

Excavations *at the*
SWARTZ SITE:

A Native American
Settlement
on French Creek



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TABLE OF CONTENTS

CHAPTERS

Chapter 1: Introduction

Chapter 2: Late Woodland Period on the Glaciated Allegheny Plateau

Chapter 3: Discovery and excavation of the Swartz Site

Chapter 4: Telling Time and reconstructing life at the Swartz Site

Chapter 5: The Swartz Site in a larger context

APPENDICES

Appendix A: Glossary

Appendix B: For further reading

Appendix C: What do archaeologists do?

Appendix D: Archaeology ethics

Appendix E: Native American Cultural Periods in Pennsylvania

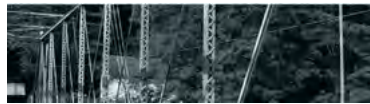
Appendix F: Why does PennDOT do archaeology?

Appendix G: Making stone tools

Appendix H: Making Native American pottery

Appendix I: How to get involved with archaeology





Chapter 1

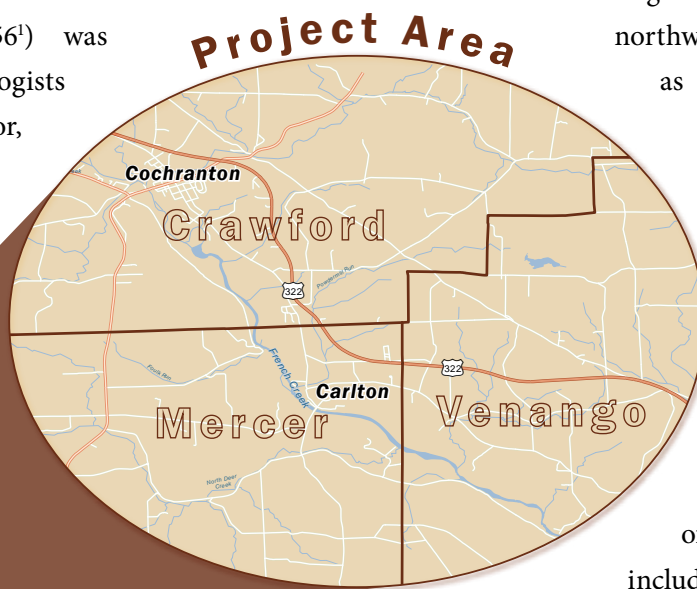
INTRODUCTION

Prior to European contact, the French Creek Valley in northwestern Pennsylvania was occupied by Native American groups who were drawn to the area for its proximity to a variety of microenvironments including wetlands, marshes, prairies, floodplains, and forests that attracted an abundance of plant and animal resources. The fertile soils along French Creek also allowed these groups to supplement their diet with grown foods (*cultigens*), like corn and squash. In order to take advantage of all the available resources, these groups occupied large village sites along the floodplain, as well as smaller temporary camps in the uplands above the valley floor.

The Swartz Site (36ME256¹) was discovered in 2011 by archaeologists working for McCormick Taylor, Inc. as part of the proposed Carlton Truss bridge replacement project.

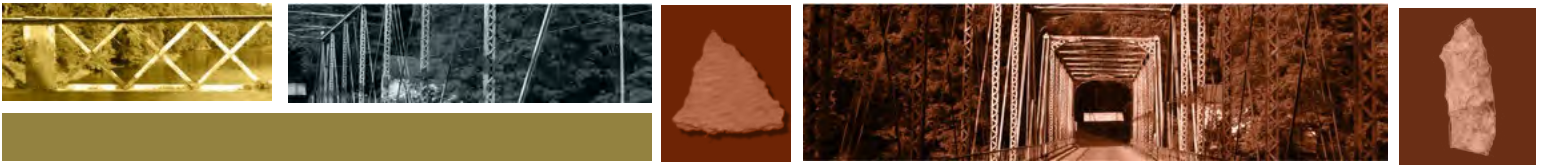
The Site is on State Route 1015 in French Creek Township, Mercer County, Pennsylvania and is one of few Native American village sites that have been identified along French Creek. In accordance with Section 106 of the National Historic Preservation Act, consultation with federally recognized tribes and *subsurface testing* were conducted in order to determine if significant sites were present within the project area. Multiple phases of archaeological testing, sponsored by the Pennsylvania Department of Transportation (PennDOT) and the Federal Highway Administration (FHWA), were conducted at the Site in order to evaluate the Site's potential to contribute to our

knowledge of Native American life-ways in northwestern Pennsylvania and recover as much information as possible about the Site and its occupants².



Three discrete occupations were identified at the Swartz Site (36ME256) that span from A.D. 1160-1480 within the Late Woodland period. Each occupation was identified by the presence of multiple cultural *features*, including *postmolds*, *hearths*, and *refuse/storage pits*, and recovered *artifacts*.

Artifacts recovered from the Swartz Site, including pre-contact pottery *sherds*, *stone tools*, wood charcoal,



cultigens, and other botanicals, provide information regarding the subsistence and technology employed by these people. The Swartz Site represents only the third well-documented excavation of a Late Woodland village within the French Creek Valley.

As a final introductory note, we have tried to keep technical terms to a minimum, but a few are unavoidable. These technical terms are italicized in this booklet, and their definitions can be found in the Glossary (Appendix A).

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, “ME” is the abbreviation for Mercer County, and the number “256” indicates that the site is the 256th archaeological site recorded in that county.

² 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. All archaeological work, including tribal consultation, at the Swartz Site was done to comply with the Section 106 of the National Historic Preservation Act. Additional information on what archaeologists do and why PennDOT conducts archaeological investigations can be found in Appendices C and F of this booklet.



Temporary shelter used by McCormick Taylor archaeologists to protect the *excavation blocks* from harsh weather conditions.

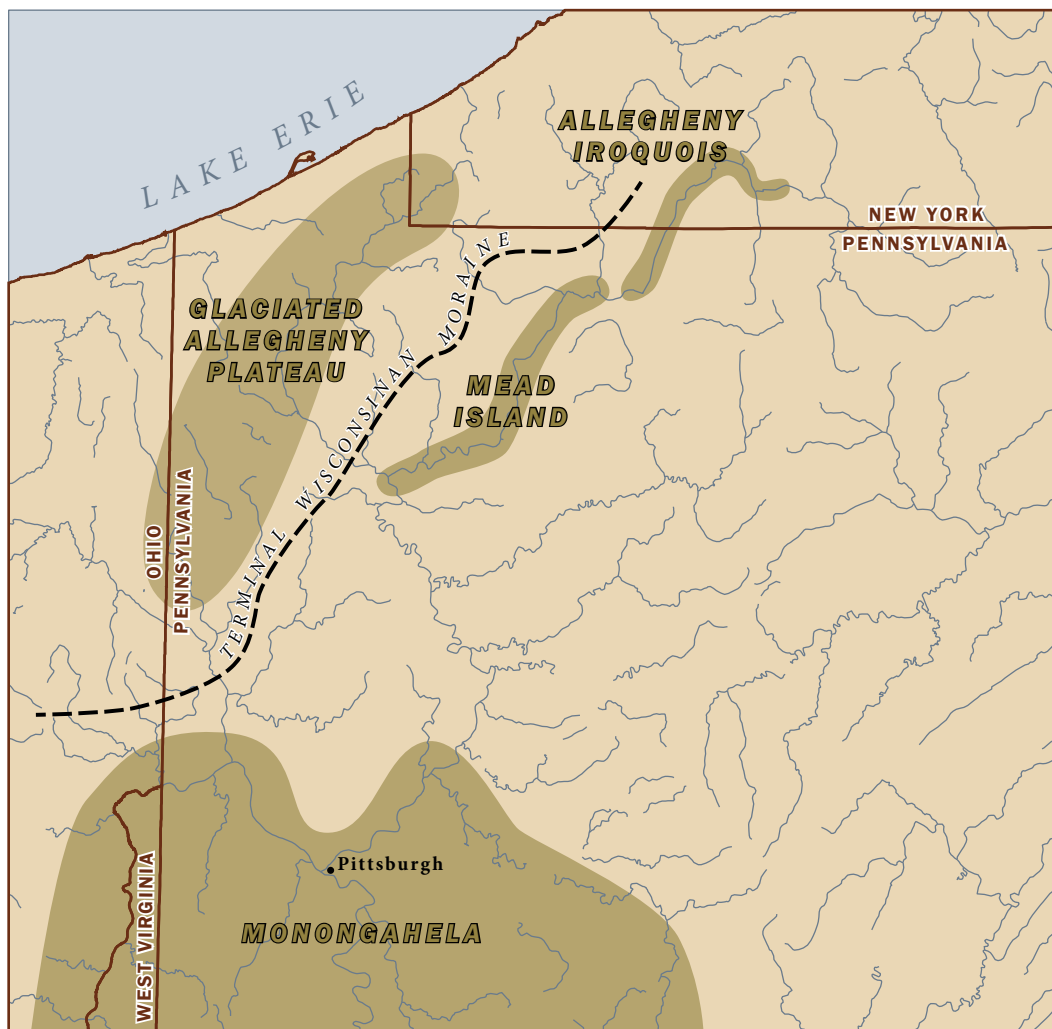


Chapter 2

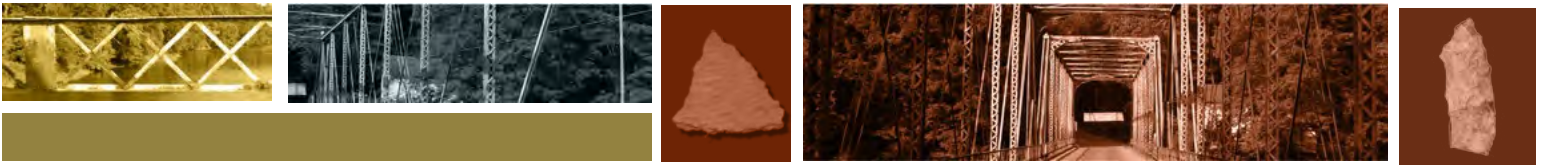
LATE WOODLAND PERIOD ON THE GLACIATED ALLEGHENY PLATEAU

The Late Woodland is by far the most well-studied period in western Pennsylvania. The Late Woodland is the last pre-contact period, beginning at approximately 900 A.D. and lasting until European Contact³. Because there are no written records for this period, researchers have relied on what pre-contact peoples have left behind to learn about who these people were and how they lived; this is referred to as the archaeological record. Changes in the archaeological record, regarding the types of tools that were made, how they were made, or what they were

made from, are interpreted by archaeologists as signaling changes in a population or the movement of a population across the landscape. Within northwestern Pennsylvania during the Late Woodland period several groups have been identified archaeologically, including the Monongahela, Mead Island, Allegheny River Iroquois (Proto-Erie), and the Glaciated Allegheny Plateau Tradition. Primarily, these groups have been identified based on the distinct types of pottery that they manufactured and the locations of their settlements within northwestern Pennsylvania. The spread



Adapted from Johnson & Myers 2004



of people and technology into and within the region was facilitated by the Allegheny River. Variations in pottery manufacture, in regard to tempering agent, collar, rim profile, decoration, cordage impressions, and the twist direction of cordage impressions found on the pottery have been observed between the multiple river valleys and plateaus of northwestern Pennsylvania (See Appendix H for more information about making Native American pottery).

Through time within the French Creek Valley, changes in preferences of tempering agent and the appearance of more elaborate decoration are seen along with a shift to more heavy reliance on *horticulture* and more permanent settlements. The Glaciated Allegheny Plateau (GAP) Tradition, which occupied the French Creek Valley, is comprised of Mahoning, French Creek, and McFate Phase populations⁴. The three phases of the Glaciated Allegheny Plateau (GAP) Tradition document a gradual replacement of igneous and metamorphic grit tempered pottery by those tempered with crushed freshwater mussel shell⁵.

The first phase, Mahoning Phase (A.D. 1100-1300), includes predominantly igneous-rock tempered pottery known as Mahoning Cordmarked. The second phase, French Creek phase (A.D. 1275/1300-1400) indicates a transition from igneous-rock-tempered vessels to those tempered with pulverized mussel shell. *Shell-tempered* vessels recovered from French Creek phase sites are identified as Chautauqua Cordmarked. The third phase, McFate phase (A.D. 1400-1575), is identified by the presence of shell-tempered and elaborately decorated McFate Incised ceramics, as well as Conemaugh Cord-Imprinted ceramics.

