



Remembering Our Agricultural Past:

An Archaeological Study of a Pennsylvania German Farmstead in Berks County



Archaeological Data Recovery Excavations at
the Leinbach/Hartman Site, 36BK876
Bern Township
Berks County, Pennsylvania



Look for these other titles in the *Byways to the Past* series:

At the Sign of the King of Prussia

Richard M. Affleck

Gayman Tavern: A Study of a Canal-Era Tavern in Dauphin Borough

Jerry A. Clouse

A Bridge to the Past: The Archaeology of the Mansfield Bridge Site

Robert D. Wall and Hope E. Luhman

*Voegtly Church Cemetery: Transformation and
Cultural Change in a Mid-Nineteenth Century Urban Society*

Diane Beynon Landers

On the Road: Highways and History in Bedford County

Scott D. Heberling and William M. Hunter

Industrial Archaeology in the Blacklog Narrows: A Story of the Juniata Iron Industry

Scott D. Heberling

Connecting People and Places: The Archaeology of Transportation at Lewistown Narrows

Paul A. Raber

Canal in the Mountains: The Juniata Main Line Canal in the Lewistown Narrows

Scott D. Heberling

The Walters Business Park Site: Archaeology at the Juniata Headwaters

David J. Rue, Ph.D.

*The Wallis Site: The Archaeology of a Susquehanna River Floodplain at Liverpool,
Pennsylvania*

Patricia E. Miller, Ph.D.

*Small is Beautiful: Native American Occupations at Site 36MG378,
Montgomery County, Pennsylvania*

Andrew Wyatt and Barbara J. Shaffer



Remembering Our Agricultural Past:

An Archaeological Study of a Pennsylvania German Farmstead in Berks County

Archaeological Data Recovery Excavations
at the Leinbach/Hartman Site, 36BK876
Bern Township
Berks County, Pennsylvania

Robert H. Eiswert
McCormick Taylor, Inc.

Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
for the Pennsylvania Department of Transportation

2013

Commonwealth of Pennsylvania

Thomas W. Corbett, Governor

Federal Highway Administration-Pennsylvania Division

Renee Sigel, Division Administrator

Pennsylvania Department of Transportation

Barry J. Schoch, Secretary

Pennsylvania Historical and Museum Commission

Andrew E. Masich, Chairman

James A. Vaughan, Executive Director

Joe Baker, Series Editor

Photographs courtesy of McCormick Taylor, Inc., except as noted.

Layout and design by Jennifer Regina

Cover Photograph: Blocks 1 and 2 at Site 36BK876 completely excavated.

©2013 Pennsylvania Department of Transportation

ISBN Number:

Table of Contents

Finding and Learning About the Site.....	1
Archaeological Excavations and Analysis.....	6
What Did We Learn?.....	16
Appendix A: Glossary.....	23
Appendix B: For Further Reading.....	25
Appendix C: Archaeological Ethics.....	28
Appendix D: Why Does PennDOT Do Archaeology?.....	29
Appendix E: Getting Involved In Archaeology.....	32

Finding and Learning About the Site

The Leinbach/Hartman Site, 36BK876¹, was excavated by the Pennsylvania Department of Transportation (PennDOT) and the Federal Highway Administration (FHWA) because the site was scheduled for destruction by the construction of the 183/222 Interchange Improvement Project. PennDOT and the FHWA hired consulting archaeologists to excavate the site, analyze the artifacts, and produce a report. The site was located in the northeast quadrant of the SR 183/222 interchange in Bern Township, Berks County, Pennsylvania.

During the project development process, PennDOT and FHWA realized that the Leinbach/Hartman Site contained important information for understanding the

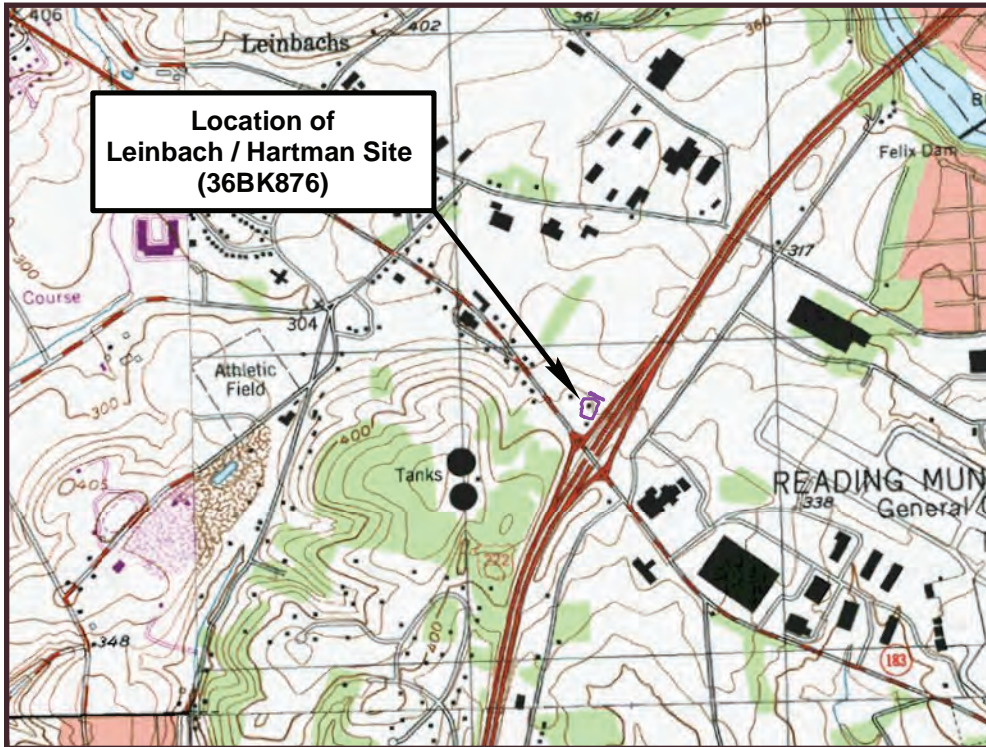
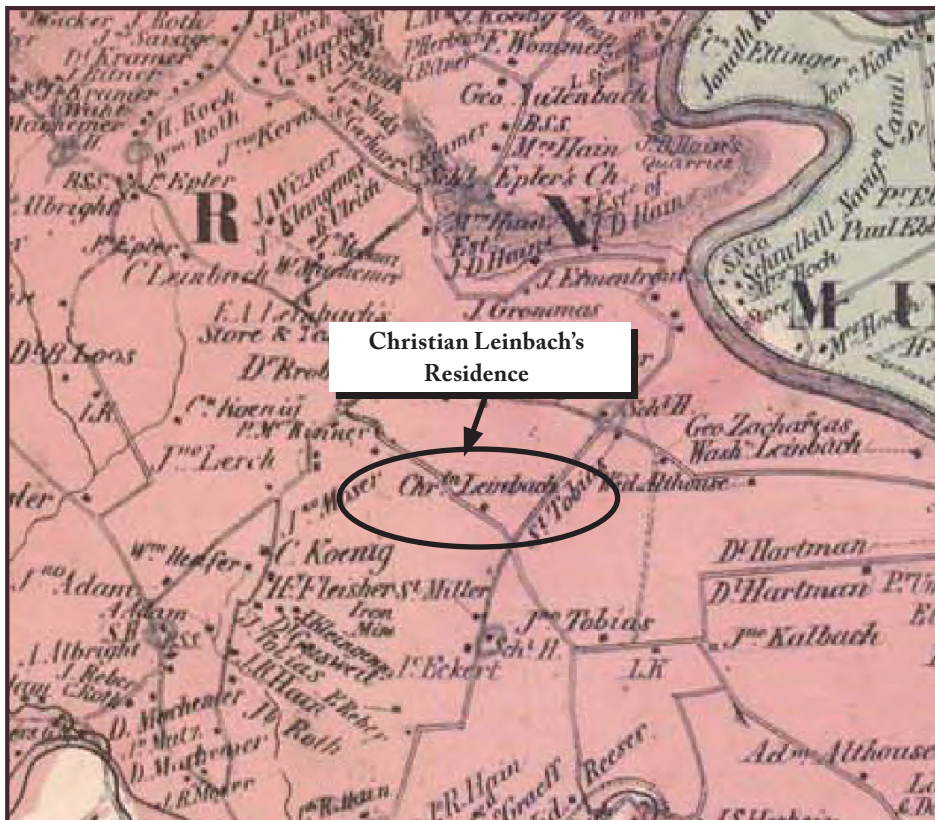


