An approximate quarter-century time frame was assigned to each well in the sample (Figure 5.4). When provided, the report author's estimates were used. However, builder's trenches were not always evident, and in such cases, especially if only one well was found at the site, the well construction date was assumed to be coincident with the establishment of the site. Where there appears to have been a succession of wells, the construction date was estimated based on the apparent date of an earlier well's abandonment. This sometimes came from datable artifacts in the well fill. In a few instances, dendrochronology dates were available (e.g., the Cardon/Holton and Armstrong Rogers Sites). Quarter-century date estimates for the wells are shown in Table 4.1.

The earliest wells in the sample were all lined with wood until the second quarter of the 18th century. Most of these early wells were rectangular wood plank wells, though there is a wood plank well with a barrel at the bottom dating from probably the first quarter of the 18th century. Barrel-only wells appear in the sample by the third quarter of the 18th century, and seem to persist until the third quarter of the 19th century. Brick well linings appear in the second quarter of the 18th century, and continue through the latest wells included in the sample. The first stone-lined wells date from the last quarter of the 18th century.

This makes some intuitive sense, and mirrors patterns in construction materials used for other structures. Brick makers and bricks may not have been widely available in the earliest years of European settlement, while wood would have been abundant. Barrels might also have been common, and an easy expedient for lining a shallow well, compared to the level of effort that would have been needed to line a well with brick or stone.

Depth

Perhaps one of the most salient characteristics of the wells in our sample is that many of them are very shallow. None of those for which bottom depth was available is deeper than 30 feet, and all but 4 of those are 15 feet deep or less (Figure 5.5). Three other wells were excavated to below 20 feet, but the bottom was not documented for these. This has obvious implications for the technology used to dig and line these wells, as well as for the potential reliability and quality of the water obtained. One advantage of having a shallow water table is that they can be dug quickly and easily without specialized equipment, and you can get away with fairly expedient technologies and linings, like barrels. On the other hand, such materials might be more prone to fail than masonry linings, requiring that occupants dig new wells periodically. In fact 12 of the sites in the sample include multiple wells that may have been used in succession, including the Moore Taylor Farm (7K-C-380), which had five wells.

One significant problem with this data set is that depth was only recorded for 24 of the 58 wells excavated. The depth archaeologically excavated for the remainder of the sample (34 wells) ranged from 25 feet to less than 3 feet. Three were excavated to below 20 feet, the remaining archaeological tests were all terminated less than 14 feet from the surface, sometimes at or about the beginning of the water table. This is understandable given the challenges and hazards associated with excavation below the water table, but it poses an obvious dilemma for interpreting how well technology was used in Delaware. Answering the question about whether people in Delaware sometimes dug their wells deeper to avoid wells running dry requires that the bottom depth be determined and clearly documented. Material deposited at the bottom of wells can also help date the period of their use and abandonment. Material recovered near the tops of wells may be related to much later activity, perhaps when the site as a whole was abandoned.

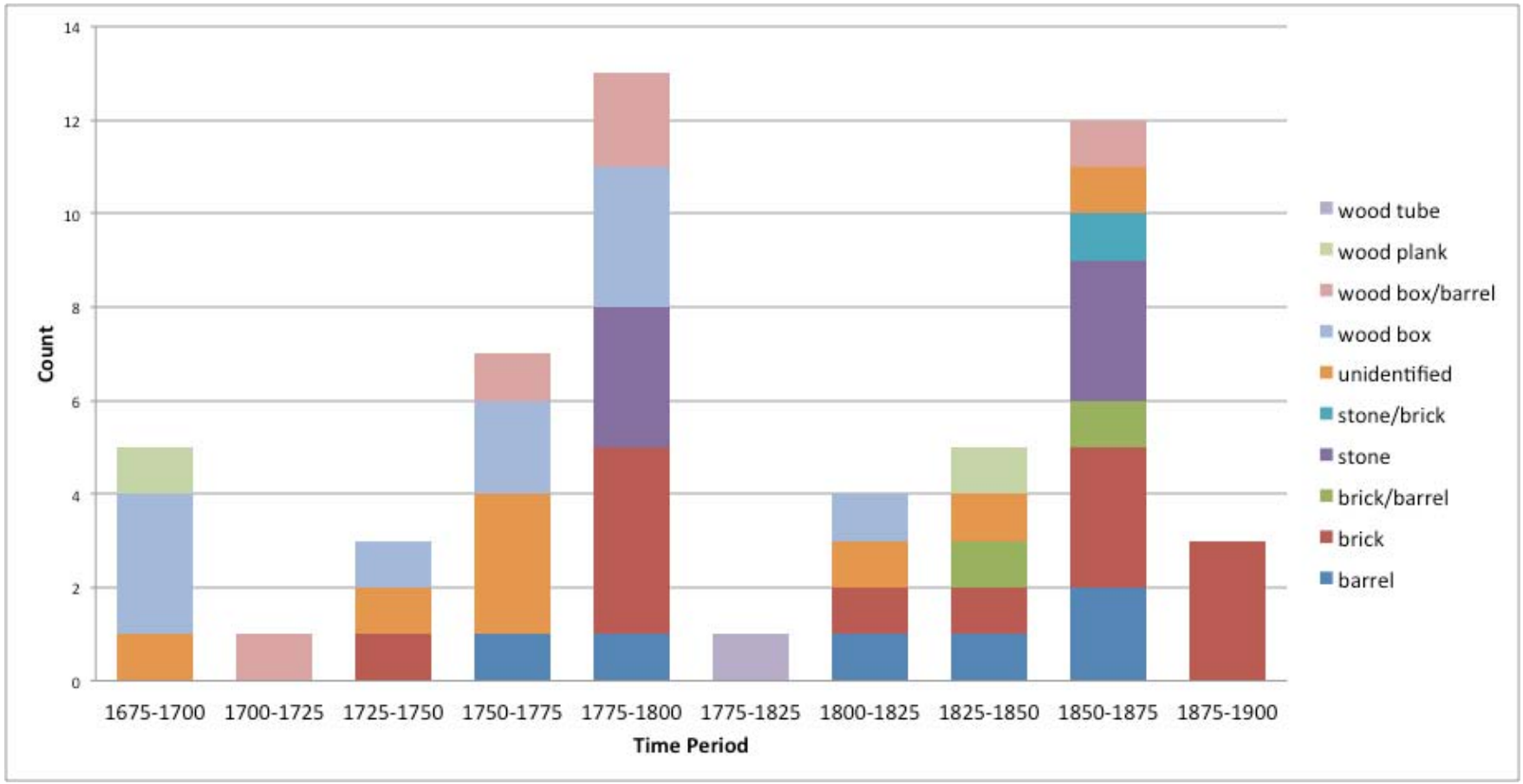

Figure 5.4: Well Types Chronologically

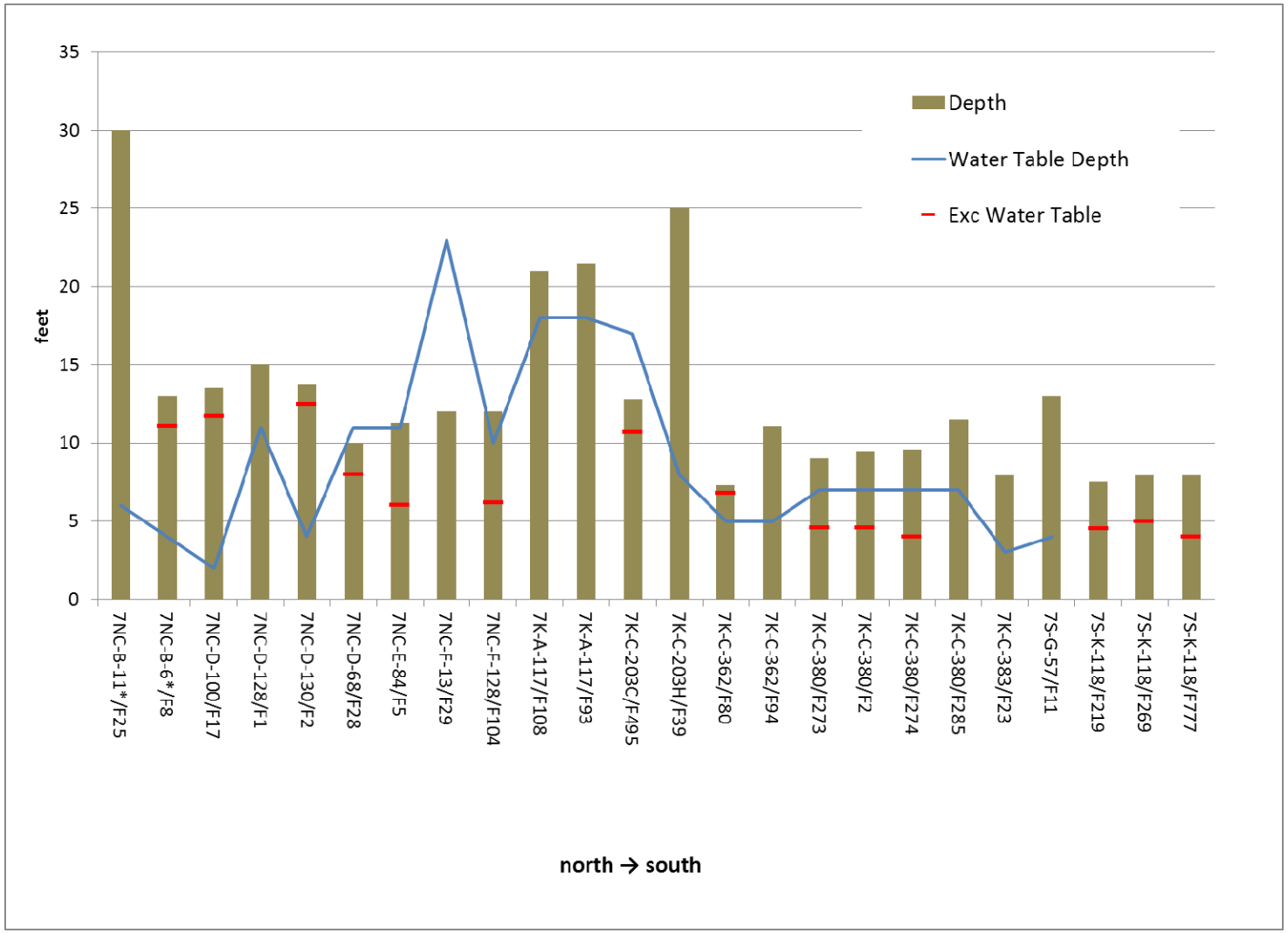

Figure 5.5: Depth of Wells: Red dashes indicate water table depth as recorded by archaeological testing. Blue line indicates water table from NRCS or DGS. *NRCS 1970, all others DGS 2005.

Shape and Dimensions

Circular wells in the sample ranged in size from 2 to 6 feet in diameter with an average of 3.1 feet. Square or rectangular wells similarly ranged in size from 2 x 2 feet to the largest (the Armstrong Rogers well) at 8.3 x 7.6 feet. Comparing well area by well type and approximate date shows that rectangular wood frame wells were the largest wells in the sample (Table 5.3, Figure 5.6). Barrels were the smallest, understandably perhaps since their diameter was essentially fixed by the size of available barrels. The next smallest were stone wells, then brick wells. Perhaps their small size compared to wood frame wells is a reflection of the greater relative cost of the materials. The overall temporal trend suggesting a drop in well size is probably mostly a product of the temporal trend towards brick wells.

Table 5.3: Average of Area of Well Openings by Type Through Time

Row Labels	barrel	brick	stone	wood	Total
1675-1700				10.2	10.2
1700-1725				16.0	16.0
1725-1750		9.6		16.0	12.8
1750-1775	6.6			25.2	20.5
1775-1800	9.1	7.6	6.7	20.9	12.9
1800-1825	3.1	12.6			7.9
1825-1850	4.9	7.1		3.1	5.5
1850-1875	8.3	7.0	7.1	16.0	8.1
1875-1900		9.0			9.0
Average	**6.7**	**8.1**	**6.9**	**16.7**	**10.9**

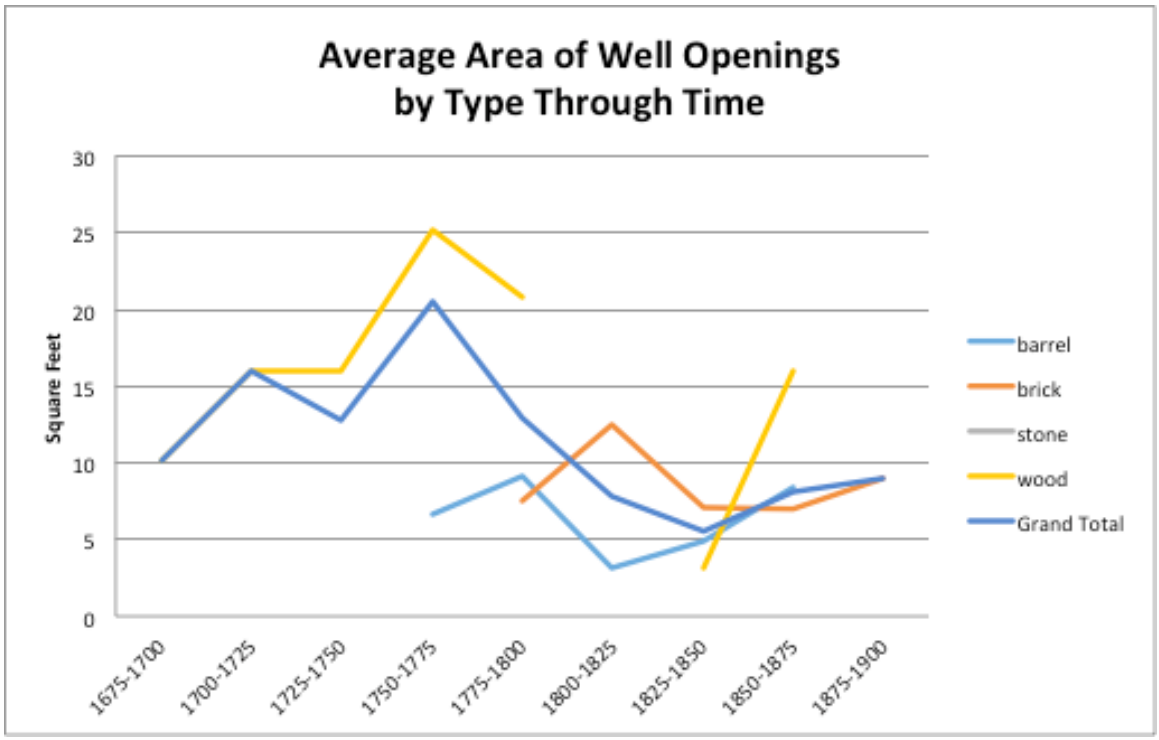

Figure 5.6: Average Area of Well Openings by Type, Chronologically.

5.2 Well Setting

Geographical Context

The geographical distribution of wells is shown in Table 5.4 and in Figures 5.7-5.11. The clearest geographical pattern that emerged from analysis was that all of the stone-lined wells excavated to date have been found in northern New Castle County. This is the only region of the state located in the Piedmont rather than the Atlantic Coastal Plain, and where stone as a material is relatively more abundant than elsewhere in the state. Stone would likely have been expensive to transport, so the pattern is not unexpected. Beyond that, it is difficult to discern other patterns with confidence since most of the wells found were in the northern half of the state. Thirty were found in New Castle, 21 in Kent, and only 7 in Sussex County. The extent to which this reflects the number of historic sites subject to excavation versus the actual spatial distribution of wells is unclear since statistics on the number of historic sites excavated by county in the state have not yet been compiled. The number of sites (historic and prehistoric) recorded is relatively similar across the three counties, so the geographical distribution of wells may not be random, and may reflect the relatively higher historical population density of the northern half of the state versus Sussex County, but the degree to which this reflects instead the distribution of archaeological projects is still unknown.

Table 5.4: Geographical Distribution of Wells in Delaware				
County	Sites with Excavated Wells	Total Sites	% sites with excavated wells	% of all sites in state recorded in county
Kent	21	1369	1.53%	34.0%
New Castle	30	1407	2.13%	34.9%
Sussex	7	1251	0.56%	31.1%
		4027		

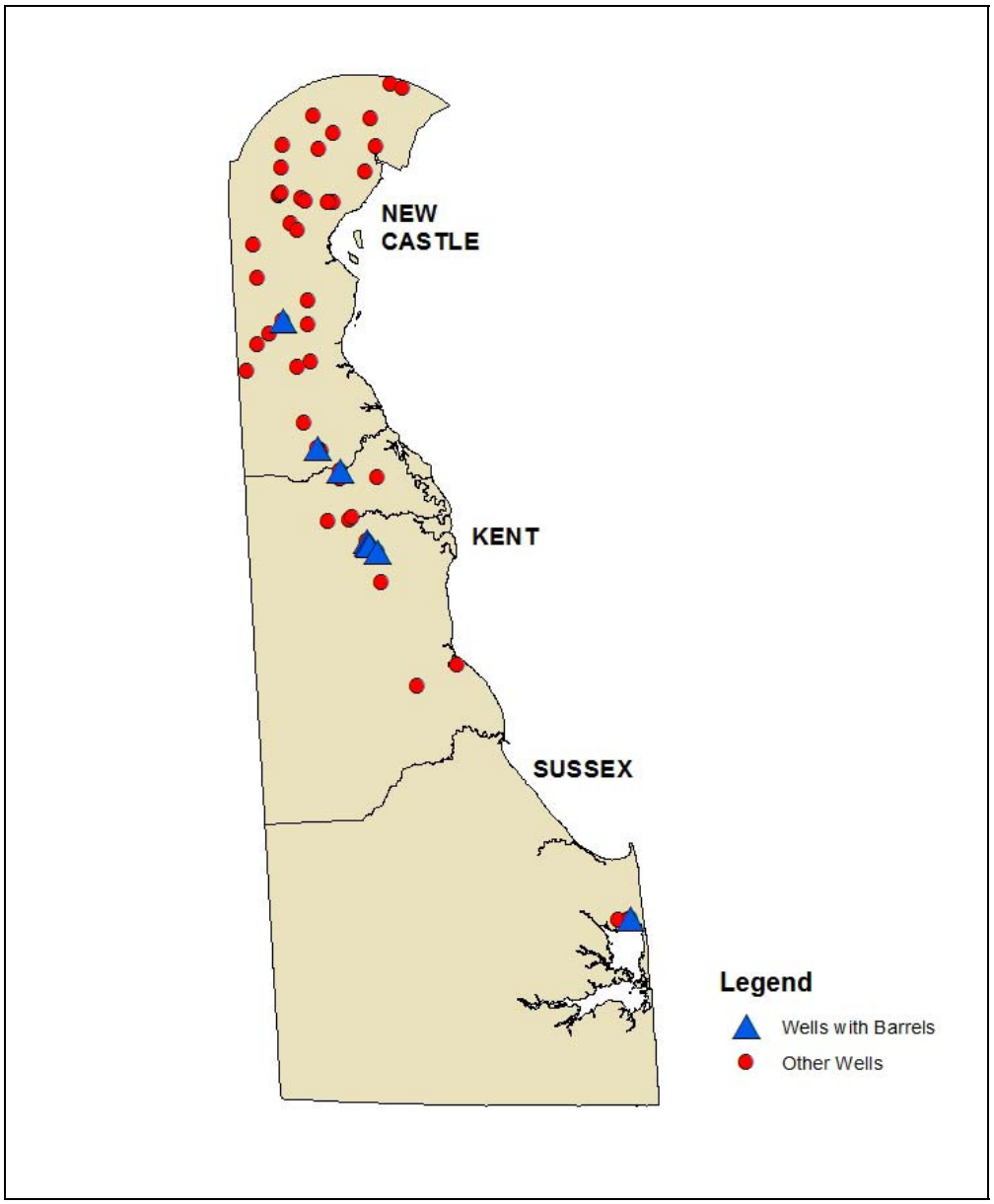

Figure 5.7: Barrel Wells

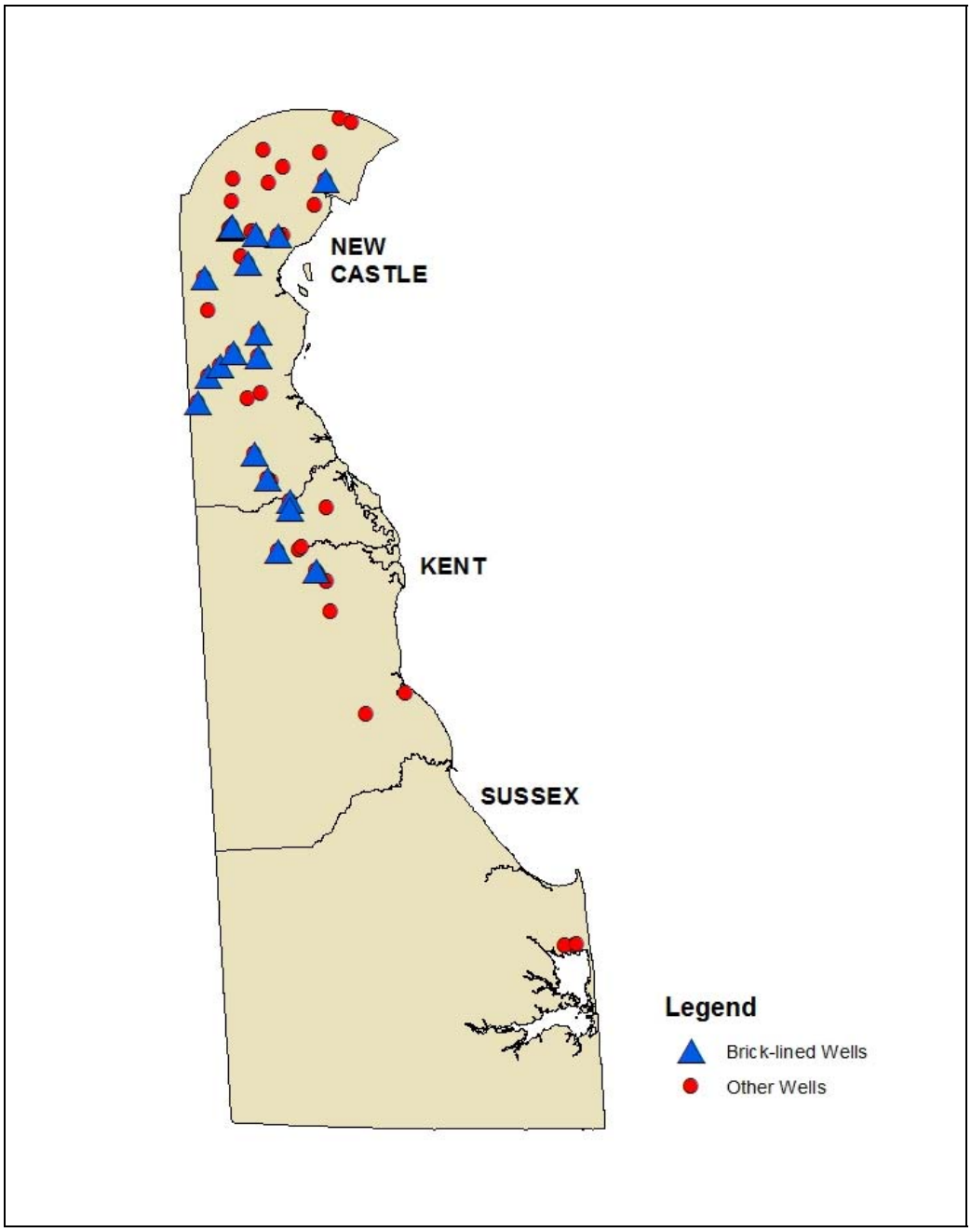

Figure 5.8: Distribution of brick-lined wells.

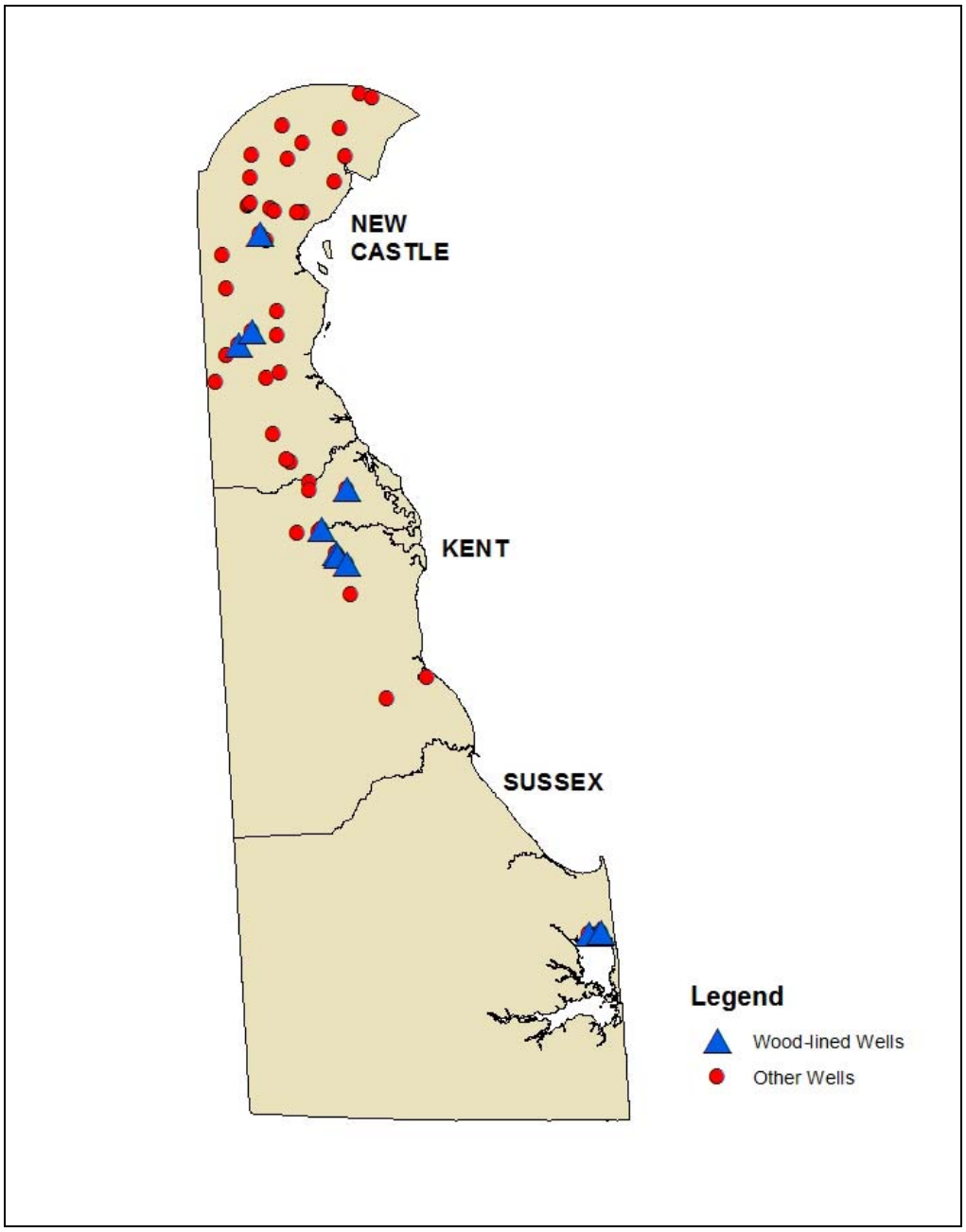

Figure 5.9: Distribution of wood-lined wells.