McFate Incised ceramics are identified by bands of decoration around the rim and collar that are filled with horizontal and oblique lines. These decorations are found

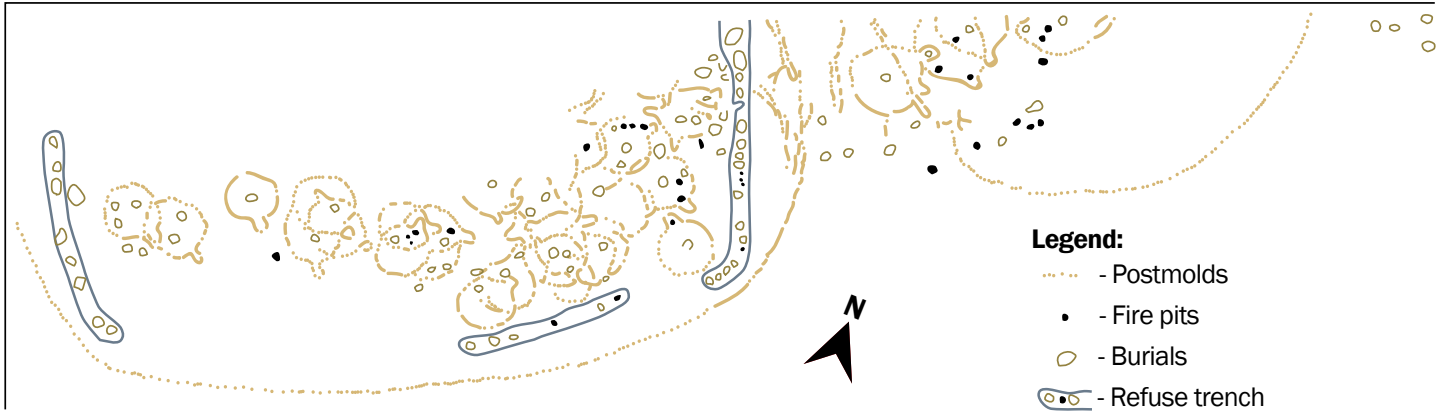
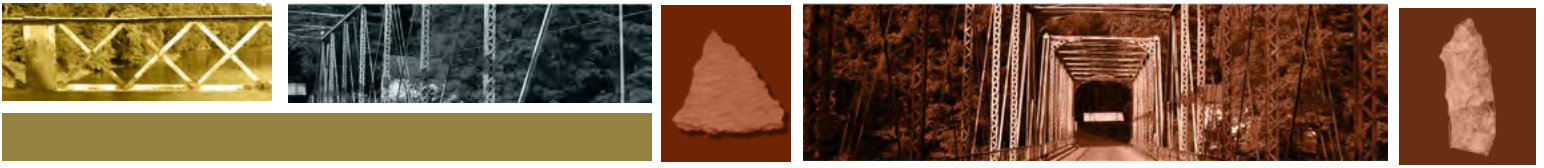
³ The Contact period refers to the time when Native Americans first encountered Europeans. In northeastern North America and the Middle Atlantic, some coastal Native groups met Europeans as early as 1520s. Basque fisherman made regular contacts with interior Native groups in the St. Lawrence River after 1580 A.D.

⁴ Suggested readings which detail the development of the Glaciated Allegheny Plateau Tradition and research conducted in association with the McFate, in particular, can be found in Appendix B of this booklet.

⁵ According to researchers, this technological change, which began in southwestern Pennsylvania, spread northward, occurring at approximately A.D. 1250-1275 on the Glaciated Allegheny Plateau, appearing in the French Creek and upper Beaver River drainages.



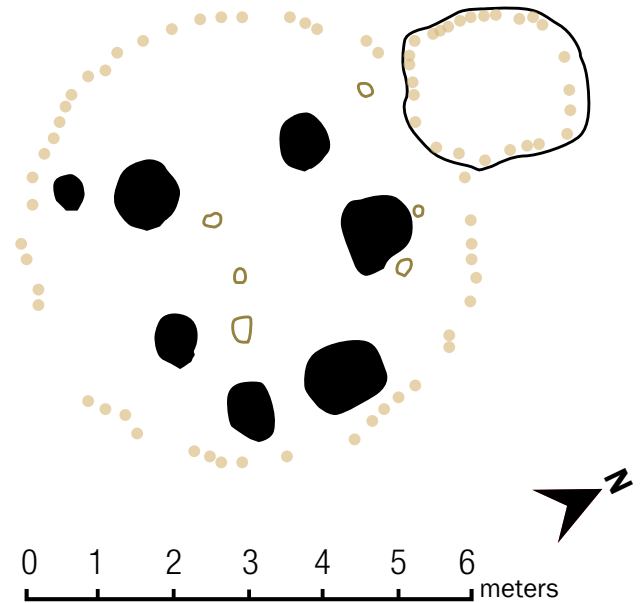
The McFate territorial sphere is based on the distribution of their distinctive ceramics: “straight-sided rims and/or moderate to high molded collars decorated within rectilinear incising typically in the form of right and left oblique plats separated by rows of horizontal lines.” *Images courtesy of The State Museum of Pennsylvania*



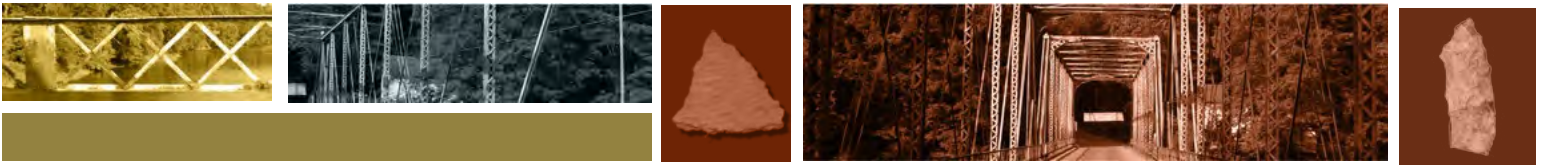
The Wilson Shutes Site (36CW5). Image borrowed from Brown n.d.

on pots which would otherwise be identified as Chautauqua Cordmarked vessels. Despite changes in ceramic technology regarding tempering agent and decorative modes, analyses of cordage twist, a unique cultural marker, suggest population continuity between the makers of the ceramics. Continuity regarding cordage twist direction, used to create exterior *cordmarked* designs, signifies population continuity for the approximately 600 year-long Glaciated Allegheny Plateau Tradition resulting in the well-known *McFate*.

Over time, *settlement patterns* became focused around villages supported by hunting and gathering with an increased utilization of grown foods such as corn, beans, and squash. Floodplains appeared to be preferable due to the presence of fertile soils. Within the French Creek Valley, villages were comprised of multiple houses with an open plaza and surrounded by a stockade. The houses of this period typically were circular (approximately 6 meters in diameter) and contained multiple storage pits or semi-subterranean storage structures. Domed



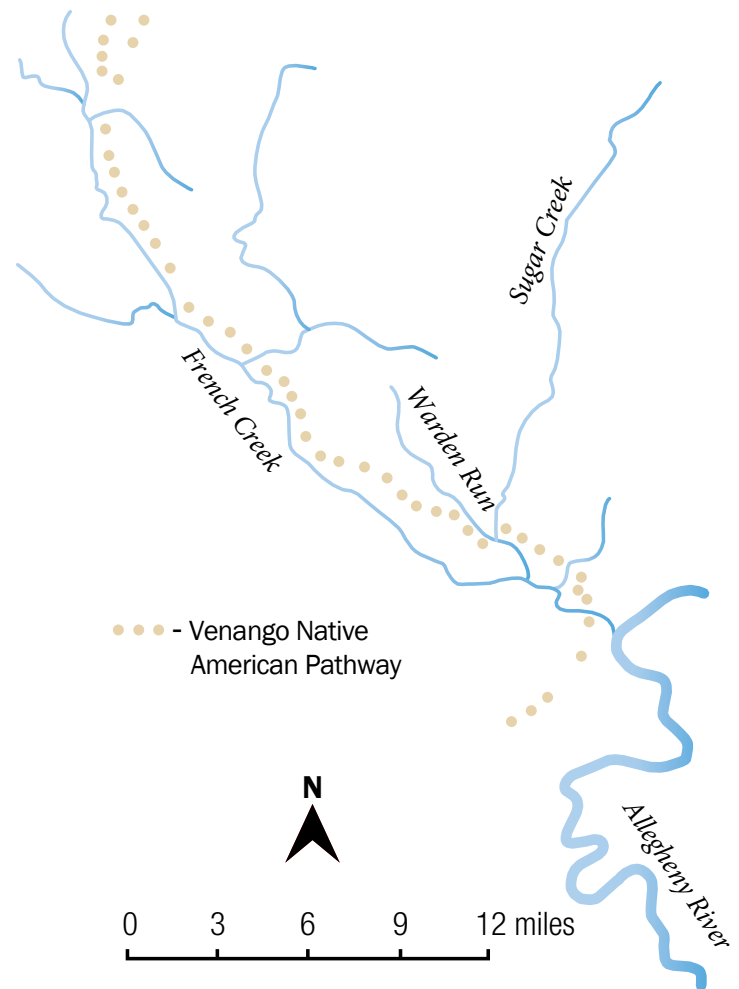
Drawing of typical house pattern found at the McFate and Wilson Shutes Sites showing wall postmold pattern, semi-detached, post-lined storage pit, and internal storage/refuse pits. Image borrowed from Burkett and Cunningham 1997.



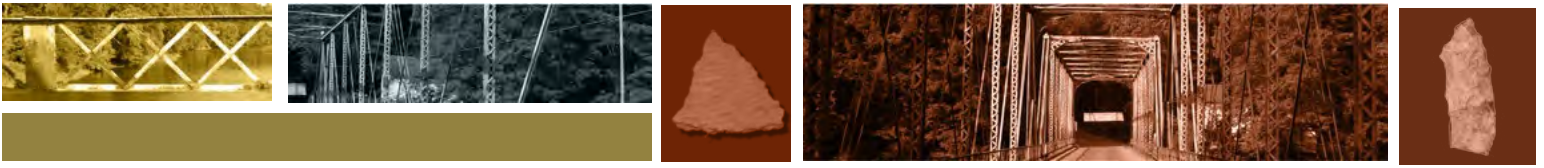
roofs were made of bark or woven mats and the walls were made of posts set into the ground. Each village was temporary and at intervals of ten to fifteen years they were moved when the soil had lost its productivity, overhunting resulted in a reduction of available protein sources (e.g. woodland bison, deer, and elk), and/or the supply of firewood was exhausted, with the new village usually established only a few miles away. Though the primary village sites within the French Creek Valley are the most well-known, the populations have also been identified to have occupied a number of temporary campsites including upland stockaded hunting camps, rock shelters, and small open-air campsites. The majority of these sites are positioned close to historically recorded Native American trail systems, such as Venango Native American pathway which connects Franklin to Meadville, and eventually Erie.

Artifacts recovered from these sites consisted of chipped stone tools and groundstone tools utilized in hunting and food processing activities, dietary remains including bone, shell, and edible plants, and pottery used for food storage and cooking. The projectile points of this period are small and almost always triangular in shape. These points were hafted onto arrow shafts and utilized with the bow. Hoeing implements are commonly found on Late Woodland Sites; some of them were chipped from shale along with notches for the attachment of a handle; others were shaped from the shoulder blade of the elk or a slice of its antler. Pipes were made of both stone and clay and are of varied forms.

Due to the short growing season reported for the French Creek Valley, which was made shorter following the *Little Ice Age*, researchers have suggested that the McFate culture adopted a subsistence strategy of hunting and gathering supplemented by a casual form of farming (horticulture) as a way of adapting to these changes in climate. The horticultural practices of the McFate culture within northwestern Pennsylvania are in sharp contrast to those practiced by the Monongahela to the south and Lake Erie Plain groups to the northwest, which experience a more lengthy growing season, allowing for a more maize-centered economy.



Native American Village Sites have been identified along French Creek and the Venango Native American Pathway. Adapted from Wallace 1998



Many researchers have suggested that the French Creek Valley was selected for occupation due to the presence of a variety of ecological settings including wetlands, marshes, floodplains, and forests. Concentrations of Late Woodland sites have been found to correspond with locations referred to as meadows, or prairies, by 18th Century accounts. Soil analyses have confirmed the presence of pre-contact prairies in these areas. This data suggests that Late Woodland horticultural groups may have utilized fire management strategies to alter the natural environment.

Due to the variety of utilized site types, it is likely that the McFate culture participated in some sort of patterned seasonal round based on the availability of plant and animal resources. In this subsistence strategy, various members of the group, predominantly women, would be tasked with tending the fields; while others, predominantly men, would travel to outlying base camps in order to exploit other resources - this is referred to as a sexual division of labor. Upland stockaded sites, located on upland plateaus overlooking the floodplain and valley floor, likely served as temporary base camps for seasonal hunting and gathering. The most well-known upland stockades are the Elk County Earthworks, including the Kane, Russell City, McKinley, and

Russell City II earthworks. Tools found at the earthworks provide evidence of butchering and skinning activities associated with hunting, woodworking, woodcutting, and some food processing. Unlike the village sites, little data regarding the floral and faunal contents of interior pit features is available. Rockshelter sites, specifically Dutch Hill Rockshelter have been interpreted as temporary way stations occupied by small family groups while hunting and gathering in the adjacent Clarion River Valley. Stockaded fortifications have also been identified at both permanent and temporary site types, which may indicate the need for defensive protection during this time.

Northwestern Pennsylvania appears to have been gradually abandoned by the McFate people during the 15th century. Though some authors have suggested that this population dispersal is related to increased tensions and warfare between adjacent populations, it is more likely that the movement is related to the continued shortening of the frost-free day growing season. Due to the already relatively short average and unpredictable frost-free day growing season reported for the French Creek Valley prior to the *Little Ice Age*, this onset would have adversely affected the reliable cultivation of maize.



Chapter 3

DISCOVERY AND EXCAVATION OF THE SWARTZ SITE (36ME256)

The Swartz Site was discovered in 2011 by archaeologists working for McCormick Taylor, Inc. during an archaeological survey prompted by FHWA's and PennDOT's proposed replacement of the Carlton Truss Bridge along State Route 1015.

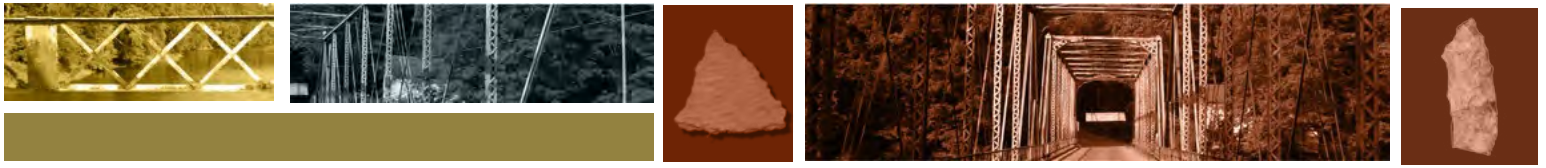
On river and stream floodplains, archaeological sites can be buried, sometimes deeply, by flood-deposited soils. Due to the location of the project area for the SR 1015 bridge replacement along the banks of French Creek, *geomorphological testing* was conducted as part of the archaeological survey. The geomorphological survey, conducted by Dr. Frank Vento of Clarion University, served to identify the presence of buried land surfaces and assess the potential of the soils to contain buried archaeological deposits within the project area. Areas adjacent to the bridge were determined to have the potential to contain intact archaeological deposits. Phase I archaeological testing was conducted in these areas in order to determine whether an archaeological site was present. Due to the depth of the soil horizons encountered during the geomorphological survey, 1x1 meter test units (TU) were excavated in order to reach the buried land surface. The use of large 1x1 meter test units allows archaeologists to safely and easily excavate to depths of up to 1.5 meters and to expose a larger area to look for features. Multiple TUs were excavated within the project area. Each test unit was excavated by natural soil layers. The soil from each test unit was screened through ¼ inch wire mesh and the material left in the screen was visually scanned for artifacts. As a result of the Phase I survey, 54

flakes, four pieces of *fire cracked rock*, and charcoal samples were recovered (see Appendix G for a brief discussion of how stone tools were made). One pre-contact hearth feature was also identified. The identification of these materials indicated that this area was occupied by Native Americans, and this area was designated as an archaeological site.