Figure 1

¹ Archaeological sites in Pennsylvania are assigned unique site numbers by the Pennsylvania Historical and Museum Commission using the Smithsonian Trinomial System. The first number “36” reflects Pennsylvania’s alphabetical place with respect to other states before Alaska and Hawaii gained statehood. “BK” is the abbreviation for Berks County, and the “876” indicates that the site was the 876th archaeological site recorded in that county.

late eighteenth and early nineteenth century agricultural lifestyles and economic systems in the Great Valley of Pennsylvania. Due to these considerations the site was considered eligible for the National Register of Historic Places. They also determined that the construction of the project would destroy the Leinbach/Hartman Site, therefore PennDOT and FHWA funded intensive excavations at the site to recover the important information that it contained. Another component of the site's excavation and analysis was to produce public outreach materials that summarize the site's importance. The public outreach materials include the publication of this booklet. Additional information on what archaeologists do and why PennDOT conducts archaeological investigations can be found in Appendices B and D of this booklet.



Christian Leinbach's residence is shown on this 1862 map of Berks County.

The Leinbach/Hartman Site was named after Christian Leinbach, who along with his wife Susanna, acquired the property in 1839 from Susanna's father, Peter Althouse. The farmstead stayed within subsequent generations of the immediate Leinbach family until 1943 when Elsie Leinbach sold the farmstead to Edward Hartman, a distant relative of the Leinbach family. Edward's family lived in the original farmhouse until 1971, when they dismantled the old log house and the farm's outbuildings. All of the buildings, with the exception of the large bank barn and the adjoining silo, were razed and buried under soil and rubble. Grass was subsequently planted and the landscape was turned into a field, leaving little evidence of the complex of buildings that laid beneath. The only visible feature left in this field was the stone and concrete entrance to a ground cellar. The ceiling of the cellar was covered with stone rubble and a large tarp when the archaeologists began their survey. In 1971 the Hartman family moved into a newly constructed Neocolonial style home which was placed on a rise approximately 200 feet to the west of the original farmhouse.



Late nineteenth century view of the Leinbach/Hartman farm.
(Photograph source: Book of Bern)

Although we do not know the exact date the property was settled, the earliest records that can be found for the site date to May 21, 1772, when John George Althouse (commonly referred to as George) acquired a tract of 140 acres from the



The Leinbach/Hartman farm during the mid-twentieth century.
(Photograph courtesy of Fayne Hartman)



The farmhouse during its demolition in 1971. The log construction of the house was visible beneath the wooden siding. (Photograph courtesy of Fayne Hartman)

original land patent holder. George Althouse was born May 5, 1744 in Wittenstein (Grafschadt) Germany. George Althouse was engaged in farming and appears to have acquired several farm properties during his lifetime. He and his wife had four children, including sons Samuel and Peter. When George Althouse died in 1811, his will provided his son Peter, who was born February 3, 1775, with the family farm in Bern Township. He married Catherine Schaeffer and they had three children together: George, Susanna, and Samuel. Peter was a successful farmer and landowner in Bern Township. After he died on March 5, 1839 his daughter Susanna and her husband Johann Christian Leinbach acquired the farmstead. Christian Leinbach, born November 24, 1791, was the son of John Daniel Leinbach, an important Berks County political leader in the 1780s and 1790s. The Leinbach family traces its Pennsylvania origins to 1723 when Johannes Leinbach Sr. immigrated to America from the Hochstadt region of Germany. Christian Leinbach's farmstead stayed within subsequent generations of the immediate Leinbach family until the mid-twentieth century.



View of the field containing the Leinbach/Hartman site prior to the archaeological investigations.

Archaeological Excavations and Analysis

The archaeological excavations were conducted in three phases. At the time of the Phase I Archaeological Identification Survey, members of the Hartman family were interviewed for information regarding the history of their property. The information revealed to the archaeologists through the interviews was very helpful in determining the location of the farmstead's remains, which were in the field to the north of the existing barn. In order to confirm the presence of the farmstead, 63 round shovel test pits, about 1.8 feet in diameter, were systematically excavated across the ground surface at 25 foot intervals. The soil from each shovel test pit was screened through ¼ inch wire mesh and the material left in the screen was visually scanned for artifacts. Using this method 1,122 artifacts were recovered and the remains of several stone foundations were found at the base of some of the shovel tests.