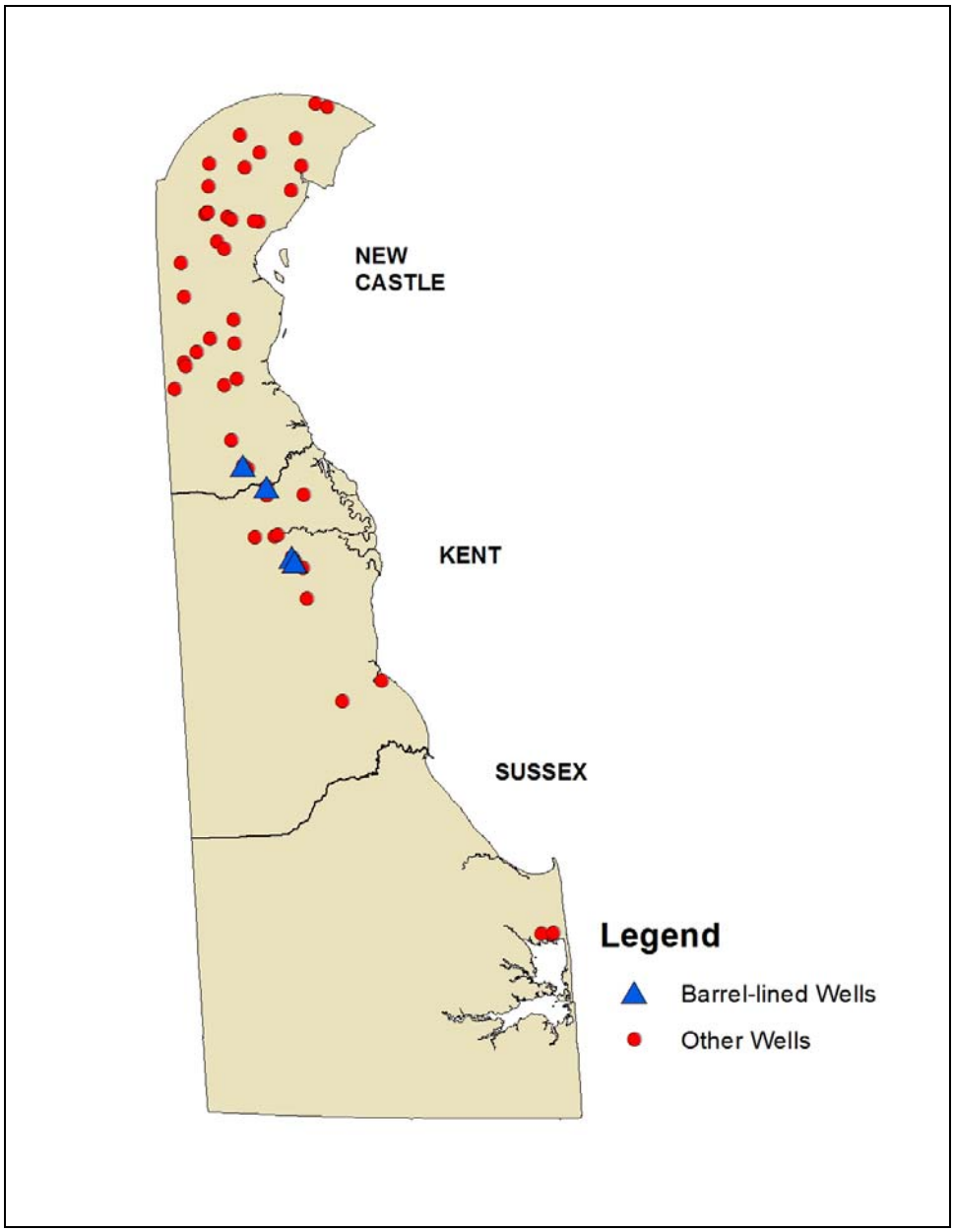

Figure 5.10: Distribution of barrel-lined wells.

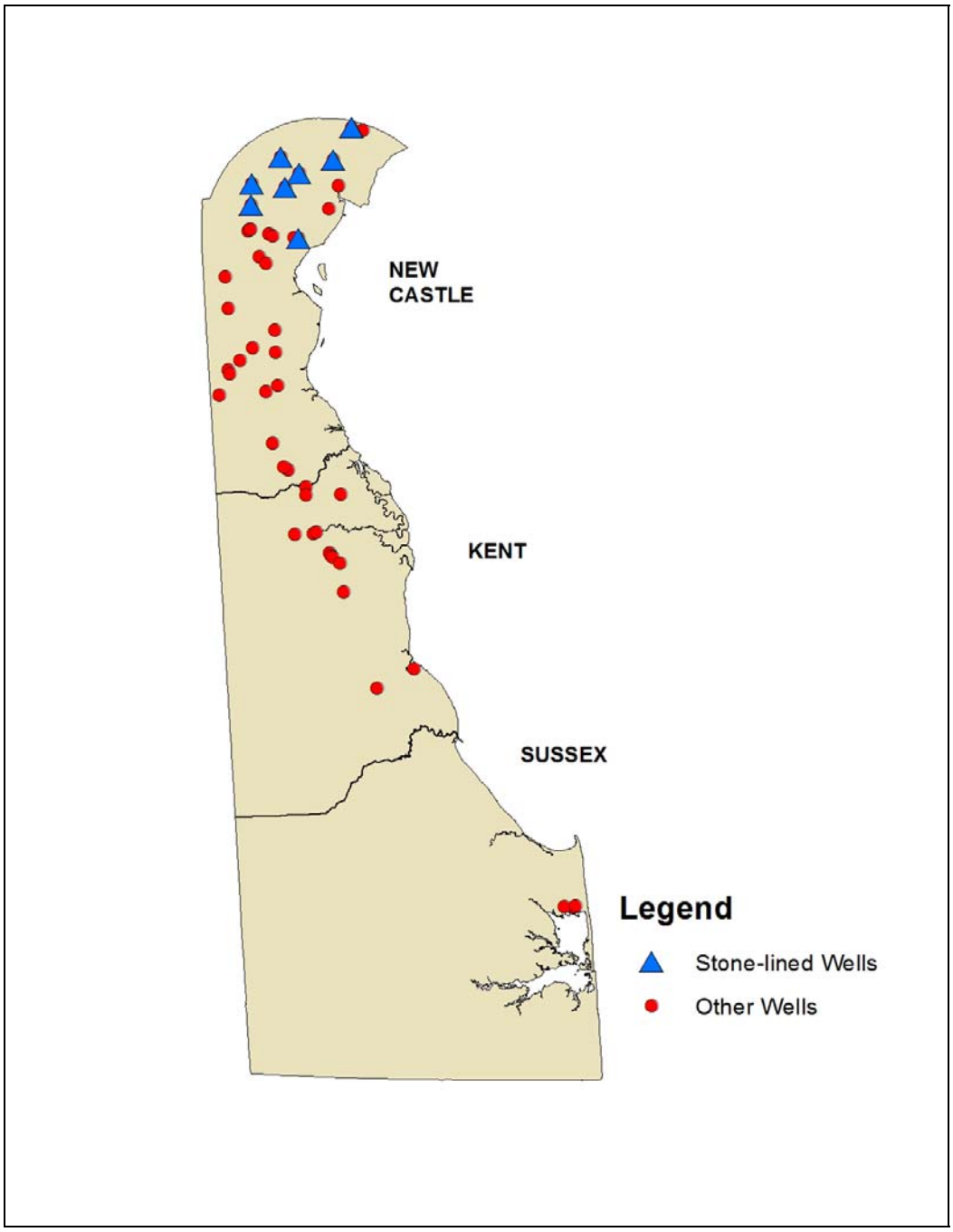

Figure 5.11: Distribution of stone-lined wells.

Site Context: Nearest structure

Most of the excavated wells were found relatively close to the principal site structure, usually a dwelling. Table 5.5 shows the average distance between excavated wells and the site dwelling by material for which this measurement was available (n=53) along with the minimum and maximum distance from the dwelling for each lining material along with the standard deviation. All of the averages ranged between 30 and 56 feet. However, there was substantial variation in the distances recorded. The greatest variability was found among wood frame lined wells, which were found as far away as nearly 200 feet from the dwelling. The average distance and variability are both reduced when the nearest structure of any kind is considered (Table 5.6). With the exception of wood box lined wells, excavated wells averaged about 20 feet from the nearest structure, with a range from 0 to 164 feet (0 feet indicated location inside a structure).

Table 5.5: Distance to Principal Site Structure (ft)

	Average	StdDev	Minimum	Maximum
Barrel	36.8	13.2	28.0	60.0
Brick	34.7	31.0	0.0	112.0
Stone	32.3	34.5	0.0	100.0
Unidentified	40.9	17.9	7.0	75.0
Wood	55.6	53.4	0.0	197.0
Total	**42.8**	**38.2**	**0.0**	**197.0**

Table 5.6: Minimum Distance to Nearest Structure (ft)

	Average	StdDev	Minimum	Maximum
Barrel	23.0	9.9	10.0	33.0
Brick	21.1	16.9	0.0	50.0
Stone	19.0	9.6	0.0	25.0
Unidentified	19.6	18.2	0.0	50.0
Wood	35.7	42.3	0.0	164.0
Total	**25.7**	**28.0**	**0.0**	**164.0**

A lot of the variability in the wood-lined wells comes from two samples (Features 17 from Whitten Road and 578 from the Houston/LeCompt site). Repeating the calculations without those two outliers still shows the wood-lined wells to be further away on average than other well types, and more variable, but closer to the rest of the sample (Table 5.7).

Table 5.7: Minimum Distance to Nearest Structure (ft) Without Outliers

	Average	StdDev	Min	Max
Barrel	23.0	9.9	10.0	33.0
Brick	21.1	16.9	0.0	50.0
Stone	19.0	9.6	0.0	25.0

Table 5.7: Minimum Distance to Nearest Structure (ft) Without Outliers				
	Average	**StdDev**	**Min**	**Max**
Unid.	19.6	18.2	0.0	50.0
Wood	22.3	16.0	0.0	50.0
Total	**21.1**	**15.1**	**0.0**	**50.0**

Table 5.8 compares the number of outbuilding wells by material to the total number of wells recorded. The percentage of outbuilding wells made with barrels or brick do not seem to differ substantially from their overall representation in the sample. However, the percentage of outbuilding wells that are made of stone and wood framing does differ. This may suggest that barrel and brick wells were no more or less likely to be associated with an outbuilding than with the principal structure on site, but that stone wells were more likely to be associated with a dwelling or other principal structure and wood-lined wells were more likely to be associated with an outbuilding. It makes sense given the relative effort to build a stone-lined versus a wood-frame well that stone-lined wells would be reserved for the most important structures on a site.

Table 5.8: Outbuilding Wells					
	Count	**Total**	**% of material**	**% of outbuilding wells**	**% of all locations**
Barrel	2	6	33%	8%	10%
Brick	6	17	35%	25%	29%
Stone	1	7	14%	4%	12%
Unid	5	10	50%	21%	17%
Wood	10	18	56%	42%	31%
Total	**24**	**58**			

Environmental Context: Distance to water

We considered the environmental context of the wells identified in the study, examining their distance to nearest water as well as the type and drainage characteristics of the soils in which they were dug. However, given the typical proximity of wells to site structures, especially the principal occupation structure, it is possible that these environmental variables have more to do with overall site selection than with parameters for selecting a well site. Given Delaware's even topography and relatively shallow water table, finding a suitable well location may have been fairly easy, making other factors, like access to transportation and other overall site location parameters more important.

Charting wells (both excavated and unexcavated) according to distance to the nearest water shows considerable variability. Figure 5.12 shows the distance from surface water for 49 wells in the sample for which distance data were available. Wells were found as close as 50 feet from the nearest surface water, and as far away as over 4,000 feet. More than half of this sample (n = 26) were less than 1,000 feet from water (Figure 5.13). Overall, the distances seem fairly evenly distributed across the range. This may have

more to do with site selection characteristics than well selection, since most wells, at least those excavated, are very near site structures. One might expect earlier sites to be closer to water than later sites which might be distributed along Delaware's growing network of roads, and did not need to be located on water necessarily. However, the data do not seem to support this as well features do not exhibit any clear trend chronologically with regard to distance to water (Figure 5.14). It appears that distance to water was not clearly an important factor in well site location.

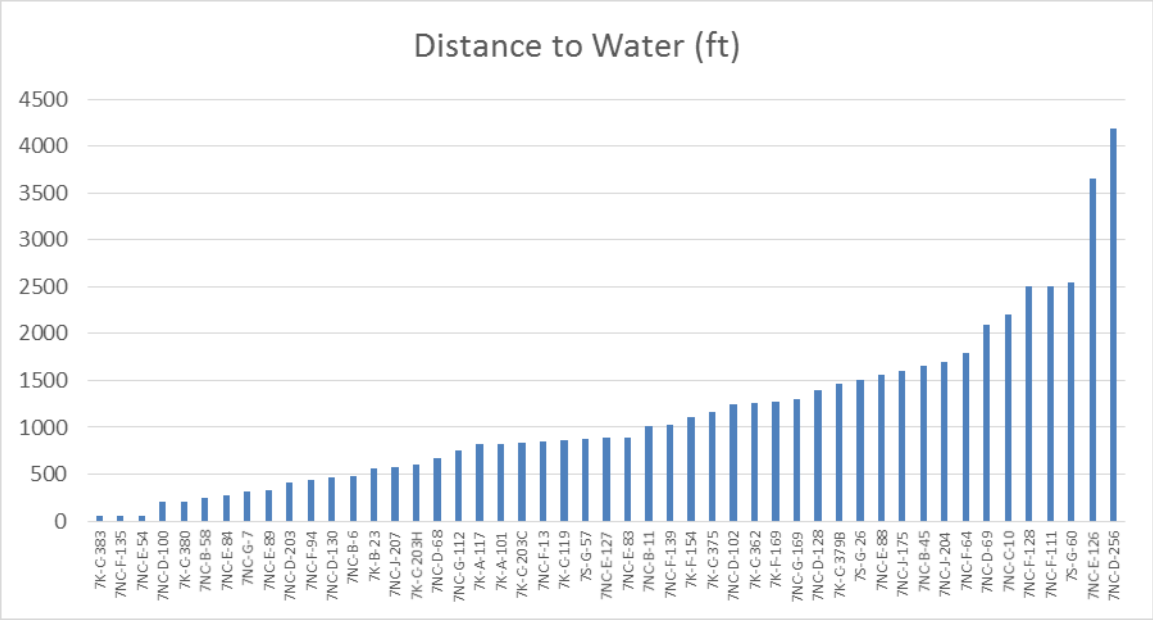

Figure 5.12: Wells by distance to water.

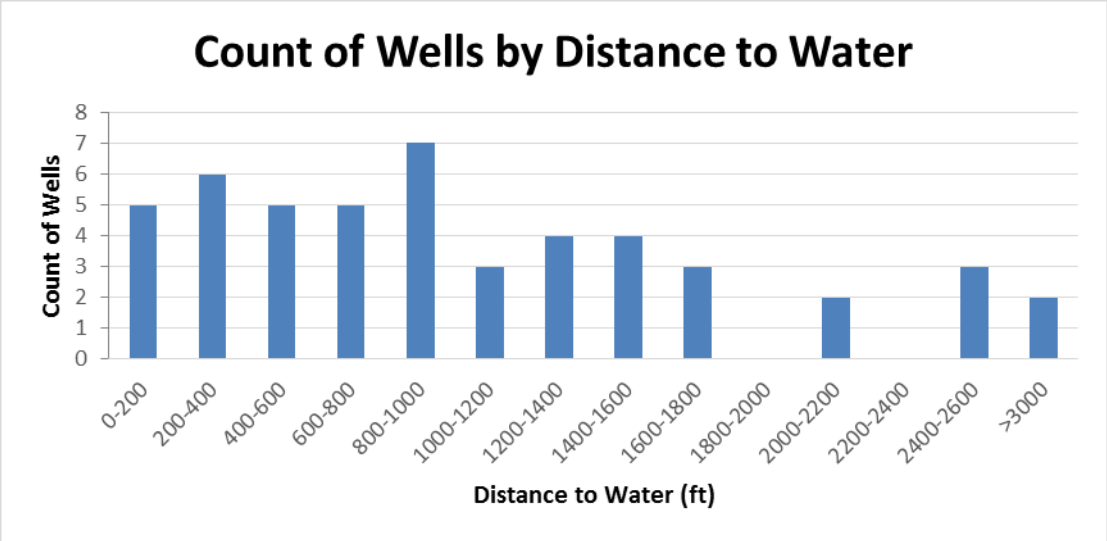

Figure 5.13: Count of wells by distance to water.

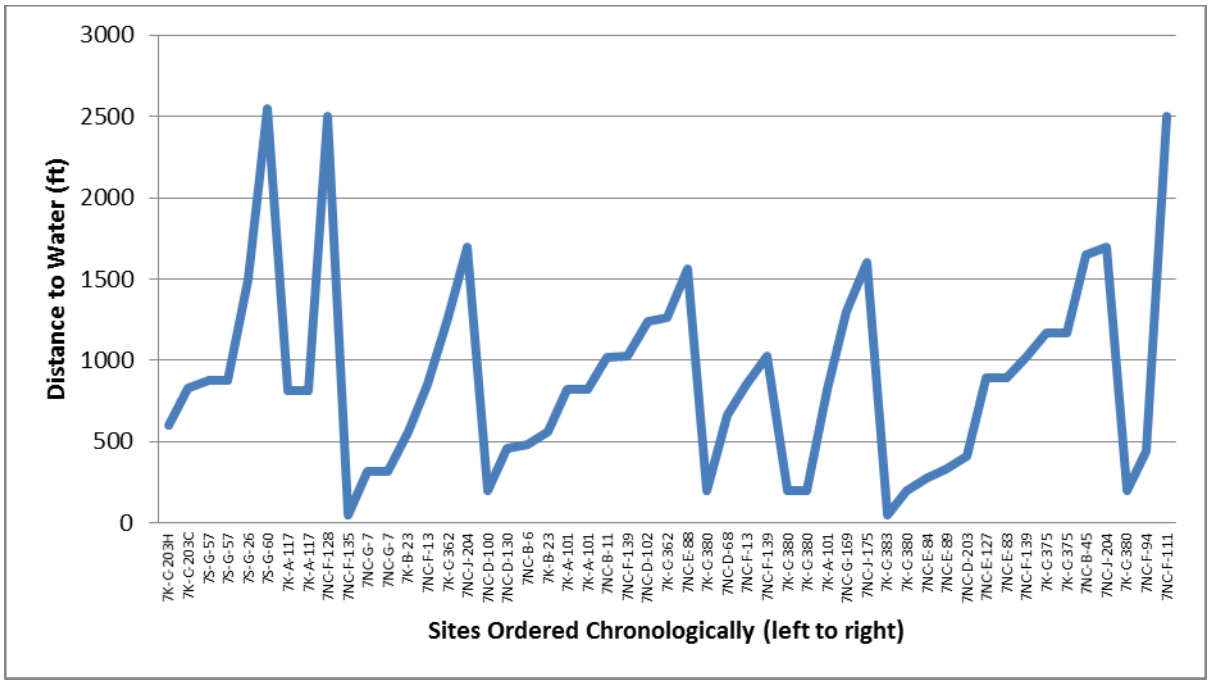

Figure 5.14: Well distance to water ordered chronologically.

Environmental Context: Soils

Soil characteristics can be expected to have affected how the well filled, how easy it was to construct, and potentially how often it may have needed to be repaired or replaced. The following tables (5.9, 5.10) show the mapped soil unit and drainage characteristics for the wells in the sample for which soils data were available (n = 49).

Table 5.9: Well Type by Soils

	Channery Loam	Loam	Loamy Sand	Mucky Loam	Sandy Loam	Silt Loam	Total
Barrel		3			1	2	6
Brick	1	2			4	5	12
Brick/Barrel		1				1	2
Stone		1		2	1	1	5
Unidentified		2	1		3	3	9
Wood Box	1	2	2			4	9
Wood Box/Barrel		2			2		4
Wood Plank		1	1				2
Total	**2**	**14**	**4**	**2**	**11**	**16**	**49**

Table 5.10: Well Type by Soil Characteristics

	Well Drained	Moderately Well Drained	Poorly Drained	Very Poorly Drained	Total
Barrel	1	2	2		5
Brick	9	2			11

Table 5.10: Well Type by Soil Characteristics					
	Well Drained	**Moderately Well Drained**	**Poorly Drained**	**Very Poorly Drained**	**Total**
Brick/Barrel	2				2
Stone	2		1	2	5
Unidentified	6	1	2		9
Wood Box	7		2		9
Wood Box/Barrel	4				4
Wood Plank	1	1			2
Total	**32**	**6**	**7**	**2**	**47**

Note, information regarding drainage characteristics was not available for all recorded soil types.

Table 5.10 shows the drainage characteristics for soils identified for wells included in the sample. "Poorly drained" in the table includes soils that are poorly to very poorly drained, while the column "well drained" includes moderately well drained. The tables show that wells were more likely to be sited on well drained than poorly drained soils. Such locations might have been easier to dig, and more importantly, permeable soils are better at allowing water to move through the soil to refill the well. However, like distance to water, the siting of a well near the structures it was intended to serve may have had more to do with the location of wells than choosing soils with particular characteristics. Ideally a well should have been located on well-drained soil away from and at a higher elevation than potential sources of contamination. A potential avenue for future research would be to examine the topography, soil types and chemistry of a well and the site around it to see what environmental variables were important.

Social Context: Well Types and Ownership Status

Excavated wells in our sample were found in a variety of site-type contexts, including churches, community settings, and stores. Most, however, were found on farmstead sites. Among these, there are some differences between owner-occupied and tenant-occupied sites that may be worth exploring further (Table 5.11). A Chi-squared distribution analysis shows that this distribution is significantly different (p=.04). All of the barrel-lined wells in this sub-sample were found on tenant farm sites. Most of the stone-lined wells were from owner-occupied sites. If closer examination, and more data, sustain this pattern, it might suggest a higher frequency of expedient well linings like barrels at tenant occupied sites, and a greater frequency of higher cost linings, like stone, at owner occupied sites. But based on this interpretation, one would expect there to be more brick-lined wells at owner-occupied sites, and more wood-lined wells at tenant sites, but the opposite is true. One possible explanation for this is that wood-lined wells averaged earlier dates than brick-lined wells (mid to last quarter 18th century vs first to second quarter 19th century), while owner-occupied sites in the sample had an earlier average date than tenant-occupied sites in the sample (3rd quarter 18th century vs 1st quarter 19th century). Thus the pattern with wood-lined and brick-lined wells may have more to do with chronology than ownership status. Then too, the sample size is fairly small; the addition of new samples could easily change the pattern.

Table 5.11: Well Types by Occupation Type			
Observed Distribution			
Well Type	**Owner**	**Tenant**	**Total**
Barrel		5	5
Brick	2	10	12
Stone	4	2	6
Wood	10	7	17
Total	**16**	**24**	**40**
Expected Distribution			
Well Type	**Owner**	**Tenant**	**Total**
Barrel	2	3	5
Brick	4.8	7.2	12
Stone	2.4	3.6	6
Wood	6.8	10.2	17
Total	**16**	**24**	**40**
probability	0.0394		

5.3 Well Contents

There has long been much interest on the part of archaeologists in the contents of wells. When abandoned while the site was still occupied and slowly filled with refuse that can be attributed to the site occupants, they offer well preserved, clearly stratified, and sometimes dense deposits of material related to site occupation. Deposition in water-logged soils can also promote the preservation of organic materials otherwise rare on archaeological sites, such as leather, faunal and floral remains. Unhappily, the interest is not confined to professionals. Numerous itinerant groups of avocational bottle collectors scavenge the contents of abandoned wells for collectible bottles. But how often do wells produce assemblages of potential interest in site interpretation?

At least 54 of the excavated wells produced artifacts in the well fill. Available reports were not always clear about the artifact counts from excavated well features, but of those that had those data available, at least 18 produced more than 500 artifacts, and 5 had more than 1,000. In some cases, much of the material consisted of demolition debris recovered from the uppermost part of the shaft. Such assemblages (such as the wells at the Heisler house site and the Heisler tenant site) arguably have relatively low research value. Research value here is simply an estimate of the likelihood the assemblage may be useful in addressing questions of archaeological interest. However, 30 wells, more than half of those excavated, had significant quantities of non-architectural material. These 30 wells appear to be heterogeneous in material type and date. It does not appear that wells of any particular construction type or date are any more or less likely to contain significant domestic artifact deposits (Tables 5.12 and 5.13).

Table 5.12: Artifact Assemblage Research Value by Well Type				
Well Type	**Low**	**Med**	**High**	**Grand Total**
Unknown	5	1	4	10
barrel	2	1	3	6
brick	5	3	9	17
stone	1		5	6
wood	3	3	9	15
Total	**16**	**8**	**30**	**54**

Table 5.13: Assemblage Research Value by Period				
Decade of Construction	**Low**	**Med**	**High**	**Total**
1675-1700	1		4	5
1700-1725		1		1
1725-1750			2	2
1750-1775	1	2	3	6
1775-1800	2	1	7	10
1800-1825	1	2	1	4
1825-1850	4		1	5
1850-1875	3	1	7	11
1875-1900	2	1		3
Total	**14**	**8**	**25**	**47**

Different contents can generate different interpretations; e.g., at the W. Eager Farmstead (7K-C-383), the fill was generally unstratified and contained few historical artifacts, suggesting to the researchers that it had been intentionally filled in, probably with dirt from another part of the site or from off-site altogether.

The wells that do contain substantial, stratified deposits of artifacts deposited either by accident while the well was in use or after it was abandoned, could provide information about the behavior of people at the site. Table 5.14 lists the well assemblages from Delaware that appear to have the highest artifact-related research value, along with a brief

summary of the contents. This is based on descriptions in the associated reports that show large numbers of artifacts not dominated by demolition debris.