Native American hearth feature identified during test unit excavation. The soil in the feature has been reddened due to its exposure to fire.

Due to the potential impacts to the Site, a second stage of archaeological investigation was carried out to determine when Native Americans inhabited the Site, to establish the Site's limits within the project area, and to evaluate whether it was eligible for inclusion in the *National Register of Historic Places (NRHP)*. The archaeological investigations, which involved the excavation of multiple TUs in the form



of an excavation block, resulted in the identification of additional pre-contact features, including hearths, refuse/storage pits, and postmolds, that were arranged on distinct *living surfaces*.

The presence of numerous overlapping features indicated the presence of a large and intensive occupation of this area. The identification of multiple living surfaces, separated by thick packages of flood deposited soils, indicated that the Site was subject to reuse over time. Given the density and integrity of identified features, which had not been impacted by plowing activities, 36ME256 was determined to have the ability to yield important information about the Native Americans that lived in the French Creek Valley. The fact that these features were not impacted by plowing is important because plowing can move artifacts over a considerable distance from their original position, potentially mixing artifacts from different time periods. PennDOT determined that 36ME256 (the Swartz Site) was eligible for inclusion in

the NRHP (Appendix C) and recommended that further excavation and analysis of the Site be conducted prior to bridge construction. A data recovery was to be conducted for the Site prior to bridge construction, with excavations limited to the portion of the Site that would ultimately be destroyed. Alternative mitigation options were also selected in order to share the results of these investigations with the public. The final archaeological excavations and research at 36ME256 was conducted to recover as much information as possible in order to answer questions about the Site's use and its similarity to other contemporary sites in the region.

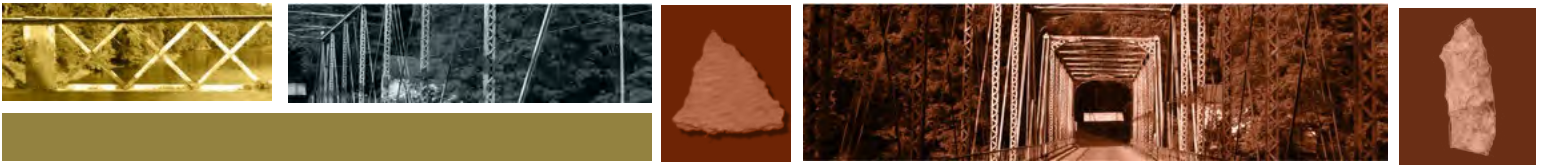
The archaeological excavations identified 45 pre-contact features and yielded a total of 495 Native American artifacts from the Site. Block test units were excavated by individual strata so that an entire living surface was exposed and the association of cultural features could be observed. Features were hand-excavated to recover artifacts that had been discarded when the pits were filled. These pits were used to



Postmold Identified at the Swartz Site.

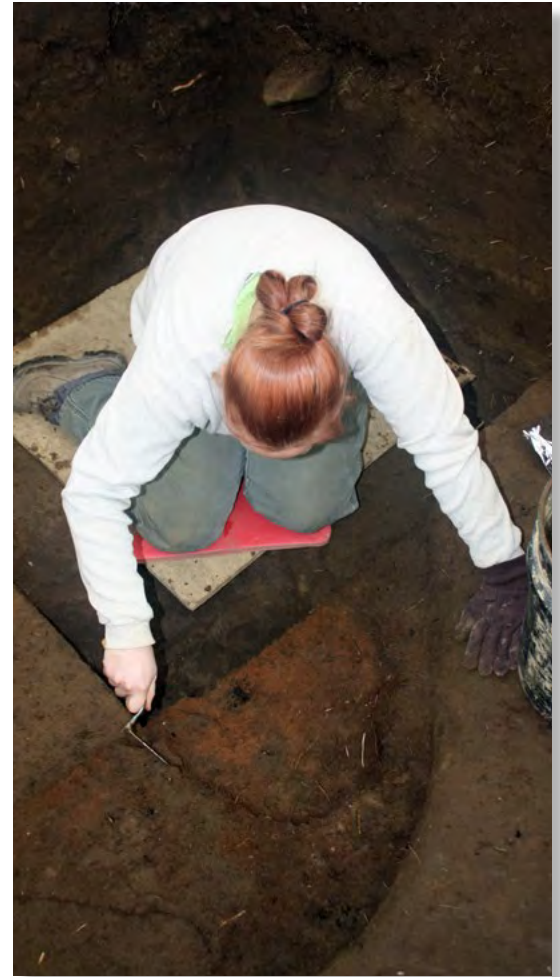


Refuse/Storage Pit identified at the Swartz Site.



cook and store food, or as a place to discard broken items or food waste. Many of the pits contain information on day-to-day life at the Site. The soil fill was bagged and processed by a method known as *flotation*. Flotation captures artifacts smaller than one-sixteenth of an inch, allowing for the potential recovery of microdebitage, archaeobotanicals (small seeds, cultigens, charcoal, and various plant parts) and faunal materials which facilitate in the reconstruction of diet, seasonality, and lithic production and maintenance. These methods ensured that the Site's data would be recovered in a systematic way, so that the Swartz Site could be interpreted and compared to other sites with some degree of confidence.

After excavations were complete, McCormick Taylor archaeologists and other specialists analyzed the artifacts and the features in order to develop a broad picture of life at 36ME256 (the Swartz Site)⁶. This involved identifying, categorizing, and counting the Site's artifacts, searching for patterns in that data, and then interpreting those patterns based on our understanding of Native American life-ways. However, archaeologist's reconstructions are biased by the nature of the materials they study. For example, we know that the greatest proportion of all objects made and used by Native Americans and other non-industrial people were made from organic materials. Plant fiber and animal skins were used for containers, clothing and lashing. Wood was used for structures and tools. Because plant fibers, animal skins, wood, and food waste decay rapidly after being discarded on the surface or buried, our reconstructions of the past are incomplete and biased toward what we can learn from artifacts that do survive the passage of time. Artifacts that survive burial are usually limited to stone artifacts like chipped and ground stone tools, pottery, glass, and metals. *Diagnostic artifacts* recovered from these excavations, including one triangular projectile point (Monongahela Triangle made of chert) and multiple sherds of pre-contact pottery, allowed archaeologists to determine that the Site was generally occupied during the Late Woodland period between 900 AD and 1600 AD (see Appendix E for a summary of Native American



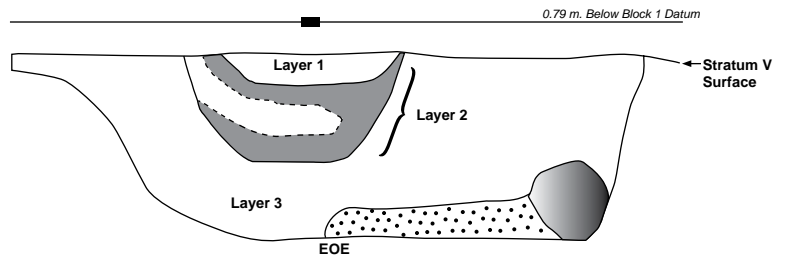
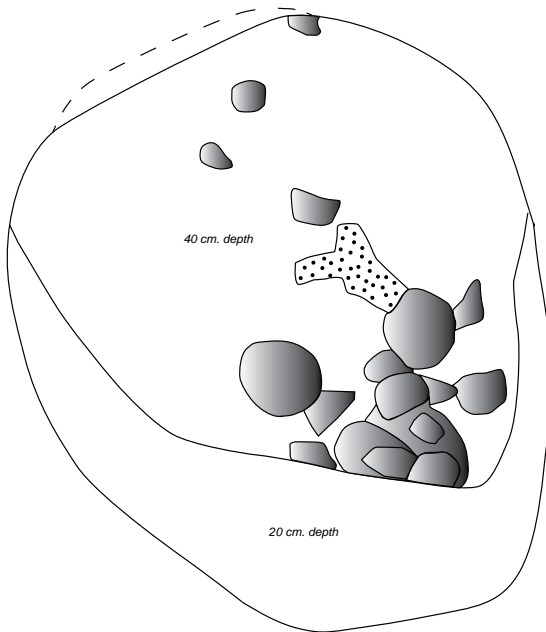
McCormick Taylor archaeologist excavating an Occupation 2 hearth feature.

⁶ Specialists performed several types of analysis on the recovered artifacts to help us reconstruct when and how the Site was used. Beta Analytic, Inc., Miami, Florida, provided the radiocarbon dates. Archaeobotanical consultant Justine Woodward McKnight, MA, Severna Park, Maryland conducted the botanical analysis. Kevin Schwarz, ASC, Columbus, Ohio, conducted the ceramic analysis. Lithic analysis and faunal analysis were conducted by McCormick Taylor archaeologists.

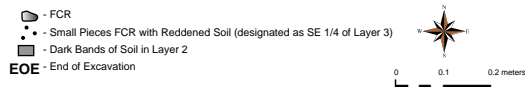


McCormick Taylor archaeologist taking measurements to create a scale drawing of an excavated feature.

cultural periods in Pennsylvania and examples of the projectile points commonly associated with them). Though the preservation of organic materials was poor at the Site, due to the proximity of the Site to the creek, flotation allowed for the recovery of items indicative of diet and cultural preference. The identification of corn, wild beans, and squash, as well as a predominance of nuts and fleshy fruits, confirms the variety of crops grown and exploited by the McFate people at the Swartz Site.



Layer 1: 10YR 3/3 sandy loam
Layer 2: Alternating bands of 10YR 2/1 sandy loam and 10YR 5/4 sandy loam
Layer 3: 10YR 3/3 sandy loam