In the next stage of the work, the Phase II Evaluation Investigation, the Leinbach/Hartman site was evaluated for its research potential and eligibility for listing in the *National Register of Historic Places*. The Phase II testing at the Leinbach/Hartman site consisted of the excavation of 15 5x5 foot square test units in order to gather a larger sample of artifacts and to determine the presence and integrity of archaeological *features*; such as building foundations, privies, or trash pits. The results of the Phase II work indicated that the site contained a well-preserved complex of buildings and features associated with a farmstead. Given these observations, PennDOT and FHWA determined that the Leinbach/Hartman site was eligible for listing in the National Register of Historic Places and that further excavation and analysis of the site should be conducted prior to the construction of the new interchange. The State Historic Preservation Office staff archaeologists agreed with this finding and the final stage of excavations, the Phase III Archaeological Data Recovery, began in September 2009.

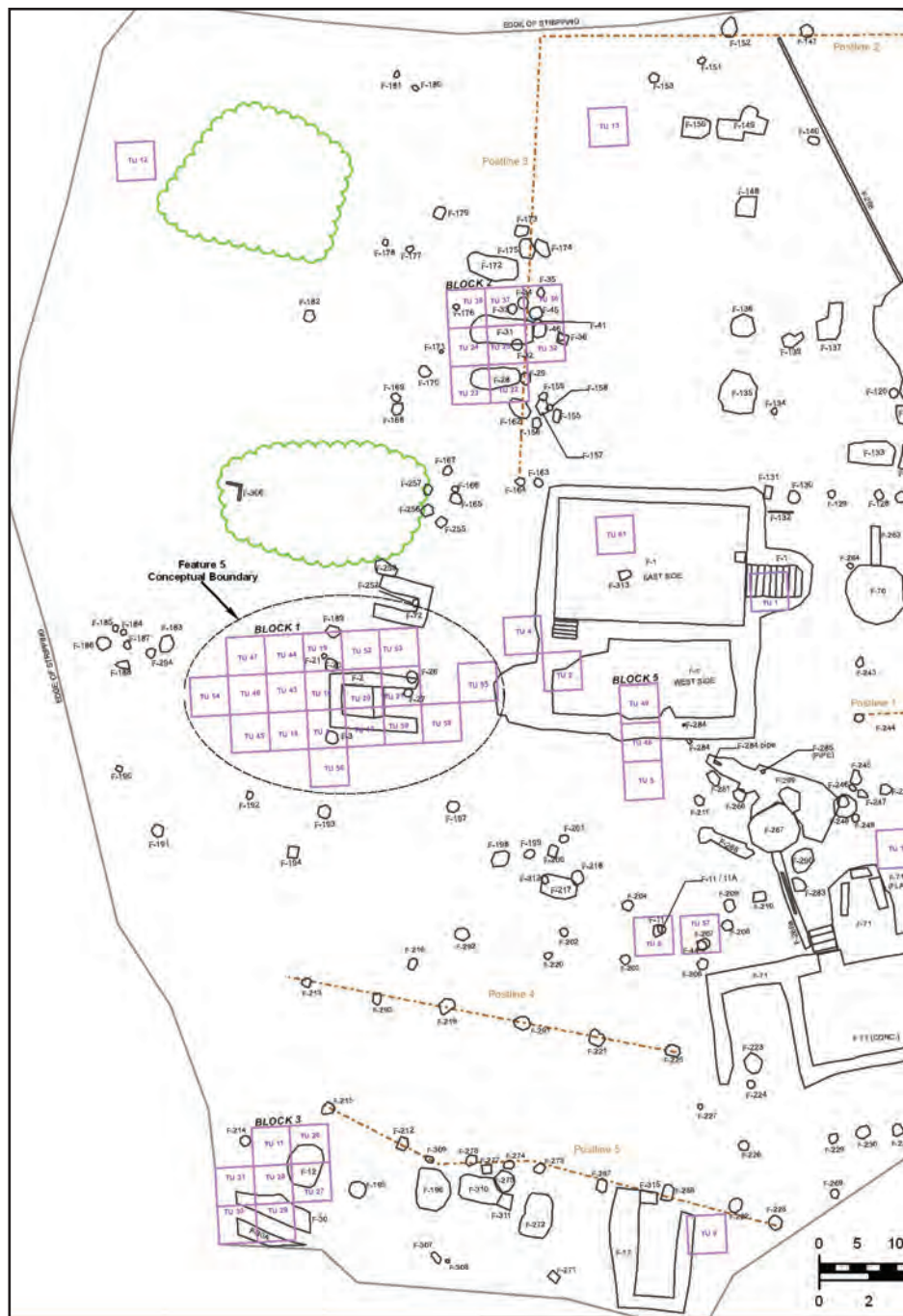
During the Phase II Evaluation Investigation, the boundaries of the site were identified and determined to cover approximately 3.1 acres. Within this boundary approximately 1.25 acres of the site's area was found to contain archaeological features and high quantities of artifacts; which was the focus of the data recovery excavations. The Phase III work included the excavation of an additional 46 5x5 foot square test units. Subsequent to the excavation of these test units, a backhoe was