Table 5.14: Well Artifact Contents

Site_Name	Contents	Quantity of Material
Laban Rogers House F219	Artifacts recovered from builders trench and shaft; Domestic, personal items, hardware and floral/faunal remains; extensive artifact list presented in report text. Included redware, Westerwald, creamware, pearlware.	Not noted
Laban Rogers House F269	Several elements of the box frame and barrel were recovered from identification. Artifacts recovered from builders trench and shaft; Domestic, hardware and floral/faunal remains; extensive artifact list presented in report text. Lack of personal items su	Not noted
Laban Rogers House F777	800+ cermamic fragments along with domestic, personal, and hardware items; extensive table provided in report; includes pearlware, stoneware, creamware, delft, and redware.	800+
John Powell Plantation F39	Well Shaft: architectural and domestic artifacts (n=2,124); floral remains; faunal remains (n=3,039); 90% from uppermost 3 ft.	5163
Benjamin Wynn Tenancy F94	Well shaft: n=2,293: fill not stratified; contained domestic and architectural artifacts and faunal remains. Builder's trench n=108 domestic and architectural artifacts.	2293
John Darrach Store F99	Contains store demolition rubble: foundation stones and mortared brick; suggests well was open into mid-1860s; artifacts recovered from well fill (n=697) include domestic, architectural; hardware, faunal items. F99 contained 20 ceramic crossmends with 14 features.	697
William Strickland Plantation F108	Primarily domestic items.	Not noted
William Strickland Plantation F93	Primarily domestic items.	Not noted

Table 5.14: Well Artifact Contents		
Site_Name	**Contents**	**Quantity of Material**
Benjamin Wynn Tenancy F80	Feature 80 was filled in three main episodes. Each episode corresponds to the vertical distribution of historical artifacts. The displaced subsoils of Soil B were deposited when the well was initially constructed. Soils C and then A were then deposited into the well shaft after the well was abandoned. Based on this overall sequence, the artifacts of the builder's trench, Soil B, would be older than the artifacts of the two well shaft deposits. Domestic items; faunal remains.	Not noted
Wilson-Lewis Farm F123	n=607 artifacts; Domestic 58%, Architectural 25% - predominantly wire nails; floral remains.	607
Moore-Taylor Farm F285	1,000+ artifacts near base; mostly domestic; upper portion of well filled with tree stumps and demolition debris.	1000
Moore-Taylor Farm F273	515 artifacts, mostly domestic items.	515
Webb's Landing	Artifact collection stored at DE SHPO. Contains tin-glazed, salt-glazed, and earthenware holloware sherds. Pipe stem and bowl fragments. Pipe bowl stamps indicate R. Tippet and Evans (Bristol Export). Domestic and wild faunal remains; oyster and conch; corn cob fragments.	Not noted
Weldin Plantation F25	Included 52% domestic artifacts, 27% indeterminate, 18% architectural, and 2% ecological.	788
Pierce/Talley House	The artifacts include fragments from a George Washington portrait flask manufactured at the Dyottville Glass Works in Philadelphia in the 1840s, a tumbler base, an embossed beer bottle fragment, an amber bitters bottle fragment, lamp chimney fragments, greybodied salt-glazed stoneware cuspidor sherds, slip trailed redware plate sherds and an ironstone granite-china saucer rim sherd with a molded wheat and black berry border manufactured in England, ca. 1850-1873.	Not noted
Grant Tenancy F8	11 feet of rubble over primarily domestic artifacts in sediment.	Not noted
Whitten Road F17	Demolition debris, domestic items.	Not noted

Table 5.14: Well Artifact Contents		
Site_Name	**Contents**	**Quantity of Material**
Bernard Glatz House F21	Including 19th century redware, many different forms of whiteware, including 1830s and 1840s styles, nails, screws, a black glass 2-hole button, leather scraps, brick fragments, and oyster shells.	1000
Thomas Williams F2	Domestic, activity, architectural, faunal, personal.	Not noted
Springer/Ward/Little Farm F918	Artifacts consisted of beverage and milk bottles, large sherds of ironstone and porcelain, a 1929 Lincoln Head wheat cent, a glazed ceramic door knob, cutlery, tools, and a brass plate. Overall, they suggest that the well was filled in the second quarter of the 20th century.	Not noted
Forrest Street Shaft Feature	n=694; Artifacts recovered were primarily domestic in function. The soil, ash and slag layers recorded in the matrix were interpreted as a contemporaneous fill sequence with cultural materials that indicating that the procedure took place at the turn-of-the-century.	694
Bethel Church F1	The well had no stratigraphy per se, as it was filled with bottles and trash and not with soil. Among the whole bottles found in the well were 51 square Manischevitz. 16 whole Thunderbird. 2 Richards Wild Irish Rose. 2 Miller beer, 3 juice. And 16 Gallo Wine. This account does not include the many broken bottles that were also present.	Not noted
Clayton Farm F1	Artifacts related to site occupation (n=3,796): domestic, architectural, fuel, bone shell; frequency increased with depth.	3796
Armstrong-Rogers F14	Top deconstruction level contained 105 artifacts: one metal hook or latch, 22 nails, two milk glass, one pipe stem and five brick samples. Second level contained 183 artifacts: one button with thread, two flat glass, five vessel glass, five wood samples, plaster samples, seven lithics, 62 iron pieces and 100 ceramics. One-hundred and seventy pounds of brick and 136 pounds of rock were discarded from this feature.	288
Robinson Plantation F7	n=1000+; not specified in report; extensive ceramic description.	1000+

Table 5.14: Well Artifact Contents		
Site_Name	**Contents**	**Quantity of Material**
Jones F156	621 total artifact count; Upper Fill: Creamware (undecorated); whiteware (undecorated); cut nail; cut/wrought nail; wrought nail; Lower Fill: Pearlware (blue shell-edged); barbed wire; cut nail; cut/wrought nail; wrought nail; Builder's Trench: none.	621
Jones F268	199 total artifact count; Barrel 1(top): Pearlware (hand painted); white salt glazed stoneware (scratch blue); cut nail; wrought nail; Barrel 2(middle): Pearlware, cut nails; Barrel 3 (bottom): Creamware (undecorated); cut nail; blown in mold glass, Pearlware, Chinese porcelain; Builder's trench: Creamware.	199
Bay Vista F2	Including fragments of red earthenware, combed slipware, tin-glazed earthenware, nail fragments, clay tobacco pipe fragments, and a flake. Although the fill deposited in Feature 8-2, the well, were clearly stratified, there were so few artifacts recovered from the feature that stratigraphic analysis of this feature was not considered significant.	607
Avery's Rest F11	"German stoneware, English stoneware, tin-glazed stoneware, red-bodied earthenware, bone, shell, brick, iron artifacts including scissors and hoe, Staffordshire ceramics, white clay tobacco pipes. Well casing made of white oak. Remaining portion preserved by water table at 8 ft below base of plow zone."	
Avery's Rest F7	Well shaft contained a quantiy of demolition debris (i.e. bricks, plaster, window glass, and nails) as well as household refuse (e.g. bone, shell, tin-glazed earthenware, white clay tobacco pipes, copper alloy pins, lead scraps, lead shot, red-bodied earthenware, bottle glass, copper alloy artifacts, stonewares).	

5.4 Polk Site Well in Context

The one-meter diameter circular brick-lined well found at the Polk site appears to have been built between 1895 and 1899 (based on the feature contexts, the artifacts recovered from these features, and available historical documentation). William Taylor likely owned the farm and constructed the Polk Tenant Site structure between 1895 and 1900. The bricks are dry laid, and single wythe — one course thick — typical for brick-lined wells in Delaware. It was dug 2.3 ft from the house, and is approximately 2,500 feet from an unnamed tributary of Sandy Branch.

Because the site was not subject to traditional mitigation, there are limits to what we know. The site was abandoned and razed during the 1930s. Only the top 3 feet of the well was excavated, so we do not know the bottom depth. The well, (labeled Feature 7 in the field) yielded 122 artifacts. Feature 7 yielded 122 artifacts dating from the mid 19th century to the 20th century. Artifacts included brick, mortar/plaster fragments, cut and wire nails, stoneware sewer pipe, window glass, brick fragments, mortar/plaster fragments, vessel and bottle glass; wire and barbed wire; a horseshoe, whiteware sherds, an aluminum can pull tab, and sheet metal. Overall, the impression left by this assemblage is that it relates to site demolition rather than material discarded into the well while the site was occupied.

That the well contents may have comprised primarily demolition debris could have limited what the well might have contributed to an understanding of the Polk Site. However, along with all the other wells excavated in Delaware, it helps to flesh out the overall context of wells in the state. In construction material, date, and distance to the house, it fit well within the patterns found among wells in Delaware described in this report, although it is at the farther end of the observed range for distance to nearest water. It is one of 12 all-brick wells in the sample, and like 7 of these, it was found on a tenant-occupied site. It is at the late end of the chronological range of wells in our sample having likely been dug after 1895: there are 3 brick wells dating to the last quarter of the century. It thus illustrates that while piped water was being introduced in urban areas at this time, many rural areas did not receive plumbing until the 1930s.

5.5 Excavation Approaches

The wells in the sample were archaeologically excavated through a mix of hand and mechanical excavation methods. For obvious reasons, the deeper the excavation, the more likely a backhoe or other machine was used. Table 5.15 gives the minimum, maximum and average depths in feet of archaeological well excavations by method. Additional aids appear to be uncommon. Excavation at Thompson's Loss and Gain Feature 78 used corrugated metal well casing as shoring to remove barrel staves, but no other report mentioned using shoring. Stepping or sloping excavation to ensure safety appears to have been more common. A one-inch diameter pump was used during excavation of the wells at the Jones site, but review of the other reports did not indicate whether dewatering was done on other sites. As was said before, most well excavations ended when the water table was reached.

Table 5.15: Depth of Well Excavations in Delaware (ft)

	min	max	av
Hand excavation	0.5	13.5	7.1
Hand and mechanical	6.7	30.0	13.2
Mechanical	10.0	14.0	12.0

Because wells in Delaware are relatively shallow, these methods appear to be generally adequate, with the exception of not always recording the bottom depth of a well. In many

cases, the addition of dewatering would likely have allowed mechanical excavation the few more feet below the water table necessary to document the bottom of the well, and obtain a sample of artifacts. In the case of deeper wells (there were two wells 25 feet or more deep), perhaps boring or auguring might be considered if stepping or shoring to support safe excavation to the required depth is prohibitively expensive. This might well require geotechnical boring to get through the bottom of the well and any debris present. The bottom depth of the well should be apparent in a geotechnical bore, but a sample of potentially datable artifacts indicating the time period of abandonment would not be recovered.

6.0 MANAGEMENT RECOMMENDATIONS

6.1 Methodological, Analytical and Substantive Gaps

Analysis of wells excavated in Delaware reveals a number of interesting patterns about these simple but vital features of the landscape. Wells in Delaware were nearly always very shallow (most less than 15 feet deep) and made with a variety of materials and construction techniques. We have wells made from brick, stone and stone and brick together. Wood-lined wells were mostly rectangular frame in construction, but could also be circular, or made with stacked barrels, and in one case, stacked hollow logs. Most of these technologies appear to have been used throughout most of Delaware's history, though the range of wood-lined wells (last quarter 17th century to 3rd quarter 19th century) is a little earlier than brick-lined wells (2nd quarter 18th century to the present). Brick and wood wells are found in each of the three counties of Delaware, but stone-lined wells are found only in the northern part of New Castle County, the only part of the state in the Piedmont where stone is more common, rather than in the Atlantic Coastal Plain.

Nearly all of the wells in the excavated sample were found very close to a structure (within an average of 25 feet). There were differences within the sample in the well-lining material and the type of nearest structure. Stone wells were more likely to be associated with a dwelling or other principal structure and wood-lined wells were more likely to be associated with an outbuilding, perhaps because outbuilding wells did not warrant the effort towards permanency given to wells associated with a dwelling. Differences in well material were also found between sites of differing socio-economic class. All of the barrel-lined wells on farms in our sample were found on tenant farm sites. By contrast, most of the stone-lined wells were from owner-occupied sites. This might suggest a higher frequency of expedient well linings like barrels at tenant occupied sites, and a greater frequency of higher cost linings, like stone, at owner occupied sites. But then one would expect more brick-lined wells at owner-occupied sites, with more wood-lined wells at tenant sites, but the opposite is true. One possible explanation for this is that wood-lined wells averaged earlier dates than brick-lined wells (mid to last quarter 18th century vs first to second quarter 19th century), while owner-occupied sites in the sample had an earlier average date than tenant-occupied sites in the sample (3rd quarter 18th century vs 1st quarter 19th century). Thus the pattern with wood-lined and brick-lined wells may have more to do with chronology than ownership status.

These results offer some potentially interesting insights into the use of wells on Delaware sites. But in most cases, the dataset suffers from small size, and some attributes are not completely or consistently recorded. Oftentimes, wells appear to be treated in the archaeological record primarily as receptacles for artifacts, rather than as important features in their own right. Reports of sites containing wells do not always contain detailed descriptions of the construction techniques or materials. The bottom depth is not always recorded, often owing to the difficulty in safely obtaining samples from substantially below the ground surface. Descriptions of well features do not always say clearly whether there is any evidence of a builder's trench that might help date the construction of a well, or evidence of repair episodes. Specific details about brick type

and size are often missing, as is detailed description of wood frame construction techniques. And in interpretation of well features, an estimated range of use is not always given.

More detailed recordation of well features might help flesh out the chronology of well construction, repair, and replacement. Wells, especially those built with impermanent materials like wood framing or barrels, would have needed at least occasional repair or replacement. Examining well shaft features for evidence of repair episodes would help illuminate the level of effort needed to keep these features functioning. Evidence for the use of specialized or unusual materials such as curved or glazed bricks should be particularly noted. Changes in a well, or the digging of a new well can also point to significant changes in a site's occupation, such as a new owner or tenant. For this reason, evidence for the date of abandonment of a well, such as from artifacts found in the well shaft near, but above the water table, are important to record and analyze. Once artifacts begin to accumulate above the water table, clearly the well can no longer be used.

Although most wells in Delaware appear to be relatively shallow, nevertheless, excavation to the bottom of a well below the water table presents significant logistical concerns. It may be possible to measure the bottom depth of a well using a geotechnical bore, thus avoiding the need to fully expose the lowest strata. However, this will not recover any artifacts from the bottom that could be used to date the time of abandonment. The only way to get that information is through controlled excavation to the bottom, likely requiring dewatering techniques. It is not likely to be safe to excavate a well from inside. Even with the insertion of a support structure such as a tube to prevent collapse, such an excavation would present significant hazards associated with confined spaces. Total excavation in stages from outside the well with ample stepping and or shoring of the excavations would be the safest approach.

More thorough excavation of wells should help with more precise dating of their construction and abandonment. Further research into local environmental history may tie a finer well chronology to regional rainfall cycles. A 248-year reconstruction of streamflow in the Potomac River has been generated based on tree-ring evidence (Cook and Jacoby 1983). This reconstruction suggests that since 1730, there have been several long periods of about 50 years in length when the river's flow has been abnormally high or low (Figure 6.1). This study, and other similar studies, note several long periods of apparent drought in the Middle Atlantic United States, such as the one peaking in about 1820, and another from the 1850s through the mid 1860s (Cook and Jacoby 1983; Seager and Herweijer 2011). Periods of prolonged drought could have affected local water tables, causing some shallow wells to fail. Comparison with approximate Delaware well construction dates does show an increase in the number of wells dug during the quarter century from 1850 to 1875, a period of drought. There are two caveats that should accompany this observation: the well construction dates are not very precise, and the impact of noted droughts on Delaware water tables is not known for certain. However, this suggests an interesting avenue for future research. How were Delaware farms affected by changing climatic conditions as reflected in particular farm features like wells?

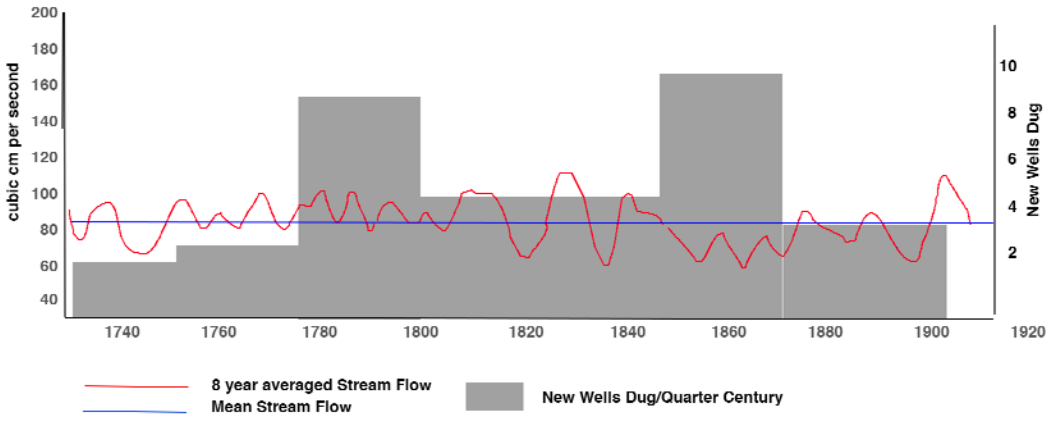

Figure 6.1: Comparison of Reconstructed Streamflow for the Potomac River at Point of Rocks, MD. After Cook and Jacoby (1983) with Delaware well construction.

The research to date suggests that wells were typically dug near site structures, and most often in well drained soils; distance to surface water appears to have been less important. More work could be done to understand how well locations were chosen within sites. Well features are consistently mapped horizontally, but their relation to site microtopography and soil chemistry would be interesting additions to typical recordation. Information on microtopography might provide some insight into the practice of well siting. Information about adjacent soil chemistry might provide some interesting clues about possible water contamination from human or animal waste, or other site activities. Given how shallow wells were in Delaware, water contamination could have been a significant health issue prior to the advent of modern plumbing.

The sample of wells in this study provided an opportunity to examine the rough chronology of different types of well construction. Expanding the sample will allow this chronology to be confirmed or refined, as well as providing the data necessary to further explore possible connections between well type and type of site occupation. Despite the number of wells excavated in Delaware, significant gaps remain. Once the existing sample of excavated wells is divided by construction type, period, and region, the number of similar wells becomes quite small. In particular, the number of wells excavated in the state declines steadily from north to south. The sample of wells from Sussex County is particularly scant. Excavating more wells in Sussex County may help show whether the patterns found here hold throughout the state, or have more to do with the northern part of Delaware.

6.2 Research Priorities

Although the overall problems with sample size and recording inconsistencies provide reasons to record in detail any historic well found on an archaeological site, it is possible to suggest some priorities. Evaluation of the information potential of a well should put emphasis on those with a good historical context. It would be good to explore the possible relationship between well type and ownership/tenancy. To do this, wells of documented occupation are more valuable than wells whose social context is ambiguous.

Similarly, wells that can be securely dated, either through artifact contents, materials used or documentary evidence, are more useful than wells whose use dates are unclear. Ideally, both well construction and abandonment dates are needed, and should be clearly identified if known in the resulting report.

Wells located in sites with overall high physical integrity have more information potential than isolated wells. Wells from sites with evidence for the location of nearby structures, as well as the potential for meaningful soil chemistry will be able to better illustrate how the well feature functioned within the overall site, and potentially how safe the water from that well might have been.

Wells with features related to water extraction technology (such as the pump at the Armstrong Rogers Site) or which have a clear functional association are more valuable than wells that lack functional context. The well at the Armstrong Rogers Site is associated with the dairy, for example. The better the overall site integrity is, the more the well has to say.

The better a well's context, archaeologically and historically, the more valuable the feature. Conversely, wells that are not accompanied by other well-preserved features with clear functions, or that are on sites with little or no documentation, or that cannot be reliably dated, are not necessarily valuable archaeologically. If a site lacks good documentation or well-preserved features other than a well, the presence of even a well preserved well is probably not enough by itself to make the site eligible.

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APPENDIX A

WELL DATA

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
55	7NC-F-128	N114508	Cardon/Holton	104	tenant farmstead	New Castle	Saint George's	Appoquinimink River	ReB	Reybold silt loam, 2 to 5 percent slopes	wood box	square	rear/side yard
56	7S-K-118		Laban Rogers House	219	farmstead	Sussex	Baltimore				wood tube	round	rear/side yard
57	7S-K-118		Laban Rogers House	269	farmstead	Sussex	Baltimore				wood box/barrel	square	rear/side yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
55	7NC-F-128	N114508	Cardon/Holton	104	wood box casing; corner posts with horizontal hard planking and wrought nail fasteners	Upper 4 ft of builders shaft was 12 ft diam. Cylinder shored with wood planks. Box framing began at 4 ft below pz. The wooden posts (probably oak) were hand-hewn with an adze and the ends pointed with an axe. The well sides were fashioned from large logs, split with a froe into wedge-shaped planks (some also with bark).	1737 to after 1753		
56	7S-K-118		Laban Rogers House	219	hollow larch log tubes within hand-exavated shaft	hollowed larch tube (3' long, 2' diam) was placed at center of shaft at the water table allowing soil to be removed from within tube; additional tubes were stacked resulting in a wood lining; Sections of the wood tube were recovered - all larch; 1 eastern white pine board;	1775-1825		
57	7S-K-118		Laban Rogers House	269	wood frame utilizing hewn oak timbers with barrel at the base	builders trench excavated, barrel place at base of excavation providing 2-ft wide, 3-ft deep column for water extraction. Hewn oak posts and split oak clapboards fromed a 3-x-3ft box structure above the barrel for a total of 5 feet from surface to top of barrel. Lack of personal items suggest well was utilized at a livestock or dairy well.	1775-1800		MCD 1805

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
55	7NC-F-128	N114508	Cardon/Holton	104		dendrochronology. A comparison of production dates for the other diagnostic ceramics suggestsa date range between 1720 and 1740. Dates of 1737 and 1753 were returned from preliminary dendrochronological analysis.	Unnamed Tributary to Drawyer Creek	2500	90	Possible House Footprint	0
56	7S-K-118		Laban Rogers House	219		Recovered ceramics suggest a late 18th C/E 19th C timeframe for construction and use of well; builders trench and shaft artifact contents were similar suggesting brief use		0	0		0
57	7S-K-118		Laban Rogers House	269	MCD 1774	Recovered ceramics suggest a late 18th C/E 19th C timeframe for construction and use of well; MCD of 1805 for upper portion of shaft; MCD for builders trench and lower shaft is 1774.		0	0		0

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
55	7NC-F-128	N114508	Cardon/Holton	104		80	Smokehouse	0		0				
56	7S-K-118		Laban Rogers House	219		0		0		0				
57	7S-K-118		Laban Rogers House	269		0		0		0				

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
55	7NC-F-128	N114508	Cardon/Holton	104		hand excavation		dendrochronology	12	9.5	12	0
56	7S-K-118		Laban Rogers House	219		hand excavation		Wood Specimen Analysis	7.5	7.5	7.5	0
57	7S-K-118		Laban Rogers House	269		hand excavation		Wood Specimen Analysis	8	8	10	0

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
55	7NC-F-128	N114508	Cardon/Holton	104	Projected depth of the well at time of construction was about 12 feet (1 ft erosion, 1 foot pz); depth of the shaft below plowzone was 9.5 ft; corner posts driven another 0.7 ft to a depth of 10.2 ft below plowzone.	
56	7S-K-118		Laban Rogers House	219	Builders trench was 7.5' diameter at opening, tapering to 3' diameter at base, and 7.5' in depth; same as shaft.	
57	7S-K-118		Laban Rogers House	269	large, approximately 10-x-15 ft builders trench tapered to approximately 2 ft wide at base of well exavation.	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
55	7NC-F-128	N114508	Cardon/Holton	104	
56	7S-K-118		Laban Rogers House	219	Edward Heite, C. Rose, G. Mellin, T. Mancl, J. Ferguson, W. Sandy, and C. Pipes, 2011, Phase III Data Recovery Excavations at the Laban Rogers House Site, 7S-K118, Baltimore Hundred, Sussex County, Delaware. Prepared for Carl M. Freeman Communities, LLC.
57	7S-K-118		Laban Rogers House	269	Edward Heite, C. Rose, G. Mellin, T. Mancl, J. Ferguson, W. Sandy, and C. Pipes, 2011, Phase III Data Recovery Excavations at the Laban Rogers House Site, 7S-K118, Baltimore Hundred, Sussex County, Delaware. Prepared for Carl M. Freeman Communities, LLC.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
55	7NC-F-128	N114508	Cardon/Holton	104		6
56	7S-K-118		Laban Rogers House	219		
57	7S-K-118		Laban Rogers House	269		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
55	7NC-F-128	N114508	Cardon/Holton	104						6.2
56	7S-K-118		Laban Rogers House	219	Context 16.6.219					4.5
57	7S-K-118		Laban Rogers House	269	Context 16.6.269					5

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
58	7S-K-118		Laban Rogers House	777	farmstead	Sussex	Baltimore				brick	round	rear/side yard
7	7K-B-23	K06724	Bloomsbury	5	tenant farmstead	Kent	Duck Creek	Leipsic River	CaA	Carmichael loam, 0 to 2 percent slopes	unidentified	circular	work yard
8	7K-B-23	K06724	Bloomsbury	182	tenant farmstead	Kent	Duck Creek	Leipsic River	CaA	Carmichael loam, 0 to 2 percent slopes	wood box	square	work yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
58	7S-K-118		Laban Rogers House	777	brick lining within builders trench with wooden base ring	brick lining stacked on wooden ring at watertable; weight of lining sank ling to a depth of approximately 8 ft below surface; no evidence of wood support structure or framing; most of brick had been robbed or removed. High domestic artifact content suggest this was a domestic well.	1775-1800		MCD 1798
7	7K-B-23	K06724	Bloomsbury	5	pump stock	Pump stock found near base of shaft; at 6'6" below plowzone, a wood cylinder was encountered; approx. 12 inch diam.		ca. 1775-1810	MCD: 1790.1
8	7K-B-23	K06724	Bloomsbury	182	wood box casing; corner posts with horizontal planking; upper and lower casings	western; watertable at 6.75 ft below surface; timbers begin at 4 ft below surface		ca. 1775-1810	TPQ 1770 (use) MCD 1799.25 (abandonment)

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
58	7S-K-118		Laban Rogers House	777		Well fill disturbed by brick robbing.		0	0		0
7	7K-B-23	K06724	Bloomsbury	5			Hawkey Branch	560	50	"probable house location"	0
8	7K-B-23	K06724	Bloomsbury	182	1767 (dendrochonology)	The wood frame of the casing provided a construction date of 1767; Cutler may have dug the well when he built his new house around 1775. TPQ 1770 (creamware, Wheildon - use) MCD 1799.25 (soil plug, abandonment)	Hawkey Branch	560	43	"probable house location"	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
58	7S-K-118		Laban Rogers House	777		0		0		0				
7	7K-B-23	K06724	Bloomsbury	5		36	Wash House	36	Unidentified	0				
8	7K-B-23	K06724	Bloomsbury	182		35	Wash House	24	Unidentified					

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
58	7S-K-118		Laban Rogers House	777		hand excavation		Wood Specimen Analysis	8	8	10	0
7	7K-B-23	K06724	Bloomsbury	5		hand excavation		flotation samples		6.9	10	
8	7K-B-23	K06724	Bloomsbury	182		hand and mechanical excavation				7		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
58	7S-K-118		Laban Rogers House	777	Conical builders trench appoximately 10-x-10 ft at surface tapering to 3 ft at base;	
7	7K-B-23	K06724	Bloomsbury	5	No drawings or photos presented in report.	http://www.deldot.gov/archaeology/bloomsbury/pdf/12_getting.pdf
8	7K-B-23	K06724	Bloomsbury	182		http://www.deldot.gov/archaeology/bloomsbury/pdf/12_getting.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
58	7S-K-118		Laban Rogers House	777	Edward Heite, C. Rose, G. Mellin, T. Mancl, J. Ferguson, W. Sandy, and C. Pipes, 2011, Phase III Data Recovery Excavations at the Laban Rogers House Site, 7S-K118, Baltimore Hundred, Sussex County, Delaware. Prepared for Carl M. Freeman Communities, LLC.
7	7K-B-23	K06724	Bloomsbury	5	Edward F. Heite and Cara L. Blume, 2008, Mitsawokett to Bloomsbury Archaeology and History of a Native-American Descendant Community in Central Delaware. Delaware Department of Transportation Archaeological Series Number 154. Delaware Department of Transportation, Dover, DE.
8	7K-B-23	K06724	Bloomsbury	182	Edward F Heite and Cara L. Blume, 2008, Mitsawokett to Bloomsbury Archaeology and History of a Native-American Descendant Community in Central Delaware. Delaware Department of Transportation Archaeological Series Number 154. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
58	7S-K-118		Laban Rogers House	777		
7	7K-B-23	K06724	Bloomsbury	5		2
8	7K-B-23	K06724	Bloomsbury	182	A tenant house site occupied between c. 1761 and c. 1814 by a series of families. Some of the occupants were of Native American descent.	2