Feature 23 Planview and north profile



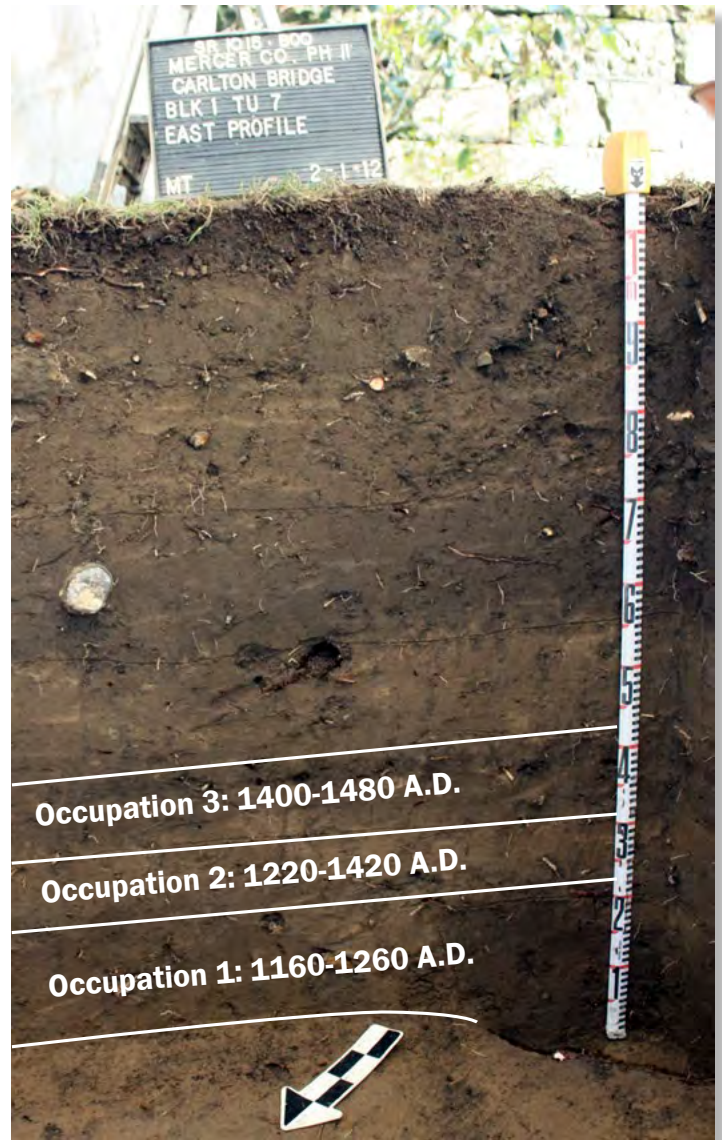
Chapter 4

TELLING TIME AND RECONSTRUCTING LIFE AT THE SWARTZ SITE

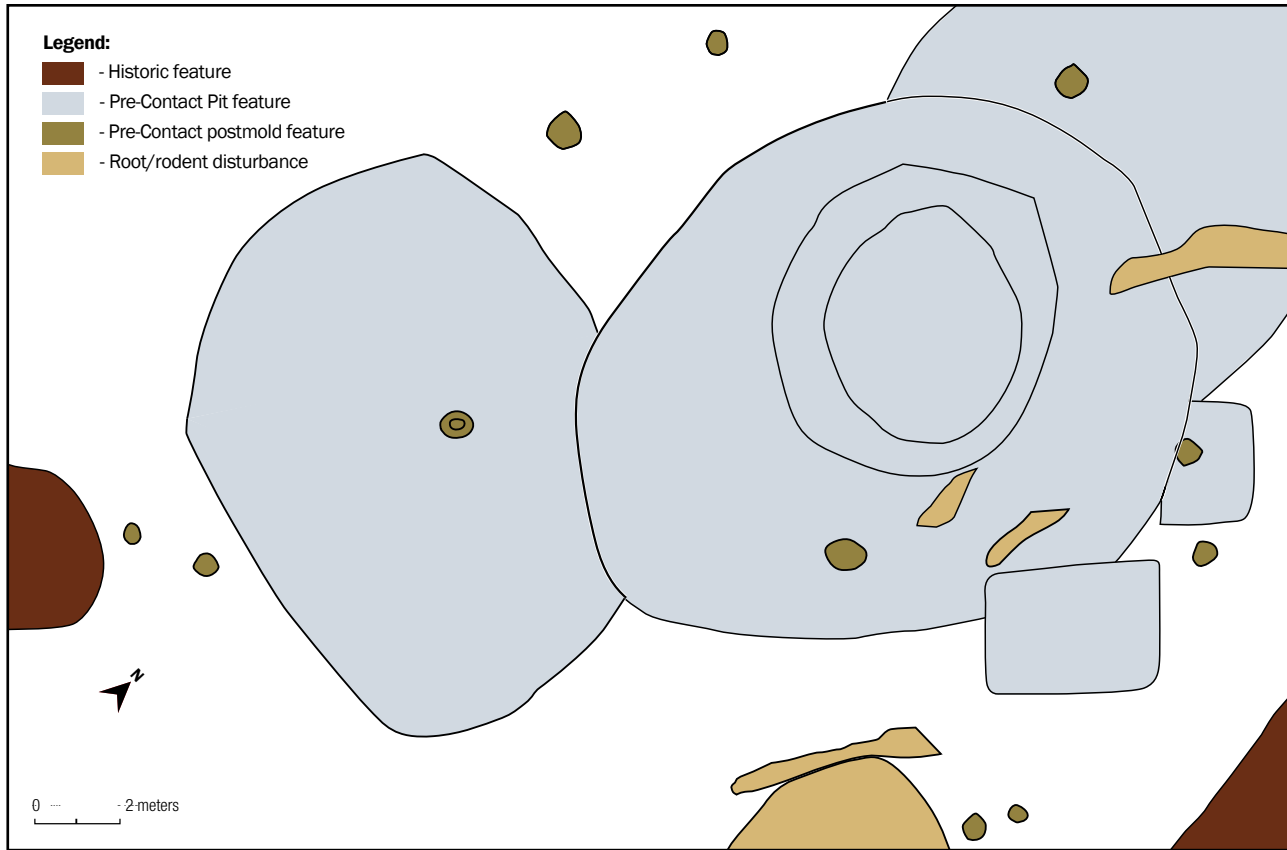
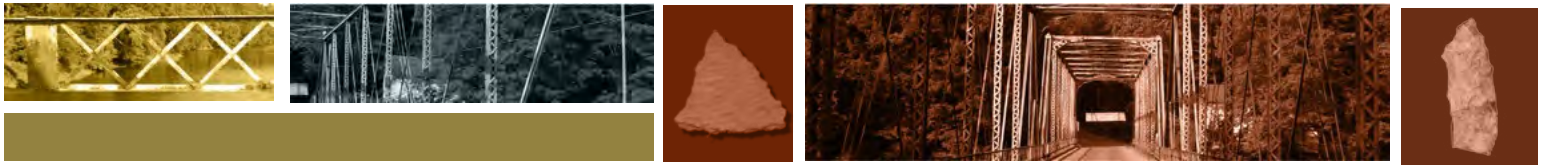
Three separate Late Woodland occupations were identified at 36ME256 (the Swartz Site) based on the identification of discrete living surfaces, *radiocarbon dates*, and pottery types. Each identified living surface is separated by a package of flood deposited soils. Radiocarbon dates indicated that the Site was inhabited periodically over a 300 year period, from 1160-1480 A.D. The identified occupations correspond to the Mahoning Phase, transitional Mahoning/French Creek Phase, and McFate Phase of the Glaciated Allegheny Plateau (GAP) Tradition.

Glaciated Allegheny Plateau (GAP) Tradition	Occupations	Dates
Mahoning Phase	Occupation 1	1160-1260 A.D.
transitional Mahoning/French Creek Phase	Occupation 2	1220-1420 A.D.
McFate Phase	Occupation 3	1400-1480 A.D.

The presence of overlapping or cross-cutting features at the Site indicates an intense use or frequent reuse of the Site. A distinct increase in the number and size of identified features during Occupation 2 indicates that there was an increase in activity at the Site during the transition between the Mahoning and French Creek phases of the Late Woodland period. These features were created in short succession with one feature being dug, used, and filled, and another feature being dug shortly thereafter before additional flood deposited soils could cover them over. As a result, the occupational history of the Site can



Based on radiocarbon dates, recovered pottery types, and identified features within discrete soil layers, three Late Woodland occupations were identified at 36ME256 (the Swartz Site).

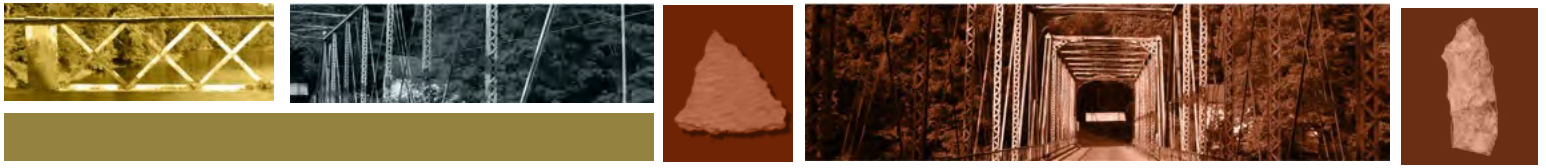


Multiple overlapping features created and used during Occupation 2.

be further refined by identifying the order in which features were created. Three episodes of feature construction were identified during the second occupation of the Site. Though these individual feature construction episodes may reflect a seasonal return to the Site, they may also reflect an expansion of the Site through the relocation, construction, or reorganization of structures and pits. Potentially, the Swartz Site could have been occupied on five separate occasions.

The pottery types used at the Swartz Site, from the earliest occupation (Occupation 1) to the latest occupation

(Occupation 3), indicate that the manufacture and use of grit-tempered pottery (Mahoning Cordmarked) was gradually replaced by shell-tempered pottery (Chautauqua Cordmarked). In fact, some sherds recovered from Occupation 2 exhibit characteristics of both types, potentially reflecting the transition between these types. The majority of the ceramics utilized at the Site were manufactured during the French Creek Phase. Despite the small sample size, the sequence of pottery types and cordage twist direction identified on cordmarked sherds (S-twist; twisted counterclockwise) found at the Swartz Site corresponds with the sequence of pottery technology

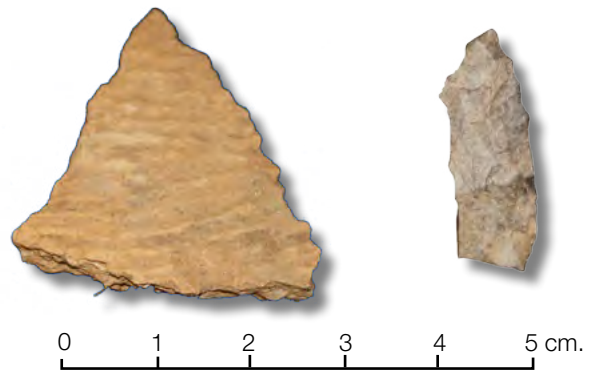


reported for the Glaciated Allegheny Plateau Tradition, in general. Though pottery was recovered from the McFate Phase occupation (Occupation 3), no McFate Incised rim sherds were recovered. Though, seemingly, no McFate Incised ceramics are present at 36ME256, ceramic specialist William Johnson has indicated that McFate Incised ceramics are technologically the same as Chautauqua cordmarked ceramics with the exception of elaborately decorated collars. The apparent absence of McFate Incised ceramics at the Swartz Site may be, again, more a function of sampling than an actual absence of a type.

Unfortunately, likely due to issues of preservation and sampling, little can be said about the utilization of bone, antler, shell, or fiber technology employed at the Site. First, due to the limited portion of the Site that has been exposed by archaeological investigations, it is undetermined how much of the Site is represented in the archaeological sample. Second, due to the proximity of the Site to French Creek and its high water table, many of the items typically encountered during the excavations of Native American Sites were not recovered, including bone and wood tools or ornamentation, food waste, plant fiber cordage or textiles. Though likely present, these materials typically succumb to rapid decay after being discarded; therefore, the majority of artifacts that survive in buried context include stone artifacts like chipped and ground stone tools and pre-contact pottery. At the Swartz Site, one indeterminate cobble tool, one anvil stone, one Late Woodland projectile point (a Monongahela Triangle manufactured from Onondaga chert) and pre-contact pottery sherds [predominantly Mahoning Cordmarked (grit-tempered) and Chautauqua Cordmarked (shell tempered)] were recovered. Though little can be said

about the utilization of bone and antler at the Swartz Site, indirect evidence for the use of other perishable materials and perishable technology at the Site is preserved in the form of cordage impressions found on recovered sherds as well as the use of shell as temper. Despite utilization of shell as tempering agent, no additional evidence of shell usage for other activities, such as sustenance, spoons, scrapers, or beads were reported at the Swartz Site.

Though the preservation of organic materials was poor at the Site, flotation allowed for the recovery of some items that are indicative of diet and cultural preference. Information regarding the utilization of plant species at 36ME256 was obtained through the analysis of archaeobotanical remains recovered from 17 cultural features. The identification of corn, squash, and wild beans, as well as a predominance of nuts and fleshy fruits, including walnuts and fruits like chokeberry, sumac, poke, and hawthorn, confirmed that a variety of crops were grown and collected by the people at the Swartz Site. This variety reinforces the idea that horticulture, the harvesting of seasonally predictable plant



Pottery recovered from the Swartz Site. Cordage impressions are observed on the surface.

Late Woodland projectile point (Monongahela Triangle) recovered from the Swartz Site.



foods, and the gathering of local woods for construction, firing pottery and fuel was taking place. Most of these plants ripen during late summer and fall and their presence at the Site suggest that it was occupied at least during these periods of the year. Some of the identified features were likely used to store surplus food for consumption during lean times and potentially during the winter months.

process corn and black walnuts, which would allow them to be stored for an extended period of time⁷.

Though no White Oak acorns were identified within the nut assemblage, the predominance of White Oak wood charcoal at the Site suggests that the acorns were likely harvested as a primary food source.



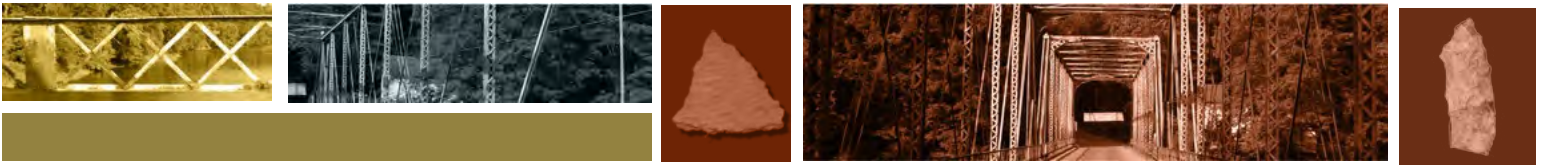
Corn (Maize), left, and squash (Cucurbita), right, recovered from the Swartz Site.

Pit feature used during Occupation 2 to process black walnuts before they were consumed.

Uniquely, the nut assemblage was dominated by black walnuts, which were likely consumed for their high fat content. Black walnut processing activities were conducted at the Site during successive occupations. In fact, the intensity of this exploitation may have increased through time. One unique feature encountered at the Swartz Site was Feature 23, which contained the majority of the evidence regarding subsistence at the Site. Due to the recovery of a large amount of fire-cracked rock at the base of Feature 23, as well as maize (*Zea mays*), squash (*Cucurbita* spp.), black walnuts, miscellaneous seeds, and faunal remains, the pit was likely associated with food processing activities. Potentially, Feature 23 may have been used as a *parching feature* to

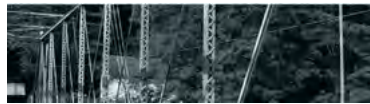
Recovered animal bones, which provide evidence for some hunting activities at the Site, were heavily burned and extremely fragmented. Unfortunately, as a result of this fragmentation, none of the bone could be identified to a particular species or body part, and only two fragments could be identified to a broader classification level of medium or large mammal (such as a deer or elk).

⁷ Experimental archaeological research has suggested that cracking and picking is a preferable processing method for black walnuts, which become bitter and unpalatable, if not inedible, when boiled. The use of hot stones to process black walnuts, which facilitate in the cracking of the hard shell, has been proposed at the Dunsfort Site (36WH477) in southwestern Pennsylvania. In addition, the heating would also aid in killing both the nut embryo and any insects present.



Based on the density of large and small pits identified at the Site, it is likely that the archaeological excavations have exposed the interior of a house. Though patterns of postmolds, that would equate the walls of house structures, could not be identified due to the limited size of the excavations at the Site, the sheer number of identified postmolds and their association with larger pits strongly suggests the existence. The recovery of large amounts of wood charcoal (predominantly white oak) from the Site indicates the intensive use of wood at the Site and also suggests, indirectly, the presence of yet unidentified structures. Unfortunately, portions of the Site have been destroyed by the construction of the current bridge structure and an indeterminate portion of the Site has also been impacted by transportation activities associated with the canal and railroad that lie adjacent to the project area.