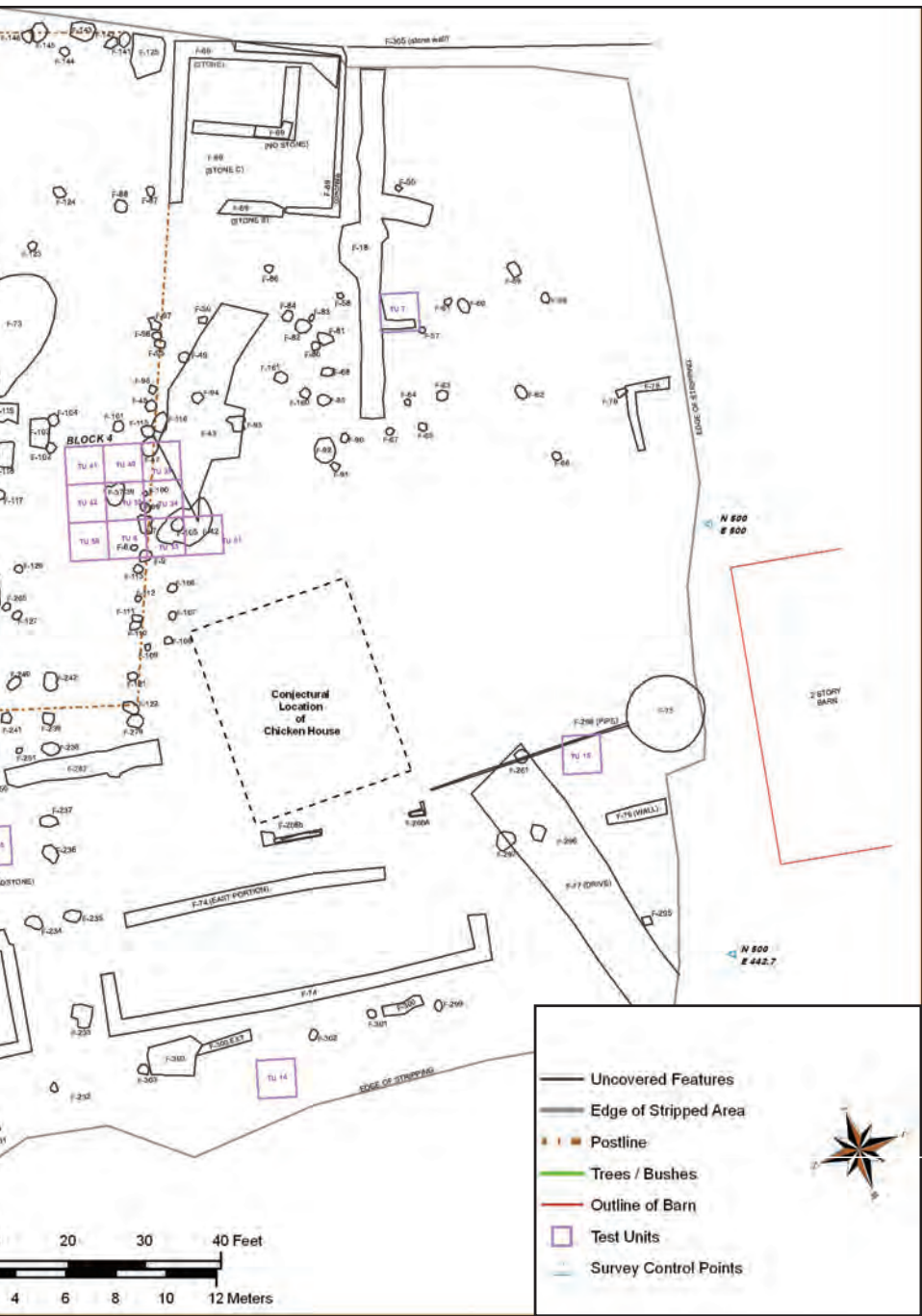
The bake oven foundation subsequent to its excavation.

used to remove the topsoil across the site so that the outlines of the other features, such as foundations and pits, could be seen in the undisturbed subsoil. A total of 310 features were documented during the Phase I-III excavations; 101 of these were excavated and a total of 81,753 artifacts were recovered.

The architectural features which were discovered during the excavations included the building foundations for both domestic and agricultural buildings. The domestic buildings included the farmhouse, the bakeoven, a possible butcher house, the multi-functional washhouse/summer kitchen/smokehouse, a dry house, and two wells; one of which had a windmill overtop to power the well's pump system. Agricultural foundations that were documented included a pig sty, a milk house, a poultry house, and a cistern. Other types of features included two rows of large pits that appeared to represent privies and/or trash pits as well as numerous postholes which established fence lines around the property.



Excavation plan of the Leinbach/Hartmena Site (36BK876)





Aerial view of the wash house/summer kitchen/smoke house (bottom), bake oven (left), farmhouse (center), dry house (top left), and pig sty foundation (right). The circular mound of stones to the right of the house marks the location of a well.



Two partially excavated pits found at the Leinbach/Hartman site. These features contained artifacts dating to the site's first occupants, the Althouse family.



An archaeologist recovers a redware plate from one of the pit features discovered at the Leinbach/Hartman site.



Concentration of bone and shell found during the excavation of one of the pit features.



The last outhouse used at the site was located next to the pig sty. It was not excavated by the archaeologists. (Photograph courtesy of Fayne Hartman)

The artifacts recovered during the excavations included the types of things that families would have used while living at the site (ceramic sherds, bottle glass, sewing items, etc.), things related to the buildings (brick, nails, and window glass), and other personal items such as buttons and coins. Appreciable amounts of bone and shell were also recovered, which told us something about the diets of the site's inhabitants.



Mended Sgraffito plate. Sgraffito was a popular decorating technique among the Pennsylvania Germans.



Mended cup and saucer set. These dishes were manufactured from 1863-1868.



A sampling of the various Polychrome Painted tea wares recovered from the site.



G.W Oakeley's Depurative Syrup bottle, from Reading Pennsylvania. This was manufactured from 1867-1900.



F. Gerling & Brothers bottle, from Reading, Pennsylvania.
This was manufactured from 1857-1900.

What Did We Learn?

The information from the research about the history of the site, the archaeological excavations, and the analysis of the artifacts were synthesized to help us learn about the lives of the families that lived there. There were two important research questions that were developed for the site.

1) How does the location of the farmstead and its features reflect the spatial organization of the activities at the site through time?

- Do man-made alterations to the landscape and construction of buildings and other features reflect the documented status of the inhabitants of the farmstead?
- Did the geographic positioning of the farmstead on the environmental features of the landscape and the spatial layout of the buildings and other features influence the outcome of the agricultural and economic activities that were undertaken?
- Did the layout and organization of the farmstead influence the longevity and productivity of the farmstead?

2) How does the historical and archaeological record reflect the transition of the farmstead from one oriented toward subsistence to a market oriented farmstead?

In terms of the first research question, we learned that the Althouse and Leinbach families' decisions regarding the location of their farm and the placement of its buildings was heavily influenced by the surrounding geology, soils, topography, and access to transportation networks. The *Pennsylvania Germans* were known for their innate ability to choose quality farm land and Althouse's decision to place his farm in its location was no exception. The limestone-based soils have a history of productivity and were critical to the overall success of the farm. The limestone bedrock also proved to be a convenient source of building material for the structures on the farmstead, as all of the early foundations were constructed of it. The placement of the buildings reflected a typical Pennsylvania German farmstead arrangement. The natural contour of the ground probably represented the most influential factor in determining the layout of the buildings, as several bank buildings were constructed

on the gentle slope along the western margin of the site. The construction of bank buildings was brought to southern Pennsylvania by early German immigrants and was implemented on the similar landscapes they found in Pennsylvania. Bank buildings were efficient because they provided access to multiple levels of the building, provided good drainage, and provided stable temperatures on the lower level, which was at least partially underground. Another factor contributing to the location of the farm was the existence of a public roadway. This provided convenient access to local market places such as Bernville and the rapidly growing City of Reading.