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
58	7S-K-118		Laban Rogers House	777	Context 16.6.777					4
7	7K-B-23	K06724	Bloomsbury	5			13	13		
8	7K-B-23	K06724	Bloomsbury	182	no measurements given in text, only drawings; good discussion on construction and abandonment; good well context section		13	13		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
9	7K-C-203C	K06033	Richard Whitehart Plantation	495	farmstead	Kent	Little Creek	Leipsic River	UbB	Udorthents, borrow area, 0 to 5 percent slopes	unidentified	circular	work yard
10	7K-C-203H	K06033	John Powell Plantation	39	farmstead	Kent	Little Creek	Leipsic River	UbB	Udorthents, borrow area, 0 to 5 percent slopes	wood box	square	side/rear yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
9	7K-C-203C	K06033	Richard Whitehart Plantation	495	no lining evident	watertable at 10.75 below surface; conical excavation, tapers from 8 ft at surface to 1 ft at base.		ca. 1681-1701	
10	7K-C-203H	K06033	John Powell Plantation	39	wood box casing; corner posts with mortise and tenon horizontal supports	Cribbing encountered at 5 ft below base of plow zone. The cribbing consisted of four 7-ft long squared timbers set vertically along the outer edge of the well shaft. The timbers measured 0.4 x 0.3 ft and fonned a 2-ft square well shaft. The bottom of the cribbing rested on the bottom edge of the builder's trench at 12.2 ft below subsoil. The next 7 ft of the well shaft was not cribbed. The second set of cribbing was encountered at 19 ft below subsoil. This cribbing consisted of four 2 ft long squared timbers and several fined crosspieces. The four vertical posts rested on the bottom of the well. Each timber was the same size as the upper cribbing. The mortise and tenon supports were also similar in construction; water table depth / inundation not mentioned in report Builders trench identified.	ca. 1691-1721	ca. 1691-1735	1720.2 (pipe stems)

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
9	7K-C-203C	K06033	Richard Whitehart Plantation	495		Site was occupied from ca. 1681-1701 by Richard Whitehart and his family; The stratigrapbic record of the well indicates that it was filled-in over a relatively short period of time at the end of occupation ca. 1701.	Leipsic River	830	40	Whitehart House	38
10	7K-C-203H	K06033	John Powell Plantation	39	no artifacts in deposit	The fill was dated by the two marked English brown stoneware mugs made between 1702-1714 and by pipe stem bore hole size analysis. The mean date of 168 measurable pipe stems from the well shaft was 1720.2. The lack of artifacts in the builders trench suggests that the well was constructed early in the occupation of the site; Filled in near end of the Powell occupation, ca. 1721	Leipsic River	600	40	Second Powell House	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
9	7K-C-203C	K06033	Richard Whitehart Plantation	495	Outbuilding IV (Tobacco House)	55	Outbuilding I	12	Outbuilding II	10	Outbuilding III			
10	7K-C-203H	K06033	John Powell Plantation	39		70	Outbuilding I	75	Outbuilding II	65	Outbuilding III	20	Outbuilding IV	105

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
9	7K-C-203C	K06033	Richard Whitehart Plantation	495		hand and mechanical excavation	hand excavated to 5 ft below surface in 1-ft arbritrary levels; mechnical excavtion in arbritrary 2-ft thick levels, screened.		12.8	12.8	8	
10	7K-C-203H	K06033	John Powell Plantation	39	Outbuilding V	hand and mechanical excavation	he well shaft and builder's trench were excavated by hand to a depth of 4.0 feet below subsoil.	macrobotanical	25	25		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
9	7K-C-203C	K06033	Richard Whitehart Plantation	495	first encountered as 8-x-8.4 ft soil anomaly;	http://www.deldot.gov/archaeology/whitehart_powell/pdf/whitehart_results.pdf
10	7K-C-203H	K06033	John Powell Plantation	39	First identified as 10 ft diameter soil anomaly.	http://www.deldot.gov/archaeology/whitehart_powell/pdf/powell_results.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
9	7K-C-203C	K06033	Richard Whitehart Plantation	495	D. Grettler, G. Miller, K. Doms, B. Seidel, M. Coleman, and J. Custer, 1995, Landowner and Tenant Opportunity in Seventeenth Century Central Delaware: Final Archaeological Investigations at the Richard Whitehart (7K-C-203C) and John Powell (7K-C-203H) Plantations, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 127. Delaware Department of Transportation, Dover, DE.
10	7K-C-203H	K06033	John Powell Plantation	39	D. Grettler, G. Miller, K. Doms, B. Seidel, M. Coleman, and J. Custer, 1995, Landowner and Tenant Opportunity in Seventeenth Century Central Delaware: Final Archaeological Investigations at the Richard Whitehart (7K-C-203C) and John Powell (7K-C-203H) Plantations, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 127. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
9	7K-C-203C	K06033	Richard Whitehart Plantation	495	late 17th / Early 18th C	17
10	7K-C-203H	K06033	John Powell Plantation	39	Farmstead with evidence of two late seventeenth and early eighteenth century occupations. John Powell and family 1691-1721 and unknown tenants from ca. 1722-1735.	8

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
9	7K-C-203C	K06033	Richard Whitehart Plantation	495			61	91		10.7
10	7K-C-203H	K06033	John Powell Plantation	39			61	91		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
11	7K-C-362	K06385	Benjamin Wynn Tenancy	94	tenant house and blacksmith shop	Kent	Little Creek	Leipsic River	HbB	Hambrook sandy loam, 2 to 5 percent slopes	wood box/barrel	square	side/rear yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
11	7K-C-362	K06385	Benjamin Wynn Tenancy	94	wood box casing; corner posts with horizontal planking; nailed; barrel lining	Seven large posts found in association with well opening were interpreted as 10-x-10 ft well cover or curb. Cribbing was identified at 4.3 ft below subsoil. These remains consisted of the stains of four large, square corner posts set into a 1.5-ft square well shaft. Intact portions of all four hewn posts were encountered at 4.7 ft below subsoil. Also identified at this level were the remains of four large horizontal spindles forming a large box around the four vertical posts. Each of these spindles measured between 2.0 and 2.2 ft in length and extended beyond the vertical posts in a "pinwheel" pattern. The four "pinwheel" spindles were attached to the four vertical posts with hand-wrought nails. These spindles, however, were otherwise very poorly preserved and no other architectural features could be identified. The spindles appeared to be at least four inches wide and less than two inches thick. The "pinwheel" extensions on these spindles probably served to center the well shaft when the builder's trench was back filled. 19 horizontal wooden planks between the vertical posts were encountered at 5.8 ft below base of plow zone. Barrel encountered at - 8.1 ft within cribbing.		ca. 1765-1822	MCD range 1762-1825

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
11	7K-C-362	K06385	Benjamin Wynn Tenancy	94	MCD range 1767-1809	mean begin/end date ranges based on ceramic assemblage: builder's trench: 1767 to 1809 well shaft: 1762 to 1825	Unnamed Tributary to Dyke Branch	1260	40		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
11	7K-C-362	K06385	Benjamin Wynn Tenancy	94		31	Blacksmith Shop							

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
11	7K-C-362	K06385	Benjamin Wynn Tenancy	94		hand and mechanical excavation	hand excavavated to 4.7 ft below base of plow zone; mechanically excavated to base at 11.1 ft below base of plow zone	macrobotanical	11.1	11.1	6	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
11	7K-C-362	K06385	Benjamin Wynn Tenancy	94	feature identified at base of plow zone as 6-ft diameter dark soil anomaly; depths are from base of plow zone.	http://www.deldot.gov/archaeology/wynn_wilson_lewis/pdf/wynn_tenancy.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
11	7K-C-362	K06385	Benjamin Wynn Tenancy	94	David J. Grettler, George L. Miller, Wade P. Catts, Keith Doms, Mara Guttman, Karen Iplenski, Angela Hoseth, Jay Hodny, and Jay F. Custer, 1996, Marginal Farms on the Edge of Town: Final Archaeological Excavations at the Moore-Taylor, Benjamin Wynn (Lewis-E), and Wilson-Lewis Farmsteads, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 124. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
11	7K-C-362	K06385	Benjamin Wynn Tenancy	94	The Benjamin Wynn Tenancy Site was occupied from ca. 1765-1822	5

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
11	7K-C-362	K06385	Benjamin Wynn Tenancy	94			114	165		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
1	7K-A-101	K06415	John Darrach Store	2	store	Kent	Duck Creek	Smyrna River	UlA	Unicorn loam, 0 to 2 percent slopes	brick	circular	rear yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
1	7K-A-101	K06415	John Darrach Store	2	coursed, dry-laid, hand-made bricks, header pattern, single wythe	brick lining was intact 5 ft below surface; robber's trench documented from surface to a depth of 5 feet		ca. 1775-1868	MCD 1832

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
1	7K-A-101	K06415	John Darrach Store	2		mean ceramic date: 1832.66; excluding redware: 1840.56; mean ceramic date of the robbed well construction pit is 1807.67 or 1814.40 excluding redwares; The robbers trench contained the earliest artifacts of any of the well context, and although disturbed and refilled in the nineteenth century, these early artifacts suggest F2 was the first well dug on the site. Occupation range based on report context	Duck Creek	825	40	Store	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
1	7K-A-101	K06415	John Darrach Store	2		18		45						

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
1	7K-A-101	K06415	John Darrach Store	2		hand and mechanical excavation	mechanical excavation halted at 14 ft below surface due to rising water table	flotation identified macrobotanical specimens		14		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
1	7K-A-101	K06415	John Darrach Store	2		http://www.deldot.gov/archaeology/darrach/pdf/wells.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
1	7K-A-101	K06415	John Darrach Store	2	Lu Ann, De Cunzo, Angela Hoseth, Jay Hodny, JoAnn Jamison, Wade P. Cates, and David C. Bachman, 1992, Final Archaeological Investigations at the John Darrach Store Site, Delaware Route 6-Woodland Beach Road, Smyrna Section, Delaware Route 1, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 93. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
1	7K-A-101	K06415	John Darrach Store	2	late-18th through mid-19th century store	9

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
1	7K-A-101	K06415	John Darrach Store	2			114	165	groundwater	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
2	7K-A-101	K06415	John Darrach Store	82	store	Kent	Duck Creek	Smyrna River	UlA	Unicorn loam, 0 to 2 percent slopes	barrel	circular	rear yard
3	7K-A-101	K06415	John Darrach Store	99	store	Kent	Duck Creek	Smyrna River	UlA	Unicorn loam, 0 to 2 percent slopes	brick/barrel	circular	rear yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
2	7K-A-101	K06415	John Darrach Store	82	stacked barrels	barrel staves preserved between 7-12 ft below surface due to ground water; too deteriorated to estimate barrel size;		ca. 1775-1868	ca. 1790-1850
3	7K-A-101	K06415	John Darrach Store	99	coursed, dry-laid, stretcher pattern, brick lining within stacked barrels	intact brick lining began at 7 ft below surface; barrel staves preserved below 10.5 ft below surface		ca. 1775-1868	MCD 1823

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
2	7K-A-101	K06415	John Darrach Store	82		The four cut nails provide a TPQ for the deposit of c. 1790, while the presence of annular whitcware (1830-1875} pushes the date back to at least 1830. No certain evidence for when F82 was constructed; similar fill soils in F2 and F82 suggest they were filled/abandoned at same time in 2 qtr of 19th C. Occupation range based on report context	Duck Creek	825	60	Store	
3	7K-A-101	K06415	John Darrach Store	99		mean ceramic date: 1823.27; clearly remained open until the store's abandonment in the 1860s. as it is filled with rubble from the store's demolition; construction date undetermined Occupation range based on report context	Duck Creek	825	65	Store	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
2	7K-A-101	K06415	John Darrach Store	82		10		22						
3	7K-A-101	K06415	John Darrach Store	99		30		15						

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
2	7K-A-101	K06415	John Darrach Store	82		hand and mechanical excavation	hand excavated to 5 ft below surface	chemical analysis of shaft fill, macrobotanical sampling		12		
3	7K-A-101	K06415	John Darrach Store	99		hand and mechanical excavation		chemical analyses; flotation: macrobotanical, faunal sampling		14		3

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
2	7K-A-101	K06415	John Darrach Store	82		http://www.deldot.gov/archaeology/darrach/pdf/wells.pdf
3	7K-A-101	K06415	John Darrach Store	99		http://www.deldot.gov/archaeology/darrach/pdf/wells.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
2	7K-A-101	K06415	John Darrach Store	82	Lu Ann, De Cunzo, Angela Hoseth, Jay Hodny, JoAnn Jamison, Wade P. Cates, and David C. Bachman, 1992, Final Archaeological Investigations at the John Darrach Store Site, Delaware Route 6-Woodland Beach Road, Smyrna Section, Delaware Route 1, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 93. Delaware Department of Transportation, Dover, DE.
3	7K-A-101	K06415	John Darrach Store	99	Lu Ann, De Cunzo, Angela Hoseth, Jay Hodny, JoAnn Jamison, Wade P. Cates, and David C. Bachman, 1992, Final Archaeological Investigations at the John Darrach Store Site, Delaware Route 6-Woodland Beach Road, Smyrna Section, Delaware Route 1, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 93. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
2	7K-A-101	K06415	John Darrach Store	82	late-18th through mid-19th century store	9
3	7K-A-101	K06415	John Darrach Store	99	late-18th through mid-19th century store	9

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
2	7K-A-101	K06415	John Darrach Store	82			114	165		
3	7K-A-101	K06415	John Darrach Store	99			114	165		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
4	7K-A-117	K06446	William Strickland Plantation	108	farmstead	Kent	Duck Creek	Smyrna River	DoB	Downer sandy loam, 2 to 5 percent slopes	unidentified	circular	rear yard
5	7K-A-117	K06446	William Strickland Plantation	93	farmstead	Kent	Duck Creek	Smyrna River	DoB	Downer sandy loam, 2 to 5 percent slopes	brick	circular	rear yard
6	7K-B-23	K06724	Bloomsbury	180	tenant farmstead	Kent	Duck Creek	Leipsic River	CaA	Carmichael loam, 0 to 2 percent slopes	wood box	square	work yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
4	7K-A-117	K06446	William Strickland Plantation	108	no lining evident	builder's trench identified; wood lining assumed due to presence of milled lumber within fill; three post holes located 10 ft east of well interpreted as supports for a well sweep; interpreted as primary water supply for livestock; water table depth / inundation not mentioned in report		ca. 1726-1764	MCD 1734
5	7K-A-117	K06446	William Strickland Plantation	93	not specified	builder's trench identified; four post holes on three sides interpreted as support for cover or shed; brick lining deteriorated, most intact near base; interpreted as primary water supply for livestock; water table not reached, no inundation during excavation		ca. 1726-1764	MCD 1730
6	7K-B-23	K06724	Bloomsbury	180	wood box casing; corner posts with horizontal planking	eastern; watertable at 9 ft below surface; wood lining encountered at 4 ft below surface		ca. 1775-1810	MCD 1794.93 (use) MCD 1797.37 (abandonment)

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
4	7K-A-117	K06446	William Strickland Plantation	108		mid-18th century; Mean ceramic date is 1734; report description suggests that MCD was derived from shaft and builders trench combined.	Mill Creek	815	37	Structure I	78
5	7K-A-117	K06446	William Strickland Plantation	93		mid-18th century; Mean ceramic date is 1730; ; report description suggests that MCD was derived from shaft and builders trench combined.	Mill Creek	815	50	Structure I	67
6	7K-B-23	K06724	Bloomsbury	180	MCD 1791.54	Dug and used near the end of Thomas Cutler's (1775-1810) tenure on the property; The well was sealed, at latest, by the time Thomas Consealor is known to have left the property, in 1814.	Hawkey Branch	560	23	"probable house location"	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
4	7K-A-117	K06446	William Strickland Plantation	108	Structure III	50	Structure II (Smoke House)	70	Outbuilding I (barn/shed)	70	Outbuilding II (barn/shed)			
5	7K-A-117	K06446	William Strickland Plantation	93	Structure III	33	Structure II (Smoke House)	70	Outbuilding I (barn/shed)	70	Outbuilding II (barn/shed)			
6	7K-B-23	K06724	Bloomsbury	180		10	Wash House	32	Unidentified					

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
4	7K-A-117	K06446	William Strickland Plantation	108		hand and mechanical excavation			21	21	6.5	
5	7K-A-117	K06446	William Strickland Plantation	93		hand and mechanical excavation	bisected; hand excavation terminated at -6 ft. below surface		21.5	21.5		
6	7K-B-23	K06724	Bloomsbury	180		hand and mechanical excavation				10		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
4	7K-A-117	K06446	William Strickland Plantation	108	builder's trench opening was 10.5 feet and tapered to well shaft near base of feature.	http://www.deldot.gov/archaeology/strickland/index.shtml
5	7K-A-117	K06446	William Strickland Plantation	93	Opening plan at base of plow zone measured 14-x-12 ft; builder's trench tapered top to bottom ~13-to-4 ft	http://www.deldot.gov/archaeology/strickland/index.shtml
6	7K-B-23	K06724	Bloomsbury	180		http://www.deldot.gov/archaeology/bloomsbury/pdf/12_getting.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
4	7K-A-117	K06446	William Strickland Plantation	108	Wade P. Catts, Jay F. Custer, Jo Ann E. Jamison, Michael D. Scholl, and Karen Iplenski, 1995, Final Archaeological Investigations at the William Strickland Plantation Site (7K-A-117), A Mid-Eighteenth Century Farmstead, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 119. Delaware Department of Transportation, Dover, DE.
5	7K-A-117	K06446	William Strickland Plantation	93	Wade P. Catts, Jay F. Custer, Jo Ann E. Jamison, Michael D. Scholl, and Karen Iplenski, 1995, Final Archaeological Investigations at the William Strickland Plantation Site (7K-A-117), A Mid-Eighteenth Century Farmstead, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 119. Delaware Department of Transportation, Dover, DE.
6	7K-B-23	K06724	Bloomsbury	180	Edward F. Heite and Cara L. Blume, 2008, Mitsawokett to Bloomsbury Archaeology and History of a Native-American Descendant Community in Central Delaware. Delaware Department of Transportation Archaeological Series Number 154. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
4	7K-A-117	K06446	William Strickland Plantation	108		18
5	7K-A-117	K06446	William Strickland Plantation	93		18
6	7K-B-23	K06724	Bloomsbury	180	A tenant house site occupied between c. 1761 and c. 1814 by a series of families. Some of the occupants were of Native American descent.	2

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
4	7K-A-117	K06446	William Strickland Plantation	108						
5	7K-A-117	K06446	William Strickland Plantation	93						
6	7K-B-23	K06724	Bloomsbury	180	no measurements given in text, only drawings; good discussion on construction and abandonment; good well context section		13	13		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
12	7K-C-362	K06385	Benjamin Wynn Tenancy	80	tenant house and blacksmith shop	Kent	Little Creek	Leipsic River	HbB	Hambrook sandy loam, 2 to 5 percent slopes	wood box/barrel	square	side/rear yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
12	7K-C-362	K06385	Benjamin Wynn Tenancy	80	wood box casing; corner posts with horizontal supports; nailed; barrel lining	Cribbing was encountered at 4.8 feet below subsoil and consisted of four 3.5-foot long triangular timbers set into the corners of a 2.5-foot square. Each hewn post was made from a split rail. The three faces of each triangular post measured 0.5 x 0.55 x 0.6 feet in dimension. Deterioration along the bottom half of the barrel indicates that the historical water line was 5.8 feet below subsoil or approximately 6.8 feet below ground surface.		ca. 1765-1822	MCD range 1749-1821

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
12	7K-C-362	K06385	Benjamin Wynn Tenancy	80	MCD range 1734-1809	mean begin/end date ranges based on ceramic assemblage: builder's trench: 1734-1809 well shaft: 1749-1821	Unnamed Tributary to Dyke Branch	1260	46		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
12	7K-C-362	K06385	Benjamin Wynn Tenancy	80		47	Blacksmith Shop							

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
12	7K-C-362	K06385	Benjamin Wynn Tenancy	80		hand and mechanical excavation	hand excavated to bottom of feature at 6.7 feet below subsoil; backhoe was used to enlarge the excavation and ensure the safety of the workers		7.3	7.3	7	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
12	7K-C-362	K06385	Benjamin Wynn Tenancy	80	feature identified at base of plow zone as 7.3- x 6.8-foot dark soil anomaly 2.3-ft barrel placed inside 2.5-ft square cribbing; depth measurements from base of plow zone.	http://www.deldot.gov/archaeology/wynn_wilson_lewis/pdf/wynn_tenancy.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
12	7K-C-362	K06385	Benjamin Wynn Tenancy	80	David J. Grettler, George L. Miller, Wade P. Catts, Keith Doms, Mara Guttman, Karen Iplenski, Angela Hoseth, Jay Hodny, and Jay F. Custer, 1996, Marginal Farms on the Edge of Town: Final Archaeological Excavations at the Moore-Taylor, Benjamin Wynn (Lewis-E), and Wilson-Lewis Farmsteads, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 124. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
12	7K-C-362	K06385	Benjamin Wynn Tenancy	80	The Benjamin Wynn Tenancy Site was occupied from ca. 1765-1822	5

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
12	7K-C-362	K06385	Benjamin Wynn Tenancy	80			114	165		6.8

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
13	7K-C-375	K06414	Wilson-Lewis Farm	123	tenant farmstead	Kent	Little Creek	Leipsic River	TeA	Tent silt loam, 0 to 2 percent slopes	barrel	circular	side yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
13	7K-C-375	K06414	Wilson-Lewis Farm	123	excavated well shaft lined with barrel	Not fully excavated; Feature 123, was the first well at the site. The second well, Feature 127, clearly postdated the first well and was probably constructed immediately after Feature 123 as fragments of the same brown glass mucilage or paste bottle (Figure 84) were found in the well shaft of Feature 123 and the builder's trench of Feature 127. Thus, Feature 127 postdates Feature 123 and both may have been open simultaneously for a short period while the later well was being dug. The proximity of both wells also suggests that the second well, Feature 127, was dug for some reason other than insufficient or contaminated water. If the first well went dry or was contaminated, it is unlikely that a second well would have been constructed so close by. The first well, Feature 123, was abandoned and the second well constructed sometime after 1869. The well locations in the front yard and proximity to Lewis Drive makes it unlikely that both features were privies although a series of seven post holes around both wells suggests that they were perhaps covered by a single small structure (10-x-12ft). Shallow water table noted.		ca 1850-1889	MCD 1865.9

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
13	7K-C-375	K06414	Wilson-Lewis Farm	123		mean ceramic date: 1865.9 mean date range based on ceramic assemblage: 1855.00 to 1882.50	Unnamed Tributary to Dyke Branch	1170	29		36

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
13	7K-C-375	K06414	Wilson-Lewis Farm	123			Stable							

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
13	7K-C-375	K06414	Wilson-Lewis Farm	123		hand excavation	barrel (3-4 ft diam.) encountered at 3 ft below surface; excavation stopped at water table, 4 ft below surface	macrobotanical		4	5	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
13	7K-C-375	K06414	Wilson-Lewis Farm	123	The partial remains of one wooden (3.0- to 4.o-foot diameter) barrel along the outside edge of the center stain was encountered at 3.0 feet below subsoil, indicating that the well was partially barrel lined.	http://www.deldot.gov/archaeology/wynn_wilson_lewis/pdf/wilson_lewis.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
13	7K-C-375	K06414	Wilson-Lewis Farm	123	David J. Grettler, George L. Miller, Wade P. Catts, Keith Doms, Mara Guttman, Karen Iplenski, Angela Hoseth, Jay Hodny, and Jay F. Custer, 1996, Marginal Farms on the Edge of Town: Final Archaeological Excavations at the Moore-Taylor, Benjamin Wynn (Lewis-E), and Wilson-Lewis Farmsteads, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 124. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
13	7K-C-375	K06414	Wilson-Lewis Farm	123	The Wilson-Lewis Fann Site was occupied from ca 1850-1889.	2

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
13	7K-C-375	K06414	Wilson-Lewis Farm	123			13	13	groundwater	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
14	7K-C-375	K06414	Wilson-Lewis Farm	127	tenant farmstead	Kent	Little Creek	Leipsic River	TeA	Tent silt loam, 0 to 2 percent slopes	barrel	circular	side yard
15	7K-C-380	K06432	Moore-Taylor Farm	90	tenant farmstead	Kent	Little Creek	Leipsic River	PyA	Pineyneck loam, 0 to 2 percent slopes	brick	circular	work yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
14	7K-C-375	K06414	Wilson-Lewis Farm	127	excavated well shaft lined with barrel	Not fully excavated; The well locations (F123 and F127) in the front yard and proximity to Lewis Drive makes it unlikely that both features were privies although a series of seven post holes around both wells suggests that they were perhaps covered by a single small structure (10-x-12ft). Single barrel documented; Shallow water table noted -3ft below surface.		ca 1850-1889	MCD 1867.9
15	7K-C-380	K06432	Moore-Taylor Farm	90	coursed, dry-laid, machine-made brick, stretcher pattern, single wythe	brick with wood planks at -6.3 ft. surrounding exterior of shaft; builders trench identified; The well probably supplied water to the house, nearby outbuildings, and farmyard. This well was the only brick-lined well at the site.	ca. 1894-1937	ca. 1822-1937	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
14	7K-C-375	K06414	Wilson-Lewis Farm	127		mean ceramic date: 1867.9 mean date range based on ceramic assemblage: 1842.70 to1889.20	Unnamed Tributary to Dyke Branch	1170	28		
15	7K-C-380	K06432	Moore-Taylor Farm	90		Feature 90 was probably dug in the 1890s after the Leonard family purchased the property and remained open until the end of occupation ca. 1937 when it was filled with demolition debris.	Unnamed Tributary to Dyke Branch	200	112		105

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
14	7K-C-375	K06414	Wilson-Lewis Farm	127		40	Stable							
15	7K-C-380	K06432	Moore-Taylor Farm	90	Ell extention to house	41	Unidentified	75	Unidentified	80	Unidentified			

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
14	7K-C-375	K06414	Wilson-Lewis Farm	127		hand excavation	barrel (3 ft diam.) encountered at 2.4 ft below surface; excavation stopped at water table, 3 ft below surface	macrobotanical		3	5.2	
15	7K-C-380	K06432	Moore-Taylor Farm	90		hand and mechanical excavation	hand excavation to 5.0 feet below surface; 0.4ft levels			11.6		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
14	7K-C-375	K06414	Wilson-Lewis Farm	127		http://www.deldot.gov/archaeology/wynn_wilson_lewis/pdf/wilson_lewis.pdf
15	7K-C-380	K06432	Moore-Taylor Farm	90		http://www.deldot.gov/archaeology/wynn_wilson_lewis/pdf/moore_taylor_farm.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
14	7K-C-375	K06414	Wilson-Lewis Farm	127	David J. Grettler, George L. Miller, Wade P. Catts, Keith Doms, Mara Guttman, Karen Iplenski, Angela Hoseth, Jay Hodny, and Jay F. Custer, 1996, Marginal Farms on the Edge of Town: Final Archaeological Excavations at the Moore-Taylor, Benjamin Wynn (Lewis-E), and Wilson-Lewis Farmsteads, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 124. Delaware Department of Transportation, Dover, DE.
15	7K-C-380	K06432	Moore-Taylor Farm	90	David J. Grettler, George L. Miller, Wade P. Catts, Keith Doms, Mara Guttman, Karen Iplenski, Angela Hoseth, Jay Hodny, and Jay F. Custer, 1996, Marginal Farms on the Edge of Town: Final Archaeological Excavations at the Moore-Taylor, Benjamin Wynn (Lewis-E), and Wilson-Lewis Farmsteads, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 124. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
14	7K-C-375	K06414	Wilson-Lewis Farm	127	The Wilson-Lewis Fann Site was occupied from ca 1850-1889.	2
15	7K-C-380	K06432	Moore-Taylor Farm	90	The Moore-Taylor Farm Site is the remains of a small tenant- and owner-occupied farm occupied from ca. 1822-1937	7

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
14	7K-C-375	K06414	Wilson-Lewis Farm	127			13	13	groundwater	
15	7K-C-380	K06432	Moore-Taylor Farm	90	distances measured to centerpoint of F273,274,285 well cluster		61	91		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
16	7K-C-380	K06432	Moore-Taylor Farm	285	tenant farmstead	Kent	Little Creek	Leipsic River	PyA	Pineyneck loam, 0 to 2 percent slopes	unidentified	circular	side yard
17	7K-C-380	K06432	Moore-Taylor Farm	274	tenant farmstead	Kent	Little Creek	Leipsic River	PyA	Pineyneck loam, 0 to 2 percent slopes	wood plank	circular	side yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
16	7K-C-380	K06432	Moore-Taylor Farm	285	no lining evident	Feature 285, was probably used as a household dump by the last identifiable occupants (the Leonards) of the site from 1894 until 1931. The well was filled-in ca. 1895-1905 and represents the only long-term primary deposit found at the three site; no water table information in report.	ca. 1870-1898	ca. 1822-1937	
17	7K-C-380	K06432	Moore-Taylor Farm	274	vertical oak plank (n=12) lining	The 12 oak planks lining the bottom of the well were not part of a barrel. Planks were set vertically into the well shaft and roughly toe-nailed together. Planks were 2.5 ft long and 0.58 ft wide. No croze or other marks on the planks; ; water table level drawn on profile (4.0ft)		ca. 1822-1937	MCD range 1814-1860

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
16	7K-C-380	K06432	Moore-Taylor Farm	285		Feature 285 was probably dug in the early 1870s, replacing Feature 2: however, the date of construction is not known because Feature 285 did not have a builder's trench. The fourth well was used until the late 1890s when it began to receive domestic refuse. Feature 285 received domestic refuse until ca. 1910.	Unnamed Tributary to Dyke Branch	200	34		46
17	7K-C-380	K06432	Moore-Taylor Farm	274		"second well" The mean beginning date of the five minimum ceramic vessels from the well shaft was 1814 and the mean end date of these vessels was 1860	Unnamed Tributary to Dyke Branch	200	34		46

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
16	7K-C-380	K06432	Moore-Taylor Farm	285	Ell extention to house	62	Unidentified	71	Unidentified	15	Unidentified			
17	7K-C-380	K06432	Moore-Taylor Farm	274	Ell extention to house	62	Unidentified	71	Unidentified	15	Unidentified			

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
16	7K-C-380	K06432	Moore-Taylor Farm	285		hand and mechanical excavation	hand excavation to 6.0 feet below surface; 0.4ft levels		11.5	11.5	5.3	
17	7K-C-380	K06432	Moore-Taylor Farm	274		hand and mechanical excavation	hand excavation to 4.2 feet below surface; 0.4ft levels		9.6	9.6	5.1	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
16	7K-C-380	K06432	Moore-Taylor Farm	285		http://www.deldot.gov/archaeology/wynn_wilson_lewis/pdf/moore_taylor_farm.pdf
17	7K-C-380	K06432	Moore-Taylor Farm	274	straight 5.1-ft diameter shaft extending to 5.0 ft below subsoil; shaft then tapered to 2.0 ft in diameter	http://www.deldot.gov/archaeology/wynn_wilson_lewis/pdf/moore_taylor_farm.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
16	7K-C-380	K06432	Moore-Taylor Farm	285	David J. Grettler, George L. Miller, Wade P. Catts, Keith Doms, Mara Guttman, Karen Iplenski, Angela Hoseth, Jay Hodny, and Jay F. Custer, 1996, Marginal Farms on the Edge of Town: Final Archaeological Excavations at the Moore-Taylor, Benjamin Wynn (Lewis-E), and Wilson-Lewis Farmsteads, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 124. Delaware Department of Transportation, Dover, DE.
17	7K-C-380	K06432	Moore-Taylor Farm	274	David J. Grettler, George L. Miller, Wade P. Catts, Keith Doms, Mara Guttman, Karen Iplenski, Angela Hoseth, Jay Hodny, and Jay F. Custer, 1996, Marginal Farms on the Edge of Town: Final Archaeological Excavations at the Moore-Taylor, Benjamin Wynn (Lewis-E), and Wilson-Lewis Farmsteads, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 124. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
16	7K-C-380	K06432	Moore-Taylor Farm	285	The Moore-Taylor Farm Site is the remains of a small tenant- and owner-occupied farm occupied from ca. 1822-1937	7
17	7K-C-380	K06432	Moore-Taylor Farm	274	The Moore-Taylor Farm Site is the remains of a small tenant- and owner-occupied farm occupied from ca. 1822-1937	7

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
16	7K-C-380	K06432	Moore-Taylor Farm	285	distances measured to centerpoint of F273,274,285 well cluster		61	91		
17	7K-C-380	K06432	Moore-Taylor Farm	274	distances measured to centerpoint of F273,274,285 well cluster		61	91		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
18	7K-C-380	K06432	Moore-Taylor Farm	273	tenant farmstead	Kent	Little Creek	Leipsic River	PyA	Pineyneck loam, 0 to 2 percent slopes	barrel	circular	side yard
19	7K-C-380	K06432	Moore-Taylor Farm	2	tenant farmstead	Kent	Little Creek	Leipsic River	PyA	Pineyneck loam, 0 to 2 percent slopes	barrel	circular	front yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
18	7K-C-380	K06432	Moore-Taylor Farm	273	stacked barrels	The bottom of the well shaft was defined by two large barrels stacked upon each other and supported by additional wooden shims inserted into the builder's trench; both barrels were 2 ft diam., top 2.5ft, bottom 3ft in length; water table level drawn on profile (4.6ft)	ca. 1820s-1850s	ca. 1822-1937	
19	7K-C-380	K06432	Moore-Taylor Farm	2	nested barrels	builder's trench identified; nested barrels, inner barrel had 6.5ft long staves bound by three hand-hewn hoops at 1ft intervals; Vertical staves of both the inner and outer barrels were straight. Indicated that the barrels were specially made for this well; water table level drawn on profile (4.6ft)	ca. late1820s - mid1870s	ca. 1822-1937	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
18	7K-C-380	K06432	Moore-Taylor Farm	273		"first well." Ceramic artifacts recovered from the builder's trench of F273 indicate that it was constructed in the 1820s and filled-in in the 1840s and 1850s.	Unnamed Tributary to Dyke Branch	200	34		46
19	7K-C-380	K06432	Moore-Taylor Farm	2		Feature 2 was probably dug in the late 1820s, replacing the two earliest wells. Feature 2 was used until the mid-1870s when it began to receive mid-to-late nineteenth century whitewares, white granite wares, yellowwares, and other domestic refuse. The upper part of Feature 2 also contained demolition debris from the period of rebuilding between 1880 and 1920 accomplished by the Leonard family.	Unnamed Tributary to Dyke Branch	200	33		53

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
18	7K-C-380	K06432	Moore-Taylor Farm	273	Ell extention to house	62	Unidentified	71	Unidentified	15	Unidentified			
19	7K-C-380	K06432	Moore-Taylor Farm	2	Ell extention to house	103	Unidentified	97	Unidentified	62	Unidentified			

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
18	7K-C-380	K06432	Moore-Taylor Farm	273		hand and mechanical excavation	hand excavation to 6.5 feet below surface; 0.4ft levels		9	9		
19	7K-C-380	K06432	Moore-Taylor Farm	2		hand and mechanical excavation	hand excavation to 6.6 feet below surface; 0.4ft levels		9.5	9.5		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
18	7K-C-380	K06432	Moore-Taylor Farm	273		http://www.deldot.gov/archaeology/wynn_wilson_lewis/pdf/moore_taylor_farm.pdf
19	7K-C-380	K06432	Moore-Taylor Farm	2		http://www.deldot.gov/archaeology/wynn_wilson_lewis/pdf/moore_taylor_farm.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
18	7K-C-380	K06432	Moore-Taylor Farm	273	David J. Grettler, George L. Miller, Wade P. Catts, Keith Doms, Mara Guttman, Karen Iplenski, Angela Hoseth, Jay Hodny, and Jay F. Custer, 1996, Marginal Farms on the Edge of Town: Final Archaeological Excavations at the Moore-Taylor, Benjamin Wynn (Lewis-E), and Wilson-Lewis Farmsteads, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 124. Delaware Department of Transportation, Dover, DE.
19	7K-C-380	K06432	Moore-Taylor Farm	2	David J. Grettler, George L. Miller, Wade P. Catts, Keith Doms, Mara Guttman, Karen Iplenski, Angela Hoseth, Jay Hodny, and Jay F. Custer, 1996, Marginal Farms on the Edge of Town: Final Archaeological Excavations at the Moore-Taylor, Benjamin Wynn (Lewis-E), and Wilson-Lewis Farmsteads, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeology Series, No. 124. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
18	7K-C-380	K06432	Moore-Taylor Farm	273	The Moore-Taylor Farm Site is the remains of a small tenant- and owner-occupied farm occupied from ca. 1822-1937	7
19	7K-C-380	K06432	Moore-Taylor Farm	2	The Moore-Taylor Farm Site is the remains of a small tenant- and owner-occupied farm occupied from ca. 1822-1937	7

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
18	7K-C-380	K06432	Moore-Taylor Farm	273	distances measured to centerpoint of F273,274,285 well cluster		61	91		4.6
19	7K-C-380	K06432	Moore-Taylor Farm	2	distances measured to centerpoint of F273,274,285 well cluster		61	91		4.6

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
20	7K-C-383	K06443	W. Eager Farmstead	23	farmstead	Kent	Little Creek	Leipsic River	UlB	Unicorn loam, 2 to 5 percent slopes	wood box/barrel	square	rear yard
21	7K-F-154	K00816	Webb's Landing	0	dwelling	Kent	Milford	Murderkill River	IeA	Ingleside loamy sand, 0 to 2 percent slopes	unidentified	circular	yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
20	7K-C-383	K06443	W. Eager Farmstead	23	square shaft, possible wood box casing, barrel base	The barrel was first encountered at 5.5' below the plow zone. The barrel had been set into a 4.0' square shaft that may have had additional wooden supports. 5 posts found in association with the well opening were interpreted as a fence or other enclosure measuring 10 by 15 ft.	ca. 1850-1896	ca. 1850-1896	
21	7K-F-154	K00816	Webb's Landing	0	no lining evident	only well shaft was identified; no remains of lining were encountered.			ca. 1690-1710

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
20	7K-C-383	K06443	W. Eager Farmstead	23		The simple stratigraphy of the well suggests that it was filled over a relatively short period. All three levels of the well contained relatively few historic artifacts which suggests that the well was filled with imported fill. All three levels contained whitewares and wire nail fragments which also suggests that the well was filled over a short period in the late nineteenth or early twentieth century, probably when the site was abandoned prior to 1906.	Muddy Branch	50	30	Conjectured location	
21	7K-F-154	K00816	Webb's Landing	0		based on artifact collection; C, Fithian	Murderkill River	1110			

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
20	7K-C-383	K06443	W. Eager Farmstead	23										
21	7K-F-154	K00816	Webb's Landing	0										

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
20	7K-C-383	K06443	W. Eager Farmstead	23		hand and mechanical excavation	interior hand excavated, exterior mechanically excavated		8	8		
21	7K-F-154	K00816	Webb's Landing	0		hand excavation	excavated by hand to water table; approximately 5 ft below surface			5		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
20	7K-C-383	K06443	W. Eager Farmstead	23	4-x-4 ft square shaft	http://www.deldot.gov/archaeology/eager/pdf/eager_ph1_2.pdf
21	7K-F-154	K00816	Webb's Landing	0	dimensions estimated from excavation photograph.	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
20	7K-C-383	K06443	W. Eager Farmstead	23	David J. Grettler, David C. Bachman, Jay F. Custer, and JoAnn Jamison, 1991, Phase I & II Archaeological Survey of Kent Road 88 (Dover to Leipsic) and Kent Road 337(Persimmon Tree Lane) Realignments, and Final Archaeological Excavations at the W. Eager Site for the Delaware Route 1--Relief Corridor, Dover, Kent Co., DE. Delaware Department of Transportation Archaeology Series, No. 90. Delaware Department of Transportation, Dover, DE.
21	7K-F-154	K00816	Webb's Landing	0	personal communication, Chuck Fithian, DE SHPO, July 30 , 2013; artifact collection and photograph stored at DE SHPO

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
20	7K-C-383	K06443	W. Eager Farmstead	23	The site is a mid to late-19th century tenant-and owner-occupied farm occupied by a succession of relatively poor tenants and landowners. The occupants of the site were sensitive to minute changes in the local economy. The effects of such local economic and social changes are reflected in the material culture of the occupants and changing land use patterns at the site.	3
21	7K-F-154	K00816	Webb's Landing	0	Presumed domestic. No documentation on excavations which were conducted by the Section of Archaeology in 1969. One photograph of well excavation in progress is only record on file at DE SHPO. Artifact collection is curated at DE SHPO.	3

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
20	7K-C-383	K06443	W. Eager Farmstead	23	water table depth / inundation not mentioned in report		114	165		
21	7K-F-154	K00816	Webb's Landing	0			114	165	groundwater	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
22	7NC-B-11	N09453	Weldin Plantation	25	farmstead	New Castle	Brandywine	Shellpot Creek-Delaware River	TaB	Talleyville silt loam, 3 to 8 percent slopes	stone	circular	dwelling cellar
23	7NC-B-45	N13522	Pierce/Talley House	0	farmstead	New Castle	Brandywine	Raccoon Creek-Delaware River	VwB	Urban land-Wheaton complex, 0 to 8 percent slopes	stone	circular	rear yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
22	7NC-B-11	N09453	Weldin Plantation	25	dry-laid, fieldstone	Only the bottom 5 to 6 feet of the stone lining associated with the well remained intact; interpreted as an incomplete construction; did not produce water.		18th / mid-20th	ca. 1850-1930
23	7NC-B-45	N13522	Pierce/Talley House	0	dry-laid, rounded cobbles	partially excavated of debris to 5.5 ft below surface; The shaft was cut down through a dense reddish orange clay and was constructed of dry-laid rounded cobbles. The upper fill of the shaft contained larger angular rock similar to those used in house construction.		ca 1854-1943	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
22	7NC-B-11	N09453	Weldin Plantation	25		Table 17, terra cotta flower pot: TPQ date: 1880; mean date: 1794 brown bottle glass produced a TPQ date of 1930 for the upper part (excavated as Feature 21); wire nail yielded a TPQ date of 1850 for the lower part of the well (excavated as Feature 25)	Alapocas Run	1015	0	well located in basement of east half of house	
23	7NC-B-45	N13522	Pierce/Talley House	0		Although the archaeology of the site can be broadly dated to the period between c. 1854 and c.1943 (confirming the documentary record), there is minimal stratigraphy and mid-19th-century artifacts are well-mixed with much later 20th-century materials.	S. Branch Naaman Creek	1650	24		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
22	7NC-B-11	N09453	Weldin Plantation	25										
23	7NC-B-45	N13522	Pierce/Talley House	0										

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
22	7NC-B-11	N09453	Weldin Plantation	25		hand and mechanical excavation	Hand excavations were subsequently conducted to a depth of 6.0 feet below the elevation of the subsoi; mechanical excavation to 30 ft below ground surface		30	30	7.5	
23	7NC-B-45	N13522	Pierce/Talley House	0		hand excavation	modern debris removed by hand, further excavation deemed unsafe.			5.5		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
22	7NC-B-11	N09453	Weldin Plantation	25		http://www.deldot.gov/archaeology/weldin/phaseIII/05_fieldRslts.pdf
23	7NC-B-45	N13522	Pierce/Talley House	0	No dimensions or drawings in report; base on site map, well appears to be ca. 3 ft in diameter.	http://www.deldot.gov/archaeology/naamans/pdf/series149/series149_intro_thru_eval.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
22	7NC-B-11	N09453	Weldin Plantation	25	Barbara J. Shaffer, Brenda L. Weller, Robert H. Eiswert, Richard L. White, Jerry A. Clouse, Francine F. Arnold, Kevin J. Simons, Charles A. Richmond, and Keith R. Doms, 2012, Archaeological Data Recovery Investigations, 7NC-B-11, The Weldin Plantation Site, Blue Ball Properties Area Transportation Improvement Project, Brandywine Hundred, New Castle County, Delaware. Prepared by McCormick Taylor, Inc. for the Delaware Department of Transportation, Dover, DE.
23	7NC-B-45	N13522	Pierce/Talley House	0	William Liebeknecht, Brian Seidel, and Richard Hunter, 1996, Management Summary: Phase II Archaeological Investigations, Pierce/Talley House Site Delaware Route 92 (Naaman's Road), Brandywine Hundred, New Castle County, Delaware. Delaware Department of Transportation Archaeology Series, No. 149. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
22	7NC-B-11	N09453	Weldin Plantation	25	18th through mid-20th century dairy farm.	
23	7NC-B-45	N13522	Pierce/Talley House	0	a simple stone dwelling that was extant from the mid-19th century until at least the early 1970s	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
22	7NC-B-11	N09453	Weldin Plantation	25	water table depth / inundation not mentioned in report (interp: did not produce water)	250				
23	7NC-B-45	N13522	Pierce/Talley House	0	need full report - site/feature number	165				

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
24	7NC-B-6	N05010	Grant Tenancy	8	tenant dwelling	New Castle	Christiana	Christina River	GeB	Glenelg loam, 3 to 8 percent slopes	stone	circular	side/rear yard
25	7NC-E-84	N11162	Hollingsworth	5	dwelling	New Castle	Christiana	Christina River	Hw	Zekiah sandy loam, frequently flooded	stone	circular	rear yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
24	7NC-B-6	N05010	Grant Tenancy	8	dry-laid, fieldstone	The stone wall rested on bedrock which had been chiseled out at the base to provide an additional one half foot. Water table at 11.1 below surface (159.3 amsl); no builders trench identified.		early 19th	MCD: 1817.83
25	7NC-E-84	N11162	Hollingsworth	5	dry-laid, dressed stone (gabbro)	Intact stone lining encountered at depths of from 1.8 to 2.4 ft below surface; stone was similar to the material used in adjacent dwelling foundation. At 2.8 ft below the surface, the inside diameter of the well was 3 ft and this measurement remained constant to the bottom of the feature. At 2.75 ft below surface a 2 inch pipe with check valve extended from stone lining. Mostly rubble fill to 6 ft below surface.	ca. 1870's-1900's		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
24	7NC-B-6	N05010	Grant Tenancy	8		The Visually Interpreted Bracket Dates are 1790 and 1820. South's MCD: 1817.83; "Gen. Pearlware": 1819.6	Little Mill Creek	480	20		
25	7NC-E-84	N11162	Hollingsworth	5		based on archival and archaeological data	Red Clay Creek	280	25	well on north side of house - 3.4ft from north found. Wall	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
24	7NC-B-6	N05010	Grant Tenancy	8										
25	7NC-E-84	N11162	Hollingsworth	5										

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
24	7NC-B-6	N05010	Grant Tenancy	8		hand and mechanical excavation	mechanical excavation was stepped		13	13		2.6
25	7NC-E-84	N11162	Hollingsworth	5		hand excavation	Intially identified within shovel test. Due to stones and rubble and a seeping ground water, well was excavated as a single level. Ground water encountered at 6 ft below surface. Bailing controlled flow sufficiently to allow excavation.		11.3	11.3		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
24	7NC-B-6	N05010	Grant Tenancy	8		http://www.deldot.gov/archaeology/grant/pdf/grant_results.pdf
25	7NC-E-84	N11162	Hollingsworth	5		http://www.deldot.gov/archaeology/rt41/pdf/65/series65_ph1_2_results.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
24	7NC-B-6	N05010	Grant Tenancy	8	Randolph K. Taylor, Timothy A. Thompson, Kimberly A. Snyder, and William M. Gardner, 1987, Data Recovery Excavations at the Grant Tenancy Site, Centre Road and Lancaster Pike, New Castle County, Delaware. Delaware Department of Transportation Archaeological Series, No. 56. Delaware Department of Transportation, Dover, DE.
25	7NC-E-84	N11162	Hollingsworth	5	David C. Bachman, and Jay F. Custer, 1988, Final Archaeological Investigations of the Newport-Gap Pike (Route 41) Corridor, Wilmington and Western Railroad to Washington Avenue, New Castle County, Delaware. Delaware Department of Transportation Archaeology Series, No. 65. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
24	7NC-B-6	N05010	Grant Tenancy	8	Early 19th century. Owned by Grant but no evidence that Grant lived on site; faunal analysis suggested high-status occupant	
25	7NC-E-84	N11162	Hollingsworth	5	late-19th to 20th C dwelling, associated with Wilmington and Western Railroad development	11

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
24	7NC-B-6	N05010	Grant Tenancy	8		250				11.1
25	7NC-E-84	N11162	Hollingsworth	5	No site numbers given in report		13	13		6

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
26	7NC-D-100	N10046	Whitten Road	17	tenant farmstead	New Castle	White Clay Creek	Christina River	Za	Brinklow channery loam, 15 to 25 percent slopes	wood box	square	side yard
27	7NC-D-102	N10273	Bernard Glatz House	21	dwelling	New Castle	Mill Creek	White Clay Creek	BkD	Corsica mucky loam, 0 to 2 percent slopes	stone	circular	side yard
28	7NC-D-128	N11071	William E. Heisler House	1	farmstead	New Castle	White Clay Creek	White Clay Creek	CoA	Downer sandy loam, 5 to 10 percent slopes	brick	circular	side yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
26	7NC-D-100	N10046	Whitten Road	17	wood box casing; corner posts with horizontal planking; nailed; pump stock	At 14 feet below the surface, two networks of wooden cribbing, side boards, and the bottom of the pump mechanism were preserved by the moisture of the sand, which directly overlays the water table . An outer crib measured 4 ft square and an inner one measured 3 ft square. Each crib consisted of four upright corner posts connected by doweled cross-pieces, and the sideboards were nailed to each of the two cribs. The well was constructed with scrap and rough lumber. Rectangular form noted at 6.35 ft below ground surface.		ca. 1775-1853	
27	7NC-D-102	N10273	Bernard Glatz House	21	dry-laid, dressed stone	Initially identified as a 6-ft diameter stain at base of plow zone. Intact well-lining of dressed stones became evident at 1.5 ft below stripped surface.		ca. 1833-1912	MCD 1858
28	7NC-D-128	N11071	William E. Heisler House	1	not specified	The brick-lined well was excavated to a total depth of fifteen feet and was found to be filled from top to bottom with demolition fill deposited during the destruction of the house structure; water table depth / inundation not mentioned in report		19th / mid-20th	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
26	7NC-D-100	N10046	Whitten Road	17		a token produced by the state of New Jersey in the years 1786 through 1788 indicates that the well did not fall into disuse prior to 1786;presence of this coin is consistent with the date of late 18th/early 19th century occupation of the site as seen	Christina River	200	197	Structure I	
27	7NC-D-102	N10273	Bernard Glatz House	21		mean ceramic date: 1858.7 (n=428 fragments); fill is a secondary deposit which probably dates to the demolition of the structure in early 20th century; Bernard Glatz occupied site from 1833 to 1845; Walker period of ownership is 1847 to 1912	Unnamed Tributary to Mill Creek	1240	25	east side of foundation	
28	7NC-D-128	N11071	William E. Heisler House	1		no timframe or context given in report	Unnamed Tributary to Leathermans Run	1400	20		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
26	7NC-D-100	N10046	Whitten Road	17		164	Structure II (unident.)	308	Structure III (stable)					
27	7NC-D-102	N10273	Bernard Glatz House	21										
28	7NC-D-128	N11071	William E. Heisler House	1										

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
26	7NC-D-100	N10046	Whitten Road	17		hand excavation	hand excavated as bisection to 5 feet below surface; upper bisection removed, hand excavation continued to base utilizing steps and ramps.	conservation of cribbing and pump stock	13.5	13.5	7.5	
27	7NC-D-102	N10273	Bernard Glatz House	21		hand excavation	Excavation halted at 4.2 ft below surface due to time constraints.			4.2		
28	7NC-D-128	N11071	William E. Heisler House	1		not specified	presumed mechanical		15	15		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
26	7NC-D-100	N10046	Whitten Road	17	No precise measurements given. Opening plan at base of plow zone described as 7.5 ft in diameter. Cribbing at base of well measured: ext. 4-x-4ft, int. 3-x-3 ft. Pump stock cribbing began at 14 ft below ground surface.	http://deldot.gov/archaeology/whitten_walther/pdf/series68/fence_well_addnl.pdf
27	7NC-D-102	N10273	Bernard Glatz House	21	stain at surface measured 6 ft diameter	http://www.deldot.gov/archaeology/glatz/pdf/excavation_results.pdf
28	7NC-D-128	N11071	William E. Heisler House	1		http://www.deldot.gov/archaeology/ogletown/pdf/series42_results.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
26	7NC-D-100	N10046	Whitten Road	17	Mark Shaffer, Jay F. Custer, David Grettler, Scott C. Watson, and Colleen De Santis, 1988, Final Phase III Investigations of the Whitten Road Site 7NC-D-100, Whitten or Walther Road, County Road 346, New Castle County, Delaware. Delaware Department of Transportation Archaeological Series, No. 68. Delaware Department of Transportation, Dover, DE.
27	7NC-D-102	N10273	Bernard Glatz House	21	Wade P. Catts and David C. Bachman, 1987, Final Archaeological Investigations of the Glatz Site, Route 7 North, New Castle County, Delaware. Delaware Department of Transportation Archaeological Series, No. 60. Delaware Department of Transportation, Dover, DE.
28	7NC-D-128	N11071	William E. Heisler House	1	Ellis C. Coleman and Jay F. Custer, 1986, A Management Summary of the Phase I/II Archaeological Surveys for the Planned Ogletown Interchange, Newark, Delaware. Delaware Department of Transportation Archaeological Series, No. 42. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
26	7NC-D-100	N10046	Whitten Road	17	Archival sources indicate that the Whitten Road site was occupied from the second quarter of the 18th century until the mid-19th century. The site was first occupied by the owners of the property and then by a series of tenants. This tenant occupation lasted from last quarter of the 18th century until the last occupation ca. 1853.	2
27	7NC-D-102	N10273	Bernard Glatz House	21	early-19th to early-20th C, domestic and commerial site	
28	7NC-D-128	N11071	William E. Heisler House	1	This 19th century site including a large main residence and a number of support buildings was known to have been standing until ca. 1954, when it was destroyed by soil mining operations associated with residential development.	11

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
26	7NC-D-100	N10046	Whitten Road	17		64				11.7
27	7NC-D-102	N10273	Bernard Glatz House	21			5	5	time constraints	
28	7NC-D-128	N11071	William E. Heisler House	1						

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
29	7NC-D-130	N10900	Thomas Williams	2	tenant farmstead	New Castle	Pencader	Christina River	DoC	Brinklow channery loam, 15 to 25 percent slopes	brick	circular	side yard
30	7NC-D-203	N13542	Springer/Ward/ Little Farm	918	farmstead	New Castle	Mill Creek	White Clay Creek	BkD	Corsica mucky loam, 0 to 2 percent slopes	stone	circular	work yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
29	7NC-D-130	N10900	Thomas Williams	2	coursed, dry-laid, stretchers, single wythe; wood base and pump stock; ext. lined with barrel staves	Eight barrel staves, measuring 1" to 1.25" in width, were recovered from the excavations. A squared wooden pump stock, about 1.8' in height and .3' square, was found in the center of the well shaft. Consisting of a single wooden piece with horizontal saw marks, the pump stock had four square holes chiseled into the center of the stock, two each on opposite sides of, and slightly offset from the other pair. Beneath the final course of brick, a wooden curb or foot ring was identified. This ring was constructed of two hand-planned thicknesses of timber, about .6' wide, nailed together with cut nails. The wooden ring was connected to the barrel staves, and had a diameter of 4.0', suggesting that the barrel which was used in the construction had probably been a hogshead (54 gal), a puncheon (72 gal), or a butt (108gal); no builders trench identified.		ca. 1792-1920s	MCD 1810
30	7NC-D-203	N13542	Springer/Ward/ Little Farm	918	upper portion-mortared and dressed fieldstone; lower dry-laid fieldstone	The northern portion of the well was dis-mantled revealing a layer of ash/cinder, mucky loam, and the water table at 12 foot below surface. The lower part of the well was lined with quartz rocks and the cap consisted of Wissahickon schist.		ca. 1850-1930	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
29	7NC-D-130	N10900	Thomas Williams	2		mean ceramic date for well fill: 1810; 110 minimum ceramic vessels	Muddy Run	460	28	Williams-Stump House	
30	7NC-D-203	N13542	Springer/Ward/ Little Farm	918		based on archival and archaeological data	Pike Creek	415	100	Stone foundation	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
29	7NC-D-130	N10900	Thomas Williams	2		10	Outbuilding I	42	Outbuilding II	33	Possible Outbuilding			
30	7NC-D-203	N13542	Springer/Ward/ Little Farm	918		20	Outbuilding	40	Bank Barn					

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
29	7NC-D-130	N10900	Thomas Williams	2		hand and mechanical excavation	bisected by hand to depth of 6.6 ft below surface; bisection continued with Gradall		13.8	13.8	12	
30	7NC-D-203	N13542	Springer/Ward/ Little Farm	918		hand excavation (?)	Very little description of well in report. No profile.			12	6	3

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
29	7NC-D-130	N10900	Thomas Williams	2	Opening plan below plow zone: 12 ft diameter; brick lining encountered at 3 ft below surface; coursed at 5 ft below surface	http://deldot.gov/archaeology/williams/pdf/results_field_invest.pdf
30	7NC-D-203	N13542	Springer/Ward/ Little Farm	918	well, as exposed above ground surface, consisted of dressed, mortared stone measuring 6-x-6 ft with approx. 3 ft diameter opening/shaft in center of stone work. Stone work began 1 ft above ground surface.	http://www.deldot.gov/archaeology/henderson_road/pdf/appendix_a.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
29	7NC-D-130	N10900	Thomas Williams	2	Wade P. Catts and Jay F. Custer, 1990, Tenant Farmers, Stone Masons, and Black Laborers: Final Archaeological Investigations of the Thomas Williams Site, Glasgow, New Castle County, Delaware. Delaware Department of Transportation Archaeology Series, No. 82. Delaware Department of Transportation, Dover, Delaware.
30	7NC-D-203	N13542	Springer/Ward/ Little Farm	918	Ian Burrow, William Liebeknecht, Susan Ferenbach and Edward F. Heite, 2003, Pike Creek: Industry and Farming along a Northern Delaware River Archaeological and Historical Research on Henderson Road/Old Coach Road, Mill Creek Hundred, New Castle County. Delaware. Delaware Department of Transportation Archaeology Series, No. 164. Delaware Department of Transportation, Dover, Delaware.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
29	7NC-D-130	N10900	Thomas Williams	2	Historic research found that the site was successively occupied by a tenant farmer (1792-1846), a stone mason (1846-1875) and a black laborer (1887- 1920s). Archaeological remains were found to be associated with all three of the periods, with the tenant farmer and black laborer occupations the best archaeologically represented.	4
30	7NC-D-203	N13542	Springer/Ward/ Little Farm	918	The site is a small Piedmont farm established by the Springer family before 1796. Between 1850 and 1860, the farm's value greatly increased, and it remained a successful operation into the 20th century. Archaeological investigations showed that the extant stone ruins of a barn, other buildings, farmhouse and springhouse all date to the period of improvement after 1850.	38

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
29	7NC-D-130	N10900	Thomas Williams	2		64				12.5
30	7NC-D-203	N13542	Springer/Ward/ Little Farm	918	Well adjacent to outbuilding and bank barn; measurements to centerpoint for consistency.		5	5		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
31	7NC-D-68	N05308	A. Temple House	28	tenant farmstead	New Castle	White Clay Creek	White Clay Creek	CoA	Neshaminy-Urban land complex, 0 to 8 percent slopes	brick	circular	rear yard
32	7NC-E-127	N02355	Forrest Street Shaft Feature	0	community well, urban	New Castle	Wilmington	Brandywine Creek	NxB	Keyport sandy loam, 5 to 10 percent slopes	brick	circular	front yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
31	7NC-D-68	N05308	A. Temple House	28	coursed, dry-laid, stretchers, single wythe; barrel staves lined exterior at base; wooden base ring	The well was capped in the 1950s during the A. Temple occupation of the site. The well was brick-lined and appeared to have no soil or debris fill, water was observed at the base of the well. Approximately 2 ft above the water table a layer of wood was observed outside the well, between the soil and brick. The oral interviews with site residents indicated that a pumphouse structure was built over the well and used as cool storage for milk products.		ca. 1820-1950	
32	7NC-E-127	N02355	Forrest Street Shaft Feature	0	coursed, dry-laid, stretchers, single wythe	water table at 10.75; brick wall surrounded feature; builder's trench identified	ca. 1870-1893		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
31	7NC-D-68	N05308	A. Temple House	28		Archival research and artifacts recovered from the excavations indicate that the site was occupied as a tenant farmstead from ca. 1820 to 1950.	Unnamed Tributary to Leathermans Run	665	50		
32	7NC-E-127	N02355	Forrest Street Shaft Feature	0		associated with row houses constructed ca. 1870; public water installed in 1893	Christina River	890	10	two row houses; lots at 1232 and 1234 Forrest Street	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
31	7NC-D-68	N05308	A. Temple House	28										
32	7NC-E-127	N02355	Forrest Street Shaft Feature	0										

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
31	7NC-D-68	N05308	A. Temple House	28		mechanical excavation	Due to the absence of feature fill, a backhoe was used to excavate the area surrounding the well; water was observed at the base of the well (approximately 8.0' below ground surface).	wood species identification	10	10	4	
32	7NC-E-127	N02355	Forrest Street Shaft Feature	0		hand and mechanical excavation	mechanically excavated trench adjacent to well to provide profile and access for hand excavation. Arbitrary 0.5 ft levels.			11	3.85	3.1

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
31	7NC-D-68	N05308	A. Temple House	28	4-ft shaft at top, tapered to 3-ft shaft	http://www.deldot.gov/archaeology/temple/pdf/hist_components.pdf
32	7NC-E-127	N02355	Forrest Street Shaft Feature	0	east-west outside diameter owas 3.65 ft and the north-south dimension was 3.85 ft.	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
31	7NC-D-68	N05308	A. Temple House	28	Angela Hoseth, Colleen De Santis Leithren, Wade P. Catts, Ellis C. Coleman, and Jay F. Custer, 1990, Final Archaeological Investigations of the A. Temple Site (7NC-D-68), Chestnut Hill Road (Route 4.), Ogletown, New Castle County, Delaware. Delaware Department of Transportation Archaeology Series, No. 81. Delaware Department of Transportation, Dover, Delaware.
32	7NC-E-127	N02355	Forrest Street Shaft Feature	0	Ted M. Payne, 1993, Archaeological Investigations at the Forrest Street Shaft Feature, in the City of Wilmington, Delaware (7NC-E-127). American Preservation Consultants, Inc., St. Augustine, FL. Submitted to Delaware Division of Historical & Cultural Affairs, Dover, DE. Unpublished report on file at DE SHPO, 15 The Green, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
31	7NC-D-68	N05308	A. Temple House	28	Archival research and artifacts recovered from the excavations indicate that the site was occupied as a tenant farmstead from ca. 1820 to 1950.	11
32	7NC-E-127	N02355	Forrest Street Shaft Feature	0	The investigations were carried out to recover a representative sample of the cultural record from the late nineteenth and early twentieth century shaft feature located between lots at 1232 and 1234 Forrest Street (Wilmington).	7

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
31	7NC-D-68	N05308	A. Temple House	28	Oral History in App VII, info on wells/pumps; no profile drawing; poor photographs	250				8
32	7NC-E-127	N02355	Forrest Street Shaft Feature	0			61	91		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
33	7NC-E-83	N10954	Heisler Tenancy	8	tenant farmstead	New Castle	White Clay Creek	Christina River	KhC	Hatboro-Codorus complex, 0 to 3 percent slopes, frequently flooded	brick	circular	side yard
34	7NC-E-88	N11180	Bethel Church	1	church	New Castle	New Castle	Red Lion Creek	Up	Urban land	brick	circular	front yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
33	7NC-E-83	N10954	Heisler Tenancy	8	coursed, dry-laid, stretchers, machine-made brick, single wythe	The south and east side of the well had been enclosed with a two-row-wide brick wall. This wall could have supported a metal-roofed shed.		ca. 1850-1968	
34	7NC-E-88	N11180	Bethel Church	1	not specified	deteriorated concrete cap; filled with debris, not stratified soil		19th / mid-20th	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
33	7NC-E-83	N10954	Heisler Tenancy	8		A structure was erected on the lot by 1850, and the site was occupied until 1968, when the house was demolished.	Christina River	890	0.5		
34	7NC-E-88	N11180	Bethel Church	1		no timframe or context given in report; filled with modern debris	Unnamed Tributary to Army Creek	1565	35		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
33	7NC-E-83	N10954	Heisler Tenancy	8										
34	7NC-E-88	N11180	Bethel Church	1										

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
33	7NC-E-83	N10954	Heisler Tenancy	8		hand and mechanical excavation	The first 5 ft of fill was removed by hand where the rubble prevented further excavation. A backhoe excavated a deep trench on its eastern side to provide a bisection.			25	3.5	
34	7NC-E-88	N11180	Bethel Church	1		hand excavation				3.7		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
33	7NC-E-83	N10954	Heisler Tenancy	8	backhoe excavation dislodged rubble located at 5 feet below surface that fell 20' to water table	http://www.deldot.gov/archaeology/christeen/pdf/heisler.pdf
34	7NC-E-88	N11180	Bethel Church	1		http://www.deldot.gov/archaeology/de273/pdf/series76_bethel.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
33	7NC-E-83	N10954	Heisler Tenancy	8	Wade P. Catts, Jay Hodny, and Jay F. Custer, 1989, The Place at Christeen: Final Archaeological Investigations of the Patterson Lane Site Complex, Christiana, New Castle County, Delaware. Delaware Department of Transportation Archaeological Series, No. 74. Delaware Department of Transportation, Dover, DE.
34	7NC-E-88	N11180	Bethel Church	1	Ann R. Brown, Kenneth J. Basalik, and Alan Tabachnick, 1990, Investigations of Cultural Resources, Delaware Route 273, DE Route 7 to US Route 13, New Castle County, Delaware. Delaware Department of Transportation Archaeological Series, No. 76. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
33	7NC-E-83	N10954	Heisler Tenancy	8	19th century tenant house and lot	36
34	7NC-E-88	N11180	Bethel Church	1	The Bethel Church site was the location of a Baptist church and associated buildings dating from the early nineteenth century.	13

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
33	7NC-E-83	N10954	Heisler Tenancy	8		300	8	8	rubble	
34	7NC-E-88	N11180	Bethel Church	1						

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
35	7NC-E-89	N11181	Clayton Farm	1	farmstead	New Castle	New Castle	Red Lion Creek	Up	Urban land	stone/brick	circular	work yard
36	7NC-F-111	N05221	Polk Tenant	7	tenant farmstead	New Castle	Saint George's	Elk River	ReB	Reybold silt loam, 2 to 5 percent slopes	brick	circular	yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
35	7NC-E-89	N11181	Clayton Farm	1	dry-laid cobbles over dry-laid brick in header pattern	The upper construction of the well. which was 3 feet in diameter, consisted of 4 courses of cobble stones. Beneath the cobbles were unmortared bricks, laid with the short end facing in. The fill of the well began 3 feet below the surface.		late 19th / 20th	
36	7NC-F-111	N05221	Polk Tenant	7	coursed, dry-laid, stretchers, single wythe	Feature 7 is a circular brick-lined well or cistern approximately 1.0-meter in diameter. The feature was sampled from the base of the Ap-horizon, 20 cm below the ground surface, to 89 cm below the ground surface. The base of the feature was not reached in these excavations and clearly extends below the limits of excavation. Intact circular one-row brick walls were identified beginning 35 cm below the ground surface and continued to the base of excavations at 89 cm below the ground surface.		mid 19th / early 20th	early 19th / early 20th

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
35	7NC-E-89	N11181	Clayton Farm	1		no timframe or context given in report	Unnamed Tributary to Army Creek	330			
36	7NC-F-111	N05221	Polk Tenant	7		mid-19th-to-20th century; constructed by Taylor between 1895 and 1899; fill dates based on diagnostic artifact range; structure was demolished between 1931 and 1937	Unnamed Tributary to Sandy Branch	2500	2.3	tenant structure/ dwelling	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
35	7NC-E-89	N11181	Clayton Farm	1										
36	7NC-F-111	N05221	Polk Tenant	7										

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
35	7NC-E-89	N11181	Clayton Farm	1		hand excavation	he well had been excavated to 10 feet below datum. None of the material differed essentially from the cultural material being recovered in the test units. No further excavation was attempted in the well, and the well was backfilled with earth; 1ft levels			10		
36	7NC-F-111	N05221	Polk Tenant	7		hand excavation	The base of the feature was not reached in these excavations and clearly extends below the limits of excavation.			2.95	3	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
35	7NC-E-89	N11181	Clayton Farm	1		http://www.deldot.gov/archaeology/de273/pdf/series76_clayton.pdf
36	7NC-F-111	N05221	Polk Tenant	7		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
35	7NC-E-89	N11181	Clayton Farm	1	Ann R. Brown, Kenneth J. Basalik, and Alan Tabachnick, 1990, Investigations of Cultural Resources, Delaware Route 273, DE Route 7 to US Route 13, New Castle County, Delaware. Delaware Department of Transportation Archaeological Series, No. 76. Delaware Department of Transportation, Dover, DE.
36	7NC-F-111	N05221	Polk Tenant	7	Ilene Grossman-Bailey, Philip A. Hayden, and Michael J. Insetta, 2011, Management Summary: Phase II (Evaluation-Level) Archaeological Surveys, Warwick Prehistoric Site (18CE371) Polk Tenant Site (N05221, 7NC-F-111), U.S. Route 301 Mainline Section 3: Maryland/Delaware State Line to North of Levels Road, St. Georges and Appoquinimink Hundreds and Town of Middletown, New Castle County, Delaware and Electoral District 1, Cecil County, Maryland. Prepared by Richard Grubb & Associates, Inc. for the Delaware Department of Transportation, Dover DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
35	7NC-E-89	N11181	Clayton Farm	1	early twentieth century farm complex	19
36	7NC-F-111	N05221	Polk Tenant	7		27

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
35	7NC-E-89	N11181	Clayton Farm	1	no structures identified					
36	7NC-F-111	N05221	Polk Tenant	7	"The feature's proximity to the structure and lack of evidence for a superstructure indicated that it could have been a cistern for collecting water from the roof of the adjacent structure."-pp 5-44.					

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
37	7NC-F-13	N03827	McKean/Cochran Farm	27	farmstead	New Castle	Saint George's	Appoquinimink River	SaC	Sassafras sandy loam, 5 to 10 percent slopes	unidentified	circular	work yard
38	7NC-F-13	N03827	McKean/Cochran Farm	29	farmstead	New Castle	Saint George's	Appoquinimink River	SaC	Sassafras sandy loam, 5 to 10 percent slopes	unidentified	circular	rear yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
37	7NC-F-13	N03827	McKean/Cochran Farm	27	no lining evident	Located adjacent to dairy; Postholes along the south side showed that the well had been covered by a wooden structure.		ca. 1800-1840	
38	7NC-F-13	N03827	McKean/Cochran Farm	29	no lining evident	circular excavation with post holes at surface; The only evidence of lining in the well was a thin dark stain around the edge in some places, probably indicating that it was originally lined with wood. Postholes on the south and east sides of the well showed that it had been covered by a wooden structure; water table depth / inundation not mentioned in report		ca. 1750-1800	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
37	7NC-F-13	N03827	McKean/Cochran Farm	27		Associated with Feature 1 and the Dairy (1800-1840)	Appoquinimink River	850	75	F-1 cellar (1800-1850)	
38	7NC-F-13	N03827	McKean/Cochran Farm	29		Associated with Feature 4, Structure A, and Structure B (1750-1800)	Appoquinimink River	850	7	F-4 cellar (1750-1800)	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
37	7NC-F-13	N03827	McKean/Cochran Farm	27		1	Dairy (1800-1840)							
38	7NC-F-13	N03827	McKean/Cochran Farm	29		60	Structure A (1750-1800)	55	Structure B (1750-1800)					

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
37	7NC-F-13	N03827	McKean/Cochran Farm	27		hand and mechanical excavation				10	5.5	
38	7NC-F-13	N03827	McKean/Cochran Farm	29		hand and mechanical excavation			12	8		5

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
37	7NC-F-13	N03827	McKean/Cochran Farm	27	hand excavated to 5 feet, then augered to 10 feet	http://www.deldot.gov/archaeology/mckean_cochran/index.shtml
38	7NC-F-13	N03827	McKean/Cochran Farm	29	excavated to 8 feet then augered to 12 feet where sterile sand was encountered	http://www.deldot.gov/archaeology/mckean_cochran/index.shtml

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
37	7NC-F-13	N03827	McKean/Cochran Farm	27	John Bedell, Ingrid Wuebber, Meta Janowitz, Marie-Lorraine Pipes, Sharla Azizi, and Charles H. LeeDecker, 1999, Farm Life on The Appoquinimink, 1750-1830, Archaeological Discoveries at the Mckean/Cochran Farm Site Odessa, New Castle County, Delaware. Delaware Department of Transportation Archaeological Series, No. 156. Delaware Department of Transportation, Dover, DE.
38	7NC-F-13	N03827	McKean/Cochran Farm	29	John Bedell, Ingrid Wuebber, Meta Janowitz, Marie-Lorraine Pipes, Sharla Azizi, and Charles H. LeeDecker, 1999, Farm Life on The Appoquinimink, 1750-1830, Archaeological Discoveries at the Mckean/Cochran Farm Site Odessa, New Castle County, Delaware. Delaware Department of Transportation Archaeological Series, No. 156. Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
37	7NC-F-13	N03827	McKean/Cochran Farm	27	Excavation of the farm uncovered two sequential sets of buildings, the first dating to about 1750 to 1800 and the second to about 1800 to 1830. The structures uncovered include two houses, two post barns, two wells, and a dairy.	23
38	7NC-F-13	N03827	McKean/Cochran Farm	29	Excavation of the farm uncovered two sequential sets of buildings, the first dating to about 1750 to 1800 and the second to about 1800 to 1830. The structures uncovered include two houses, two post barns, two wells, and a dairy. The building foundations were well preserved and provided a great deal of information about the structures on the site, including a house with complex stone foundations and a very unusual dairy, built in the form of a springhouse on a site with no spring.	23

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
37	7NC-F-13	N03827	McKean/Cochran Farm	27	Well type not described, revisit					
38	7NC-F-13	N03827	McKean/Cochran Farm	29	distance to house is distance to 1750-1800 cellar					

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
39	7NC-F-135	N14332	Armstrong-Rogers	52	farmstead	New Castle	Saint George's	Appoquinimink River	ReB	Reybold silt loam, 2 to 5 percent slopes	wood box	square	rear yard/work yard
40	7NC-F-135	N14332	Armstrong-Rogers	14	farmstead	New Castle	Saint George's	Appoquinimink River	ReB	Reybold silt loam, 2 to 5 percent slopes	brick	circular	rear yard/work yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
39	7NC-F-135	N14332	Armstrong-Rogers	52	wood box casing; corner posts with horizontal planking; wooden pegs	At least 36 pieces of wood were collected during backhoe excavation, comprising the remains of the well support system. Cut planks and rounded posts with treenail fasteners comprised the well cribbing. Water table at 9 feet.		ca. 1767-1824	
40	7NC-F-135	N14332	Armstrong-Rogers	14	coursed, dry-laid; lift pump w/octagonal shaft	Adjacent to Dairy barn, north end. Stone-line at surface. Sediment removal revealed a stacked-brick-lined well shaft measuring approximately 8.6 ft (2.6 m) in length and 2.5 ft in diameter. A lift pump, comprising of an octagonally hewn and hollowed out wooden shaft measuring 90 inches long by 10.5 inches in diameter nesting within circular wooden disks, occupied the center of the well shaft. The discs were removed in two pieces, one measuring 48 inches in length and 1.5 inches in width and the other 20 inches (0.5 m) in length and 1.5 inches in width.		ca. 1767-1824	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
39	7NC-F-135	N14332	Armstrong-Rogers	52	dendro winter 1767	Cornelius Armstrong and his family (1767–1824), dendrochronology James Rogers,ownership of the property (1824–1849)	Unnamed Tributary to Drawyer Creek	50	130		
40	7NC-F-135	N14332	Armstrong-Rogers	14		Cornelius Armstrong and his family (1767–1824) James Rogers,ownership of the property (1824–1849)	Unnamed Tributary to Drawyer Creek	50			

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
39	7NC-F-135	N14332	Armstrong-Rogers	52		15	Smoke House	90	dairy					
40	7NC-F-135	N14332	Armstrong-Rogers	14		1	Dairy	80	smoke house					

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
39	7NC-F-135	N14332	Armstrong-Rogers	52		hand and mechanical excavation	Divided into quadrants prior to excavation, the northwest section was excavated by hand to a depth of 2.9 feet and to approximately 9 feet by backhoe, at which point the water table was reached and excavation ceased	Remnants of wood cribbing being conserved.		9		
40	7NC-F-135	N14332	Armstrong-Rogers	14		hand and mechanical excavation	Excavation was carried out by field technicians and backhoe.	The components of the lift pump were removed from the well via backhoe and transported to the Maryland Archaeological Conservation Laboratory (MAC Lab) for conservation.		8.6		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
39	7NC-F-135	N14332	Armstrong-Rogers	52		
40	7NC-F-135	N14332	Armstrong-Rogers	14		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
39	7NC-F-135	N14332	Armstrong-Rogers	52	Kerri S. Barile, Danae A. Peckler, Adriana Lesiuk, and Morgan MacKenzie, 2013, Management Summary: Archaeological Data Recovery of the Armstrong-Rogers Site, New Castle County, Delaware. Prepared for the Delaware Department of Transportation. Prepared by Dovetail Cultural Resource Group.
40	7NC-F-135	N14332	Armstrong-Rogers	14	Kerri S. Barile, Danae A. Peckler, Adriana Lesiuk, and Morgan MacKenzie, 2013, Management Summary: Archaeological Data Recovery of the Armstrong-Rogers Site, New Castle County, Delaware. Prepared for the Delaware Department of Transportation. Prepared by Dovetail Cultural Resource Group.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
39	7NC-F-135	N14332	Armstrong-Rogers	52		7
40	7NC-F-135	N14332	Armstrong-Rogers	14		7

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
39	7NC-F-135	N14332	Armstrong-Rogers	52					groundwater	
40	7NC-F-135	N14332	Armstrong-Rogers	14						

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
41	7NC-F-139	N14517	Houston-LeCompt	697	farmstead	New Castle	Saint George's	Red Lion Creek	RdA	Reybold-Queponco complex, 0 to 2 percent slopes	wood box	square	rear yard
42	7NC-F-139	N14517	Houston-LeCompt	687	farmstead	New Castle	Saint George's	Red Lion Creek	RdA	Reybold-Queponco complex, 0 to 2 percent slopes	brick/barrel	circular	side yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
41	7NC-F-139	N14517	Houston-LeCompt	697	wood box casing; corner posts with horizontal planking; wooden pegs	Circular in shape, the diameter measured 6.56 ft with a 2.95-ft protrusion on the southern half. Constructed of white oak corner posts that were cleaved and pinned, the well frame contained a 4-in thick wood base slab functioning as a filter to help keep sandy soil out of the water. Lime, found all around the well, was used to help purify the deposits.		1790s-1840s	1795 mcd
42	7NC-F-139	N14517	Houston-LeCompt	687	coursed, dry-laid, stretchers, single wythe; hand-made brick; barrel base	An old yellow pine wood barrel was used as the base of the well shaft in lieu of a box frame, and the upper shaft was formed of hand-made brick salvaged from the original Houston house cellar. When the later dwelling was demolished in the 1930s, occupants used the well for architectural refuse. Pressed roofing tin, cut stone, and other materials packed the upper stratum, preserving the well remains below and providing information on the second dwelling on the site.		1840s-1930s	1880

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
41	7NC-F-139	N14517	Houston-LeCompt	697	na	James Houston Occupation and Mulford Tenancy (circa 1800–1865)	Unnamed Tributary to Scott Run	1030	50	Main House (F509)	42
42	7NC-F-139	N14517	Houston-LeCompt	687	na	LeCompt Ownership and Twentieth Century Tenants (circa 1865–1930s); Feature 687 was the last known well used on the Houston-LeCompt site and was in operation during the last quarter of the nineteenth century and into the twentieth century.	Unnamed Tributary to Scott Run	1030	63	New House	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
41	7NC-F-139	N14517	Houston-LeCompt	697	Summer Kitchen Pad									
42	7NC-F-139	N14517	Houston-LeCompt	687		37	Garage							

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
41	7NC-F-139	N14517	Houston-LeCompt	697		hand and mechanical excavation	Augured and divided into quadrangles prior to excavation, field crews removed the southeastern portion by hand, to a depth of3.28 ft			9.84	6.56	
42	7NC-F-139	N14517	Houston-LeCompt	687		hand and mechanical excavation				6.7	3.4	2.75

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
41	7NC-F-139	N14517	Houston-LeCompt	697	box frame shaft, frame at bottom measured 1.4ft x 3 ft.	http://www.deldot.gov/archaeology/us301/pdf/brochures_posters/WellConstructionHoustonLeCompt.pdf
42	7NC-F-139	N14517	Houston-LeCompt	687	shaft size from profile drawing	http://www.deldot.gov/archaeology/us301/pdf/brochures_posters/WellConstructionHoustonLeCompt.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
41	7NC-F-139	N14517	Houston-LeCompt	697	Barile, Kerri S., Danae A. Peckler, Kerry Gonzalez, and Morgan MacKenzie, 2013, Management Summary: Archaeological Data Recovery of the Houston-LeCompt Site, New Castle County, Delaware. Prepared for the Delaware Department of Transportation. Prepared by Dovetail Cultural Resource Group.
42	7NC-F-139	N14517	Houston-LeCompt	687	Barile, Kerri S., Danae A. Peckler, Kerry Gonzalez, and Morgan MacKenzie, 2013, Management Summary: Archaeological Data Recovery of the Houston-LeCompt Site, New Castle County, Delaware. Prepared for the Delaware Department of Transportation. Prepared by Dovetail Cultural Resource Group.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
41	7NC-F-139	N14517	Houston-LeCompt	697		11
42	7NC-F-139	N14517	Houston-LeCompt	687		11