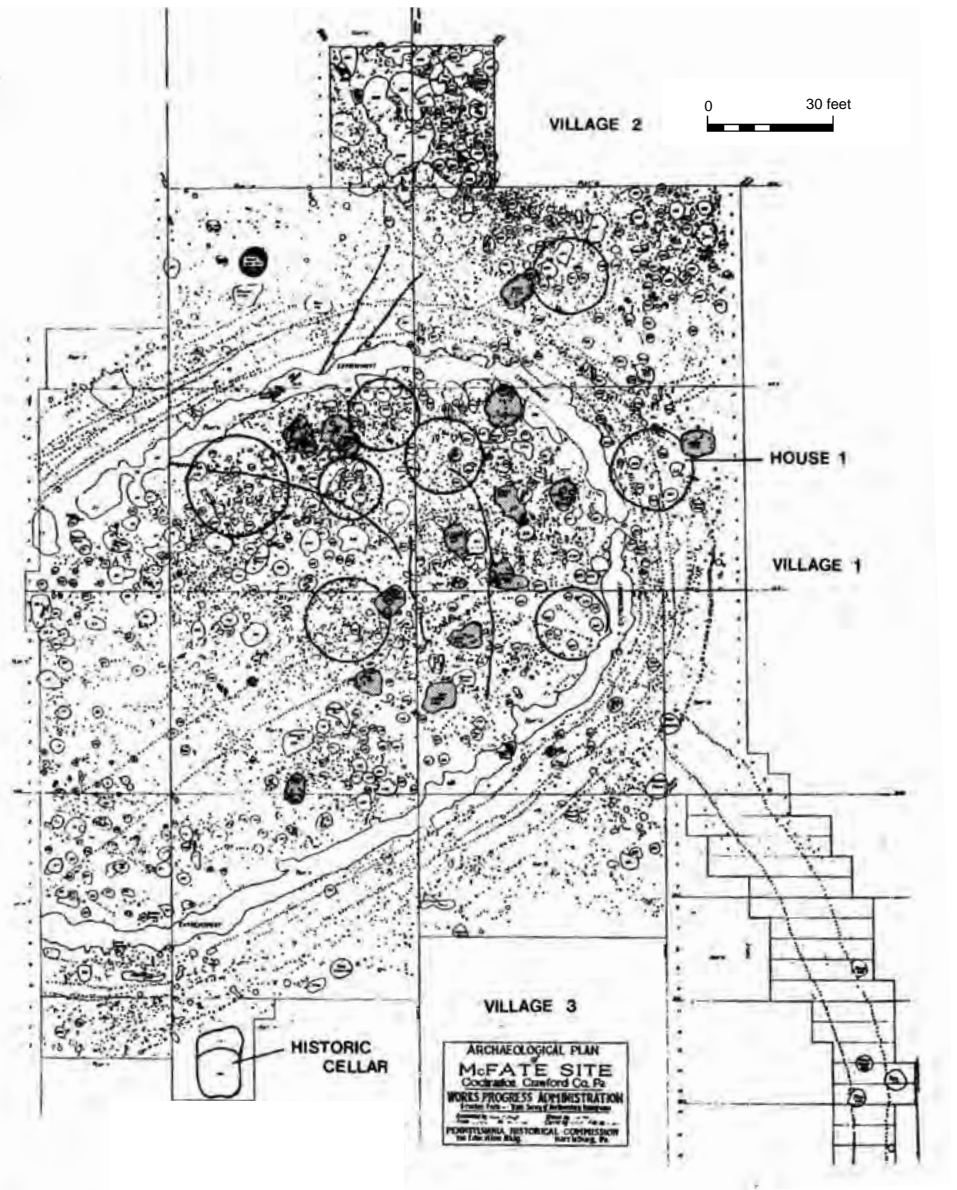


Chapter 5

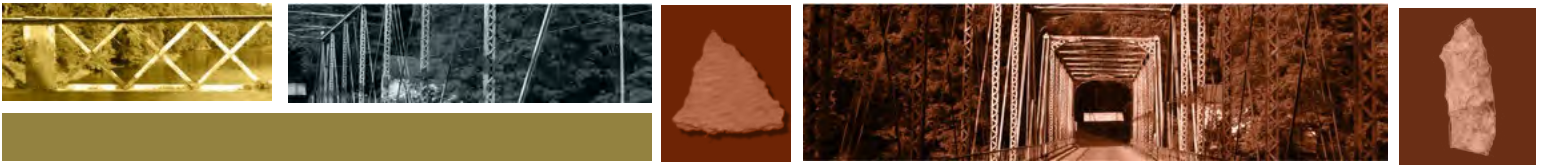
THE SWARTZ SITE IN LARGER CONTEXT

The two most well-known and extensively excavated McFate Village Sites are the McFate Site (36CW1) and Wilson Shutes Site (36CW5). Multiple Late Woodland occupations were defined at each site due to the identification of multiple stockaded villages. The chronology of the Site occupations and the temporal associations of the occupations at the Sites were established based on the ordering of the overlapping stockade lines, house patterns, and interior pit features, as well as the ceramic and lithic technology recovered from these features. Each of these Sites would have functioned as a main village, with all activities emanating from the village during their respective occupations. Both Sites were interpreted as primary village Sites rather than seasonally occupied Sites based on the recovery of carbonized cultigens (corn and squash), a community pattern of highly nucleated villages (the identification of multiple house patterns and their location and orientation within singular and double palisades), and the diversity and ratios of artifact classes which reflected economic activity and sexual division of labor.

Through continued research and analysis, a total of seven villages have been identified at the McFate Site and two villages have been identified at the



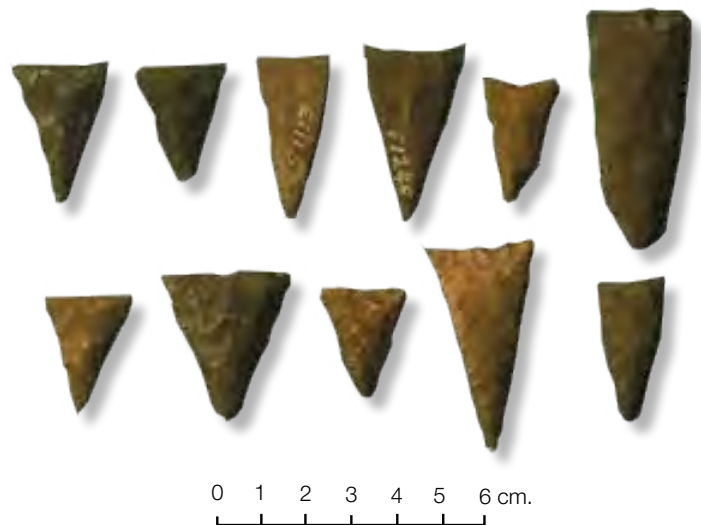
The McFate Site (36CW1). Image borrowed from Burkett and Cunningham 1997.



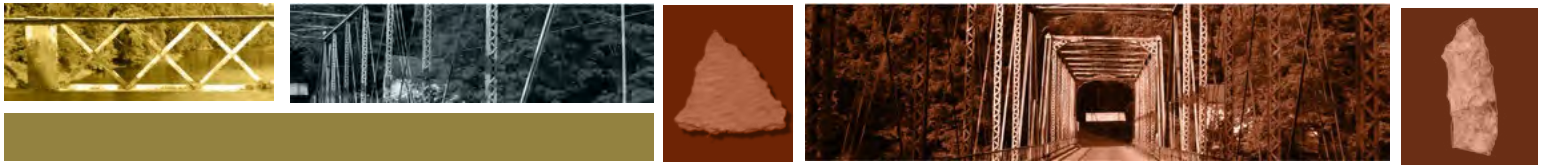
Wilson Shutes Site. Individual occupations within these villages have been identified based on overlapping house patterns and the stratification of interior entrenchments. Components of each Site included a single or double line of palisade postmolds, an interior trench, house patterns, and post-lined storage pits. A concentric pattern of storage and refuse pits was observed within the house patterns, as well as an attached post-lined pit. Identified pits were assigned to three functional categories (hearth, cache, and refuse), but most were considered to be refuse-filled cache pits. It was observed that though refuse pits may have originally functioned as storage pits, they were subsequently used for trash disposal. Interior pits containing household refuse from food preparation and processing activities, including charred wood, animal bones, mussel shell, potsherds, debitage, chipped stone tools, pitted stones, and celts, were identified as refuse pits. Few hearths were identified, but those that were, contained ash, fire-cracked rocks, and limited quantities of refuse bones and artifacts. In general, interior pits from which few artifacts were recovered were interpreted as storage pits which were likely open when the house was abandoned. The attached post-lined pits were reported to have yielded low numbers of artifacts and were interpreted as storage pits, possibly used to store items such as fresh meat and raw furs in winter; and in summer, grass and raw materials for cordage, baskets, and mats.

Several tools were identified at village sites that indicate a number of different activities. Pottery sherds indicate the use of pots to cook, process, store, and transport food and/or raw materials. *Projectile points*, usually associated with hunting, could also have been used as hafted implements for

cutting or scraping. Because of the low numbers of reported blades and knives and a lack of scrapers, butchering and skinning were likely conducted away from the main village. Woodworking and woodcutting tools, including celts and various chisels, were present. Wood was reported to dominate the material culture of the McFate people due to the identification of thousands of postmolds at the Site, which were reported to represent palisade posts, poles for house walls and storage structures, drying racks, and fuel. Only a small number of fishing tools were reported. Perishable fiber technology, in the form of netting and a cord-wrapped paddle, used in the production of pottery, was recovered from the McFate Site. Based on the identification of the recovered ceramic types, the largest village at the McFate Site (Village 3) was occupied ca. A.D. 1100 (during the Mahoning Phase), the central and northern villages at the McFate Site were occupied ca. A.D. 1550 (during the McFate Phase), and the larger Wilson Shutes village was assigned a date of ca. A.D. 1550 (during the McFate Phase).



Projectile points recovered from the McFate Site. Images courtesy of The State Museum of Pennsylvania



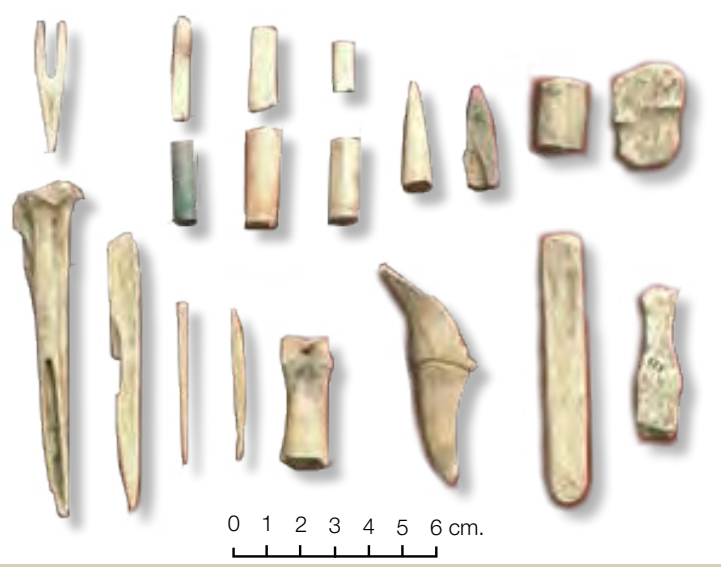
The Swartz Site (36ME256) shows similarity to both the McFate Site (36CW1) and the Wilson Shutes Site (36CW5). Though the full suite of technologies identified to represent the McFate toolkit is not represented at the Swartz Site, this is likely a result of the small portion of the Site that was excavated within the project area. Though information from the Swartz Site was recovered from limited excavations, in comparison to those that were undergone at both McFate and Wilson Shutes, the presence of multiple distinct occupations indicate the intensive and repeated use of all three Sites⁸.

The identification of similar features and the recovery of similar edible plant remains and artifacts from the McFate Site, Wilson Shutes Site, and Swartz Site indicate that the occupants of these Sites were utilizing the resources of the region in a similar way during the same general time period. Similar botanical remains argue for their participation within similar activities at the three Sites, particularly with

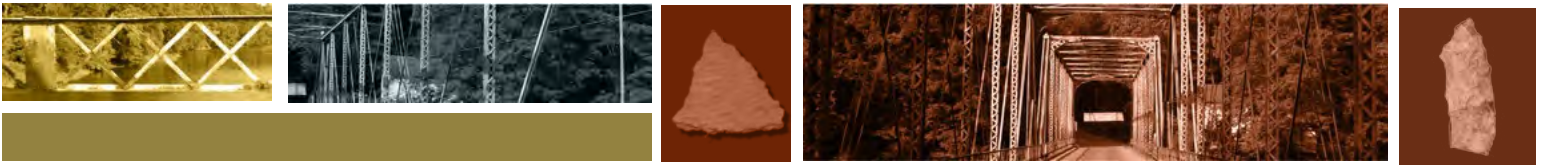
regard to the domination of the botanical assemblage by wood charcoal and the presence of nuts, fleshy fruits, and cultigens. The presence of multiple ceramic types, which are associated with each of the three Glaciated Allegheny Plateau Tradition phases, at all three Sites (McFate, Wilson Shutes, and Swartz) indicate their successive, if not coeval, occupation throughout the Late Woodland period. The presence of features, including storage pits, postmolds, and hearths, at all three identified village Sites, and their contents, indicate that, at a basic level, the resources of the French Creek Valley allowed the McFate to live in large numbers in the same place for an extended period of time.