Although the farm was purchased in 1772 by George Althouse, the first tax records for the farm date to 1785 and are written in German. That year “George Althuss” was listed as owning 142 acres, two horses, and three cows. Unfortunately, the Bern Township tax records from this time did not include any information regarding a property’s building inventory, although a federal tax known as the Direct Tax of 1798, does note George Althouse as the owner of a house worth \$500 on a tract of land valued at \$3000. Considering that Althouse obtained the property in 1772, we assume that he built his house shortly after that. The architectural features and archaeological evidence support this approximate construction date for the house. As typical of mid to late eighteenth century Pennsylvania German houses, Althouse’s was constructed of log ovetop a stone foundation and was a full two-and-a-half stories high. It was laid-out in the Continental style consisting of three first floor rooms. These included a kitchen (kiche) on the west side of the house, which was separated from the bedroom (kammer) and parlor/living room (stube) on the east side by a fireplace and wall. The east side of the house contained a cellar.

The farmstead’s garden and orchard were established while the house lot was being developed. The garden was located on the warmer east side of the house and the orchard was located on the gently sloping ground to the north of the garden and the house. The garden was enclosed with fences in order to keep farm and wild animals from disturbing the domestic food supply. It is likely that Althouse’s barn was constructed during this time, but the architectural style of the standing barn indicated a mid-nineteenth century construction date based on its framing system and large size. It is possible that the original barn was located within the footprint of the mid-nineteenth century one, leaving no archaeological evidence of it.

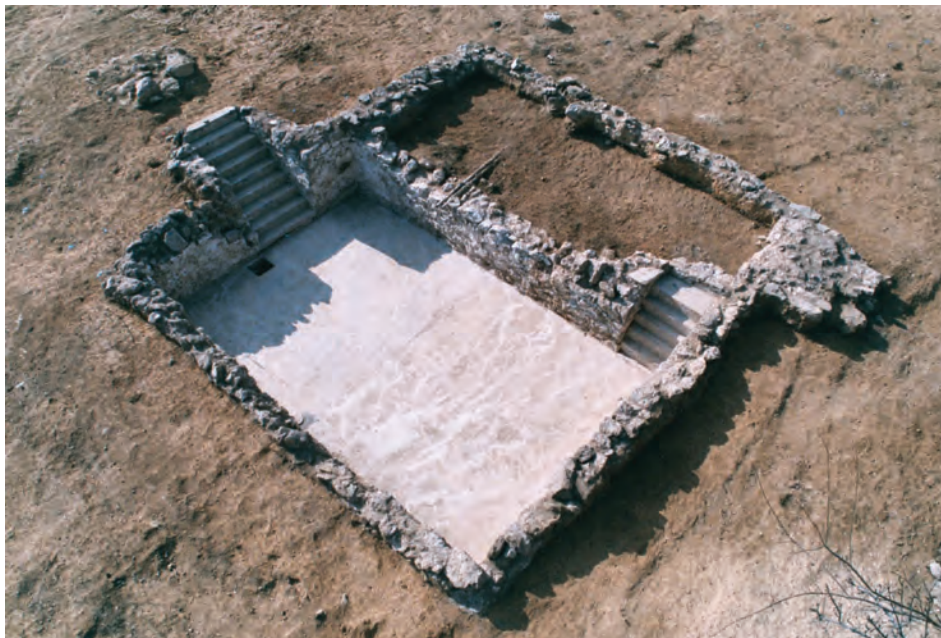
George Althouse died in 1811 and passed along his farming operation to his son



Aerial view of the farmstead.

Peter who lived on the farm until 1839. When Peter died in that year, his son in law, Christian Leinbach, acquired the farm at public sale. The archaeological and historical evidence suggest that the farm was greatly expanded under his tenure. In order to provide enough domestic space for his growing household, which included eight children and a domestic servant, he constructed the bakeoven and dryhouse in the backyard of the farmhouse and the large one-and-one half story stone combination summer kitchen/washhouse/smokehouse on the slope to the west of the farmhouse. This latter structure rested overtop a cave/root cellar that was dug into the bank. The cellar functioned as a sort of refrigerator, and was used to store root crops and sometimes meats and dairy products.

Christian Leinbach continued to expand his farming enterprise and at the time of his death in 1866 his farm production far exceeded others in Bern Township. The cash value of his farm in 1850 was \$25,000, more than any other farm in the Township. His successful operation allowed him to invest in the farm's infrastructure and enabled him to pursue other business interests. He constructed Leinbach's Hotel by 1848 and his new business venture formed the nucleus of what would become the crossroads town of Leinbachs. It also included a post office and general store.



Aerial view of the house foundation.



Aerial view of the wash house/summer kitchen/smokehouse foundation.

Christian's oldest son William inherited the farm and continued to develop it being influenced by the trends of the agricultural reform movement; which focused on increased production through improved farming techniques, such as the use of machinery. One of the structures built by William was a wagon/implement shed located just southeast of the barn. It served several functions in order to maximize efficiency and space, which was common for buildings constructed during this time. The ground floor was used for housing machinery while corn on the cob was stored on the second floor. A one-story frame pig pen was built at the southeast corner of the farmyard. This location was promoted by agricultural reformers of the mid-nineteenth century and allowed the hogs the opportunity to root up manure in the barnyard, while keeping odor and flies from infiltrating the farmhouse. It



The 1876 map of Berks County indicates that Christian Leinbach's son William became the owner of the farm.

also appears that the first poultry house was constructed during William's tenure as owner. This building, built into the bank along the western edge of the site, was identified through documentary photographs but no archaeological evidence was found for it. The remains of a second chicken house were found to the east of the first.

By the 1880s, William's son Peter had taken ownership of the family farmstead. He continued the pattern of investment, adding one additional building, the butcherhouse. Archaeological evidence indicates that the building contained a walk-in fireplace that was likely used for heating kettles of water for the butchering process, which required boiling water for the scalding of the animals after slaughter. The butcherhouse was conveniently located just west of the smokehouse, allowing easy transfer of the butchered meats to the smokehouse for final curing.