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
41	7NC-F-139	N14517	Houston-LeCompt	697			114	165		
42	7NC-F-139	N14517	Houston-LeCompt	687	Depth not given in Management Summary; field drawing of profile show brick ending at 6.5 ft b.s., but does not show barrel base		114	165		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
43	7NC-F-139	N14517	Houston-LeCompt	578	farmstead	New Castle	Saint George's	Red Lion Creek	RdA	Reybold-Queponco complex, 0 to 2 percent slopes	wood box	square	rear yard
44	7NC-F-94	N14205	Wilson Farm Tenancy	34	tenant farmstead	New Castle	Saint George's	Elk River	ReB	Reybold silt loam, 2 to 5 percent slopes	brick	oval	side yard
45	7NC-G-169	N12742	Boyd's Store and House	147	farmstead and store	New Castle	Saint George's	Appoquinimink River	MkB	Matapeake silt loam, 2 to 5 percent slopes	brick	circular	side/rear yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
43	7NC-F-139	N14517	Houston-LeCompt	578	wood box casing; corner posts with horizontal planking; wooden pegs	This well was only used for a few decades, likely rendered impractical due to its excessive distance from the house. It was filled in around 1800. The corner posts of this box-framed well were formed of white oak while the side and base planks were made from southern yellow pine. Some framing members still retain their original fastening pegs. Water table encountered at 9.84 ft below surface.		1760-1800s	1796
44	7NC-F-94	N14205	Wilson Farm Tenancy	34	coursed, dry-laid, stretchers, single wythe	Feature 34 is located at the southwestern corner of the foundation. This is an oval brick shaft with the long axis oriented toward the foundation; builder's trench identified, wood lining at -6.5 ft below surface; set in simple butt joints with the adjacent board, each plank is placed flush against the brick shaft.		late 19th / early 20th	late 1940s / early 1950s
45	7NC-G-169	N12742	Boyd's Store and House	147	coursed, dry-laid, headers, single wythe, some glazed brick	brick drain from house fed into well		ca. 1837-1910	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
43	7NC-F-139	N14517	Houston-LeCompt	578	na	Initial Houston Occupation (circa 1779–1800); feature dates are a combination of mean ceramic dating, and interpreted site history.	Unnamed Tributary to Scott Run	1030	153	Main House (F509)	173
44	7NC-F-94	N14205	Wilson Farm Tenancy	34	late 19th / early 20th	F34D, builders trench - TPQ range 1887-1940; F34J, fill - TPQ range -1805 to 1940; fieldwork indicated that the site was occupied during the last quarter of the 19th century until its abandonment sometime in the first half of the 20th century	Unnamed Tributary to Bohemia Creek	440	4	closest point	
45	7NC-G-169	N12742	Boyd's Store and House	147		Built between 1837-1910, open until 1960's	Augustine Creek	1305	40	also store	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
43	7NC-F-139	N14517	Houston-LeCompt	578	Kitchen (F667)	121	Stable (F501)							
44	7NC-F-94	N14205	Wilson Farm Tenancy	34		21	house centerpoint							
45	7NC-G-169	N12742	Boyd's Store and House	147										

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
43	7NC-F-139	N14517	Houston-LeCompt	578		hand and mechanical excavation	The well was then divided into four quadrangles and the northwest portion was excavated to sample the feature fill. Hand exacavation to 4.92 ft below surface.			9.84		
44	7NC-F-94	N14205	Wilson Farm Tenancy	34		hand and mechanical excavation	Excavation of the shaft fill was terminated at 6.9 feet below surface due to inundation.			10.5		
45	7NC-G-169	N12742	Boyd's Store and House	147		mechanical excavation	bisected with backhoe			14		3

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
43	7NC-F-139	N14517	Houston-LeCompt	578		http://www.deldot.gov/archaeology/us301/pdf/brochures_posters/WellConstructionHoustonLeCompt.pdf
44	7NC-F-94	N14205	Wilson Farm Tenancy	34	Dimensions of the brick shaft are 4.2 x 3 feet.	http://deldot.gov/archaeology/choptank/pdf/wilson_farm_final/6-uncovering.pdf
45	7NC-G-169	N12742	Boyd's Store and House	147		http://www.deldot.gov/archaeology/boyds_corner_data_rec/pdf/chap5.pdf

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
43	7NC-F-139	N14517	Houston-LeCompt	578	Barile, Kerri S., Danae A. Peckler, Kerry Gonzalez, and Morgan MacKenzie, 2013, Management Summary: Archaeological Data Recovery of the Houston-LeCompt Site, New Castle County, Delaware. Prepared for the Delaware Department of Transportation. Prepared by Dovetail Cultural Resource Group.
44	7NC-F-94	N14205	Wilson Farm Tenancy	34	Richard M. Affleck, Mara Kaktins, Meta Janowitz, Patricia Miller, and Ingrid Wuebber, 2011, At the Road's Edge: Final Archaeological Investigations of the Wilson Farm Tenancy Site (7NC-F-94) Middletown, New Castle County, Delaware. Prepared by URS Corporation for the Delaware Department of Transportation, Dover, DE.
45	7NC-G-169	N12742	Boyd's Store and House	147	Ian Burrow, Patrick Harshbarger, Alison Haley, and William Liebeknecht, 2011, Boyd's Corner Intersection Improvements Project, St. George's Hundred, New Castle County, Delaware Data Recovery and Contextual Research Boyd's Store and House Site. Prepared by Hunter Research, Inc. for the Delaware Department of Transportation, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
43	7NC-F-139	N14517	Houston-LeCompt	578		11
44	7NC-F-94	N14205	Wilson Farm Tenancy	34		9
45	7NC-G-169	N12742	Boyd's Store and House	147	19th- through 20th-century farmstead and store at Boyd’s Corner	22

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
43	7NC-F-139	N14517	Houston-LeCompt	578			114	165		
44	7NC-F-94	N14205	Wilson Farm Tenancy	34	well is adjacent to house at SW corner				groundwater	
45	7NC-G-169	N12742	Boyd's Store and House	147	very little detail/discussion in report					

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
46	7NC-G-7	N03833	Robinson Plantation	7	farmstead	New Castle	Appoquinimink	Appoquinimink River	ReB	Reybold silt loam, 2 to 5 percent slopes	unidentified	circular	rear yard
47	7NC-G-7	N03833	Robinson Plantation	82	farmstead	New Castle	Appoquinimink	Appoquinimink River	ReB	Reybold silt loam, 2 to 5 percent slopes	unidentified	circular	rear yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
46	7NC-G-7	N03833	Robinson Plantation	7	no lining evident	no lining was evident; investigators hypothesize that the stone in the base of the well may represent the remains of the lining; 12 levels of deposition documented: 3 capping fill episodes; 8 levels of site occupation fill/trash disposal; bottom level from 7.5 -to-22 ft below surface was comprised of clay and water-worn cobbles/boulders. Five associated post features including four small square posts (Features 77, 78, 79, 81) and one larger structural post (Feature 80) were identified. The four small posts would most likely have been corner posts for a frame structure which would have boxed in the well. The well frame may have been covered with a hinged cover.		ca. 1762-1783	
47	7NC-G-7	N03833	Robinson Plantation	82	no lining evident	cylindrical shaft excavated into subsoil; Interpreted as older than Feature 7. Fill consisted of two strata, consisting of silt loam and sandy loam; no artifacts or natural inclusions		ca. 1762-1783	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
46	7NC-G-7	N03833	Robinson Plantation	7		These distributional patterns strongly suggest that the materials recovered are, indeed, associated with the occupation of the premises by Charles Robinson and his family during the period 1762-1783.	Unnamed Tributary to Appoquinimink River	320	50	foundation/cellar	
47	7NC-G-7	N03833	Robinson Plantation	82		These distributional patterns strongly suggest that the materials recovered are, indeed, associated with the occupation of the premises by Charles Robinson and his family during the period 1762-1783.	Unnamed Tributary to Appoquinimink River	320	40	foundation/cellar	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
46	7NC-G-7	N03833	Robinson Plantation	7										
47	7NC-G-7	N03833	Robinson Plantation	82										

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
46	7NC-G-7	N03833	Robinson Plantation	7		hand and mechanical excavation	excavated by hand to 12 ft below surface; by backhoe to 22 ft below surface; water table estimated at 32 ft below surface			22	10	
47	7NC-G-7	N03833	Robinson Plantation	82		hand and mechanical excavation	excavated by hand to 11 ft below surface; by backhoe to 21 ft below surface			21	10	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
46	7NC-G-7	N03833	Robinson Plantation	7		
47	7NC-G-7	N03833	Robinson Plantation	82		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
46	7NC-G-7	N03833	Robinson Plantation	7	Ronald A. Thomas, Robert F. Hoffman, and Betty C. Zebooker, 1996, Archaeological Data Recovery of the Charles Robinson Plantation 1762-1781, Appoquinimink Hundred, New Castle County, Delaware, Volumes I and II. MAAR Associates, Inc., Newark, Delaware. Submitted to Dept. of Natural Resources and Environmental Control, Dover,DE. Unpublished report on file at SHPO, 15 The Green, Dover, DE.
47	7NC-G-7	N03833	Robinson Plantation	82	Ronald A. Thomas, Robert F. Hoffman, and Betty C. Zebooker, 1996, Archaeological Data Recovery of the Charles Robinson Plantation 1762-1781, Appoquinimink Hundred, New Castle County, Delaware, Volumes I and II. MAAR Associates, Inc., Newark, Delaware. Submitted to Dept. of Natural Resources and Environmental Control, Dover,DE. Unpublished report on file at SHPO, 15 The Green, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
46	7NC-G-7	N03833	Robinson Plantation	7	7NC-G-7 Locus B was occupied during the second and third quarters of the eighteenth century (ca. A.D. 1745 -ca. A.D. 1775) when the property was owned by the Robinson family.	7
47	7NC-G-7	N03833	Robinson Plantation	82	7NC-G-7 Locus B was occupied during the second and third quarters of the eighteenth century (ca. A.D. 1745 -ca. A.D. 1775) when the property was owned by the Robinson family.	7

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
46	7NC-G-7	N03833	Robinson Plantation	7						
47	7NC-G-7	N03833	Robinson Plantation	82						

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
48	7NC-J-175	N06272	Buchanan-Savin Farm	171	farmstead	New Castle	Blackbird	Smyrna River	TeA	Tent silt loam, 0 to 2 percent slopes	unidentified	circular	work yard
49	7NC-J-204	N12898	Jones	156	tenant farmstead	New Castle	Blackbird	Smyrna River	ImB	Ingleside-Hammonton-Fallsington complex, 0 to 5 percent slopes	brick	circular	work yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
48	7NC-J-175	N06272	Buchanan-Savin Farm	171	no lining evident	a series of square posts indicated a 8-x-16 ft shed structure was placed over well; well was not fully excavated due to high water table		ca. 1849-1921	MCD 1860
49	7NC-J-204	N12898	Jones	156	coursed, dry laid in alternately breaking joints, stretcher pattern, single wythe, with wooden slat-lined caisson	machine-made brick; dry laid in alternately breaking joints in a stretcher configuration; a wooden slat-lined caisson with two wooden collars at the base to stand on was placed in the shaft probably at a depth when the water table was encountered around 2.5-3.5 ft below the former ground surface; included builder's trench; 14 intact courses of brick were encountered at 7 ft below current ground surface		ca. 1850-1930	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
48	7NC-J-175	N06272	Buchanan-Savin Farm	171		mean ceramic date for well: 1860; The mean ceramic dates without red ware for each of the archaeologically derived structures fell within a ten year span, from 1860-1870, reflecting the most prosperous period of the Buchanan-Savin Farmstead.	Unnamed Tributary to Morris Branch	1600	35	standing farmhouse	57
49	7NC-J-204	N12898	Jones	156		mid-to-late 19th century; Occupation 2	Unnamed Tributary to Sawmill Branch	1700			

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
48	7NC-J-175	N06272	Buchanan-Savin Farm	171	Structure II	16	Structure III (meal corn, tool house)	33	Structure I (carriage house)	20	Outbuilding II (agricult.)			
49	7NC-J-204	N12898	Jones	156										

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
48	7NC-J-175	N06272	Buchanan-Savin Farm	171		hand excavation	excavation halted at -0.5 feet due to ground water			0.5	5	
49	7NC-J-204	N12898	Jones	156		hand excavation	see report narrative; 1-inch pump used to mitigate seeping ground water	brick chemistry		6.5	3.3	2.6

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
48	7NC-J-175	N06272	Buchanan-Savin Farm	171	5ft l-x-5ft w-x0.5 ft d	http://www.deldot.gov/archaeology/buchanan_savin/pdf/results_of_field_inv.pdf
49	7NC-J-204	N12898	Jones	156		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
48	7NC-J-175	N06272	Buchanan-Savin Farm	171	Michael D. Scholl, Angela Hoseth, and David J. Grettler, 1994, Transportation and Agricultural Changes in Blackbird Hundred: Final Archaeological Investigations at the Buchanan-Savin Farmstead, State Route 1 Corridor, Green Spring, New Castle County, Delaware. Delaware Department of Transportation Archaeological Series, No. 106. Delaware Department of Transportation, Dover, DE.
49	7NC-J-204	N12898	Jones	156	Versar, 2012, Working on the Farm: Archaeological Data Recovery Report for the Jones Site (7NC-J-204), New Castle County, Delaware. Prepared by Versar, Inc. Springfield, Virginia. Prepared for the Delaware Department of Transportation.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
48	7NC-J-175	N06272	Buchanan-Savin Farm	171		8
49	7NC-J-204	N12898	Jones	156	Historical research suggests there were two periods of occupation by unknown tenants between 1760 and 1820, and again from the mid-19th-century into the 20th-century. The site may have been abandoned for a period of 20 or 30 years. Major features of the Jones Site included a late 18th-century or early 19th-century brick clamp and associated mixing pit for preparing the clay, plus postholes for a probable canopy/shed structure to shelter the brick-molders. Additional features included a barrel-lined well from the same occupation period; a brick-lined well and terra cotta drain lines dating from the late 18th through early 20th centuries; and pits and fencelines of uncertain date. The artifact assemblage comprised primarily brick fragments and wasters; there were relatively few domestic artifacts, and many of those were very small. The absence of a clear dwelling foundation and the sparse artifact assemblage suggests the site was a working area of a farm, possibly with outbuildings, but not the location of a dwelling.	9

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
48	7NC-J-175	N06272	Buchanan-Savin Farm	171	Outbuilding I (stable) - 48ft, Meat House - 35 ft		13	13	groundwater	
49	7NC-J-204	N12898	Jones	156	no structures identified; isolated location west of SW-NE trending fence line; approx. 75 ft west of barrel well (F-268)		36	36		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
50	7NC-J-204	N12898	Jones	268	tenant farmstead	New Castle	Blackbird	Smyrna River	ImB	Ingleside-Hammonton-Fallsington complex, 0 to 5 percent slopes	barrel	circular	work yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
50	7NC-J-204	N12898	Jones	268	nested barrels	3 stacked barrels with construction pit that narrowed with depth; middle barrel was smaller than top and bottom barrels and was fitted inside the rims of the larger barrels		ca. 1760-1820	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
50	7NC-J-204	N12898	Jones	268		late 18th-to-early 19th century; Occupation 1	Unnamed Tributary to Sawmill Branch	1700			

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
50	7NC-J-204	N12898	Jones	268										

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
50	7NC-J-204	N12898	Jones	268		hand and mechanical excavation	see report narrative; 1-inch pump used to mitigate seeping ground water			12	3	2.9

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
50	7NC-J-204	N12898	Jones	268		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
50	7NC-J-204	N12898	Jones	268	Versar, 2012, Working on the Farm: Archaeological Data Recovery Report for the Jones Site (7NC-J-204), New Castle County, Delaware. Prepared by Versar, Inc. Springfield, Virginia. Prepared for the Delaware Department of Transportation.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
50	7NC-J-204	N12898	Jones	268	Historical research suggests there were two periods of occupation by unknown tenants between 1760 and 1820, and again from the mid-19th-century into the 20th-century. The site may have been abandoned for a period of 20 or 30 years. Major features of the Jones Site included a late 18th-century or early 19th-century brick clamp and associated mixing pit for preparing the clay, plus postholes for a probable canopy/shed structure to shelter the brick-molders. Additional features included a barrel-lined well from the same occupation period; a brick-lined well and terra cotta drain lines dating from the late 18th through early 20th centuries; and pits and fencelines of uncertain date. The artifact assemblage comprised primarily brick fragments and wasters; there were relatively few domestic artifacts, and many of those were very small. The absence of a clear dwelling foundation and the sparse artifact assemblage suggests the site was a working area of a farm, possibly with outbuildings, but not the location of a dwelling.	9

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
50	7NC-J-204	N12898	Jones	268	no structures identified; located in southeast quadrant created by crossing fencelines; in proximity to possible food processing pit and structure indicated by alignment of posts; approx. 75 ft east of brick-lined well (F-156)		36	36		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
51	7S-G-26	S00598	Bay Vista	2	farmstead	Sussex	Lewis and Rehoboth	Rehoboth Bay	IeA	Ingleside loamy sand, 0 to 2 percent slopes	wood plank	circular	side yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
51	7S-G-26	S00598	Bay Vista	2	wood planking over clay lining	Feature B-3, a modern water pipe, had been laid in a pipe trench which cut through the top of Feature B-2, extending to a depth of 1.4 ft below the working surface. At a depth of about 4.1 ft below the working surface, the well shaft was stepped-in, narrowing in diameter of approximately 3.3 ft. Water was encountered at a depth of about 5.75 ft below the working surface. Excavation of the feature was terminated at a depth of 8.3 ft below the working surface, at which point the north side of the shaft collapsed. Traces of clay lining material, sand, and wood planking were observed at the limit of excavation. Well constructed within previously excavated shaft of larger diameter. Clay lined shaft to prevent seepage; not local clay; brought in purposefully. No evidence of cover or retrieval method.		ca. 1675-1700	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
51	7S-G-26	S00598	Bay Vista	2		open through 1960's; specific period of use for well not addressed in report	Bald Eagle Creek	1500	15	Structure J	25

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
51	7S-G-26	S00598	Bay Vista	2	Structure R									

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
51	7S-G-26	S00598	Bay Vista	2		not specified	specific excavation methods for well were not stated in the report			8.3	6.5	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
51	7S-G-26	S00598	Bay Vista	2	shaft diameter measured from profile drawing between clay lining near base of well	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
51	7S-G-26	S00598	Bay Vista	2	Betty C. Zebooker and Martin B. Reinbold, 1999, Selected Archaeological Data Recovery at the Bay Vista Site, 7S-G-26, Locus 10 Historic Occupation (MAI-D-50H). MAAR Associates, Inc., Newark, DE. Submitted to the Delaware Division of Historical and Cultural Affairs, Dover, DE. Unpublished report on file at DE SHPO, 15 The Green, Dover, DE.

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
51	7S-G-26	S00598	Bay Vista	2	late seventeenth and early eighteenth century; Archeological evidence recovered from two house cellars indicate that several rebuilding stages occurred over the years. Associated with the farmstead were a well, a privy, a paling ditch, several burials and other historic rural occupational evidence.	9

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
51	7S-G-26	S00598	Bay Vista	2			114	165		

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	NRCS Soil Symbol	NRCS Map Unit Name	Well Lining	Well Shape	Well Setting
52	7S-G-57	S00717	Avery's Rest	11	farmstead	Sussex	Lewis and Rehoboth	Rehoboth Bay	IeB	Ingleside loamy sand, 2 to 5 percent slopes	wood box	square	yard
53	7S-G-57	S00717	Avery's Rest	7	farmstead	Sussex	Lewis and Rehoboth	Rehoboth Bay	IeB	Ingleside loamy sand, 2 to 5 percent slopes	wood box	square	yard
54	7S-G-60	S00769	Thompson's Loss and Gain	78	farmstead	Sussex	Lewis and Rehoboth	Rehoboth Bay	GrB	Greenwich loam, 2 to 5 percent slopes	wood box/barrel	square	side yard

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Construct Method	Feature Notes	Period of Use	Dates Occupation	Dates Fill
52	7S-G-57	S00717	Avery's Rest	11	wood box casing; mortise and tenon frame with pinned tenons and vertical planks between corner posts held in place by builders trench fill; no nails utilized.	Feature 11 appears to be John and Sarah Avery's well (1674-1682) based on artifacts on and near the floor of the feature and below the "Vacancy Period" fill. The well had evidence of two shaft casings, the outer casing, which seems to have been dismantled, was not as deep as the inner casing, the bottom portion of which was preserved below water table. After 1682 the site appears to have been abandoned until the re-occupation by daughter Jemima (Avery) Morgan in 1698. During the vacancy period, the well casing failed and the shaft partially filled in with sediment from soil erosion. The upper levels of the failed well feature were used by the Morgan's for refuse disposal.	ca. 1674-1682	ca. 1674-1715	
53	7S-G-57	S00717	Avery's Rest	7	wood box casing presumed	No intact cribbing; wood fragments are only remain evidence of lining. Interpreted as well of Jemima (Avery) Morgan (1698-1715), based on artifact content.	ca. 1698-1715	ca. 1674-1715	
54	7S-G-60	S00769	Thompson's Loss and Gain	78	wood box casing; corner posts with horizontal planking;barrel lining	large builder's shaft (~8 ft diameter, 2 ft deep), over square shaft with post holes, possible cribbing over 2 stacked barrels.			ca. 1720-1780

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Dates Builders	Chronology Notes	Nearest Water	Dist to Water (ft)	Dist to House (ft)	House Notes	Dist to Kitchen (ft)
52	7S-G-57	S00717	Avery's Rest	11		Occupation 1: John and Sarah Avery:1674-1682	Johnson Branch	880	36	Feature 63 (likely contemporary with well)	
53	7S-G-57	S00717	Avery's Rest	7		Occupation 2, Jemima (Avery) Morgan: 1698-1715 Used Feature 11 for refuse.	Johnson Branch	880	23	Feature 63 (likely contemporary with well)	
54	7S-G-60	S00769	Thompson's Loss and Gain	78		Summary review of curated artifacts, Chuck Fithian (DE SHPO)	Bald Eagle Creek	2550	50	earthfast structure, identified by posts, fireplace, and root cellars	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Kitchen Notes	Dist to Outbuild 1 (ft)	Outbuild 1 Type	Dist to Outbuild 2 (ft)	Outbuild 2 Type	Dist to Outbuild 3 (ft)	Outbuild 3 Type	Dist to Outbuild 4 (ft)	Outbuild 4 Type	Dist to Outbuild 5 (ft)
52	7S-G-57	S00717	Avery's Rest	11										
53	7S-G-57	S00717	Avery's Rest	7										
54	7S-G-60	S00769	Thompson's Loss and Gain	78										

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Outbuild 5 Type	Excavation Method	Excav Meth Notes	Special Analyses	Depth (ft)	Excav Depth (ft)	Opening Ext (ft)	Opening Int (ft)
52	7S-G-57	S00717	Avery's Rest	11		hand excavation	hand excavated in natural/cultural levels	wood species analysis of well casing; casing to be preserved.	13	12		
53	7S-G-57	S00717	Avery's Rest	7		hand excavation	excavated in arbitrary levels within well shaft; builder's trench excavated separately;	conservation of iron artifacts		10		
54	7S-G-60	S00769	Thompson's Loss and Gain	78		hand excavation	corrugated metal well casing used as shoring to remove barrel staves			4		2.8

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Size Notes	URL link
52	7S-G-57	S00717	Avery's Rest	11		
53	7S-G-57	S00717	Avery's Rest	7	excavated to water table	
54	7S-G-60	S00769	Thompson's Loss and Gain	78	barrel interior, max. dim.= 2.8 ft post/cribbing shaft = 4-x-4 ft builders trench/pit = 8 ft diam., 2 ft deep	

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference
52	7S-G-57	S00717	Avery's Rest	11	Daniel R. Griffith, 2013, Avery's Rest (7S-G-57), Well Descriptions and Interpretations. Archaeological Society of Delaware. Unpublished field notes.
53	7S-G-57	S00717	Avery's Rest	7	Daniel R. Griffith, 2013, Avery's Rest (7S-G-57), Well Descriptions and Interpretations. Archaeological Society of Delaware. Unpublished field notes.
54	7S-G-60	S00769	Thompson's Loss and Gain	78	Field notes on file at DE SHPO Site Description in DelDOT #127, Whitehart Site

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Description	Depth to Water Table (ft)
52	7S-G-57	S00717	Avery's Rest	11		4
53	7S-G-57	S00717	Avery's Rest	7		4
54	7S-G-60	S00769	Thompson's Loss and Gain	78	Excavated by SHPO June-Sept 1987, no report, only field records	3

Table A.1: Data from Excavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes	NRCS Bedrock Depth (in)	NRCS Water Table Depth-Annual-Min (in)	NRCS Water Table Depth-April-June-Min (in)	Exc Halted reason	Depth to Water Table_exc (ft)
52	7S-G-57	S00717	Avery's Rest	11	water table depth not mentioned in report; inundation apparent in photographs		114	165		
53	7S-G-57	S00717	Avery's Rest	7			114	165		
54	7S-G-60	S00769	Thompson's Loss and Gain	78						

APPENDIX B

UNEXCVATED WELL DATA

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	Well Lining
58	7NC-F-64	N10284	Jacob B. Cazier Tenancy		tenant farmstead	New Castle	Pencader	Red Lion Creek	unidentified
59	7NC-E-126	N12918	Horrace Burr House		farmstead	New Castle	New Castle	Christina River	unidentified
60	7K-C-379B	K00394.051	Blue Anchor Tavern		urban domestic/tavern	Kent	East Dover	Saint Jones River	unidentified
61	7NC-B-58	N13791	Vandever-O'Neal House		farmstead	New Castle	Mill Creek	White Clay Creek	stone

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	Well Lining
62	7NC-D-69	N05309	Thomas Ogle Site		farmstead	New Castle	White Clay Creek	Christina River	brick
63	7NC-J-207	N12901	Buckson Site		farmstead	New Castle	Blackbird	Smyrna River	brick
27	7K-C-119	K05949	C. Kimmey Tenant Farm	63	tenant farmstead	Kent	Kent	Leipsic River	brick

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	Well Lining
37	7NC-G-112	N12770	G.W. Townsend Farm	126	farmstead	New Castle	Saint George's	Red Lion Creek	brick
45	7NC-E-54	N09563	Upland Victorian		tenant farmstead	New Castle	White Clay Creek	Christina River	unidentified
47	7NC-C-10	N07640	J.G. Hanby House		farmstead	New Castle	Brandywine	Raccoon Creek-Delaware River	unidentified

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Site Type	County	Hundred	Watershed	Well Lining
48	7K-F-169	K00835	Soulie Gray House Site	8	farmstead	Kent	South Murderkill	Murderkill River	unidentified; concrete cap
51	7NC-D-256	N14276	Pyle Tenant House		tenant dwelling	New Castle	New Castle	Christina River	brick; electric pump

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Well Shape	Feature Notes	Period of Use
58	7NC-F-64	N10284	Jacob B. Cazier Tenancy			Mr. Biddle reported a well located midway along the east wall of the dwelling, approximately 5-7 feet from the side of the house. The well was filled and eventually covered by the pavement of Route 896. This well served as the only source of water for the Cazier site throughout its entire history.	
59	7NC-E-126	N12918	Horrace Burr House				
60	7K-C-379B	K00394.051	Blue Anchor Tavern				
61	7NC-B-58	N13791	Vandever-O'Neal House		circular	located adjacent to north side of house	

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Well Shape	Feature Notes	Period of Use
62	7NC-D-69	N05309	Thomas Ogle Site			brick-lined well mentioned in report and shown adjacent to house	
63	7NC-J-207	N12901	Buckson Site		circular	A brick lined well was identified in the west central portion of the site and was approximately 15 feet deep. The top four courses were mortared with cement; the lower portion of the well was drylaid brick.	ca. 1859-1989
27	7K-C-119	K05949	C. Kimmey Tenant Farm	63		A 21-foot deep dry brick well with no fill (Feature 63) was found off the south side of the frame section beneath the shed addition/porch, centered on N125 W97.5. The well shaft was approximately four feet in diameter and was capped with a 6- x 5-foot concrete slab.	

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Well Shape	Feature Notes	Period of Use
37	7NC-G-112	N12770	G.W. Townsend Farm	126		unexcavated, unfilled shaft with 3-x-3 ft concrete cap; centerpoint: N338.5 / W352.5	
45	7NC-E-54	N09563	Upland Victorian				
47	7NC-C-10	N07640	J.G. Hanby House				

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Well Shape	Feature Notes	Period of Use
48	7K-F-169	K00835	Soulie Gray House Site	8		The general size and diameter of the concrete cap is similar to a cap used to close off a well shaft. Feature 8 was located in the general area of the early-twentieth-century barn, but it is not certain from the excavations conducted to date if this feature is a well associated with the early-twentieth-century barn or possibly the nineteenth-century period of the farm's occupation.	
51	7NC-D-256	N14276	Pyle Tenant House			well was open at time of investigation, no deposits/excavation conducted	

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Nearest Water	Dist to Water (ft)	Dist to House (ft)	Excavation Method	Depth (ft)
58	7NC-F-64	N10284	Jacob B. Cazier Tenancy		Lums Pond	1790	6	unexcavated	
59	7NC-E-126	N12918	Horrace Burr House		Magazine Ditch	3650		unexcavated	
60	7K-C-379B	K00394.051	Blue Anchor Tavern		Saint Jones River	1460		unexcavated	
61	7NC-B-58	N13791	Vandever-O'Neal House		Unnamed Tributary to Red Clay Creek	250		unexcavated	

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Nearest Water	Dist to Water (ft)	Dist to House (ft)	Excavation Method	Depth (ft)
62	7NC-D-69	N05309	Thomas Ogle Site		Unnamed Tributary to Leathermans Run	2090		unexcavated	
63	7NC-J-207	N12901	Buckson Site		Sandom Branch	580		unexcavated	15
27	7K-C-119	K05949	C. Kimmey Tenant Farm	63	Leipsic River	865		unexcavated	

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Nearest Water	Dist to Water (ft)	Dist to House (ft)	Excavation Method	Depth (ft)
37	7NC-G-112	N12770	G.W. Townsend Farm	126	Scott Run	760		unexcavated	30
45	7NC-E-54	N09563	Upland Victorian		Unnamed Tributary to Christina River	50		unexcavated	
47	7NC-C-10	N07640	J.G. Hanby House		S. Branch Naaman Creek	2200		unexcavated	

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Nearest Water	Dist to Water (ft)	Dist to House (ft)	Excavation Method	Depth (ft)
48	7K-F-169	K00835	Soulie Gray House Site	8	Spring Creek	1280		unexcavated	
51	7NC-D-256	N14276	Pyle Tenant House		Christina River	4190		unexcavated	

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Opening Ext (ft)	Opening Int (ft)	URL link
58	7NC-F-64	N10284	Jacob B. Cazier Tenancy				http://www.deldot.gov/archaeology/cazier/pdf/excavation_results.pdf
59	7NC-E-126	N12918	Horrace Burr House				
60	7K-C-379B	K00394.051	Blue Anchor Tavern				
61	7NC-B-58	N13791	Vandever-O'Neal House				

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Opening Ext (ft)	Opening Int (ft)	URL link
62	7NC-D-69	N05309	Thomas Ogle Site				http://www.deldot.gov/archaeology/ogletown_series61/index.shtml
63	7NC-J-207	N12901	Buckson Site				http://www.deldot.gov/archaeology/sr1/pdf/179/series_179_4_results_7ncj207.pdf
27	7K-C-119	K05949	C. Kimmey Tenant Farm	63			http://www.deldot.gov/archaeology/kimmey/pdf/results_field.pdf

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Opening Ext (ft)	Opening Int (ft)	URL link
37	7NC-G-112	N12770	G.W. Townsend Farm	126		2.5	http://www.deldot.gov/archaeology/scotts_run/pdf/results_scotts.pdf
45	7NC-E-54	N09563	Upland Victorian				http://www.deldot.gov/archaeology/route_7_13_I-95/pdf/ph1-2.pdf
47	7NC-C-10	N07640	J.G. Hanby House				http://www.deldot.gov/archaeology/naamans/pdf/series129/series129_field.pdf

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Opening Ext (ft)	Opening Int (ft)	URL link
48	7K-F-169	K00835	Soulie Gray House Site	8			http://www.deldot.gov/archaeology/north_frederica/pdf/phase_2_vol_1_8.pdf
51	7NC-D-256	N14276	Pyle Tenant House		3		http://www.deldot.gov/archaeology/route40/pdf/phase1_2_archaeology/rt40_pyle.pdf

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference	Site Description
58	7NC-F-64	N10284	Jacob B. Cazier Tenancy		Angela Hoseth, Wade P. Catts, and Rebecca Tinsman, 1994, Status, Landscape, and Tenancy at Mount Vernon Place: Final Archaeological Investigations of the Jacob B. Cazier Tenancy #2, State Route 896, New Castle, Delaware. Delaware Department of Transportation Archaeology Series, No. 104. Delaware Department of Transportation, Dover, Delaware.	L 19th-E 20th century; brick house foundation and cellar and more than 200 features including an addition to the house, privies, outbuildings, and fencelines were excavated.
59	7NC-E-126	N12918	Horrace Burr House		Robert F. Hoffman, Betty C. Zebooker, and Lauren C. Archibald, 1993, Phase I/II Cultural Resources Survey of the Homestead (7NC-E-126, Horace Burr House), Located on a Five-Acre Parcel Fronting on Route 9 South of Wilmington, New Castle County, Delaware. MAAR Associates, Newark, DE. Submitted to Delaware Division of Historical and Cultural Affairs, Dover, DE. Unpublished report on file at SHPO, 15 The Green, Dover, DE.	The investigations involved historical documentation of the property, and an architectural evaluation of a mid-to-late nineteenth century country residence located in the project area, as well as archeological testing of the five-acre parcel to locate and evaluate previously recorded and/or documented sites, and to locate new resources.
60	7K-C-379B	K00394.051	Blue Anchor Tavern		Edward F. Heite, 1990, Archaeological Investigations at the Blue Anchor Tavern, 2 Volumes. MAAR Associates, Inc., Newark, DE. Submitted to Dover Parking Authority, Dover, DE. Unpublished report on file at DESHPO, 15 The Green, Dover, DE.	The Blue Anchor Tavern lot excavation contains a number of features associated with everyday life in early Dover. Dog burials, garden plots, minor outbuildings, wells, all are represented through three centuries. The collection adds many pieces to the jigsaw puzzle of early Dover.
61	7NC-B-58	N13791	Vandever-O'Neal House		Nedda E. Moqtaderi, 2000, Archaeological Testing and Archival Research at the Vandever-O'Neal Site, Mt. Cuba, Greenville, Mill Creek Hundred, Delaware. Unpublished report on file at DESHPO, 15 The Green, Dover, DE.	The archaeological testing and mapping of the extant foundations and features at the Vandever-O'Neal Site provides a physical history of landscape, architecture, and spatial organization on a nineteenth-through early twentieth-century farm

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference	Site Description
62	7NC-D-69	N05309	Thomas Ogle Site		Ellis C. Coleman, Angela Hoseth, and Jay F. Custer, 1987, Phase I and II Archaeological Investigations of the Ogletown Interchange Improvements Project Area Newark, Delaware. Delaware Department of Transportation Archaeological Series, No. 61. Delaware Department of Transportation, Dover, DE.	
63	7NC-J-207	N12901	Buckson Site		S.L. Bupp, S. Hathaway, L. Paonessa, and C. Sperling, 2003, Phase II Evaluation Studies in the SR 1 Corridor, Smyrna to Pine Tree Corners, New Castle County, Delaware. Delaware Department of Transportation Archaeology Series, No. 179. Delaware Department of Transportation, Dover, Delaware.	
27	7K-C-119	K05949	C. Kimmey Tenant Farm	63	JoAnn E. Jamison, Jack Kraft, Rebecca Tinsman, Karen Iplenski, Keith Doms, David J. Grettler, Colleen DeSantis Leithren, and Jay F. Custer, 1997, The Archaeology of Nineteenth Century Agricultural Change: Final Excavations at the C. Kimmey Tenant Farm Site, State Route 1 Corridor, Kent County, Delaware. Delaware Department of Transportation Archaeological Series, No. 125. Delaware Department of Transportation, Dover, DE.	The C. Kimmey Tenant Farm Site was a tenant- and owner-occupied farmstead dating from ca. 1842 to 1970. One hundred and ninety cultural features were identified and excavated including the remains of a brick and balloon-framed house, seven concrete foundation outbuildings, one post-in-ground outbuilding, a gravity-fed water tower, a windmill, a vineyard, trash disposal features, and a septic system.

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference	Site Description
37	7NC-G-112	N12770	G.W. Townsend Farm	126	Keith Doms, Angela Hoseth, Barbara Hsiao Silber, David J. Grettler, Susan M. Gentile, and Frank D. Faulls, 1995, Archaeological Investigations of the Scott's Run Project Area, the Route 72 / 13 Intersection Improvements Project Area, and the Woodville Grave Site (7NC-E-98A), State Route 1 Corridor, New Castle County, Delaware. Delaware Department of Transportation Archaeological Series, No. 147. Delaware Department of Transportation, Dover, DE.	mid-19th to early-20th C
45	7NC-E-54	N09563	Upland Victorian		Wade P. Catts, Lauralee Rappleye-Marsett, Jay F. Custer, Kevin Cunningham, and Jay Hodny, 1988, Final Archaeological Investigations of the Route 7 South Corridor, Route 13 to I-95, New Castle County, Delaware. Delaware Department of Transportation Archaeological Series, No. 58. Delaware Department of Transportation, Dover, DE.	mid-19th - 20th century; Historic features included several fallen structures, animal pens, a basement foundation, stock piles of building materials, an outdoor grill, refuse dumps, fencelines, a well, and a small, burned concrete block building.
47	7NC-C-10	N07640	J.G. Hanby House		Brooke Blades, Ernest Bower, Michael Tomkins and Richard Hunter, 1994, A Phase I and II Archaeological Survey of Four Locations for Proposed Stormwater Management Ponds, Delaware Route 92, Naaman's Road [Section Iva] (Darley Road and Marsh Road Intersections) Brandywine Hundred, New Castle County, Delaware. Delaware Department of Transportation Archaeological Series, No. 129. Delaware Department of Transportation, Dover, DE.	Occupancy of this site was established in the early 1830s and did not finally cease until sometime after 1953. The site may be characterized as the residential nucleus of a small-scale farmstead engaged in mixed agriculture, but with an emphasis on dairying.

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Reference	Site Description
48	7K-F-169	K00835	Soulie Gray House Site	8	Scott A. Emory, Amy K. Fanz, Daniel Hayes, Paul W. Schopp, and Christine Gill, 2007, Combined Phase IB Archaeological Survey and Phase II Archaeological Investigation SR 1 North Frederica Grade Separated Intersection Frederica, Kent County, Delaware. Prepared by A.D. Marble & Company for the Delaware Department of Transportation, Dover, DE.	
51	7NC-D-256	N14276	Pyle Tenant House		Christopher T. Espenshade, Barbara J. Gundy. and Margaret G. Sams, 2006, New Castle County, Delaware Pencader and New Castle Hundreds, Route 40,1mprovements S.R. 896 to S.R. 1, Phase I/II Archaeology. Prepared by Skelly and Loy for the Delaware Department of Transportation, Dover, DE.	ca. 1917-1958

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes
58	7NC-F-64	N10284	Jacob B. Cazier Tenancy		No feature number assigned
59	7NC-E-126	N12918	Horrace Burr House		
60	7K-C-379B	K00394.051	Blue Anchor Tavern		
61	7NC-B-58	N13791	Vandever-O'Neal House		

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes
62	7NC-D-69	N05309	Thomas Ogle Site		
63	7NC-J-207	N12901	Buckson Site		
27	7K-C-119	K05949	C. Kimmey Tenant Farm	63	

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes
37	7NC-G-112	N12770	G.W. Townsend Farm	126	need site maps
45	7NC-E-54	N09563	Upland Victorian		well mentioned, not investigated, check for more recent data
47	7NC-C-10	N07640	J.G. Hanby House		No site or feature number listed in report

Table B.1: Data from Unexcavated Wells

ID	Site Number	CRS Number	Site Name	Feature Number	Data Entry Notes
48	7K-F-169	K00835	Soulie Gray House Site	8	not described or excavated in Phase II, not mentioned in Phase III
51	7NC-D-256	N14276	Pyle Tenant House		need site map

APPENDIX C

PROJECT PERSONNEL

VERSAR
PROJECT PERSONNEL

Brian D. Crane, Ph.D., R.P.A., Project Manager
B.A., 1986, Anthropology, University of Pennsylvania, Philadelphia, Pennsylvania
M.A., 1987, American Civilization, University of Pennsylvania
Ph.D. 1993, American Civilization, Historical Archaeology, University of Pennsylvania
Years of Experience: 20

Dr. Crane is a Senior Project Manager and the Cultural Resources Division Director of Versar. He served as the Project Manager for this project. Dr. Crane has over 20 years of experience in all phases of historic and prehistoric archaeological projects in the United States, Caribbean and Central America, with academic projects, and projects in compliance with Section 106 of the National Historic Preservation Act of 1966 and other federal, state and local legislation. Responsibilities have included program management, project design and implementation, field and laboratory supervision, artifact analysis, archival research, public outreach, and report writing. Areas of expertise include GIS and cultural resources data management, historical archaeology, urban archaeology, and African American archaeology.

Dennis A. Knepper, Senior Archaeologist
B.A., 1977, History, Texas Christian University, Fort Worth, Texas
Years of Experience: 25

Mr. Knepper is a Senior Archaeologist with Versar and provided GIS and technical writing support for this project. He has 25 years of experience as an archaeologist in Texas, the Southwest and Mid-Atlantic regions of the United States as well as Latin America, the Caribbean, and East Asia. He has directed numerous prehistoric and historical survey, testing, and data recovery projects in compliance with Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended, for regulatory compliance with FHWA, FERC, GSA, USACOE, and other federal and state agencies. Responsibilities have included project design and implementation, field and laboratory supervision, artifact analysis, archival research, database management, predictive modeling, and report writing.

Christopher L. Bowen, Archaeologist
B.S., 1992, Interdisciplinary Studies, Radford University, Virginia
Years of Experience: 20

Mr. Bowen is a Staff Archaeologist with Versar and provided GIS, graphics, and technical writing support for this project. He has 20 years of experience as an archaeologist in the Mid-Atlantic regions of the United States as well as the West and Mid-West. He has conducted numerous prehistoric and historical survey, testing, and data recovery projects in compliance with Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended, for the Air Force, Federal Highway Administration, U.S. Army Corps of Engineers, and other Federal and state agencies.

Responsibilities have included project design and implementation, field and laboratory supervision, artifact analysis, archival research, database management, GIS analysis, and report writing.

Report Authors: Brian Crane, Christopher Bowen, Dennis Knepper

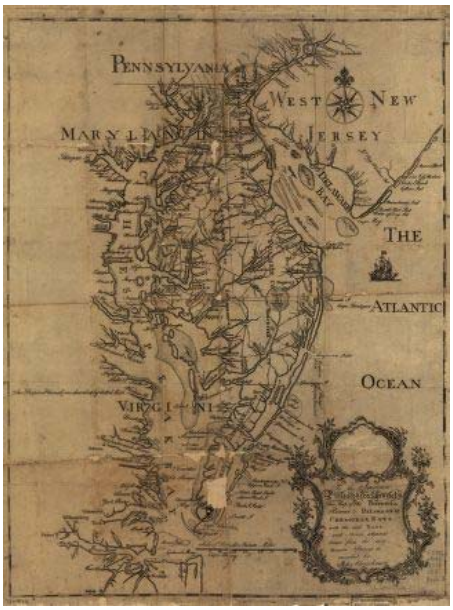
APPENDIX D

ALTERNATIVE MITIGATION TECHNICAL PROPOSAL

TECHNICAL PROPOSAL

ALTERNATIVE MITIGATION FOR POLK TENANT SITE (N05221, 7NC-F-111), U.S. ROUTE 301 MAINLINE, SECTION 3, NEW CASTLE COUNTY, DELAWARE

VERSAR TASK 6



Prepared for:

Delaware Department of Transportation
800 Bay Road
Dover, Delaware 19901

Prepared by:

Versar, Inc.
6850 Versar Center
Springfield, Virginia 22151

April 11, 2013

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VERSAR

1.0 INTRODUCTION

The following technical proposal is submitted to the Delaware Department of Transportation (DelDOT) by Versar, Inc. (Versar), under Agreement 1539, Task 6. The proposed work will involve an alternative archaeological mitigation for the Polk Tenant Site (N05221, 7NC-F-111).

Phase I and II field work for the Polk Tenant Site was conducted in April and May of 2011 by Richard Grubb and Associates (Grossman-Bailey at al. 2011). Phase II excavation found that the site was eligible for the National Register of Historic Places (NRHP). Significant features associated with the site included a 19th-century well. However, considering that only a small portion of the site would be physically impacted by Route 301 construction, the site appeared to be a better candidate for alternative mitigation rather than intensive excavation. The presence of an intact well feature at this site and others within the 301 Corridor was the basis for identifying wells as a focus of the alternative mitigation. DelDOT and the Delaware State Historic Preservation Office (DE SHPO) concurred with this recommendation.

2.0 TECHNICAL APPROACH

2.1 Project Management

This task includes project management and direct costs for management activities necessary over the course of the project. Project management activities include project coordination and oversight, budget and schedule management, project kickoff meeting, preparation of Progress Reports, project accounting and billing, and technical direction. Project management also includes the preparation of a monthly update and blog entry to be submitted to David Clarke at DelDOT via email throughout the duration of the project.

2.2 Task 1, Section 106 Report

A management summary of the site testing was prepared by Richard Grubb and Associates (Grossman-Bailey at al. 2011). Versar will expand this management summary into a single technical report, detailing the goals, methods, and results of the project in detail in compliance with Delaware State Historic Preservation Office standards for National Register Evaluation Reports and 36 CFR 800. The report will include: a project introduction; presentation of previous investigations; a site-specific historical context; presentation of the field findings; and discussion and conclusions. The discussion and conclusions will include the NRHP eligibility statement, the reasoning behind the decision to conduct an alternative mitigation, and the technical proposal for alternative mitigation. The document will include detailed site maps and photographs depicting field methodology, stratigraphic profiles, and select artifacts. A complete artifact catalog, including the Phase I and Phase II collections will be included as an appendix. The artifact catalog will be generated by Richard Grubb and Associates, and is not part of this Task. Three bound copies and two compact disks, including PDF and Word versions of the draft report, will be submitted to DelDOT. DelDOT will be responsible for

forwarding the draft report to the DE SHPO for review and concurrence. DelDOT will address all DE SHPO comments to the draft.

2.3 Task 2, Historical Well Synthesis

Versar will conduct a literature review in order to investigate historical wells as an archaeological feature type in Delaware. This review will be conducted from a regional (including urban versus rural) and temporal perspective, and will include interviews with Alice Guerrant at DESHPO and Charles Fithian at the Delaware State Museum. The scope of this effort will be limited to wells as a feature type, though cistern features considered possibly to be wells will also be included. This review will define wells as a feature type; discuss how they were constructed and used; and assess what has been learned from excavation and analysis of these features. The data will be analyzed to determine whether there are taxonomies of well types according to time period and setting, and whether there are temporal or regional patterns of well placement and construction. As part of the literature review, available data pertaining to historical wells previously excavated within Delaware will be collected in order to populate a table listing selected attributes for each well including provenience information, environmental setting, construction methods and materials, pertinent measurements, and archaeological excavation methods employed. Using the data collected, a map indicating the location of all wells listed in the data table will be prepared. Proposed data fields are listed in Table 1. The proposed fields may change slightly in consultation with DelDOT should the research show that some fields are redundant or have no data (e.g. Well Type or Height).

Table 1: Proposed Historical Wells Data Table Fields

Field Name	Description	Data Type
Well ID	unique identifier for each well	text
CRS Number	SHPO number from site files…	
Site Number	state trinomial	text
Site Name	common or local name or other designation	text
Site Type	domestic, industrial, agricultural, etc.	text
Site Description	brief site description/summary	memo
County	county in which site is located	text
Hundred	hundred in which site is located	text
Watershed	watershed in which site is located	text
NRCS Soil Type	NRCS Web Soil Survey soil type for feature area	text
Feature Number	number or other designation used during archaeological investigation	text
Well Type	specific type or taxonomic designation	text
Construction Method	materials used (e.g. brick, stone, wood)	text
Feature Description	brief narrative description of well	memo
Period of Use	date range well was in use	text
Elevation	elevation in feet of well opening above mean sea level	number
Nearest Water	name or description of nearest permanent water source	text

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Table 1: Proposed Historical Wells Data Table Fields

Field Name	Description	Data Type
Distance to Water	distance in feet to nearest permanent water source	number
Setting	description of well location within site	memo
Distance to House	distance in feet from well to main domestic structure	number
Distance to Kitchen	distance in feet from well to kitchen	number
Distance to Outbuildings	distance in feet from well to outbuilding, and outbuilding type	text
Excavation Methods	excavation methods used (i.e., hand or mechanical)	text
Excavation Methods Notes	brief narrative of methods or additional information on methods	memo
Excavation Duration	duration of well excavation in man hours	number
Special Analyses	special analyses conducted on well materials (i.e., brick or soil chemistry	text
Depth	total depth of well in feet	number
Excavated Depth	depth of well as excavated, if not fully excavated (in feet)	number
Diameter Exterior	dimensions of well opening, exterior (*n*-x-*n*)	text
Diameter Interior	dimensions of well opening, interior (*n*-x-*n*)	text
Height	height in feet of well structure above ground surface	number
Contents	summary of well contents, summarize artifacts if present	memo
Imagery	photograph(s) or drawing(s) of well	image file
References	report reference	text

Analysis of the data collected for the table will seek to identify patterns relating to well type, function, setting, and contents by period and geographical area. Research questions to be explored through this synthesis include:

- Does well construction vary with time period or region?
- Is there a taxonomy of wells beyond construction type (e.g. barrel vs brick)?
- Does well function or location vary with time period or region?
- How does the well at the Polk site fit into the broader context of well types suggested by the synthesis?

The discussion portion of the historical well context will include an assessment of what has been learned through the archaeological excavation of wells from sites in Delaware and an appraisal of the methodologies employed. The goal of the assessment will be to provide recommendations regarding the cost-effectiveness of well excavation in a Section 106 context by well type and setting. Consideration will be given to apparent data gaps as well as areas where data appear to be redundant. Issues regarding well excavation safety, if available in the data, also will be discussed. Sections of the report for the well synthesis will include:

1. Introduction/Definition of the problem
2. Methods
3. Tabular Results
4. Research Conclusions

5. Management Recommendations

2.4 Task 3, Websites

Website 1 will focus on the evolution of Delaware wells, drawing on the results of the literature review and synthesis. This website will include content from the historical well context and 3D digital models of example wells. The models will focus on displaying variation in the construction of wells across time from several sites, including the Avery's Rest site, the Polk Site, the McKean/Cochran Farm Site, and up to two others.

Website 2, will focus on historic standing structures within the Route 301 Corridor. Versar will primarily draw on material and imagery from the A.D. Marble historic structures report to produce individual pages for the website. The house belonging to the owners of the Polk Site will be featured, and historical contexts discussed will include Delaware's peach boom. Imagery will include photographs and maps.

The websites will be designed to anticipate visits of approximately 20-30 minutes and be written at an 8th grade reading level. The well and historic structure websites will be hosted by DelDOT, retain the look and feel of the current DelDOT website, and will use the DelDOT 18th-century kitchen web page as an example. Versar will coordinate with DelDOT on technical requirements and will submit each website on a compact disk. Each page of the individual websites will also be prepared as a PDF file for archival purposes. Two hard copies of the PDF file will be submitted.

3.0 SCHEDULE

Because of the complexity of this project and the need to incorporate the findings of multiple outside efforts, Versar understands that Task 6 may extend to as much as 18 months.

Table 2: Proposed Project Schedule

Month(s) from NTP	Tasks to Perform
months 1-4	Section 106 Report
months 1-4	Literature Review
months 4-8	Data Collection/Entry
months 8-12	Analysis and report generation
month 13	Well Website
month 14	Architecture website

4.0 STAFFING

Key personnel for the project include the Project Director, Principal Investigator, and Field Director. These personnel will be the primary supervisory staff assigned to the project, and they will be supported by individuals drawn from throughout Versar's

Cultural Resources staff (Table 3). The key supervisory staff meet or exceed the Professional Qualification Standards outlined in the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44738-9), as published in the Code of Federal Regulations, 36 CFR Part 61. Proposed project personnel have extensive prior experience in the archaeology of the Middle Atlantic region and participated directly in the fieldwork for the three phase II site evaluations.

Table 3: Proposed Project Staffing

Project Role	Proposed Versar Personnel
Project Director	Brian Crane
Principal Investigator	Mackenzie Caldwell Rohm
Historian	Eric Griffitts
Archaeologist II/Senior Archaeologist	Dennis Knepper
Archaeologist I/ GIS/CADD/Graphics	Chris Bowen

5.0 BASIS OF ESTIMATE

- Versar will not develop an artifact catalog for the Phase II Section 106 report, or perform curation related tasks.
- There will not be more than 75 wells to investigate for the historical well data table. This number assumes that there are approximately 60 wells that have been excavated as part of DEDOT projects in the state, and that non DelDOT projects have excavated approximately 15 others. A sample of 75 wells will cover the large majority of all wells excavated in the state, and will include a representative sample geographically and temporally.
- The effort for the well synthesis will focus largely on identifying excavated wells, and entering key data into the database. These data will be analyzed for patterns important to the interpretation of the feature type, and for the management of wells as a resource, but the write-up of this research will be limited to a chapter of approximately 30 pages.
- There will not be more than 16 separate website pages.
- Versar will provide text and graphical content for the websites, but will not perform website development.
- Versar will develop models of up to 5 wells.

6.0 REFERENCES

Grossman-Bailey, Ilene, Philip A. Hayden, and Michael J. Insetta
2011 Management Summary Phase II (Evaluation-Level) Archaeological Surveys Warwick Prehistoric Site (18CE371) Polk Tenant Site (N05221, 7NC-F-111) U.S. Route 301 Mainline, Section 3: Maryland/Delaware State Line to North of Levels Road, St. Georges and Appoquinimink Hundreds and Town of Middletown New Castle County, Delaware and Electoral District 1 Cecil County, Maryland DelDOT Parent Agreement 1537, Task 2.