It is likely that a community of people with similar culture and language was occupying these Sites. Potentially, the occupants of these Sites could represent multiple generations of the same group. Based upon the presence of similar and successive pottery manufacturing technology, radiocarbon dates associated with these pottery styles, and radiocarbon

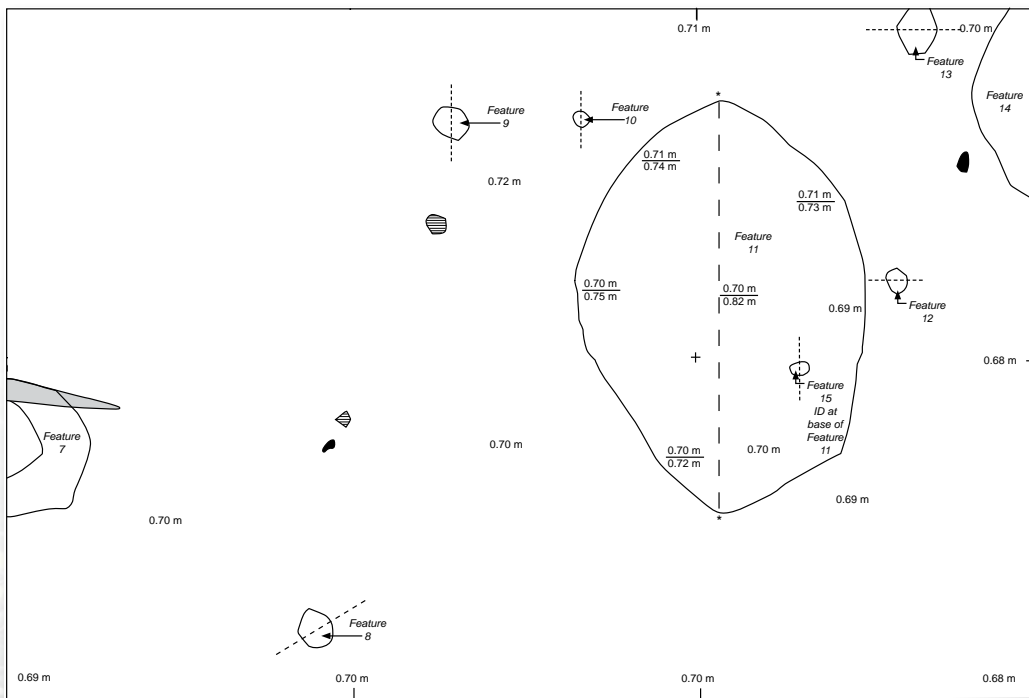
⁸ Excavations at the McFate Site involved the exposure of features from the interior of multiple village occupations within an area of approximately 215 feet x 175 feet (0.86 acres). This acreage estimate is only for the interior portions of the villages and does not include additional areas used to expose the stockade of Village 3. Excavations at the Wilson Shutes Site involved the exposure and excavation of features identified within an area of approximately 2 acres. By comparison, only 14 square meters (0.0035 acres) were excavated at the Swartz Site, with the vast majority of the features and recovered artifacts recovered from Block 1 (only 6 square meters; 0.0015 acres).



Bone tools and ornaments recovered from the McFate Site. Images courtesy of The State Museum of Pennsylvania



dates for individual features and occupations, all three Sites may have been occupied at the same time, if not as part of a series of village relocations. This periodic relocation, brought on by reduced quality of soil conditions and a scarcity of firewood, is presumed to have occurred at intervals of ten to fifteen years, with the new village usually established only a few miles away. This planned or patterned use of the landscape is likely responsible for the identification of numerous Sites along the banks of French Creek.





Appendix

A

GLOSSARY

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

Cordmarking: Cordmarking is a fairly common surface treatment in Native American pottery. Cordmarking can result from the creation of the pot, if a paddle is used to shape the clay, or when cordage is pressed into the clay as part of a planned design. Cordage was usually woven from plant or animal materials and either wrapped around a paddle or a stick. Examinations of cord impressed ceramics can provide information regarding the manufacture of textiles, which are rarely found at prehistoric Sites.

Cultigens: A cultigen is a plant that has been deliberately altered or selected by humans; these plants have commercial or economic value and, for the most part, are used in horticulture or agriculture.

Diagnostic Artifacts: Artifacts, primarily projectile points and pottery, which were manufactured and used during specific time periods. The discovery of these artifacts enables a Site to be dated.

Excavation Block: Any arrangement of multiple adjacent test units, usually placed to excavate and expose large areas of a Site to examine the spatial patterning of artifacts and features.

Features: Unlike artifacts, which can be removed from an archaeological Site without destroying them, features are not portable and can be thought of as “Site furniture” used to perform one or more functions. Pits dug into the ground for storage or processing, postmolds indicating house walls, racks, or fences, and campfires or prepared hearths are all examples of features found on Native American Sites.

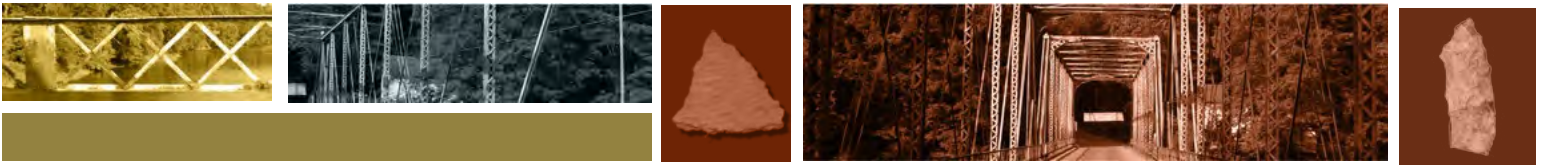
Fire-Cracked Rock (FCR): Rock that has been split by deliberate heating. In many cases, fire-cracked rock results when stones were used to line hearths or were heated to provide a longer-lasting heat-source. In other cases, fire-cracked rock results from stone being used to heat or boil water; the stones were heated and dropped directly into water held in containers made of skin or pottery.

Flakes: Flakes are distinctively shaped pieces of stone removed in making a chipped stone tool. Although most flakes were simply discarded as manufacturing waste, some were used as cutting and scraping tools due to their naturally sharp edges. An overview of how chipped stone tools were made is presented in Appendix G.

Flotation: This recovery method uses pressurized water to agitate soils that are placed in a container with a one-sixteenth inch mesh bottom. This agitation forces small, lightweight items like charcoal, seeds, and small bone to the surface of the water where they are trapped in very fine mesh screen. These artifacts can then be analyzed for information on diet and the local environment.

Geomorphological Testing: Geomorphology is the scientific study of landforms and the processes that shape them. Geomorphological testing is completed by examining soil samples, from small diameter auger borings, taken from these landforms. Geomorphological testing can identify buried land surfaces which have the potential to contain archaeological deposits.

Hearths: Hearths are discrete areas where fires were built. Hearths could be simple campfires on the ground surface or shallow pits dug to contain a fire. On archaeological



Sites, hearths are identified by concentrated areas of wood charcoal; however, pits excavated for this purpose may also contain ash. Rocks were sometimes used to contain the fire but also radiated heat. If a fire was sustained over a long period, the surrounding soil may be reddened.

Horticulture: The practice of garden cultivation and management. The origins of horticulture lie in the transition of human communities from nomadic hunter-gatherers to sedentary or semi-sedentary communities, cultivating a variety of crops on a small scale around their dwellings or in specialized plots visited occasionally during migrations from one area to the next.

Little Ice Age: A dramatic change occurred around 1300-1350 A.D. with the onset of the Neo-Boreal or what climatologists called the “Little Ice Age,” when conditions for crop failures rose dramatically throughout the world. “Little Ice Age” lasted well into the Historic Period-ending around 1850 A.D.

Living Surface: The ground surface during the time which Native Americans occupied an area. Artifacts recovered from this surface provide information about the activities that were conducted and where they were conducted within the Site. Often these living surfaces have been buried by soils deposited by hundreds of years of flooding.

McFate: The McFate are an archaeologically defined culture that occupied portions of the Allegheny Plateau in northwestern Pennsylvania from A.D. 1400-1575. The McFate were identified based on the recovery of unique ceramics with highly decorated collars. McFate are known to have occupied villages on the floodplains of the French Creek Valley as well as smaller temporary base camps above the valley floor. The McFate disappeared before Europeans arrived and are known only through archaeology. The name McFate is taken from the name of an archaeological village

Site; their name for themselves as well as their cultural identity is unknown.

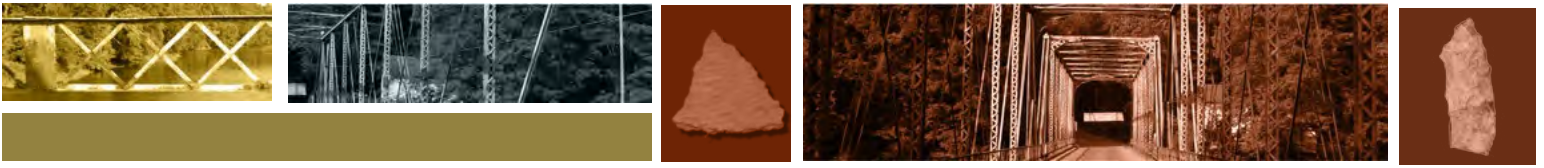
National Register of Historic Places: The National Register of Historic Places is the official list of the Nation’s historic places worthy of preservation. The National Register of Historic Places is administered by the National Park Service, a division of the United States Department of the Interior.

Parching Feature: Pits of varying sizes excavated into the ground to dry items (walnuts, corn, etc.) by exposure to heat without burning, to toast or roast slightly. Parching was utilized to facilitate the cracking of available nuts, to kill any insects present, and remove excess water or abate the growing process to allow for extended storage.

Postmolds: Postmolds are soil stains left behind by decayed wooden posts. The stains are round in plan and tapered in cross-section. Their arrangement and size allow archaeologists to identify house patterns, fencelines, and other structures made by Native Americans.

Projectile Point: A general term used for chipped stone tools used as the penetrating tip for spears and arrows. Commonly called arrowheads or spearpoints, some projectile points were also used as knives.

Radiocarbon Dates/Radiocarbon Dating: A chemical analysis used to determine the age of dead organic materials based on the amount of the radioactive isotope carbon-14 they contain. Developed in 1949 by the American chemist Willard Libby at the University of Chicago, this method revolutionized archaeology. Refinements to the method over the last 60 years have resulted in more precise dates on materials up to 40,000 years old. A clear description of radiocarbon dating can be found at <http://www.pbs.org/wgbh/nova/tech/radiocarbon-dating.html>.



Settlement Pattern: The distribution of archaeological Sites in a region during a specific time period. Archaeologists try to understand how people used an area and its resources by determining the function of Sites in different ecological settings. Shifts in settlement patterns through time can signal past environmental changes or cultural transformations like the transition from hunting and gathering to farming.

Shell-Tempered/Shell-Tempering: Temper refers to small pieces of stone, shell, or pottery that are mixed into a clay before it is made into a pot. Temper prevents the pot from cracking as it dries. Within the French Creek Valley, pottery tempered with rock grit was eventually replaced by pottery tempered with river mussel shell.

Sherds: Broken fragments of pottery.

Stone Tools: Generally, any stone used by humans to perform a task; however, building stone is not included in the definition. Some stones, such as water-rounded cobbles, were used without modification as hammerstones to crack stone, bones, and nuts. Chipped stone tools made by flaking (see Appendix G) were used for piercing, cutting, and scraping tasks. Ground stone tools made by laborious pecking and grinding, like axes, adzes, and gouges were used for heavy-duty chopping and other woodworking tasks. Human ancestors may have used stone tools as early as 3.4 million years ago (www.sciencedaily.com/releases/2010/08/100811135039.htm).

Refuse Pits: Pits of varying sizes excavated into the ground for the purpose of disposing of refuse soils including food waste, broken items, ash from hearths, or general house sweepings. In many cases, after food/items were removed from storage pits they were filled with refuse soils.

Storage Pits: Pits of varying sizes excavated into the ground to store foodstuff or other material. Food storage pits were often lined with grass or bark to reduce moisture-and insect-damage to stored materials.

Subsurface Testing: Subsurface sampling or testing of an area is often done to determine if any Sites are present. 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. 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.



Appendix B

FOR FURTHER READING

**PENNSYLVANIA ARCHAEOLOGIST, SPRING 1997,
VOLUME 67, NUMBER 1.**

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BRENDA L. WELLER, CHARLES A. RICHMOND,
CRISTIE L. BARRY, BARBARA J. SHAFFER**

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n.d.

The Wilson Shutes Site. Manuscript on file at Carnegie Museum of Natural History.

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JAMES L. MURPHY

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An Exploration of the McFate Taskscape: A Case for Compromise. Electronic document, <http://www.orgSites.com/pa/alleghenyarchaeology/pgg6.php3>, Accessed February 20, 2014. Allegheny Archaeology Research.

HARRY L. SCHOFF

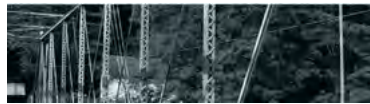
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McFate Site Report on Archaeological Excavations Conducted in Northwestern Pennsylvania by the Works Progress Administration. Unpublished manuscript on file at the Carnegie Museum of Natural History.

PAUL A. WALLACE

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Appendix C

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 analyses comes to light.

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 may help them determine if there might be any archaeological Sites present.

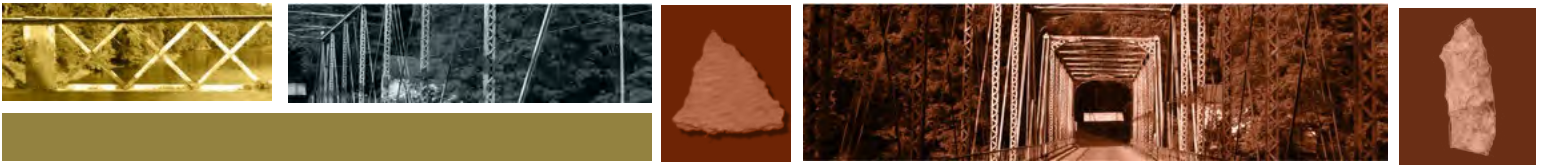
Controlled surface collection is the systematic collection of artifacts that are visible on the surface of the ground. It is usually done immediately after a field has been plowed and after it rains, as this often brings artifacts to the surface.

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



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



whether the Site is significant. It usually includes the excavation of shovel test pits or test units. 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. This 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.

Documentation is writing 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 is prepared for other archaeologists. It usually includes all of the data that was generated during the excavations and analyses, 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.



Intensive excavation being conducted at Site 7NC-B-11, a historic farm complex in Wilmington, Delaware.



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



Artifacts are returned to the lab for processing and analysis.



Appendix D

ARCHAEOLOGICAL ETHICS

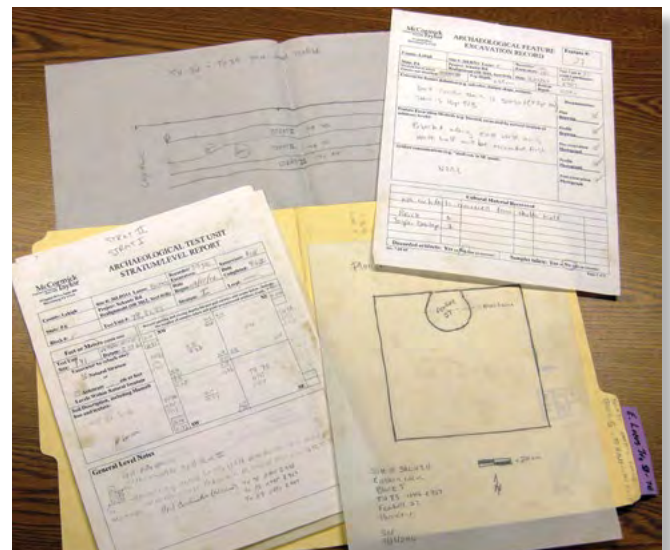
Archaeologists adhere to a set of ethics. This means that they recognize there are appropriate and inappropriate activities and behaviors to follow when conducting archaeological investigations. Conducting archaeological excavations is destructive – once someone has excavated a portion of a Site, it 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 would be if excavations were carried out haphazardly, careful records not kept during excavations, artifacts not properly analyzed, results not 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 is recovered.

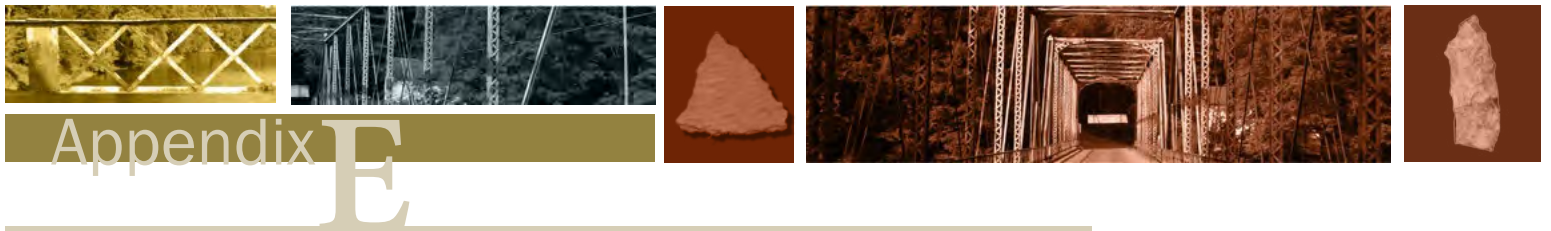
If you are involved in an archaeological project, always remember that you are destroying or damaging the Site. The reasons for conducting the excavations should outweigh the damage. Good reasons for conducting archaeological excavations are that the Site is slated for destruction by some kind of construction 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 eight 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.”



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

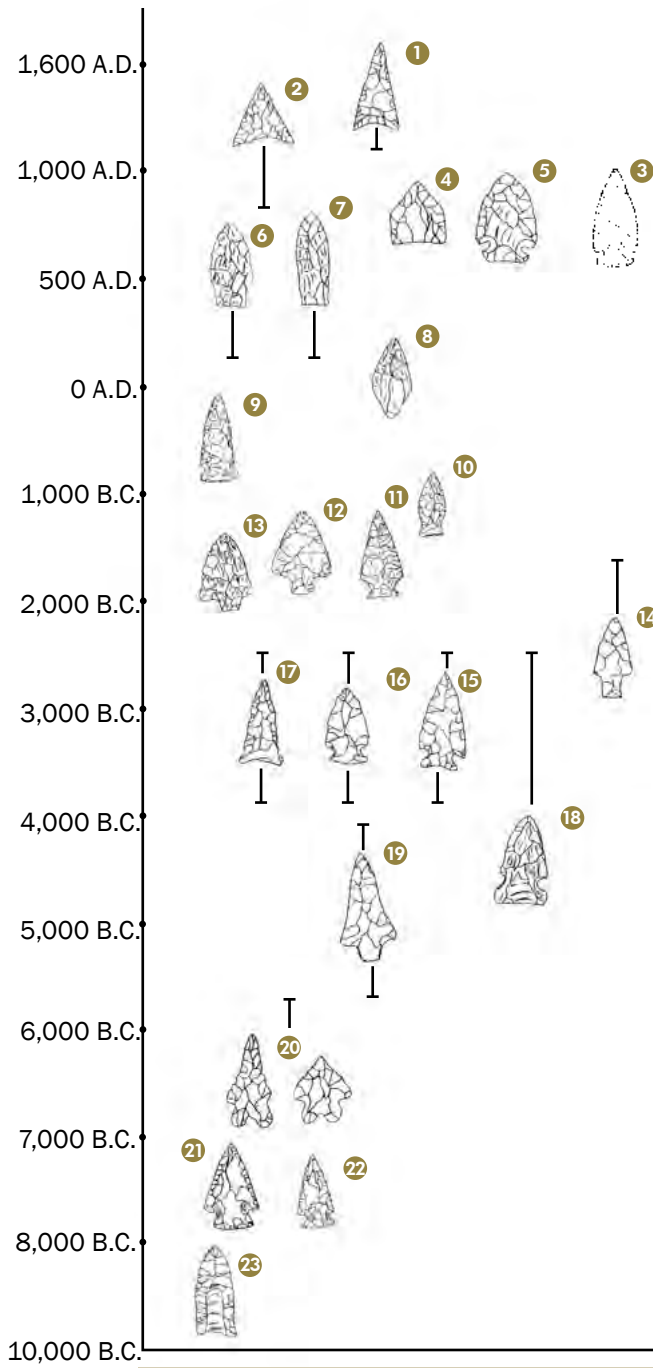
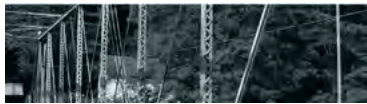


NATIVE AMERICAN CULTURAL PERIODS IN PENNSYLVANIA

Archaeologists working in the Susquehanna, Ohio, and Delaware River Basins have divided the Native American past into four major periods: Paleoindian, Archaic, Woodland, and Contact. Lifeways and technology within a period were generally similar, while period boundaries reflect significant cultural changes. The Archaic and Woodland are divided into sub-periods, each of which is based on changes in tool types, settlement patterns, or technology. The table below presents the dates for each

period and sub-period along with some of the defining characteristics of each. Although the time boundaries in this table appear sharp, they approximate when changes had taken place in the region. The earliest periods/sub-periods (Paleoindian through Middle Archaic) are represented by very few excavated Sites. The Early and Middle Woodland sub-periods are so poorly understood in Pennsylvania that farming seems to appear out of nowhere by the beginning of the Late Woodland sub-period.

PERIOD	SUB-PERIOD	DATES	DEFINING CHARACTERISTICS
Paleoindian	None	10,000-8,000 B.C.	Small, highly mobile groups adapted to late Ice Age environment. Strong focus on hunting (possibly caribou and extinct Ice Age animals).
Archaic	Early Archaic	8,000-7,000 B.C.	Small groups, less mobile than Paleoindian. Environment in transition to modern conditions, with greater abundance of, and attention to, gathered foods.
	Middle Archaic	7,000-3,000 B.C.	Group size still small, mobility reduced from Early Archaic. Forests composed of modern species. Ground stone tools rare in beginning, more common at end.
	Late Archaic	3,000-1,800 B.C.	Large re-occupied base camps appear in river valleys indicate population growth, increased sedentism. Range of artifacts indicate intensive resource collection.
	Terminal Archaic	1,800-1,000 B.C.	Similar in most respects to Late Archaic, with new container technology (soapstone vessels early, pottery by 1,200 B.C.). Inter-regional trade reaches high levels.
Woodland	Early Woodland	1,000-400 B.C.	Sites smaller than Late, Terminal Archaic. Low-level pottery use continued. Longer stays at base camps suggested by increased number of storage pits.
	Middle Woodland	400 B.C.-900 A.D.	Similar to Early Woodland. Inter-regional trade more common. Maize and squash cultivated in Susquehanna and Ohio Drainages. Main period of mound construction in Ohio Drainage.
	Late Woodland	900-1600 A.D.	Small farming hamlets, burial mounds in Susquehanna Drainage early, large stockaded villages after 1,200 A.D. Some farming in Delaware drainage by 1,200 A.D. Large stockade villages along floodplains in Ohio Drainage early.
Contact	None	1600-1780 A.D.	Extensive farming supports large Susquehannock villages, Delaware groups organized in small farming villages. Abandonment of southwest and northwest Pennsylvania by Native American groups. European contact and settlement intensifies inter-tribal conflict. European diseases reduce Native American population by up to 90 percent.



KEY TO PROJECTILE POINT TYPES

1. Madison
2. Levanna
3. Raccoon Corner-Notched
4. Jacks Reef Pentagonal
5. Jacks Reef Corner-Notched
6. Fox Creek Stemmed
7. Fox Creek Lanceolate
8. Rossville
9. Meadowood
10. Orient Fishtail
11. Susquehanna Broad Spearpoint
12. Perkiomen Broad Spearpoint
13. Snook Kill/Koens-Crispin
14. Lamoka
15. Brewerton Corner-Notched
16. Brewerton Side-Notched
17. Brewerton Eared Triangle
18. Otter Creek
19. Stanly/Neville
20. MacCorkle/St. Albans
21. Palmer Corner-Notched
22. Kirk Corner-Notched
23. Clovis

Selected projectile point types and their periods of use.



Appendix F

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 they receive federal or state funding, licensing, or assistance. Two of these 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:

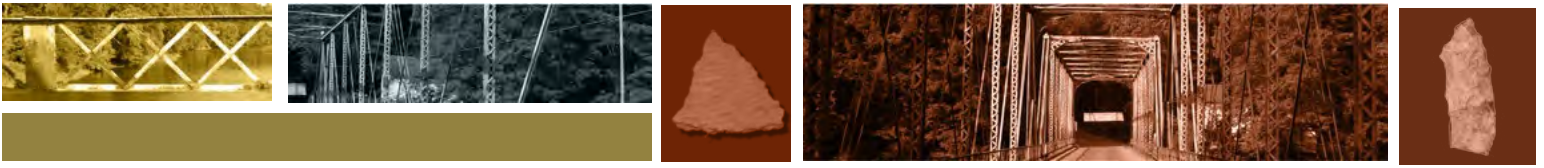
“The Congress finds and declares that -

- (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.”

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 are 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.

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 are 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 qualifies 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.

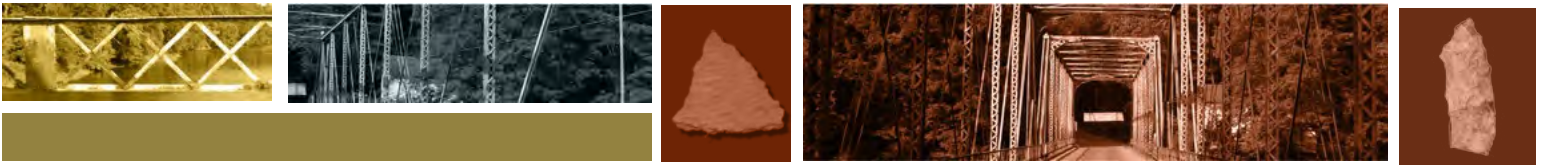
There are three phases that PennDOT follows when considering whether the project will affect archaeological Sites.

- *Phase I archaeological identification surveys* are intended to locate archaeological Sites within the area of potential effects.



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.

- *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 federally-recognized tribes and nations and 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**.



Careful record-keeping is essential during archaeological investigations.



www.paprojectpath.org



www.achp.gov



Appendix G

MAKING STONE TOOLS

Before European contact, Native Americans made most of their tools, clothing, and shelters from organic materials like wood, plant fibers, or animal products (skin, sinew, bone, antler, and shell). These materials decompose quickly and are rarely found on archaeological Sites. In contrast, stone tools formed a small part of Native American technology, yet they preserve almost indefinitely. Stone tools and the debris from making them are often the only artifacts available to reconstruct how and when a Site was used. Stone tools were durable and reusable; they were an integral part of human technology for much longer periods than metals. Archaeologists divide stone tools into three classes based on how they were made: chipped stone tools, ground stone tools, and rough stone tools.

Rough Stone Tools

Rough stone tools are unmodified or minimally modified stones used for a variety of tasks. They took very little effort or skill to make. Rough stone tools include hammerstones, anvils, and netsinkers.



0 1 inch

This hammerstone is heavily pitted from repeated impacts on a hard material, probably stone.



An anvil stone and hammerstone. Deep pitting on the anvil stone indicates repeated use.



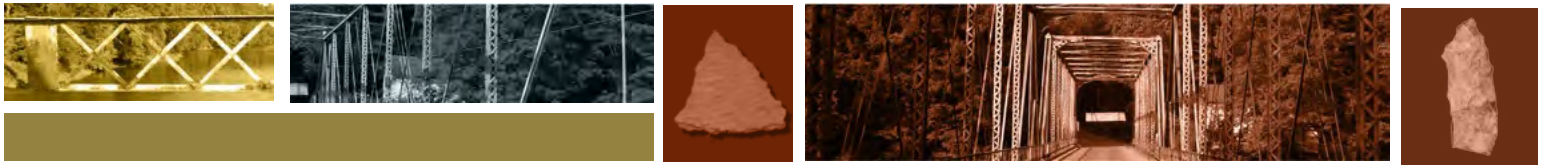
0 1 inch

Netsinkers. Larger netsinkers may indicate the use of larger, heavier nets or seines.

Hammerstones, often river pebbles and cobbles, were used to pound, batter, and crush many materials. Hammerstones were used to make chipped and ground stone tools, to crack nuts and seeds, to break bones for marrow, or virtually any task that required concentrated force from a hard object. They were often used together with an anvil stone.

Anvil stones are flat slabs of stone or flat cobbles that were used in combination with a hammerstone to crush or grind other materials. The working surface of an anvil stone often exhibits deep pits made by pecking. The pits might have held nuts securely for cracking or pieces of stone to be broken.

Netsinkers were typically made from flat cobbles to hold the bottom edge of a net in contact with the stream or river bottom. The notches on each side allowed net cords to be securely tied to the netsinker. The notches were chipped and then lightly ground with a hammerstone.



Ground Stone Tools

Ground stone tools are heavily modified and were often designed for specific tasks. They were made by pecking and grinding the piece being worked with a harder stone. Rubbing with sand and water produced a polished surface. Ground stone tool manufacture required significant time and labor as well as the experience necessary to select stone that would not fracture when the final product was used. Ground stone tool types include axes, celts, adzes, and pestles.



0 1 inch

Full-grooved ground stone axe.

Ground stone axes were made with grooves around their back ends for the attachment of a haft (handle). Like metal axes today, the axe head was oriented parallel to the haft for efficient wood chopping and splitting. Ground stone axe bits could be resharpened by pecking and grinding, but when the bit angle became too wide for effective chopping, the axe could be “re-purposed” as a maul for driving wooden wedges to split wood.



Hafted ground stone tool replicas.



0 1 inch

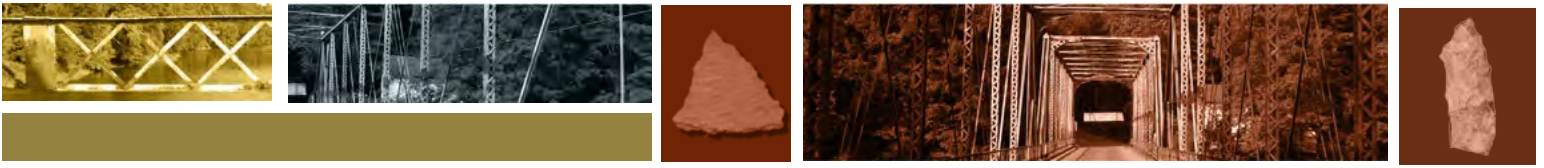
Ground stone celt.

Celts are typically smaller and thinner than axes and could be oriented parallel to the haft for lighter-duty chopping. Often, however, one face of the bit displays a steeper angle. Called *adzes*, these tools were oriented perpendicular to the haft and could be used to hollow out wooden bowls, masks, or dugout canoes.



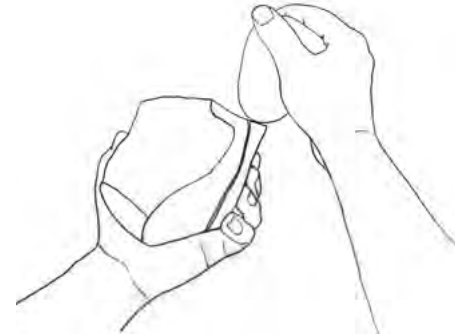
Pestle (approx. 14 inches in length).

Pestles are cylindrical in shape and have rounded ends. They could be used with a wooden mortar to pulverize nutmeats or seeds into meal. The cylindrical portion of the pestle could be used with a stone anvil or wood plank as a roller for the same purpose.

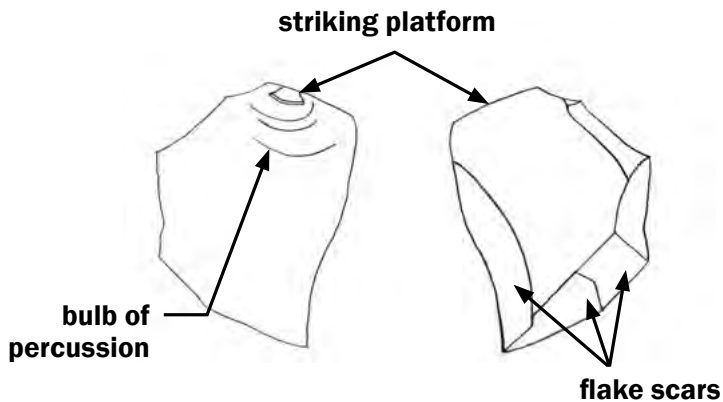


Chipped Stone Tools

Chipped stone tools were the most versatile class of stone tool. They could be made quickly and were used for a variety of piercing, cutting, or scraping tasks. Chipped stone tool types include bifaces, projectile points, drills, and endscrapers. The process of making these artifacts is variously called chipping, flaking, or knapping, because stone chips/flakes were removed from the worked piece to attain the desired shape. Fine-grained stones like flint, chert, jasper, and quartz were used for making chipped stone tools due to their predictable fracture characteristics, however, coarser-grained stones like rhyolite and quartzite were also used. Chipped stone tools could be resharpened by repeated flaking, and they could be recycled to perform different tasks. The series of drawings below illustrate a typical sequence of chipped stone manufacture and re-use.



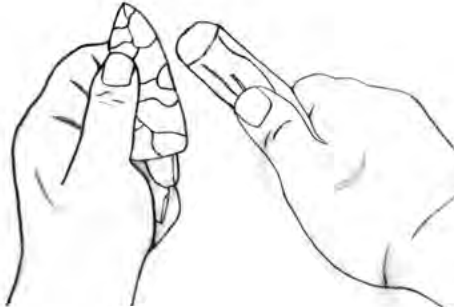
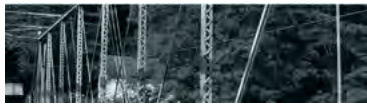
A hammerstone is used to detach a large flake from a larger piece of stone.



The resulting flake has a striking platform where the hammerstone made contact. The smooth interior surface of the flake (left) exhibits a bulb of percussion from the force of the blow, while the exterior surface of the flake (right) shows the scars of previous flake removals on the exterior of the core.



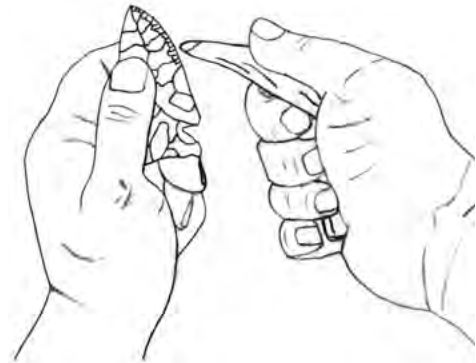
The flake is repeatedly turned over and chipped with a small hammerstone to create a biface, a stone tool that has been flaked on both faces. The biface is thick and its edges are wavy; it could be used to butcher a carcass or scrape wood. In addition, the flakes from making the biface could also be used to pierce, cut, or scrape a variety of materials.



An antler billet removes flakes to thin and shape the biface and create straighter cutting edges.



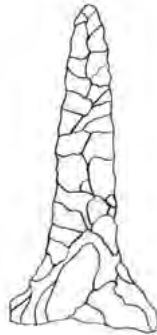
The refined biface can now be fitted into a shaft or hand-held for more delicate cutting tasks.



A sharpened antler tine is used to notch the biface for hafting and to press off very small flakes to sharpen its edges.



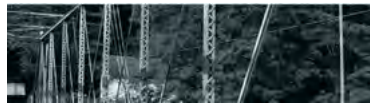
A completed side-notched projectile point.



After the point's blade width is reduced through re-sharpening, it is recycled into a drill.



If the blade tip breaks, the break can be chipped to form an endscraper. Endscrapers were used to scrape the flesh and hair from an animal hide, the first step in making skin clothing.



Appendix

H

NATIVE AMERICAN POTTERY

In Pennsylvania, Native Americans began making fired clay pottery by about 1200 B.C. The manufacture and use of pottery at this time was associated with a whole host of other changes in the ways Native Americans lived. These include a larger population, longer stays at base camps, and smaller territories in which Native Americans moved around. When we find pottery on a Native American archaeological Site, we can potentially learn much more about the people who lived there than just the fact that they used pottery.

Native Americans in Pennsylvania made numerous pottery items. The most common use was for pots, but they also made smoking pipes and effigies. An effigy is a small model of a person or animal. A ceramic effigy could be attached to a pot or a pipe, but it could also be a stand-alone figurine.

How did Native Americans make pottery?

The most common pottery in Pennsylvania was constructed from coils and fired in a pit. Local clay was used and Native Americans added temper to the clay to make it stronger and help it hold its shape better. A wide variety of material was used for temper, including crushed rock fragments, sand, or crushed shell. Once the temper was thoroughly mixed in with the clay, it was kneaded to eliminate air pockets.

To make pots, the potter made numerous coils out of the prepared clay, then stacked the coils into the desired shape. Sometimes a flat disc of clay was used for the base.

Different shapes and sizes of pots were made for different purposes. The coils were firmly pressed into one another so that cracks would not develop when the pot was fired.

Wooden paddles were often pressed against the outside of the pot while it was being smoothed to ensure that no air pockets remained. The paddles were sometimes wrapped with a cord made from plant fibers which left impressions of the cord on the pot's surface. Archaeologists refer to pottery impressed in this way as cordmarked pottery.

Pottery was sometimes decorated with designs made by incising lines on the clay with sticks or bone splinters. The ends of sticks or reeds were sometimes pushed into the pot, which is called punctation. Nets were pressed against the exterior surface of the pot to leave an impression of the net. Lugs of clay were occasionally attached to the outside of the pot.

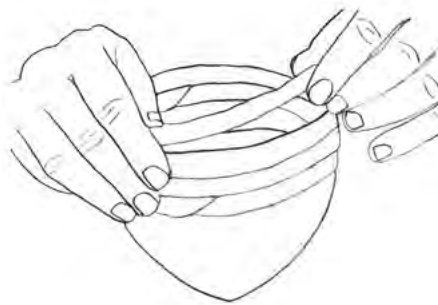
Once the pot was made into the right shape, it was allowed to air dry for several days and then fired in a shallow pit. The unfired pottery was placed upside down in the pit on top of rocks that were heated in another fire and then covered with wood and brush in a conical shape. The wood and brush were then burned in a controlled fire.

Most pottery that was made by Native Americans has been broken over the years and it is very rare to find whole pots. On archaeological sites, we usually recover sherds,



which are broken pieces of pots. Each Native American group manufactured ceramics that were slightly different than other groups, and the way in which they made them changed over time. Different groups used different temps, different techniques for making the pots, different decorations, and different shapes for their pots. Luckily for archaeologists, that means that pots are often diagnostic of a particular Native American culture or time period and when we find them, we can often tell which group made them and during what time period they were made.

Step 1



Coils are added to a hand-molded base. The base is allowed to partially dry so that it can support the weight of additional coils.

Step 2



The coils are first joined with finger pressure.

Step 3



The coils are firmly joined and air pockets are removed by pressing the pot's exterior surface with a cord-wrapped paddle. The interior is supported with a small anvilstone (not shown). The resulting cordmarked surface makes the pot easier to grip and increases its thermal conductivity. The pot is thoroughly dried before firing.



0 2 cm.

Completed pot recovered from the 36CU194. The coils have been smoothed with a cord-wrapped paddle. The impressions from the cords can be seen on the bottom portion of the pot. The upper portion of the pot has been incised with a stick or bone splinter.



Appendix

HOW TO GET INVOLVED WITH ARCHAEOLOGY

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.

For More Information on becoming a volunteer contact:

Chapter #26 French Creek Archaeological Society

Representative John C. Sites at (814) 398-8212

French Creek Archaeological Society c/o John Sites
25761 Hwy 408, Cambridge Springs, PA 16403

<http://www.orgsites.com/pa/frenchcreek26/index.html>

Chapter #30 Venango Archaeology Chapter

Representative Bill Black at blblack2@verizon.net

Venango Archaeology c/o Bill Black
P.O. Box 693, Franklin, PA 16323

Though Chapter #30 does not have a website, Venango Archaeology meets on the 2nd Friday of the month, except July & August, at Christ UM Church, 1135 Buffalo St., Franklin, PA at 7:00 PM.; meetings are open to the public.

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

Other opportunities to get involved can often be found at local colleges, universities, and historical societies. Contact local societies and the anthropology departments at nearby schools to find out if they are doing archaeology and if they accept volunteers.



Excavations *at the* **SWARTZ SITE:** A Native American Settlement *on* French Creek

The Swartz archaeological Site (36ME256) is a pre-contact village located in French Creek Township, Mercer County. The Site was successively occupied throughout the Late Woodland period by proto-Iroquoian Native American groups. Excavations at the Site resulted in the identification of 45 pre-contact features, including postmolds, hearths, and refuse/storage pits, and the recovery of 495 pre-contact artifacts. The contents of the features were processed using flotation techniques, which allowed for the recovery of botanical materials. The documentation of maize, squash, wild beans, nuts, and fleshy fruits at the Site reinforce previous hypotheses that these people participated in casual farming, supplemented by the hunting and gathering of seasonally available resources. Based on the ceramic and lithic technology encountered at the Site, as well as radiocarbon dates received from charcoal samples, multiple discrete Late Woodland occupations were identified at the Swartz Site (36ME256) that span A.D. 1160-1480. The excavation of the Swartz Site contributes to our knowledge of the Late Woodland occupants of the French Creek Valley and the Glaciated Allegheny Plateau of Northwestern Pennsylvania in general. The Swartz Site represents only the third well-documented excavation of a Late Woodland village within the French Creek Valley. The Pennsylvania Department of Transportation and the Federal Highway Administration sponsored the Site's discovery and excavation prior to the replacement of the S.R. 1015 bridge over French Creek as part of the Carlton Bridge Project.



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