Ultimately, the alterations to the landscape and the construction of the numerous specialized agricultural buildings reflected the prosperity of the Leinbach farmstead more accurately than the domestic buildings and artifacts did. The barn was constructed in a stylish form for its time. The buildings immediately adjoining the barnyard, the implement shed, and the pig pen were constructed in similar design to the barn. These well-constructed buildings indicate that the farm's agricultural output was more important than the beauty and convenience of the farmhouse, which did not necessarily reflect the economic status of its owners. The spatial layout of the buildings and organization of the buildings was geared towards efficiency and interconnectedness and the buildings were situated in a way that cut down on wasted labor. The buildings associated with the highest energy expenditures were located near the center of the farmstead. The well planned arrangement of the buildings guaranteed a high level of productivity and above average means of income for almost 200 years.

Because of the importance of agriculture in the early success of the nation, a debate exists amongst historians regarding the economic nature of early American farms. Some historians have argued that most early farms were geared towards subsistence and it was not until the disruptive changes brought on by the Industrial Revolution in the late nineteenth century that these farmers transitioned into a more true form of capitalism. Other historians argue that early farmers were capitalists by nature and that the earliest farmers were already participating in global trade networks.

They state that it was the goal of the farmer to make money off the land, not just subsistence, and that rural Americans were tied to the market not only as producers but consumers as well. The second research question is framed around this debate. The pattern of development and commodities production of the Leinbach farm suggests an increased market orientation through the years, however, the analysis of the artifacts revealed a tendency towards thrift and a subsistence mode of food production throughout the entire lifespan of the farmstead. The dichotomy between the artifacts, which suggested self-sufficiency and frugality, as compared to the development and productivity of the farmstead, which suggested a relatively high degree of market participation, seems to reflect the final struggles of the Yeoman class during the nineteenth century. As a tightly bound Pennsylvania German farm family, the Leinbachs appeared to be motivated by familial autonomy and a desire to keep the farmstead within their lineage. The first occupants, the Althouse family, seemed to practice subsistence-oriented agriculture, and if they were fortunate enough to have a surplus, it would have been sold at market. But through time the farmstead practiced a much higher degree of market participation, as indicated by Christian Leinbach's surplus production. We do not know for certain, but this could be due to several capitalist developments in the nineteenth century; including the demand for agricultural products in Europe, improved transportation networks, better technology, and the rise of wage labor in an increasingly industrialized society. Through time it appears that the Leinbach family consciously pursued the opportunities of the expanding marketplace, but also clung to the ideals of economic independence of the Yeoman farmers. In terms of the historical debate regarding the "subsistence" and "capitalist" farmers, the Leinbachs were somewhere in between. Evidence of market participation was visible from the outset of the farmstead and increased with time, but the Leinbach's subsistence-oriented household and strong family lineage persevered in the face of a developing capitalist economy.

APPENDIX A - Glossary

Artifact: Any portable object made, altered, or used by humans.

Bake oven: A structure usually made of brick or stone which contains an oven. It was usually sited near the farmhouse. This was commonly one of the first structures built on early Pennsylvania German farmsteads. It kept the hot and labor intensive task of baking on the outside of the farmhouse.

Butcher house: A butcher house is a small outbuilding used for cutting, packing, and processing meats. These are usually frame buildings, and commonly date from c. 1875 to the mid-twentieth century. They usually contain work tables and sometimes a stove or set-kettle.

Cistern: A waterproof receptacle for holding liquids, usually water. Cisterns are often built to catch and store rainwater. Cisterns are distinguished from wells by their waterproof linings.

Dry house: A dry house is a small structure fitted with interior racks, shelves, or drawers and a small stove. Thinly sliced fruits and vegetables were placed on the



An archaeologist excavates a deep storage pit at site 36CU194, a Susquehannock site in Cumberland County, Pennsylvania.

racks and slowly dried with low heat from the stove. The dryhouse would be situated near the farmhouse. This is a rare outbuilding. It is mainly associated with Pennsylvania German culture.

Feature: Unlike artifacts, which can be removed from an archaeological site without destroying them, features are non-portable material remains, such as trash pits, privies, and postholes.

Milk house: A milk house is a small structure used expressly for the purpose of isolating fresh milk from the smells, dust, and microbes of the barn environment. It provided a cool and clean place to store milk before it was sent to market. Most milk houses date to the twentieth century.

National Register of Historic Places: The official list of the Nation's historic places worth of preservation. The National Register of Historic Places is administered by the National Park Service, a division of the United States of the Interior.

Pennsylvania Germans: Descendants of the Germans who migrated into Pennsylvania until the time of the American Revolution. Most of the first immigrants were poor farmers who sought land similar to that in their homeland. This land was common in southeastern and central Pennsylvania, the main areas settled by the Pennsylvania Germans.

Pig sty: A detached outbuilding for housing hogs. The pig sty was usually located on the forebay side of the barn, or between the house and barn. It usually faced south. These features ensured warm and dry conditions, the main requirements for hogs.

Posthole: a posthole is a cut feature used to hold a timber. They are usually deeper than they are wide. Although the remains of the timber may survive, most postholes are mainly recognizable as circular patches of darkened earth.

Poultry house: Poultry houses (chicken houses, hen houses) provided shelter for poultry and is was usually intended for egg laying or meat production during the twentieth century. These were usually of frame construction. Poultry houses had either a shed roof or a gable roof. Windows across one eaves side afforded the light essential to chicken health.

Privy: A toilet located in a small shed outside a house or other building; outhouse.

Smoke house: A small one-story structure with a square or rectangular shape used for curing meats. These buildings vary considerably in construction, but generally lack a chimney and windows for the purpose of containing smoke, which permeates the meat products.

Summer kitchen: A rectangular outbuilding, one to two stories high, that is detached or semi-detached from the main house. It contains cooking facilities for the hot and busy summer season. These are usually frame buildings, but some are made of brick, log, or stone.

Wash house: A wash house was an outbuilding constructed for the task of washing clothes. A wash house may have a stove or fireplace, but usually contained a heavy set-kettle set-up.

Yeoman: Farmers that owned small tracts of land and sold goods in the local and sometimes national markets and were economically independent because they produced their own food and avoided debt.

APPENDIX B - What Do Archaeologists Do?

The most common question archaeologists get is “Do you find dinosaur bones?” Archaeologists don’t actually look for dinosaur bones, although some archaeologists may find them by accident occasionally. Archaeology is the scientific study of the human past through the recovery of material remains and the analysis of those remains. Dinosaurs became extinct about 65 million years ago. Modern humans did not evolve until about 200,000 years ago at the very earliest, so dinosaurs were gone for at least 64 million years before people appeared. People have lived in North America for at least 13,000 years.

Here in Pennsylvania, archaeologists study the past lives of people who have lived here both before and after the European colonization of the New World. There are four basic components to an archaeological study: background research, fieldwork, laboratory analysis, and documentation. Each of these components is equally important, and fieldwork should never be undertaken unless the other three are also going to be completed.

Background research should be conducted before beginning any field work. Background research tells us what is already known about an area, including where archaeological sites are already recorded and what work has been done at those sites. It also allows us to develop a context for the site. A historic context contains information about what is already known regarding a site’s specific time period, location, and type. The context is the framework within which the site’s importance can be evaluated. Background research will often continue throughout the field work, laboratory work, and report write-up, as new information from the excavations and analysis comes to light.



One component of background research is reviewing research that has been previously conducted.

Fieldwork is the on-site investigation of an area or archaeological site. Field work can consist of a variety of different activities. In Pennsylvania, these activities often include reconnaissance, controlled surface collection, subsurface sampling or testing, and intensive excavations.

- **Field reconnaissance** involves walking over an entire area to assess the conditions. During the walk-over, the archaeologists look for previously disturbed areas, evidence of archaeological sites on the surface (such as artifacts or foundations), water sources, how steep the ground is, and any other factors that might help them determine if there might be any archaeological sites present.
- **Controlled surface collection** is the systematic collection of artifacts that are visible on the surface of the ground. It is usually done immediately after a field has been plowed and after it rains, as this often brings artifacts to the surface. When archaeologists are walking fields looking for artifacts during a controlled surface collection, they walk in rows that are a set distance apart, and they record the location of the artifacts they find.
- **Subsurface sampling or testing** of an area is often done to determine if sites are present. Also, subsurface sampling or testing of a known site is done to assess whether the site is significant. It usually includes the excavation of shovel test pits or test units.



Intensive excavations being conducted at site 7NC-B-11, a historic farm complex in Wilmington, Delaware

Shovel test pits are round holes that are approximately 2 feet in diameter and test units are square holes that are approximately 3.3 by 3.3 feet. Sometimes backhoes can be used to cut trenches or to remove overburden that is covering up a site.

- **Intensive excavations** are usually full-scale investigations where a large portion of the site is excavated to recover the important information that can be learned from the site. It usually includes excavating blocks of test units and any features that are identified.

Laboratory analysis is the processing of the artifacts found during field work. It includes washing, labeling, inventorying, analyzing, and packing the artifacts in appropriate containers for curation. Curation is the storage and maintenance of archaeological artifacts in an appropriate facility. The artifacts should be stored in archivally safe bags and boxes and the facility should be climate controlled. A very important aspect of curation is that the artifacts are made available to other people in the future who might want to use them for additional research.



Artifacts are returned to the laboratory for processing and analysis.

Documentation is writing up the results of the archaeological investigations and making them available to other researchers and the general public. There are usually at least two different types of documentation. A detailed technical document, which may be very long and dry, is prepared for other archaeologists. It usually includes all of the data that was generated during the excavations and analysis, so that other archaeologists can use that data for their research. The second is a booklet (such as this one), brochure, poster, exhibit, website, or other avenue for the public to learn about the site and the important information that was learned from the site.

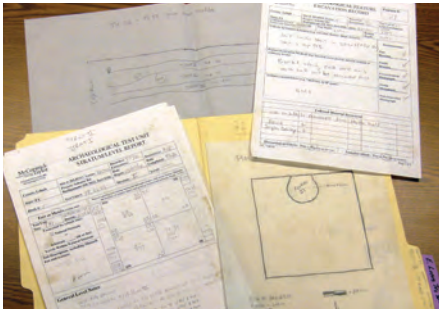


Preparing reports for other archaeologists and also for the public is an important component of archaeological investigations.

APPENDIX C - Archaeological Ethics

Archaeologists adhere to a set of ethics. This means that we recognize that there are appropriate and inappropriate activities and behaviors that we follow when conducting archaeological investigations. Conducting archaeological excavations is destructive – once someone has excavated a portion of a site, it is destroyed. If the important information from that portion of the site is lost, it can never be obtained again. Ways the information could be lost are if the excavations were carried out haphazardly, careful records weren't kept during the excavations, the artifacts weren't properly analyzed, the results weren't written up and made available to the public, or any number of other reasons. This is why it is so important that all archaeological work be conducted in a manner which follows accepted protocols and why trained archaeological professionals should supervise all archaeological excavations.

One of the core beliefs at the center of archaeological ethics is the idea that archaeological sites are an important part of our shared heritage and the results of the excavations should benefit the public. Anyone participating in archaeological research should strive to be a good steward of the site, the artifacts, and the information that was recovered.



The paperwork completed by archaeologists is an important part of the documentation of the archaeological investigations. These records will be permanently curated with the artifacts.

If you are involved in an archaeological project, always remember that you are destroying or damaging the site. The reasons for conducting the excavations should outweigh the damage. Good reasons for conducting archaeological excavations are that the site is slated for destruction by some kind of construction project (such as the roadway project for which this booklet has been written) or that the site contains information that is so significant that it will contribute greatly to our knowledge of the way people lived during a specific time period in a certain place (such as the work often conducted by universities and the Society for Pennsylvania Archaeology).

The Society for American Archaeology, an international organization dedicated to the research, interpretation, and protection of the archaeological heritage of the Americas, has 8 principles that archaeologists should follow. If you plan to become involved in archaeological research, you should take a look at them. They can be found on their website at www.saa.org, under the section entitled “About the Society.”

APPENDIX D - Why Does PennDOT Do Archaeology?

Many PennDOT as well as local road and bridge projects receive funding from the Federal Highway Administration (FHWA). There are federal and state laws that require agencies or individuals to take historic properties into consideration any time that they receive federal or state funding, licensing, or assistance. Two of the important laws are Section 106 of the National Historic Preservation Act (along with the regulations that enforce it, 36CFR§800) and the Pennsylvania History Code (37 Pa. Cons. Stat., Section 507 et. seq.). We often call the process that PennDOT goes through when it is considering historic properties the **Section 106 process**.

The underlying assumption of these laws is that historic properties, including archaeological sites, are important to all Americans. Our federal government believes this and has explained why in the National Historic Preservation Act:

The Congress finds and declares that -

(1) the spirit and direction of the Nation are founded upon and reflected in its historic heritage;

(2) the historical and cultural foundations of the Nation should be preserved as a living part of our community life and development in order to give a sense of orientation to the American people;



(3) historic properties significant to the Nation's heritage are being lost or substantially altered, often inadvertently, with increasing frequency;

(4) the preservation of this irreplaceable heritage is in the public interest so that its vital legacy of cultural, educational, aesthetic, inspirational, economic, and energy benefits will be maintained and enriched for future generations of Americans.

Our federal government believes that historic properties are significant to the Nation's heritage. Photograph of intensive excavations at site 36BK876, a historic farmstead in Berks County, Pennsylvania.

As a result, agencies such as PennDOT and FHWA are required to consider the effects on historic properties within the area of potential effects of any projects they carry out, approve, or fund. **Historic properties** are defined by regulation as districts, sites, structures, buildings, objects, or traditional cultural properties that are listed in or eligible for listing in the National Register of Historic Places. Historic properties are also referred to as cultural resources. **The National Register of Historic Places** is the official list of the Nation's historic places worthy of preservation. The regulatory definition of the **area of potential effects** is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties. For archaeological sites, the area of potential effects is any place in which ground disturbing activities could occur for a project.



Careful record-keeping is essential during archaeological investigations.

The **State Historic Preservation Office** administers the national historic preservation program at the state level, reviews National Register of Historic Places nominations, maintains data on historic properties that have been identified but not yet nominated, and consults with Federal agencies during the Section 106 process. In Pennsylvania, the State Historic Preservation Office is the Pennsylvania Historical and Museum Commission's Bureau for Historic Preservation. To successfully complete the Section 106 process, PennDOT and FHWA work with the State Historic Preservation Office, any Federally Recognized Tribes that are interested in the project, and other parties to complete the steps listed below.

- Identify properties within the area of potential effects that are listed in or eligible for listing in the National Register of Historic Places.
- Determine if the project will have an effect on the property, and if so, if the effect will be adverse. An **adverse effect** occurs when an undertaking may directly or indirectly alter characteristics of a historic property that qualify it for inclusion in the National Register of Historic Places.

- When PennDOT projects have an adverse effect on a historic property, PennDOT must explore measures to minimize or mitigate the effect.

For this booklet, we only talk about how PennDOT considers the effects of its projects on archaeological sites, although they also consider buildings, bridges, historic districts and other above ground man-made structures.

There are three phases that PennDOT follows when considering whether the project will affect archaeological sites.

- **Phase I archaeological identification surveys** are intended to locate archaeological sites within the area of potential effects.
- **Phase II archaeological evaluation investigations** are conducted to determine if an archaeological site is eligible for listing in the National Register of Historic Places. The results of the investigations should also provide the time period in which the site was used, the boundaries of the site, and some idea of the artifacts types and distribution and soil characteristics found at the site. If the site is determined to be eligible, PennDOT must assess if the project will have an effect on the site, and if so, if the effect will be adverse. For PennDOT projects, an adverse effect usually means that the project will destroy a part or all of the site.
- **Phase III archaeological data recovery excavations** are conducted on sites that are eligible for listing in the National Register of Historic Places as mitigation if PennDOT activities will have an adverse effect on the site.

PennDOT and FHWA are required to involve the public throughout the process of identifying historic properties, determining if they are eligible for listing in the National Register of Historic Places, assessing if the project will have an effect on properties that are eligible, and mitigating those effects that are adverse.

To learn more about PennDOT's public involvement process for historic properties and find out about projects that are being developed in your area and how you can get involved in them, you can go to the Pennsylvania Transportation & Heritage website that PennDOT has set up for this purpose: www.paprojectpath.org.

To find out more about the Section 106 process, you can read A Citizen's Guide to Section 106 Review. Go to www.achp.gov and click on **Working with Section 106**.

APPENDIX E - Getting Involved in Archaeology



Volunteers, both adults and children, can make valuable contributions archaeological investigations.

Archaeologists' understanding of the Native American past is based on excavation and research conducted over the last 150 years. Scientifically-based archaeology, with its attention to hypothesis-testing and rigorous standards of evidence, has developed from the 1930's onward. Because archaeology is a relatively young discipline compared to history and the physical sciences, new discoveries on sites and in the lab can radically change what we know about the past. It is also one of the few fields of study in which non-academics can participate and make lasting contributions.

The best way to get involved with archaeology is to join a local chapter of the Society for Pennsylvania Archaeology (SPA). The SPA's website says that it was:

organized in 1929 to: Promote the study of the prehistoric and historic archaeological resources of Pennsylvania and neighboring states; Encourage scientific research and discourage exploration which is unscientific or irresponsible in intent or practice; Promote the conservation of archaeological sites, artifacts, and information; Encourage the establishment and maintenance of sources of archaeological information such as museums, societies, and educational programs; Promote the dissemination of archaeological knowledge by means of publications and forums; Foster the exchange of information between the professional and the avocational archaeologists (www.pennsylvaniaarchaeology.com).

Local chapters of the SPA often do research, conduct archaeological excavations, process and analyze artifacts, and write reports and other publications. They do most of this through the efforts of volunteers. The SPA local chapter in the Montgomery County area is Chapter #21, the John Shrader Chapter. It meets on the 1st Wednesday each month at 7:00 p.m., at the Joanna Furnace, Berks County, Pennsylvania (as of the publication of this booklet). The Chapter Representative is Catherine Spohn and she can be reached at (610) 678-1274 or cspohn@pa.gov.

Another way to volunteer for archaeological studies is through the United States Forest Service's Passports in Time Program. The US Forest Service uses volunteers to perform archaeological investigations and other historic preservation activities at interesting sites in the National Forests throughout the country. Further information is on their website at www.passportintime.com.

The Leinbach/Hartman archaeological site (36BK876) is a farmstead located in Bern Township, Berks County. The site was settled in the last quarter of the eighteenth century by Pennsylvania Germans who traced their roots to Wittenstein (Grafschadt) Germany. In the early nineteenth century, the farm was under the ownership of Christian Leinbach, a prominent citizen of Berks County. The farm was passed down through the generations of the Leinbach family until the twentieth century. The fertile limestone-based soils of the Great Valley and the efficient arrangement of the farmstead guaranteed a high level of productivity and above average means of income for almost 200 years. The archaeological excavations at the site uncovered a complex of buildings and features that shed light on the evolution of this successful farm and the daily lives of its inhabitants. The Pennsylvania Department of Transportation and the Federal Highway Administration sponsored the site's discovery and excavation prior to the construction of the 183/222 Interchange Project.



pennsylvania

DEPARTMENT OF TRANSPORTATION

Pennsylvania Historical and Museum Commission

ISBN Number: