



September 11, 2008

GAI Project No. C080204.10

Ms. Barbara Hubbard
Areva NP Inc.
400 Donald Lynch Blvd.
Marlboro, Massachusetts 01752

Management Summary
Phase Ib Cultural Resources Investigation
Bell Bend Nuclear Power Plant
Luzerne County, Pennsylvania

Dear Ms. Hubbard:

GAI Consultants, Inc. (GAI) is pleased to submit this management summary on the Phase Ib Cultural Resources Investigation of the proposed Bell Bend Nuclear Power Plant in Luzerne County, Pennsylvania, conducted on behalf of UniStar Nuclear Development, LLC (UniStar). This document provides a summary of the methods and results of the Phase Ib study and recommendations for further work.

Should you have any questions, please contact me at 412-476-2000 x1203 (b.munford@gaiconsultants.com) or GAI's Cultural Resource Group Manager, Ben Resnick, M.A., RPA, at x1200 (b.resnick@gaiconsultants.com).

Sincerely,
GAI Consultants, Inc.

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cc: Lannis Selz (Areva)
Peter Gluckler (Areva)



Management Summary Phase Ib Cultural Resources Investigation

Bell Bend Nuclear Power Plant
Luzerne County, Pennsylvania
ER 81-0658-079

Prepared for:
Areva NP Inc.
and
UniStar Nuclear Development, LLC

Prepared by:
Barbara A. Munford, M.A.,
Lori A. Frye, M.A., Jared N. Tuk and
Matthew G. Hyland, Ph. D.
GAI Consultants Inc.
385 East Waterfront Drive
Homestead, Pennsylvania
GAI Project No. C080204.10



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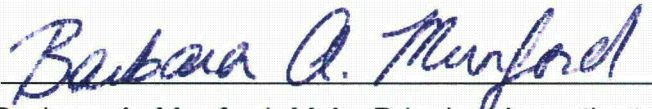


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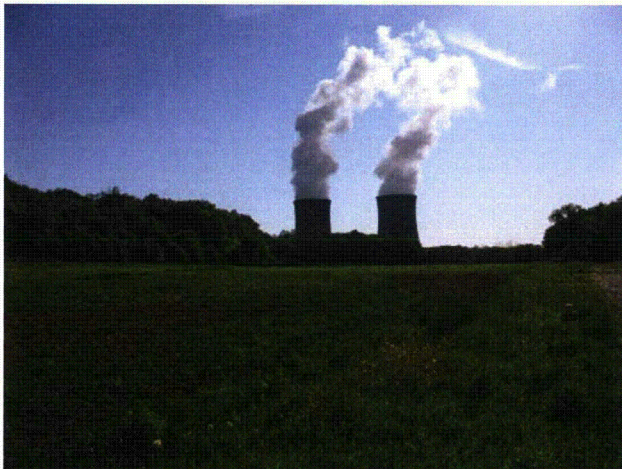
I. Introduction and Project Overview

Project Summary

GAI Consultants, Inc. (GAI) conducted Phase Ib cultural resources investigations at the Bell Bend Nuclear Power Plant (BBNPP), Luzerne County, Pennsylvania, for UniStar Nuclear Development, LLC, a subsidiary of Constellation Energy (UniStar Nuclear) under a contract to Areva NP Inc. (Areva). This study, performed between May and August, 2008, included Phase Ib archaeological survey and supplemental architectural and historical survey. The goals of the investigation were to identify archaeological sites within the project area, to assess the potential eligibility of these sites for listing in the National Register of Historic Places (NRHP), and to conclusively evaluate NRHP eligibility and/or define boundaries for 22 of the architectural and historic resources recorded during GAI's initial architectural survey. This management summary presents the preliminary results of GAI's Phase Ib survey and recommendations for additional work.

The BBNPP project area consists of a 630-acre (255-hectare) parcel situated adjacent to the existing PPL Corporation's Susquehanna Steam Electric Station (SSES), west of the North Branch Susquehanna River and northeast of the town of Berwick (Figure 1). UniStar proposes the potential development of a nuclear power generation unit in this locality. The project area encompasses upland settings south and west of the SSES and low/terrace

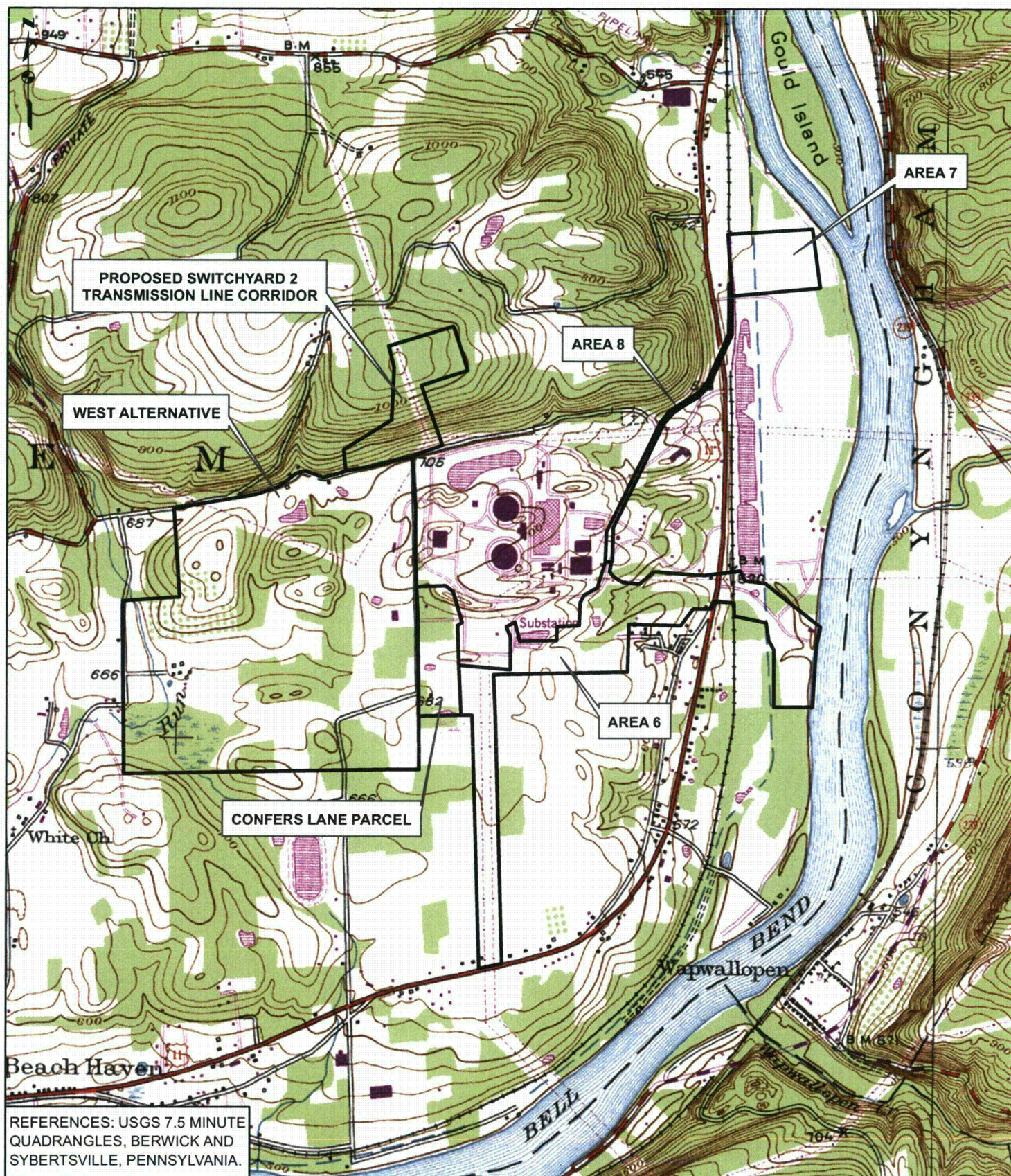
floodplain settings along the Susquehanna River, to the east of this facility. Current land use includes cultivated fields, woodlands, wetlands, and areas of disturbance resulting from prior construction (Photographs 1, 2 and 3).



Photograph 1. Overview of Project Area, West Alternative, Showing Cultivated Fields, Facing East

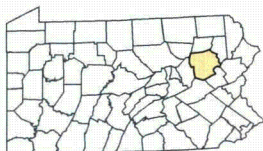


Photograph 2. Overview of Project Area, West Alternative Showing Fallow Fields, Facing Northeast



REFERENCES: USGS 7.5 MINUTE
QUADRANGLES, BERWICK AND
SYBERTSVILLE, PENNSYLVANIA.

PROJECT LOCATION



LUZERNE COUNTY,
PENNSYLVANIA

LEGEND

 PHASE 1B PROJECT AREAS



FIGURE 1
PROJECT LOCATION

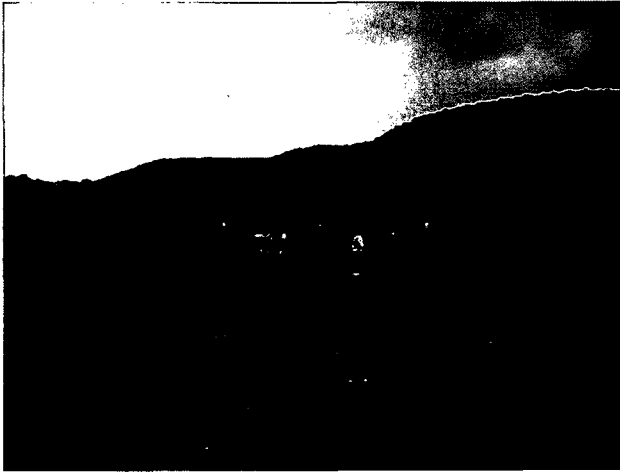


gai consultants

BELL BEND NUCLEAR POWER PLANT
UNISTAR NUCLEAR
DEVELOPMENT, LLC.

DRAWN BY: JRF
CHECKED: MDO

DATE: 9/8/08
APPROVED: BAM



Photograph 3. Overview of Project Area, Area 7 Showing Cultivated Field, Facing Northeast

GAI's Phase Ib survey represents the third phase of cultural resources investigations of the BBNPP project. In June 2007 and January 2008, GAI conducted Phase IA cultural resources investigations for the proposed project, consisting of background research, a geomorphological and archaeological field reconnaissance and an architectural and historical survey (GAI 2007, Munford and Tuk 2008).

[Supplemental Phase Ib archaeological survey of approximately 235 acres (95-hectares) of new project areas is currently in progress and, after completion, the results of this testing will be presented in a separate, Supplemental Phase Ib management summary.] A full report on both Phase Ib surveys will be included in a subsequent, combined Phase I/Phase II technical report.

Phase Ia Cultural Resources Investigation

In June 2007, GAI conducted a Phase IA archaeological and geomorphological reconnaissance of potential project alternatives (West Alternative and Southeast Alternative) for green space/power plant development, totaling approximately 760 acres (GAI 2007). In January 2008, following selection of the West Alternative as the preferred alternative, GAI performed a Phase IA survey (archaeological and geomorphological reconnaissance and architectural and historical survey) of an additional 511 acres (Area 6, Area 7, Area 8 and the Confers Lane Parcel) of new project areas (Munford and Tuk 2008). In total, 1,271 acres were investigated by Phase IA survey. The goals of this work were to identify previously recorded cultural resources within the project vicinity, evaluate the project area's potential for unrecorded cultural resources, delineate localities for subsequent Phase Ib survey, and document architectural and historical resources in the project viewshed.

Phase IA background research identified 24 previously-recorded archaeological sites within 1.6 kilometers (1.0 mile) of the project area and five architectural resources within a 0.8 kilometer (0.5 mile) radius of the project. Six of these sites (36LU15, 38LU16, 36LU48, 36LU49, 36LU50 and 36LU51) and one architectural resource (the North Branch Pennsylvania Canal/141573) were located within the Phase IA project footprint.

The architectural and historical survey recorded 52 resources within the proposed project viewshed. Ten of these surveyed resources were recommended eligible for NRHP listing, including one potential historic district (Wapwallopen Historic District) composed of ten individually-identified resources.

The results of Phase IA geomorphological and archaeological field reconnaissance of the project area indicated that undisturbed, relatively level, well-drained portions of the project area have a moderate to high archaeological potential, requiring subsequent Phase Ib archaeological survey to identify archaeological sites. Portions of the project characterized by

wetlands, highly eroded soils, or slopes in excess of 15 percent were considered to have a low archaeological potential. These areas would not require systematic testing during subsequent Phase Ib investigations. Disturbed localities were determined to have no archaeological potential and were excluded from further investigation. Archaeological sites in upland settings were anticipated to be near surface in nature. Low terrace/floodplains adjacent to the Susquehanna River were concluded to have a potential for both near surface and deeply buried archaeological sites.

GAI presented the results and recommendations of these Phase IA surveys in two reports (GAI 2007; Munford and Tuk 2008), which have been reviewed by the Pennsylvania Historic and Museum Commission-Bureau of Historic Preservation (PHMC-BHP). In their June 5, 2008, review letter, the PHMC-BHP concurred with GAI's recommendations for additional Phase Ib archaeological fieldwork and requested further survey information for 22 of the 52 properties recorded by the architectural and historical survey, as well as submittal of Pennsylvania Historic Resource Survey (PHRS) forms for these resources.

Phase Ib Cultural Resources Investigation

Based on the results of Phase IA studies, GAI conducted Phase Ib archaeological fieldwork between May 19 and July 3, 2008. The Phase Ib project area initially encompassed 600-acres (243 hectares) and consisted of the West Alternative, Area 6, Area 7, Area 8, and the Confers Lane Parcel. During the course of fieldwork, the project was expanded to include a 30-acre (12-hectare) parcel, identified as the proposed Switchyard 2 Transmission Line Corridor (Switchyard 2), located immediately north of the initial project boundary, thus resulting in a 630-acre (255-hectare) total project area. Phase Ib archaeological survey was conducted in areas of moderate to high archaeological potential (approximately 350 acres/865 hectares) within the 630-acre (255-hectare) project area. Fieldwork included pedestrian survey, the excavation 3,789 shovel test pits (STPs), and a program of deep testing in one low terrace/floodplain locality—involving mechanical excavation of 11 trenches, soil corings, and hand-screening of eight 1x1-meter test unit column samples. Phase Ib survey resulted in the identification of 11 archaeological sites and 25 Isolated Finds. Figure 2 depicts Phase Ib testing locations and identified archaeological sites. Table 1 presents a summary of the survey results by project areas (i.e. West Alternative, Confers Lane, Area 6, Area 7, Area 8 and Switchyard 2).

Table 1. Summary of Phase Ib Archaeological Survey Results by Project Area

Area	Pedestrian Survey	# STPs	Deep Testing	Sites	Isolated Finds
West Alternative	Yes	2285	--	9	19
Confers Lane Parcel	No	265	--	1	0
Area 6	Yes	713	11 trenches, 8 units	0	1
Area 7	Yes	269	--	1	5
Area 8	No	0	--	0	0
Switchyard 2	No	257	--	0	0
Total		3,789	11 trenches, 8 units	11	25

This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

Supplemental architectural and historical survey, conducted between August 25 and 28, 2008, collected additional information on 22 of the 52 resources recorded during the initial survey (Munford and Tuk 2008). In accordance with PHMC-BHP's review of Phase IA results, provided in their June 5, 2008 letter, these resources included ten resources recommended by GAI as NRHP eligible as well as 12 additional resources recommended as Not Eligible for listing in the NRHP. PHRS forms were completed for all 22 resources and are attached as Appendix A. Original forms will also be submitted to PHMC-BHP for review under separate cover.

Area of Potential Effect

The Area of Potential Effect (APE) for GAI's Phase Ib Archaeological Survey consists of the 630-acre (225-hectare) project footprint as delineated by Areva and UniStar. The APE for the Architectural Survey consists of the project viewshed, defined, in general, as extending 0.8 kilometers (0.5 miles) beyond the boundaries of the 630-acre (255-hectare) project footprint.

Regulatory Guidelines

GAI's Cultural Resources Survey was conducted in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, guidelines developed by the Advisory Council on Historic Preservation, the amended *Procedures for the Protection of Historic and Cultural Properties* as set forth in 36 CFR 800, the Secretary of Interior's *Standards and Guidelines for Archaeology and Historic Preservation and Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations* (PHMC-BHP 1991). The architectural survey was performed according to *Archaeology and Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716-44742); *National Register Bulletin 15- How to Apply the National Register Criteria for Evaluation* (National Park Service 1992a); and *National Register Bulletin 21- Defining Boundaries for National Register Properties* (National Park Service 1992b).

Project Staff and Acknowledgements

Benjamin Resnick, M.A., RPA (Group Manager, Cultural Resources) was project manager for GAI's study. Barbara A. Munford, M.A. (Lead Archaeologist) served as project Principal Investigator and was the primary author of this management summary. Terry J. Newell (Archaeologist) and Doug Jeffries (Senior Technician) supervised archaeological fieldwork. Colleen Dugan (Archaeologist) performed historic artifact analysis and Marina Davis (Archaeologist) conducted prehistoric artifact analysis. Lori A. Frye, M.A., (Lead Archaeologist) reviewed historic artifact analysis and contributed to report chapters. Jared N. Tuk (Lead Architectural Historian) authored the architectural survey sections of the report. Matthew G. Hyland, Ph. D. (Architectural Historian) carried out supplemental architectural field survey and he and Megan Otten (Cultural Resource Specialist) prepared PHRS forms for architectural resources. Jonathan Farrell, Alyssa Trimmer and Lisa Dugas prepared figures for this report.

From Areva, Lannis Selz was project manager and Peter Gluckler was the technical manager for the project.

From Kleinfelder, on behalf of UniStar, Chuck Thompson and Lyndsay Stutzman served as field coordinators at BBNPP during Phase Ib fieldwork and facilitated the field crew's daily access within the project area.

II. Environmental Setting

Physiography

The project area is in the Susquehanna Lowland Section of the Ridge and Valley physiographic province (Sevon 2000). This section contains low to moderately high, linear ridges, linear valleys and the Susquehanna River Valley. Relief is low to moderate, and the drainage pattern is trellis and angulate. A narrow prong of the Anthracite Valley Section of the Ridge and Valley occurs approximately 6 kilometers (4 miles) north of the project area. The Glaciated High Plateau Section of the Appalachian Plateaus Province is in northwestern Luzerne County approximately 25 kilometers (16 miles) north of the project area. All of Luzerne County has been glaciated. Uplands in the region are covered with the Wisconsin age Olean Till (Sevon and Braun, 2000). The Susquehanna River valley is mapped with stratified drift of Recent to Late Illinoian age.

The North Branch Susquehanna River originates in Otsego Lake near Cooperstown, New York (Kaktins and Delano, 1999). It flows through Pennsylvania and into Maryland, where it empties into the Chesapeake Bay. The river has a total length of 715 kilometers (444 miles) and it drains 71,225 square kilometers (27,502 square miles), covering nearly half of the land area of Pennsylvania and portions of New York and Maryland.

Near the project area, the North Branch Susquehanna River flows south to near Wapwallopen, Pennsylvania where it makes a curve to the southwest. This curve is referred to as Bell Bend. The river continues its southwesterly flow downstream, past Berwick and on to Sunbury. The width of the channel near the project area ranges from 200 to 300 meters (656 to 984 feet). Further downstream near Berwick the channel broadens to 500 meters (1640 feet). Several islands are present in the channel, the most notable being Gould Island near the northern boundary of the project area (Area 7).

Geology

The bedrock in the project area consists of Middle to Upper Devonian shale, claystone, sandstone and limestone (Inners 1978). The area north of Beach Grove Road, including all of Area 7 and the northern one third of Area 8, is mapped with the Upper Devonian Trimmers Rock Formation. This formation consists of medium gray to medium dark gray fine grained to very fine grained sandstone, siltstone and shale. The uplands to the north of Beach Grove Road are steep with moderately broad summits and as much as 170 meters (558 feet) relief. The area between Beach Grove Road and an east-west line just north of the northernmost cooling tower of the SSES is mapped with the Middle Devonian Harrell Formation (Inners, 1978). The Harrell Formation consists of dark gray to grayish black clay shale and silty clay shale that forms splintery and platy fragments. To the south of the Harrell Formation, the remainder of the project area is mapped with the Middle Devonian Mahantango Formation of medium dark to dark gray silty to very silty claystone. The northernmost edge of this formation is differentiated into the Tully Member of the Mahantango Formation. The Tully Member consists of medium dark gray, argillaceous, fine grained limestone and calcareous clay shale.

Geomorphology

As noted above, all of Luzerne County was glaciated during the Pleistocene. According to maps prepared by Inners (1978), the project area occurs at the boundary of the Woodfordian (Late Wisconsin, circa 12-25 ka) glaciation to the north and east, and older glacial deposits to the west and south. The Woodfordian End Moraine map unit is mapped crossing the Susquehanna River at Beach Haven and extending northward beyond the project area to Lee

Mountain. The mapped unit is depicted as a broken boundary with various segments separated by outwash, ground moraine, or kame deposits (Inners 1978). The westernmost portion of the project area (West Alternative) contains portions of this end moraine. North and east of the moraine, the majority of the uplands are mapped with the Woodfordian Ground Moraine map unit. This unit occurs on most of the uplands north of the project area, the uplands in the northern portion of the West Alternative, and the uplands west of the bend in Confers Lane. Both the end moraine and the ground moraine consist of till; an unsorted mixture of clay, silt, sand, gravel, cobbles and boulders. The remainder of the project area west of Route 11 is mapped with the Woodfordian Kame Terrace, and Outwash, Undivided map unit (Inners, 1978). This unit is relatively flat to gently sloping land surfaces and consists of unconsolidated and stratified sand, gravel, and cobbles with some boulders.

Woodfordian outwash and kame deposits are mapped along the Susquehanna River to the south and west of the end moraine (Inners, 1978). The town of Berwick, Pennsylvania is largely built on Woodfordian outwash deposits. The uplands to the south and west of the end moraine are mapped with discontinuous deposits of Altonian (circa 45-70 ka) and Illinoian (circa 500 ka) glacial deposits.

The Susquehanna River valley floor, east of Route 11, is mostly mapped with the Holocene Alluvium map unit (Inners, 1978). This unit extends northward (upstream) beyond Gould Island and southward to Berwick. In the project area, the width of the Holocene Alluvium unit (and the valley floor) ranges from about 400 to 670 meters (1312 to 2198 feet). Further downstream beyond Bell Bend, the unit is very narrow ranging from 60 to 140 meters (197 to 459 feet).

Soils

The portions of the project area to the west of U.S Route 11 have been mapped with glacial till and glacial outwash soils (Bush 1981). The till soils occur on the highest uplands to the north of the project area, and on the highest elevation knobs within the project area. Most of Area 6 and portions of Area 8 west of the highway are mapped with glacial outwash soils. These broad, gently sloping areas represent the highest outwash terraces of the Susquehanna River and are Late Illinoian to Wisconsin in age. The wetlands that have developed on these terraces are also formed in glacial outwash. These areas have no potential for deeply buried cultural resources. Any cultural resources in these areas are associated with the modern ground surface. The ground surface has been disturbed to varying extent due to construction and agriculture.

The portions of the project area east of U.S. Route 11 occur on low terraces and flood plain of the Susquehanna River, formed in Late Holocene to recent-aged alluvial sediments. The Luzerne County soil survey (Bush 1981) maps two soil types in this portion of the project area: the well drained Pope soils and the poorly drained Holly soils. Holly soils probably represent low and former stream channels on the flood plain. The Pope soils represent higher terrace and natural levee landforms. Area 7 and the eastern portions of Area 6 and Area 8 occur on the low terraces and flood plain of the Susquehanna River. These areas, particularly the well drained low terraces and natural levee landforms have a potential for deeply buried cultural resources. Hayes et al. (1981) performed an archaeological investigation of the Susquehanna flood plain east of the SSES. They encountered a shallow buried (0.5-1.0 meters/1.6-3.3 feet) deep cultural bearing soil horizon with features and a "carbonized horizon" at a depth of 3.2 meters (10.5 feet) below surface. Thus, this area required deep testing to fully evaluate cultural resources.

The poorly drained channel-like areas within the Pope soils need to be evaluated for cultural resources. In particular, the edge of wetlands bordered by natural levee landforms could have a high potential for cultural resources. Broader areas of the Holly soil are probably not conducive to having cultural resources and have a lower potential.

III. Supplemental Architectural Survey

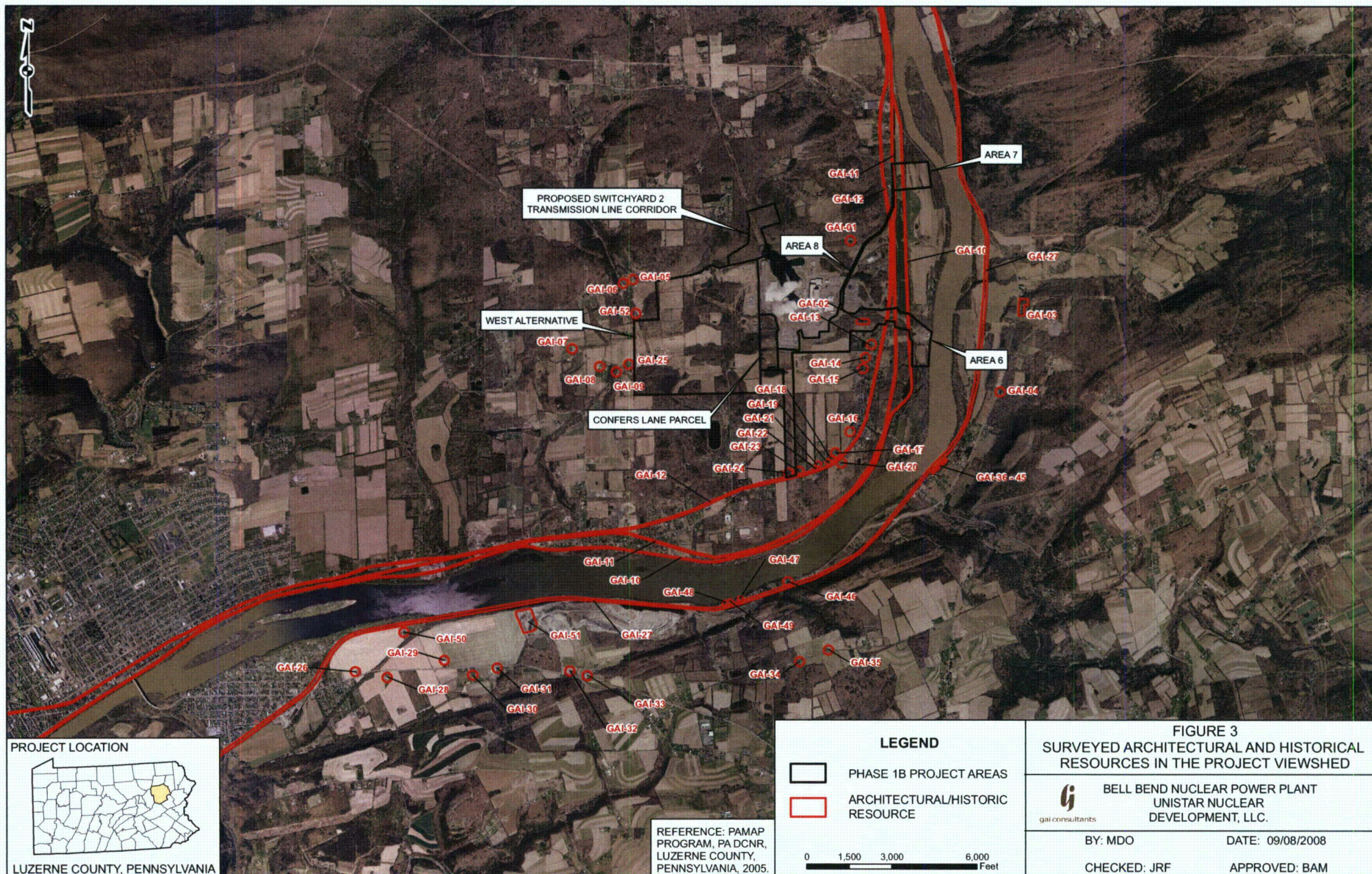
Summary of Previous Architectural Survey

Initial reconnaissance-level architectural and historical survey of the project area was conducted between January 28 and 30, 2008, in conjunction with GAI's 2008 Phase IA investigations. The Area of Potential Effect (APE) for this study was defined as the footprint of the project plus the surrounding viewshed (extending approximately 0.8-kilometers/0.5-miles beyond the footprint). In some areas (i.e. along the riverbank) the APE was extended to include additional resources located within a clear line of sight of the project area. GAI's survey identified 52 resources (including ten resources that collectively comprised the potential Wapwallopen Historic District) within the APE (Figure 3).

Survey results and recommendations were presented in the Phase IA technical report (Munford and Tuk 2008). GAI recommended supplemental study of the following four resources to conclusively recommend their NRHP eligibility as well as further study to conclusively define the recommended NRHP boundaries for the ten (10) resources recommended eligible for NRHP listing:

- Stone Walls (GAI-02) – Additional research was recommended to identify a historical association for this resource, thus facilitating NRHP evaluation. (Subsequent to this recommendation, the PHMC-BHP determined that no further work was necessary for this resource.)
- Union Reformed and Lutheran Church (GAI-03) – Additional research was recommended for this resource, to determine its potential NRHP significance under Criterion B (it was recommended eligible under Criteria A and C).
- Heller Farm (GAI-08) – Recommendations for additional work for this resource included obtaining property access to allow for a careful study of the buildings on this property, which were far removed from the public right-of-way.
- Wapwallopen Historic District (GAI 36 through 45) – Supplemental fieldwork was recommended to determine the full extent of the recommended historic district boundary and to identify contributing resources to this district that are located outside the APE for this project.

The PHMC-BHP reviewed this document and responded in a June 5, 2008 letter (PHMC/BHP 2008) requesting completion of Pennsylvania Historic Resource Survey (PHRS) forms for 22 of the surveyed resources (including the ten resources comprising the Wapwallopen Historic District). The PHRS forms for these 22 resources are included with this document as Appendix A. The PHMC-BHP also determined that one of the resources for which GAI recommended further work, Stone Walls (GAI-02), was not eligible for NRHP listing and that no further work would be required. No further study was required for the remaining 21 surveyed resources.



Methods and Results of Supplemental Architectural Survey

GAI conducted supplemental architectural and historical survey of the BBNPP project area between August 25 and 28, 2008. This study was performed by GAI's Architectural Historian, Matthew G. Hyland, Ph.D., according to *Archaeology and Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716-44742); *National Register Bulletin 15- How to Apply the National Register Criteria for Evaluation* (National Park Service 1992a); and *National Register Bulletin 21- Defining Boundaries for National Register Properties* (National Park Service 1992b), as well as the guidelines of the PHMC-BHP for survey projects (1991). Supplemental fieldwork consisted of the compilation of digital photographs of resources and the evaluation of their NRHP eligibility according to NRHP criteria for significance and standards of integrity.

Based on the results of supplemental survey, GAI now recommends that the Union Reformed and Lutheran Church is NRHP-eligible under Criterion B, as well as Criteria A and C; the Heller Farm does not possess sufficient historical associations, architectural significance, or integrity for NRHP listing; and the Wapwallopen Historic District should encompass a number of resources outside the APE, including several orchards associated with the community. The updated information for these resources is reflected in the PHRS forms included with this document.

Of the 52 architectural and historical resources identified in the project area, ten are recommended eligible for NRHP listing. Table 2 below summarizes the results of architectural and historical investigations for this project. It is divided into three sections: 1) resources recommended eligible for NRHP listing and requiring PHRS forms; 2) other resources for which the PHMC-BHP requested PHRS forms; and 3) resources for which no further study was requested by the PHMC-BHP. As noted above, Pennsylvania Historic Resource Survey (PHRS) forms are included in Appendix A; these forms will also be submitted to the PHMC/BHP for review under separate cover.

Table 2. Summary of Surveyed Architectural and Historical Resources in Project APE

ID No.	Name	Address	Style and Type	Date	NRHP Eligibility Recommendation
<i>Surveyed Resources Recommended Eligible for NRHP Listing (Require PHRS Forms per PHMC-BHP—June 5, 2008)</i>					
GAI-03 (086572)	Union Reformed and Lutheran Church (Old River Church and Burying Ground)	3200 SR 239, Conyngham Twp	Greek Revival Church and Cemetery	1833 (Church), 1805 (Cemetery)	Eligible, Criteria A, B, and C
GAI-04	Woodcrest	3209 SR 239, Conyngham Twp	Federal, Vernacular Farmstead	1805, 1822	Eligible, Criteria A and C
GAI-06	Stone Arch Bridge	Beach Grove Road at Stone Church Road, Salem Twp	Vernacular Stone Arch Bridge	c1935	Eligible, Criterion C
GAI-09	North Market Street Bridge	North Market Street, Salem Twp	Vernacular Stone Arch Bridge	c1935	Eligible, Criterion C
GAI-10 (141673)	North Branch Pennsylvania Canal	Along Susquehanna River, US Rt. 11 Vicinity, Salem Twp	Vernacular Canal	1828	Eligible, Criteria A and C

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ID No.	Name	Address	Style and Type	Date	NRHP Eligibility Recommendation
GAI-11	Canadian Pacific/ Bloomsburg Division of the Delaware, Lackawanna & Western Railway	Along Susquehanna River, US Rt. 11 Vicinity, Salem Twp	Vernacular Railroad	1858	Eligible, Criterion A
GAI-12	Susquehanna and Tioga Turnpike	US Rt. 11, Salem Twp	Vernacular Highway	1807-1810	Eligible, Criterion A
GAI-26	House (Red Brick Studios)	1405 Berwick-Hazleton Highway (SR 93), Nescopeck Twp	Masonry Vernacular, Gothic Revival Residence	c1880	Eligible, Criterion C
GAI-27	Pennsylvania Railroad-Sunbury Line/ Delaware & Hudson Railroad	Along Susquehanna River in Vicinity of River Road and SR 239, Nescopeck Twp	Vernacular Railroad	c1870	Eligible, Criterion A
GAI-36 through GAI-45	Wapwallopen Historic District	454 through 480 South River Street, Wapwallopen	Vernacular, Italianate, Gothic Revival, Queen Anne, Stick, Colonial Revival Historic District	c1870-c1900	Eligible, Criteria A and C
<i>Other Resources Requiring Completion of PHRS forms per PHMC-BHP Request—June 5, 2008</i>					
GAI-05	Hummel Farmstead	371 Beach Grove Road, Salem Twp	Frame Vernacular Farmstead	c1890	Not Eligible
GAI-07	Kiliti Farm	62 Kiliti Road, Salem Twp	American Foursquare, Vernacular Farmstead	c1925	Not Eligible
GAI-08	Heller Farm	4210 North Market Street, Salem Twp	Frame Vernacular Farmstead	c1930	Not Eligible
GAI-13	House	29 Bell Bend Road, Salem Twp	Bungalow Residence	c1925	Not Eligible
GAI-14	House	49 Bell Bend Road, Salem Twp	Frame Vernacular, Georgian Residence	c1875	Not Eligible
GAI-20	Valley View Farm	1022 Salem Boulevard, Salem Twp	Frame Vernacular Farmstead	c1900	Not Eligible
GAI-25	Michaels Farm	4252 N. Market Street, Salem Twp	Frame Vernacular Farmstead	c1880	Not Eligible
GAI-29	Farm	950 Berwick-Hazleton Highway (SR 93), Nescopeck Twp	Greek Revival Farmstead	c1870-c1960	Not Eligible
GAI-30	House	944 Berwick-Hazleton Highway (SR 93), Nescopeck Twp	Masonry Vernacular, Georgian Residence	c1870	Not Eligible
GAI-33	Farm	783 Berwick-Hazleton Highway (SR 93), Nescopeck Twp	Masonry Vernacular, Greek Revival Farmstead	c1880	Not Eligible
GAI-35	Farm	212 East Cherry Road (T379), Nescopeck Twp	Frame Vernacular Farmstead	c1890	Not Eligible
GAI-50	Farm	811 River Road (SR 3036), Nescopeck Twp	Vernacular, Georgian Farmstead	c1880-c2000	Not Eligible
<i>Identified Ineligible Resources Requiring No Further Work per PHMC-BHP—June 5, 2008</i>					
GAI-01	Beach Grove Cemetery	Beach Grove Road, Salem Twp	Vernacular Cemetery	c1850-c2004	Not Eligible
GAI-02	Stone Walls	Bell Bend Road at US Rt. 11, Salem Twp	Vernacular Walls	c1810-c1850?	Not Eligible

ID No.	Name	Address	Style and Type	Date	NRHP Eligibility Recommendation
GAI-15	House	65 Bell Bend Road, Salem Twp	Frame Vernacular Residence	c1880	Not Eligible
GAI-16	House	155 Bell Bend Road, Salem Twp	Minimal Traditional, Cape Cod Residence	c1950	Not Eligible
GAI-17	House	189 Bell Bend Road, Salem Twp	Colonial Revival Residence	c1925	Not Eligible
GAI-18	House	193 Bell Bend Road, Salem Twp	Minimal Traditional Residence	c1950	Not Eligible
GAI-19	House	1021 Salem Boulevard, Salem Twp	Frame Vernacular Residence	c1950	Not Eligible
GAI-21	Bell Bend Efficiency Apartments	1043 Salem Boulevard, Salem Twp	Frame Vernacular Apartment	c1940	Not Eligible
GAI-22	House	1047 Salem Boulevard, Salem Twp	Frame Vernacular Residence	c1910	Not Eligible
GAI-23	House	1091 Salem Boulevard, Salem Twp	Frame Vernacular Residence	c1910	Not Eligible
GAI-24	House	1069 Salem Boulevard, Salem Twp	American Foursquare Residence	c1925	Not Eligible
GAI-28	Barn and Trailer	998 Berwick-Hazleton Highway (SR 93), Nescopeck Twp	Vernacular Former Farmstead	c1900-c1990	Not Eligible
GAI-31	House	906 Berwick-Hazleton Highway (SR 93), Nescopeck Twp	Frame Vernacular Residence	c1900	Not Eligible
GAI-32	House	809 Berwick-Hazleton Highway (SR 93), Nescopeck Twp	Frame Vernacular Residence	c1910	Not Eligible
GAI-34	House	175 East Cherry Road (T379), Nescopeck Twp	Frame Vernacular Residence	c1930	Not Eligible
GAI-46	House (Opossum Lodge)	598 River Road (SR 3036), Nescopeck Twp	Frame Vernacular Residence	c1920	Not Eligible
GAI-47	House	546 River Road (SR 3036), Nescopeck Twp	Frame Vernacular Residence	c1920	Not Eligible
GAI-48	House	520 River Road (SR 3036), Nescopeck Twp	Frame Vernacular Residence	c1920	Not Eligible
GAI-49	House	510 River Road (SR 3036), Nescopeck Twp	Frame Vernacular Residence	c1920	Not Eligible
GAI-51	Quarry	SR 3036 (River Road) vicinity, Nescopeck Twp	Vernacular Extraction Facility	c1930	Not Eligible
GAI-52 (135820)	Bridge	N. Market Street, Salem Twp	Vernacular Concrete Bridge	1937	Not Eligible

All of the resources recommended NRHP eligible as part of this study are located within the viewshed of existing facilities at the BBNPP, which include two cooling towers reaching 475 feet in height (Document 38-9084012-000). Accordingly, it is unlikely that proposed construction activities will result in a visual effect that diminishes the significant historical and/or architectural features of these resources. However, GAI recommends the preparation of a Criteria of Effects Evaluation Report once concurrence on eligibility recommendations for the architectural and historical resources identified in the survey is received from the PHMC-BHP.

IV. Phase Ib Archaeological Survey

Objectives

The goals of GAI's Phase Ib archaeological survey were to identify, delineate and evaluate the potential National Register eligibility of previously unrecorded historic and prehistoric sites in the project APE.

Field Methods

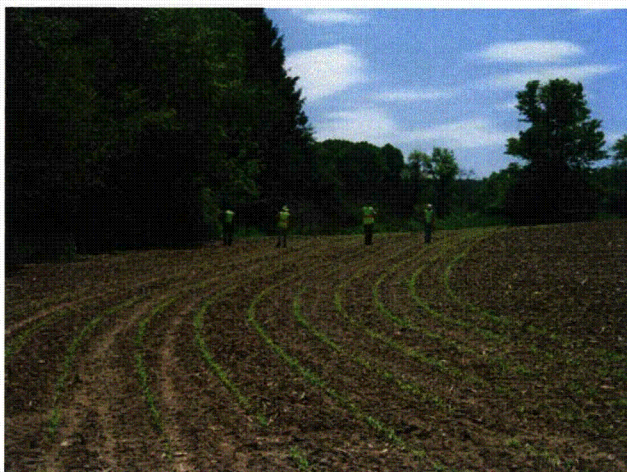
Phase Ib archaeological survey of the BBNPP project area was conducted between May 19 and July 3, 2008. Based on the results of the Phase IA field reconnaissance, GAI concluded that approximately 350 acres (142-hectares) of the 630-acre (255-hectare) project APE possessed a moderate to high archaeological potential and would require systematic Phase Ib survey. In their June 5, 2008, review letter, PHMC-BHP concurred with GAI's recommendations for a Phase Ib study. Field investigations consisted of pedestrian ground survey and shovel testing, as well as a program of deep testing in one low terrace/floodplain locality.

The BBNPP Phase Ib project area was divided into six test areas: the West Alternative, Area 6, Area 7, Area 8, Confers Lane Parcel, and Switchyard 2 (see Figure 1). The West Alternative, located in an upland setting west of the existing SSES facility and representing the location of the proposed new power generation unit, is the largest of these test areas. GAI defined Phase Ib testing sections within each of the five main project areas; no testing was conducted in Area 8, an existing, previously disturbed railway corridor connecting Areas 6 and 7 and located largely within the SSES facility (see Figure 2). Test Sections were numbered sequentially within each area (i.e. West Alternative: Sections 1-24 and 27-31; Confers Lane Parcel: Sections 25 and 26; Area 6: Sections 1-5; Area 7: Sections 1-4; Switchyard 2: Section 1). GAI conducted Phase Ib survey within each of these sections (see Figure 2).

The project's 350 acres (142 hectares) of moderate to high archaeological potential were located predominantly (89 percent) in upland settings (311 acres/126 hectares); minor amounts occurred in low terrace/floodplain settings (39 acres/16 hectares). The remainder of the project area included approximately 165 acres (67 hectares) of low archaeological potential (e.g. slopes in excess of 15 percent, wetlands or recent deposits) and 115 acres (46.5 hectares) of prior disturbance (no archaeological potential). These areas were excluded from systematic Phase Ib survey. (Due to refinements in assessments of archaeological sensitivity, resulting from detailed field observations during the course of Phase Ib fieldwork, approximately 16 acres (6.5 hectares) assessed with low archaeological potential were also examined by pedestrian survey or judgmental shovel testing. These low potential areas include eroded fields in the West Alternative, Sections 10 and 11, and the edges of wetlands in the West Alternative Sections 23 and 28.)

Upland Settings

In upland portions of the project area with a moderate to high archaeological potential, Phase Ib survey consisted of pedestrian ground survey or systematic shovel testing or to identify near-surface archaeological sites. Pedestrian ground survey was conducted in approximately 96 acres (39 hectares) of previously cultivated fields that had been recently plowed and disked in advance of fieldwork in order to provide good ground surface visibility (Photograph 4).



Photograph 4. View of Pedestrian Survey in Area 6, Section 5, Facing East

Archaeologists systematically walked these fields along transects spaced at 5-meter intervals. Diagnostic artifacts and a representative sample of nondiagnostic artifacts observed on the surface were plotted on project maps, bagged, and provenienced (Photograph 5). Widely dispersed surface artifacts were individually point provenienced. Concentrations of

surface artifacts were provenienced within 5-meter surface collection units. Judgmental shovel test pits were excavated in select localities within these fields to document soil stratigraphy and assess the presence of subplowzone cultural deposits.



Photograph 5. View of Surface Collection in West Alternative, Section 7, Facing North

Shovel testing was required in approximately 215 acres (87 hectares) of upland fields and woodlands with poor ground surface visibility (Photographs 6 and 7). Systematic shovel test pits (STPs) were excavated at 15-meter (50 foot) intervals within transects spaced 15 meters (50 feet) apart. Judgmental STPs were excavated in select areas to confirm the presence of cultural artifacts, disturbed soils or recent deposits. When a shovel test yielded

artifacts, radial STPs were excavated at 5-meter (15-foot) intervals around the initial positive findspot in order to further investigate the locality. In areas of standing structures or archaeological sites, 5-meter (15-foot) interval shovel testing was conducted, where appropriate, to assist in evaluating the resource and to define site boundaries. GAI excavated 3,491 STPs in upland settings.

Photograph 6. View of Shovel Testing in West Alternative, Section 31 (Site 10), Facing Southeast





Photograph 7. View of Shovel Testing in Woodlands, West Alternative, Facing North

STPs measured 50 cm in diameter and were hand-excavated in natural strata to at least 10 cm into the subsoil and 10 cm below the deepest artifact recovery. Excavated soils were screened through 0.25-in (0.6-cm) wire mesh for systematic artifact recovery. Prehistoric and historic artifacts recovered during survey were bagged and labeled with appropriate provenience information. GAI archaeologists recorded results of individual STPs on standardized field forms, noting

depths of soil horizons, soil texture and Munsell color, and the presence of artifacts. STP locations were recorded on project maps and were backfilled upon completion.

Identified archaeological resources were recorded on standardized forms, plotted on maps, documented with photographs, and their locations were recorded using mapping grade GPS equipment.

Lowland Settings

Based on the results of Phase IA reconnaissance, moderate to high potential portions of the project APE in low terrace/floodplain settings (Area 7 and portions of Area 6) were determined to have a potential for both near-surface and deeply-buried archaeological sites. Phone consultation with Steve McDougal (PHMC-BHP) on April 8, 2008, resulted in PHMC-BHP's concurrence on restricting deep testing to evaluate the potential for deeply-buried archaeological resources to those localities with proposed deep project impacts (i.e. Area 6 floodplain). Due to anticipated shallow impacts resulting from proposed use as a laydown area [personal communication, phone conference with Mark Hunter (UniStar), February 2, 2008; (Document 38-9090613-000)], deep testing was not required in portions of the low terrace/floodplain within Area 7.

In addition to this subsurface testing, GAI documented portions of the previously-recorded North Branch Pennsylvania Canal (GAI-10/141673) located within Areas 6 and 7. In portions of the canal that contain water (Area 6) GAI recorded the canal with digital photographs. In Area 7, where the canal bed was dry, documentation included both photography and a measured drawing of the canal's profile.

Near-Surface Testing

Low terrace/floodplain settings with proposed shallow project impacts were investigated by pedestrian survey or systematic shovel testing to evaluate the presence of near-surface archaeological resources. Approximately 18 acres (7 hectares) of recently plowed and disked low terrace/floodplain fields) with good ground surface visibility (Area 7, Sections 1 and 2) were subject to pedestrian ground survey. Judgmental STPs were excavated in select locations within these fields. Systematic shovel testing was conducted in approximately 13 acres (5 hectares) of poor ground surface visibility within the shallow-impact, low terrace/floodplain settings (Area 7, Sections 3 and 4). STPs in these lowland settings were

excavated to a depth of 80 cm below ground surface. GAI excavated 298 STPs in low terrace/floodplain portions of the project.

Deep Testing

Deep testing was proposed for portions of Area 6 (Sections 1 and 2) which are expected to be subject to deep impacts from proposed construction of a new intake structure and blow down lines [personal communication, phone conference with Mark Hunter (UniStar), February 2, 2008; (Document 38-9090613-000)]. Deep testing was monitored by Dr. David Cremeens, GAI's Senior Lead Soil Scientist, during site visits in May, June and July. The objective of this testing was to evaluate the potential for deeply-buried cultural resources and determine the depth to Pleistocene deposits in these localities. In Section 1, deep testing was conducted by a combination of backhoe trenching (and soil coring with a drill rig in Section 1, followed by hand-screening of 1x1-meter test unit column samples. In Section 2, initial hand-augering revealed a shallow depth to bedrock (ranging from 42 to 78 cm), unexpected based on topography and on the earlier reconnaissance. The shallowness to bedrock negated the need for deep testing in this section.

Area 6, Section 1 consists on an approximately 8-acre (3.2-hectare) fallow field adjacent to the Susquehanna River. It has a mounded surface topography, with the highest elevation in its south-central portion. This field was vegetated in tall grass and brush and was bordered by a screen of trees to the east, along the riverbank, and by wooded wetlands to the north, south and west. The North Branch Pennsylvania Canal lies within the wetland area west of the field and an unnamed drainage marks its northern end. Eleven trenches (six with soil corings in their base) were mechanically excavated (using a trackhoe) to expose soil stratigraphy and permit an assessment of the locality's potential for deeply-buried cultural deposits.

Deep testing began with the excavation of five initial trenches (BHTs 1-5), placed in a staggered north-south transect across the field, and extending to a maximum depth of a 4.2 meters (13.8 feet) or, in one trench, to bedrock (encountered at 1.2 meters/3.9 feet below

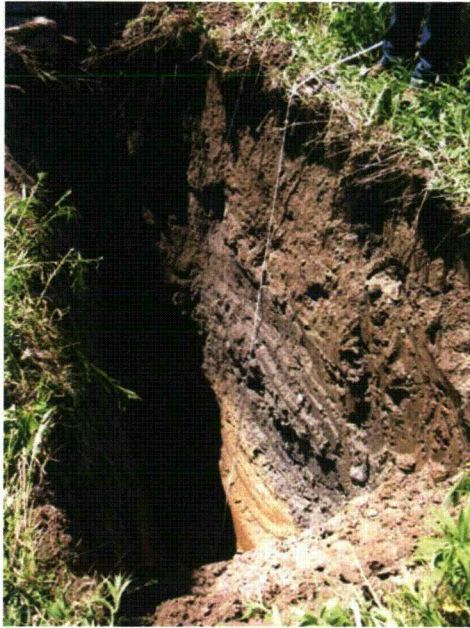


surface) (Photographs 8 and 9). These trenches exposed an unanticipated 1.0 to 4.0-meter- (3.3 to 13.1-foot) thick surface fill deposit above natural soils.

Photograph 8. Deep Testing in Area 6, Section 1, Showing Mechanical Excavation of Trench, Facing South

Because of the depth necessary to expose natural soils and evaluate the depth of Pleistocene deposits, a second set of six trenches (Trenches 6-11) was excavated approximately 1.0 to 2.0 meters (3 to 7 feet) into the fill and a track-mounted drill rig was used to collect a continuous sample soil core in the base of each trench (Photograph 10). Cores were

collected to a maximum depth of 8.5 meters (27.9 feet) below ground surface. As documented in the soil borings, the natural soils underlying the surface fill deposit consisted of a single soil profile [Ab-(BE)-Bt(x)-BC] developed on an alluvial terrace. No buried soils were observed below the surface of the terrace. Pleistocene deposits were not observed in any of the cores. The depth to bedrock, encountered at the base of the soil borings, ranged from 5.9 to 8.5 meters (19.4 to 27.9 feet).



Photograph 9. Deep Testing in Area 6, Section 1, Showing Upper Fill Deposit Exposed in Profile of Trench, Facing South



Photograph 10. Deep Testing in Area 6, Section 1, Showing Drill Rig Excavating a Soil Coring in Base of Trench, Facing North

Based on the results of a June 19, 2008, phone consultation with the Steve McDougal (PHMC-BHP), natural soils below the surface fill were sampled with eight mechanically-excavated 1x1-m test unit column samples. These eight test localities were situated along a proposed 30-meter (100-foot)-wide right-of-way corridor extending north-south through the central portion of the field, and then turning eastward to continue to the riverbank [personal communication, phone conference with Michael Cain (PPL), June 16, 2008 (Document 38-9090613-000)]. In each location, a trackhoe was first used to excavate a trench (TU 1-8) through the fill and into the underlying natural soils. A unit was positioned along the side of the excavated trench. At each test location, the approximately 4.0-meter (13-foot)-thick surface fill deposit was mechanically removed as a single layer and the 1x1-meter (3x3-foot) column sample was then mechanically-excavated in 20-cm (8-inch) levels from the lower portion of the fill deposit to the BC horizon or bedrock (approximately 1 meter/3 feet of excavation). Soils from each 20-cm level were placed on plastic sheeting in separate, labeled piles, adjacent to the trench. Soils from each level were hand-screened and recovered artifacts were bagged by provenience. Standardized excavation forms were completed for each level. A profile was drawn of one wall of each unit.

Following the completion of hand-screening, each test location was mechanically backfilled. Due to the unconsolidated nature of the thick, surface fill layer, many of these units experience slumping prior to backfilling.

Results of Fieldwork

Based on preliminary field results, Phase Ib survey of the BBNPP project area consisted of pedestrian ground survey of 114 acres (46 hectares) of cultivated fields, the excavation of 3,789 STPs, and a program of deep testing (eleven trenches, soil corings, and eight test unit column samples) in a low terrace/floodplain field. Based on preliminary analysis, this work yielded approximately 2,100 artifacts (approximately 2,000 historic artifacts and 80 prehistoric artifacts). Analysis of artifacts from non-site contexts (e.g. field scatter) is ongoing.

The survey resulted in the identification of eleven archaeological sites (three prehistoric and eight historic) and 25 prehistoric isolated finds, as well as dispersed historic/modern surface artifacts representing field scatters. Table 3 presents a summary of Phase Ib survey results by testing location. The eleven identified archaeological sites (Sites 1-11) are summarized in Table 4 and their locations are illustrated on Figure 2.

Table 3. Summary of Phase Ib Archaeological Survey Results by Testing Location

Testing Location	Pedestrian Survey*	# STPs	# Pos. STPs	Sites	Isolated Finds
West Alternative					
1	X	4	0	Site 1	IF 1 IF 24 IF 25 IF 27
2	X	4	0	--	--
3	X	4		Site 6	IF 6 IF 7 IF 8 IF 9
4	X	4	0	--	--
5	X	4	0	--	--
6	X	4	1	--	IF 2 IF 3 IF 4 IF 5 IF 10
7	X	3	1	Site 2	IF 11 IF 12 IF 14
8	X	3	0	--	--
9	X	4	0	--	--
10	X	4	1	--	--
11	X	4	0	--	--
12	X	3	0	--	IF 15
13	X	4	1	Site 3	--
14	X	4	1	Site 4	--
15	X	4	0	--	--
16	--	417	2	--	--
17	--	201	9	Site 9	IF 22
18	--	392	2	--	--
19	--	117	0	--	--
20	--	111	0	--	--
21	--	115	2	*	--
22	--	140	2	--	--

Management Summary: BBNPP Phase IB Cultural Resources Survey

Testing Location	Pedestrian Survey*	# STPs	# Pos. STPs	Sites	Isolated Finds
23	--	229	0	--	--
24	--	54	0	--	--
27	--	218	0	--	--
28	--	15	0	--	--
29	--	43	2	--	IF 25
30	--	117	40	Site 7	--
31	--	59	18	Site 10	--
Subtotal	15 sections	2285	53	9	19
Confers Lane					
25	--	70	0	--	--
26	--	195	31	Site 8	--
Subtotal	--	265	31	1	0
Area 6					
1	--	Deep Testing (11 trenches/ 8 units)	0	--	--
2	--	29	0	--	--
3	X	3	0	--	IF 16
4	--	449	4	--	--
5	--	232	4	--	--
Subtotal	1 section	713	8	0	1
Area 7					
1	X	8	1	--	IF 17 IF 18 IF 19 IF 20 IF 21
2	X	134	13	Site 5	--
3	--	58	3	--	--
4	--	69	6	--	--
Subtotal	2 sections	269	23	1	5
Area 8					
	--	0	0	--	--
Switchyard 2					
	--	257	0	--	--
Total	18 sections	3,789 STPs plus deep testing	115	11 sites	25 IFs

*X=systematic pedestrian survey was conducted in section

Table 4. Summary of Identified Archaeological Sites

Site #	Site Name	Area	Section	Setting	Landform	Site Type	Age
1	--	West Alt	1	Upland	Hillside	Lithic Scatter	Unknown Prehistoric
2	--	West Alt	7	Upland	Broad Flat	Domestic Site	Early to Mid 19 th c
3	--	West Alt	13	Upland	Broad Flat	Domestic Site	Early to Mid 20 th c
4	--	West Alt	14	Upland	Broad Flat	Domestic Site	Mid 19 th to Early 20 th c
5 (36LU51)	--	Area 7	2	Lowland	Low Terrace/ Floodplain	Lithic Scatter	EA, LA, EW
6	--	West Alt	3	Upland	Broad Flat	Lithic Scatter	Unknown Prehistoric
7	Sink Site	West Alt	30	Upland	Broad Flat	Farmstead / Foundations	Late 19 th to Mid 20 th c
8	Shortz	Confers Lane	26	Upland	Broad Flat	Domestic Site / Possible Foundation	Mid to Late 20 th c
9	Johnson/Folk	West Alt	17	Upland	Broad Flat	Domestic Site	Mid to Late 19 th c and 20 th c
10	Kisner	West Alt	31	Upland	Broad Flat	Farmstead / Foundations	Mid 19 th to 20 th c
11	--	West Alt	21	Upland	Broad Flat	Artifact Scatter	19 th c

Preliminary review of Phase Ib field data indicates that seven of the eleven identified sites are potentially eligible for listing in the NRHP. These include six historic sites (Sites 2, 3, 4, 7, 9 and 10) and one prehistoric site (Site 5). All six potentially-eligible historic sites are located in upland settings within the West Alternative and Confers Lane. The single potentially-eligible prehistoric site occupies a low terrace/floodplain setting in Area 7. Summaries of each of the identified sites are presented in the following sections.

Phase Ib deep testing in Area 6, Section 1 identified no archaeological sites. Scattered historic/modern artifacts were recovered from fill deposits and the upper portion of the former ground surface (now buried by up to 4.2 meters/13.8 feet of fill) in trenches and column samples. Two prehistoric artifacts were also found in a fill deposit immediately above shallow bedrock (Test Unit 3). Due to their disturbed context, these artifacts do not represent historic or prehistoric archaeological sites. Additionally, deep testing documented no buried soils below the single ground surface lying between the surface fill deposit and the top of bedrock. Many of the soil corings exposed Cg horizons suggesting the presence of marshy or swampy conditions in the area, perhaps associated with an abandoned stream channel. These deposits do not represent a dry land surface that was stable for any period of time. The results of deep testing indicate that any cultural resources found in Area 6, Section 1 are expected to be associated with the natural soil (Ab-Bxb-BC) found immediately below the fill mantle. Based on the presence of a weakly-developed fragipan (Bx) subsoil, the age of the low terrace landform in Area 6, Section 1 is estimated to date to the mid-Holocene (4000 to 6000 years old).

Site 1

Location: West Alternative, Section 1

Site Type: Indeterminate Prehistoric

Site Size: 3 x 21 meters (10 x 70 feet)

Recommendations: Not NRHP Eligible/No Further Work

Site 1 is a small, undated prehistoric lithic scatter located in the West Alternative, Section 1, in the northwest portion of the project area (see Figure 2). It is situated in a cultivated field on an upland hillside approximately 49 meters (160 feet) south of Beach Grove Road (Figure 4, Photograph 11). Walker Run is located approximately 701 meters (2300 feet) to its west. Site 1 lies at an elevation of approximately 730 feet above mean sea level (amsl); the hilltop, located to its southwest rises to an elevation of 800 feet amsl. Identified during Phase Ib pedestrian survey, Site 1 has dimensions of 3 x 21 meters (10 x 70 feet). Prehistoric IFs 24, 25 and 27, also recorded during pedestrian survey, are located between 27 and 85 meters (90 and 280 feet) south and west of Site 1.



Photograph 11. View of Site 1 in Cultivated Field, Facing Southwest

GAI's Phase Ib investigations in this locality consisted of pedestrian ground survey of the cultivated field and judgmental shovel testing. Site 1, consisting of three prehistoric lithic artifacts, was found in the northeast corner of the field. One shovel test (STP 1) was excavated immediately east of these artifacts to document stratigraphy and the depth of cultural deposits in this locality. The three isolated finds identified in this cultivated field in proximity to Site 1 (IFs 24, 25 and 27), represent two pieces of debitage and one distal fragment of a projectile point.

Shovel testing revealed an Ap-B soil horizon sequence. As described for STP 1 the profile consists of a 28-cm-thick dark yellowish brown silt loam plowzone above a brownish yellow silty clay B horizon (Figure 5). Artifacts were recovered from the surface only. No cultural features were identified.

The three lithic artifacts recovered from Site 1 consist of two untyped projectile point fragments and one piece of debitage. Both point fragments are manufactured from black chert, while the debitage (flake fragment) is made from grainy gray chert. One of the point fragments (FS 1) represents a small distal (tip) fragment and the other (FS 2) is an untyped stemmed point base. No diagnostic artifacts were recovered from this site.

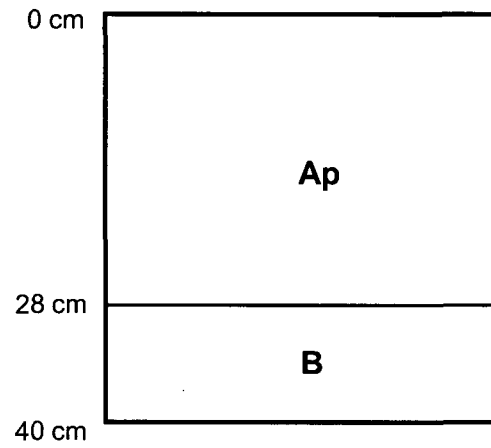
Site 1 Recommendations

Site 1 is a small, undated, prehistoric lithic scatter on an upland hillside east of Walker Run. The low artifact density and limited range of artifact types suggests that this site represents a small, brief prehistoric occupation. Due to the absence of diagnostic artifacts or dateable cultural features, the age of the site cannot be determined. The integrity of this site is good, with disturbances limited to cultivation. Based on the site's low artifact density and lack of diagnostic artifacts of features GAI concludes that the potential for Site 1 to contribute important information on the prehistoric utilization of this area is low. GAI recommends that Site 1 is Not Eligible to the National Register under Criterion D. No further archaeological investigations are recommended for this site.

This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

SITE 1

STP 1

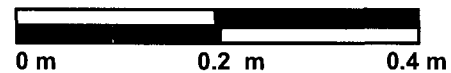


KEY:

Ap – DARK YELLOWISH BROWN (10YR 4/4) SILT LOAM

B – BROWNISH YELLOW (10YR 6/6) SILTY CLAY LOAM

SCALE



gai consultants

DWN LMD CHKD TJN

APPD BAM DATE 09/04/08

SCALE AS NOTED

DRAWING NUMBER C080204.10.002.C.A.SI 1

FIGURE 5. SITE 1: REPRESENTATIVE SOIL PROFILE (STP 1)

BELL BEND NUCLEAR POWER PLANT
UNISTAR NUCLEAR DEVELOPMENT, LLC.

Site 2

Location: West Alternative, Section 7

Site Type: Early to mid 19th Domestic Site

Site Size: 38 x 76 meters (125 x 246 feet)

Recommendations: Potentially NRHP Eligible/Avoidance or Phase II Recommended

Site 2 is situated in the West Alternative, Section 7, along the western margin of the project area (see Figure 2; Figure 6). It occupies the northern portion of a cultivated field flanked by



North Market Street to the west and woodlands bordering Walker Run to the east (Photograph 12). This upland setting has an elevation of 660 feet amsl. Site 2 was identified during Phase Ib pedestrian survey and has dimensions of 35 x 75 meters (115 x 246 feet). Disturbances in the site area appear to be limited to cultivation. Cartographic review revealed no structure in the vicinity of Site 2 in 1873 (Figure 7), 1939 (Figure 8) and 1955 (Figure 9).

Photograph 12. View of Site 2 in Cultivated Field, Facing Southeast

Phase Ib investigations of Site 2 consisted of pedestrian ground survey, systematic surface collection and the excavation of judgmental shovel tests. Initial pedestrian survey, conducted in transects spaced at 15-meter intervals, identified an artifact scatter in the northern portion of the field. Artifacts observed on the surface were marked with pin flags. A grid was then established over this locality using a compass and tapes and the site was subject to a systematic surface collection. Observed artifacts were collected by 5-meter-blocks within the grid system. Artifacts were recovered from 56 5-meter blocks, with artifact density ranging from 1 to 10 per block. Three shovel tests were excavated in the north, east-central, and southern portion of the site to document stratigraphy and the depth of cultural deposits.

Shovel tests excavated at the site revealed an Ap-B soil horizon sequence. As described for STP 3, this profile consisted of a 30-cm-thick brown silt loam plowzone and a brown silty clay loam B horizon (see Figure 7). Historic artifacts were recovered from the Ap horizon as well as from the surface. No cultural features were identified.

Phase Ib survey of Site 2 generated 159 artifacts (Table 5). Approximately 90 percent of the artifact assemblage fell within the kitchen group and included bottles and ceramics. The vast majority of ceramics (n=104) were redware, which typically dates to the eighteenth and nineteenth centuries. There were several other temporally diagnostic ceramics including plain pearlware (1780-1830), hand-painted blue pearlware (1780-1820), hand-painted polychrome pearlware (1795-1820), and hand-painted polychrome whiteware (1840-1860). Architecture-related remains include a brick, a nail, and window glass. The window glass was thin, which is typical for the early to mid-nineteenth century. A small quantity of other artifacts was recovered including a honey-colored (French) gunflint, an aluminum pull-tab (modern), glass insulator, and a bolt. The paucity of architectural-related artifacts may indicate that there was once a log house at this site, most likely during the second and third quarters of the nineteenth century.

Table 5. Site 2: Pattern Analysis, Historic Artifacts

Class	Sub-Class	Total	Percent
Activities	Cans/Tins	1	0.63
	MachineParts/Hardware	1	0.63
	Activities Total	2	1.26
Architecture	Brick, Block	1	0.63
	Electrical	1	0.63
	Nails, Spikes, etc.	1	0.63
	Window Glass	9	5.66
	Architecture Total	12	7.55
Arms	Gunflints	1	0.63
Faunal	Bone	1	0.63
Kitchen	Bottles/Jars	4	2.52
	Ceramics	139	87.42
	Kitchen Total	143	89.94
Total		159	100.00

Site 2 Recommendations

Site 2 consists of an early to mid 19th century possible domestic site located in a field between North Market Street and Walker Run. Because of its good integrity, early to mid 19th century temporal affiliation, GAI concludes that the Site 2 has a high potential to contribute important information on the historic utilization of this area. GAI recommends that Site 2 is Potentially Eligible to the National Register under Criterion D. If Site 2 cannot be avoided by proposed construction, GAI recommends Phase II testing to determine NRHP eligibility.

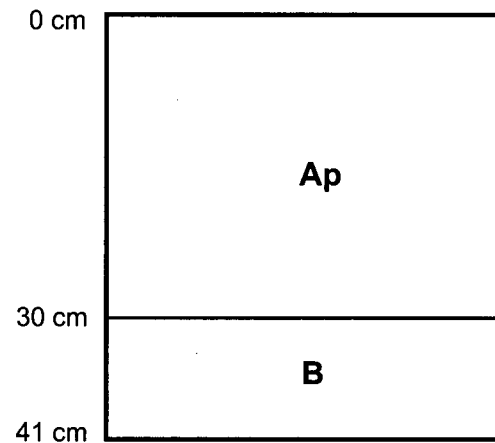
This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

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This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

SITE 2
STP 3

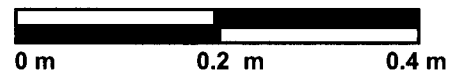


KEY:

Ap – BROWN (10YR 4/3) SILT LOAM

B – BROWN (7.5YR 4/4) SILTY CLAY

SCALE



gai consultants

DWN LMD **CHKD** TJN

APPD BAM **DATE** 09/04/08

SCALE AS NOTED

DRAWING NUMBER C080204.10.002.C.A.SI 2

FIGURE 10. SITE 2: REPRESENTATIVE SOIL PROFILE (STP 3)

BELL BEND NUCLEAR POWER PLANT
UNISTAR NUCLEAR DEVELOPMENT, LLC.

Site 3

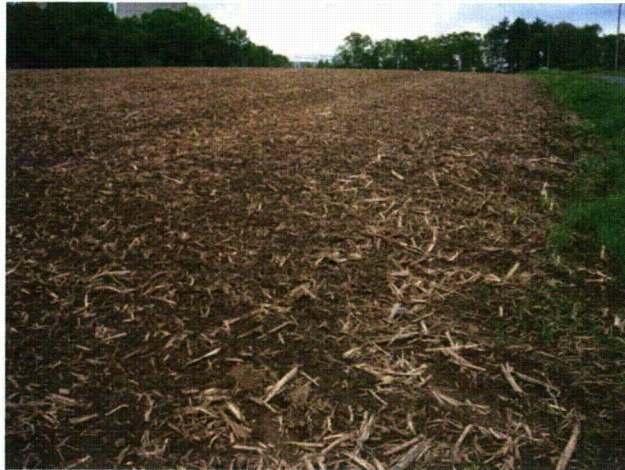
Location: *West Alternative, Section 13*

Site Type: *Early to Mid -20th Century Domestic Site*

Site Size: *20 x 20 meters (65 x 65 feet)*

Recommendations: *Potentially NRHP Eligible/Avoidance or Phase II Recommended*

Site 3 is situated in the West Alternative, Section 13, near the center of the project area (see Figure 2; Figure 11). It lies in a cultivated field on a broad upland flat, 23 meters (75 feet) north of Confers Lane and approximately 60 meters (200 feet) west of a sharp bend in this roadway (Photograph 13). Historic Site 8 is located just east of the road's bend while historic Site 4 lies in a field south of Confers Lane, 107 meters (350 feet) to the southwest.



Disturbances in the site vicinity appear to be limited to cultivation. The 1939 aerial photograph of the project vicinity illustrates a complex of structures (farmstead) in the location of Site 3 (see Figure 8). No structures appear in this locality on either the 1873 map (see Figure 7) or on the 1955 map of the area (see Figure 9), suggesting a limited time frame for this historic occupation.

Photograph 13. View of Site 3 in Cultivated Field, View from Confers Lane, Facing East

Phase Ib investigations of Site 3 consisted of pedestrian ground survey, systematic surface collection and judgmental shovel testing. Initial pedestrian survey of the field was conducted along transects spaced at 15-meter intervals. Observed surface artifacts were marked with pin flags. Following the identification of the Site 3 artifact scatter, a grid was established over this locality using a compass and tapes and the site was subject to a systematic surface collection. Observed artifacts were collected by 5-meter-blocks, designated by coordinates within the site grid. Artifacts were recovered from 15 5-meter blocks, with artifact density ranging from 1 to 18 per block. One shovel test was excavated in the central of the site to document stratigraphy and the depth of cultural deposits.

Shovel testing revealed an Ap-B soil horizon sequence. As described for STP 2, this profile consisted of a 25-cm-thick brown silt loam plowzone above a yellowish brown silt loam B horizon (Figure 12). Historic artifacts were recovered from the Ap horizon as well as from the surface. No cultural features were identified.

Phase Ib survey of Site 3 produced 102 artifacts (Table 6). Over three-fourths of the artifact assemblage fell within the kitchen group. Kitchen ceramics were typically plain whiteware, but also included one decal-decorated whiteware, one refined earthenware, and one porcelain ceramic sherds. Kitchen glass included beer bottles, other bottles, and jar fragments, as well as, canning jar lid liners. Other types of artifacts were present in smaller quantities.

Table 6. Site 3: Pattern Analysis, Historic Artifacts

Class	Sub-Class	Count	Percent
Activities	Activities-Other	4	3.92
	Flowerpots	2	1.96
	Toys	1	0.98
	Activities Total	7	6.86
Architecture	Electrical	1	0.98
	Window Glass	8	7.84
	Architecture Total	9	8.82
Kitchen	Bottles/Jars	57	55.88
	Ceramics	23	22.55
	Glassware-Other	1	0.98
	Kitchen Total	81	79.41
Personal	Jewelry	1	0.98
Unidentifiable	Indeterminate	4	3.92
Total		102	100.00

Based on preliminary analysis, the assemblage contains 38 temporally diagnostic artifacts, consisting largely of plain whiteware ceramics and canning jar lid liners (Table 7). A mean date of 1921 was calculated for these diagnostic specimens. The artifacts produced a TPQ date of 1945 and five of the diagnostic artifacts were not produced until 1939 or later. There were no plastic artifacts, which would be expected on sites occupied in the latter half of the twentieth century. Based on the artifact assemblage the site dates to ca. 1910-1950. The cartographic sources support this conclusion and indicate that this domestic site was present in 1939 and abandoned prior to 1955.

Table 7. Site 3: Dating Analysis, Historic Artifacts

Material	Description	Count	Begin Date	End Date	Reference
beer bottle	stippled	2	1939	2008	Busch 1983
bottle glass	Fairmont Glass Co.	1	1945	1960	Toulouse 1971
bottle glass	Owen's mark	1	1929	1954	Toulouse 1971
bottle glass	Owen's Illinois Glass Co.	1	1939	1954	Busch 1983; Toulouse 1971
canning jar lid liner	white opaque	14	1869	1950	Toulouse 1971
whiteware	plain	18	1830	2008	Price 1979; Noël Hume 1980
whiteware	overglaze decal, floral	1	1890	2008	Haskell 1981
	Total	38			
	Mean Date	1921			
	TPQ	1945			

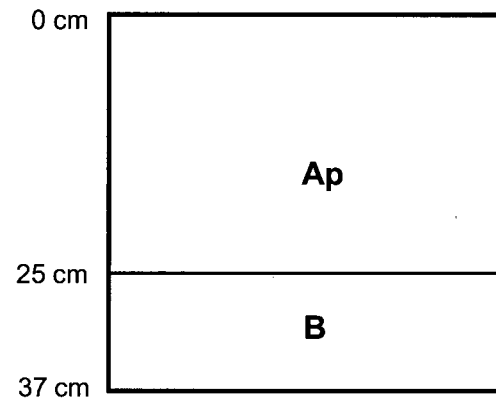
Site 3 Recommendations

Site 3 represents the remains of an early to mid 20th century domestic site in a field north of Confers Lane. Based on its good integrity, early to mid 20th century temporal affiliation and possible association with a former structure in the vicinity, GAI concludes that Site 3 has a high potential to contribute important information on the early to mid 20th century utilization of this area. GAI recommends that Site 3 is Potentially Eligible to the National Register under Criterion D. If Site 3 cannot be avoided by proposed construction, GAI recommends Phase II testing to determine NRHP eligibility.

This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

SITE 3

STP 2

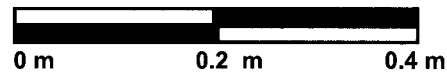


KEY:

Ap – DARK YELLOWISH BROWN (10YR 4/4) SILT LOAM

B – YELLOWISH BROWN (10YR 5/6) SILT LOAM

SCALE



gai consultants

DWN LMD CHKD TJN

APPD BAM DATE 09/04/08

SCALE AS NOTED

DRAWING NUMBER C080204.10.002.C.A.Si 2

FIGURE 12. SITE 3: REPRESENTATIVE SOIL PROFILE (STP 2)

BELL BEND NUCLEAR POWER PLANT

UNISTAR NUCLEAR DEVELOPMENT, LLC.

Site 4

Location: West Alternative, Section 14

Site Type: Mid 19th to Early 20th Century Domestic Site

Site Size: 30 x 45 meters (100 x 150 feet)

Recommendations: Potentially NRHP Eligible/Avoidance or Phase II Recommended

Site 4 consists of an historic artifact scatter on a broad upland flat in the West Alternative, Section 14, near the center of the project area (see Figure 2; Figure 13). It occupies a cultivated field, immediately south of Confers Lane and approximately mid way between two sharp bends in this roadway (Photograph 14). Historic Site 7 (Sink Site) is located just opposite Confers Lane 20 meters (75 feet) to the northwest while Site 3, also situated on the north side of Confers Lane, lies in a field 107 meters (350 feet) to the northeast. Disturbances in the site vicinity are limited to cultivation. Phase Ib investigations indicate that Site 4 has dimensions of 30 x 45 meters (100 x 150 feet). Based on historic map review a structure is depicted in the vicinity of Site 4 in 1873 (see Figure 7). Due to possible



reorientation of Confers Lane (shown on the 1873 map as having a right-angled turn), the structure illustrated on the south edge of this road may represent either Site 4 (identified south of the roadway) or Site 7 (north of the roadway). No structures appear in this locality on the 1939 aerial photograph or the 1955 map of the project vicinity (Figures 8 and 9).

Photograph 14. View of Site 4 in Cultivated Field South of Confers Lane, Facing East

Phase Ib investigations of Site 4 consisted of pedestrian ground survey, systematic surface collection and judgmental shovel testing. Initial pedestrian survey of the field was conducted along transects spaced at 15-meter intervals. Observed surface artifacts were marked with pin flags. Following the identification of the Site 4 artifact scatter, a grid was established over this locality using a compass and tapes and the site was subject to a systematic surface collection. Observed artifacts were collected by 5-meter-blocks, designated by coordinates within the grid system. A total of 357 surface artifacts were recovered from 38 5-meter surface collection blocks, with artifact density ranging from 1 to over 75 artifacts per block. One shovel test was excavated near the center of the artifact scatter to document site stratigraphy and the depth of cultural deposits.

Shovel testing exposed an Ap-B soil horizon sequence. As described for STP 1, this profile consisted of a 23-cm-thick brown silt loam plowzone superimposing a brown clay loam B horizon (Figure 14). Four historic artifacts were recovered from the Ap horizon in this STP. No cultural features were identified.

Phase Ib survey of Site 4 yielded 361 artifacts. Nearly ninety-three percent of this assemblage consists of kitchen-related bottle/jar glass and ceramics (Table 8). The ceramic assemblage includes whiteware, redware, ironstone, stoneware, and porcelain sherds. The bottle glass sample includes aqua, amethyst, cobalt, clear and blue specimens. White opaque canning jar lid liners were also present. The few remaining artifacts consists of

architectural debris (i.e. window glass, nails, and brick), a toy (glass marble), a shell, a kaolin pipe fragment, two possible clay pigeons, and two unidentified plastic items.

Table 8. Site 4: Pattern Analysis, Historic Artifacts

Class	Sub-Class	Total	Percent
Activities	Toys	1	0.28
Architecture	Brick, Block	2	0.55
	Nails, Spikes, etc.	1	0.28
	Window Glass	17	4.71
	Architectural Total	20	5.54
Arms	Arms Related-Other	2	0.55
Faunal	Bone	1	0.28
Kitchen	Bottles/Jars	55	15.24
	Ceramics	279	77.29
	Kitchen Total	334	92.52
Tobacco Pipes	White Ball Clay	1	0.28
Unidentifiable	Indeterminate	2	0.55
Total		361	100.00

Based on preliminary analysis, the assemblage contains 198 temporally diagnostic specimens, consisting largely of ceramics (whiteware and ironstone) along with bottle glass pieces (Table 9). These diagnostic specimens indicate a mid-19th to early 20th century temporal affiliation for the site. The paucity of architecture-related artifacts may indicate that the house was constructed of logs.

Table 9. Site 4: Dating Analysis, Historic Artifacts

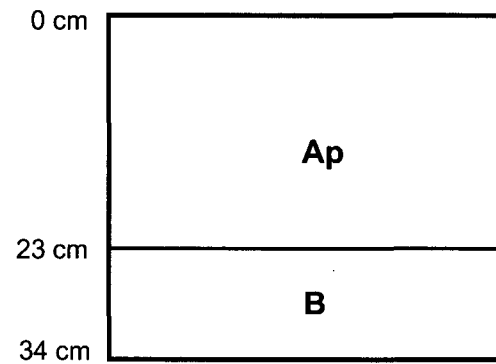
Material	Description	Count	Begin Date	End Date	Reference
bottle glass	patent finish	2	1860	1935	Jones & Sullivan 1989
bottle glass	sun colored amethyst	5	1880	1915	Miller & Pacey 1980
canning jar lid liner	white opaque	5	1869	1950	Toulouse 1971
ironstone	plain/other	10	1830	2008	Wetherbee 1980
whiteware	hand painted	10	1840	1860	Lofstrum et al. 1982; Majewski & O'Brien 1984
whiteware	overglaze decal	2	1890	2008	Haskell 1981
whiteware	plain	148	1830	2008	Price 1979; Noël Hume 1890
whiteware	shell edge, blue & green	4	1830	1860	Lofstrum et al 1982; Miller & Hunter 1990
whiteware	spongeware, various colors	3	1830	1871	Robacker & Robacker 1978
whiteware	transfer print, various colors	9	1828	1850	Majewski & O'Brien 1984
whiteware	transfer print, Old Blue	1	1820	1840	Majewski & O'Brien 1984
pearlware	plain	2	1780	1920	
redware	slip decorated	1	ca 1750	ca 1825	
pipe stem		1	18 th c	19 th c	
Total		203			
Mean Date		1909			
TPQ		1890			

Site 4 Recommendations

Site 4 represents the location of a mid 19th to early 20th century domestic site. Based on Phase Ib shovel testing, the integrity of this site is good. Due to the site's relatively high artifact density, good integrity and association with the mapped location of a former structure, GAI concludes that Site 4 has a high potential to contribute important information on the historic utilization of this area. GAI recommends that Site 4 is Potentially Eligible to the National Register under Criterion D. If Site 4 cannot be avoided by proposed construction, GAI recommends Phase II testing to determine NRHP eligibility.

This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

SITE 4
STP 1

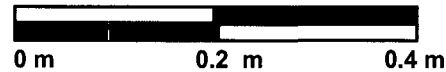


KEY:

Ap – DARK YELLOWISH BROWN (10YR 4/4) SILT LOAM

B – BROWN (7.5YR 4/4) SILTY CLAY LOAM

SCALE



gai consultants

DWN LMD **CHKD** TJN

APPD BAM **DATE** 09/04/08

SCALE AS NOTED

DRAWING NUMBER C080204.10.002.C.A.Si 2

FIGURE 14. SITE 4: REPRESENTATIVE SOIL PROFILE (STP 1)

BELL BEND NUCLEAR POWER PLANT
UNISTAR NUCLEAR DEVELOPMENT, LLC.

Site 5 (36LU51)

Location: Area 7, Section 2

Site Type: Early Archaic, Late Archaic and Terminal Archaic/Early Woodland Lithic Scatter

Site Size: 152 x 260 meters (500 x 850 feet)

Recommendations: Potentially NRHP Eligible/Avoidance or Phase II Recommended

Site 5 consists of a low-density, dispersed prehistoric lithic scatter located on a low terrace/floodplain approximately 90 meters (300 feet) west of the North Branch Susquehanna River, in Area 7, Section 2, in the northeast corner of the project area (see Figure 2; Figure 15). Measuring 152 x 260 meters (500 x 850 feet), this site occupies the eastern portion of a large cultivated field bounded by woodlands to the north and east, a line of trees marking the field border to the south, and the North Branch Pennsylvania Canal to the west (see Photograph 3; Photograph 15). Site 5 may represent or be associated with previously-recorded Site 36LU51, a small Woodland/Late Woodland period site identified during 1980 survey of the SSES floodplain (Hayes et al 1981) and mapped in the northeast corner of this field (see Figure 15). The low terrace/floodplain landform containing the site is bisected by several low, northwest/southeast oriented swales, representing former stream channels.



Disturbances within the site area result from cultivation as well as these stream channels. The wooded area immediately east of the site contains walking trails associated with the PPL Riverlands Park, a push-pile disturbance and installation of a gas pipeline. At the time of Phase Ib fieldwork, the field had been recently plowed and disced and was planted in corn.

Photograph 15. View Site 5 Showing Shovel Testing in Cultivated Field, Facing Northeast

Site 5 was identified during Phase Ib survey of the field. Field investigations consisted of pedestrian ground survey, surface collection as well as both judgmental and systematic shovel testing to a depth of approximately 80 cm below surface. (Deep testing was not required in this low terrace/floodplain setting because proposed impacts will be shallow, resulting from use as a construction laydown area.) GAI conducted pedestrian survey of the field along transects spaced at 15-meter intervals. Observed surface artifacts were marked with pin flags. A grid was then established over this locality using a compass and tapes. Due to the dispersed nature of the artifact scatter, individual surface artifacts were point provenienced within the site grid rather than being collected within 5-meter blocks. A total of 29 surface artifacts were found in a low-density scatter, with the majority located in the northeast and southeast portions of the field. Eight judgmental STPs were excavated within the field—four in the corners of the field and four in proximity to areas of higher surface artifact density. Only two of these STPs were positive, producing three prehistoric lithics.

In an attempt to more clearly define boundaries of the dispersed artifact scatter and to identify the location of previously recorded Site 36LU51, 15-meter-interval shovel tests were initially excavated in the northeast corner of the field (the mapped location of Site 36LU51). When these shovel tests yielded no artifacts, 15-meter (50-foot)-interval shovel tests were

subsequently excavated throughout nearly the entire eastern portion of the field. GAI excavated 126 15-meter-interval STPs within Site 5, for a total of 134 Phase Ib shovel tests. Fifteen STPs were positive, yielding 19 prehistoric artifacts. Shovel test artifact densities were low, ranging from one to three artifacts per STP. A loose cluster of positive STPs occurs in the center of the field; positive STPs are also found in its southeast corner and along the field's eastern edge. The location of positive STPs does not closely correspond to the areas of higher density for surface artifacts.

Shovel testing revealed an Ap-B soil horizon sequence (Figure 16). The Ap horizon varied in thickness from approximately 40 to over 70 cm in thickness, with the areas of deepest plowzone occurring in infilled, former stream channels. As described for STP A1, located in the northeast corner of the site, the typical profile included a 44-cm-thick brown silt loam Ap horizon and a yellowish brown silt loam B horizon (see Figure 16). STP A15, located in the southeast corner of the site, exposed a 71-cm-thick plowzone, likely representing a former stream channel that is no longer visible on the surface. STP E9, excavated in the site's east-central portion consisted of a 40-cm-thick dark grayish brown Ap horizon and a yellowish brown silt loam B horizon (see Figure 16). Artifacts were recovered from Ap horizon contexts, as well as from the surface. No cultural features were identified.

The sample of 48 prehistoric artifacts recovered from the site consists of 10 bifaces, 1 uniface, 36 debitage and 1 core (Table 10). Lithic analysis identified ten raw material types in the assemblage, including seven varieties of chert, as well as Bald Eagle jasper and chalcedony. Black chert was used to manufacture over half of the recovered artifacts (54 percent), while gray chert and dark gray chert each accounted for ten percent of the assemblage.

Table 10. Site 5: Crosstabulation of Artifact Type by Raw Material

Raw Material	Biface	Core	Debitage	Uniface	Total	%
Bald Eagle Jasper (red)			1		1	2.08
Black Chert	4	1	21		26	54.17
Blue-Gray Chert			3		3	6.25
Chalcedony			1		1	2.08
Dark Gray Chert	1		3	1	5	10.42
Gray Chert			5		5	10.42
Gray Grainy Chert	1		1		2	4.17
Gray Translucent Chert			1		1	2.08
Light Gray Opaque Chert	1				1	2.08
Rhyolite	3				3	6.25
Total	10	1	36	1	48	100.00

The sample of ten bifaces includes one Late Archaic Brewerton corner-notched point (FS 32) manufactured from black chert and one Terminal Archaic to Early Woodland Frost Island or Orient Fishtail point (FS 11) made from a gray (grainy) chert. Additionally, one reworked specimen of light gray opaque chert (FS 12) may represent an Early Archaic Kirk corner-notched point. The remaining seven bifaces or biface fragments are nondiagnostic. The single uniface (FS 4) represents a side scraper manufactured from dark gray chert. The core (FS 37) is a freehand specimen made from black chert. Based on the recovery of temporally diagnostic artifacts, Site 5 represents the remains of Early Archaic, Late Archaic and Terminal Archaic/Early Woodland occupations.

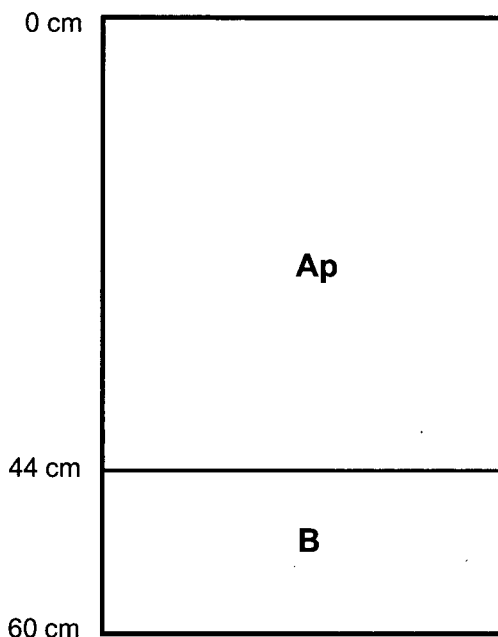
A dispersed scatter of historic/modern artifacts was also found on the ground surface in the vicinity of Site 5. These specimens represent a field scatter associated with cultivation of this landform; they do not represent an historic archaeological site.

Site 5 Recommendations

Site 5 is a low-density, multicomponent prehistoric site representing the remains of Early Archaic, Late Archaic and Terminal Archaic/ Early Woodland occupations on the low terrace/floodplain adjacent to the North Branch Susquehanna River. This site likely represents or is associated with previously-recorded Site 36LU51, a Woodland/Late Woodland period site. Site 5 has good integrity, with disturbances limited to cultivation as well as some areas of disturbance associated with former stream channels; artifacts were recovered from the surface and the Ap horizon. Although the site is characterized by a low-density, widely-dispersed artifact scatter, its good integrity and the recovery of temporally diagnostic artifacts suggests that it has a potential to yield additional diagnostic artifacts, and possibly, prehistoric cultural features. GAI concludes that Site 5 has a high potential to contribute important information on the prehistoric occupation of this area. GAI recommends that Site 5 is Potentially Eligible to the National Register under Criterion D. If Site 5 cannot be avoided by proposed construction, GAI recommends Phase II testing to determine NRHP eligibility.

This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

SITE 5 STP A 1

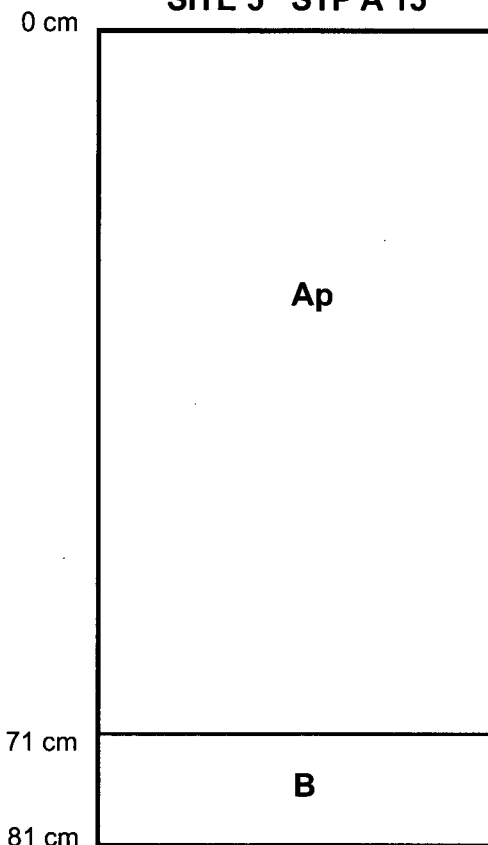


KEY:

Ap – BROWN (10YR 4/3) SILT LOAM

B – YELLOWISH BROWN (10YR 5/4) SILT LOAM

SITE 5 STP A 15

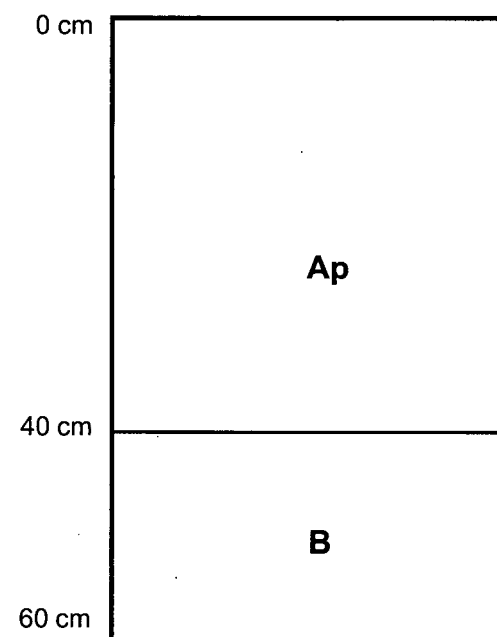


KEY:

Ap – DARK GRAYISH BROWN (10YR 4/2) SILT LOAM

B – DARK YELLOWISH BROWN (10YR 4/4) SANDY LOAM

SITE 5 STP E 9



KEY:

Ap – DARK GRAYISH BROWN (10YR 4/2) SILT LOAM

B – YELLOWISH BROWN (10YR 5/6) SILT LOAM

SCALE



gai consultants

DWN LMD CHKD TJN

APPD BAM DATE 09/04/08

SCALE AS NOTED

DRAWING NUMBER C080204.10.002.C.A.Si 5

FIGURE 16. SITE 5: REPRESENTATIVE SOIL PROFILES (STP A1, A15 AND E9)

**BELL BEND NUCLEAR POWER PLANT
UNISTAR NUCLEAR DEVELOPMENT, LLC.**

Site 6

Location: *West Alternative, Section 3*

Site Type: *Undated Prehistoric Lithic Scatter*

Site Size: *5 x 5 meters (16 x 16 feet)*

Recommendations: *Not NRHP Eligible/No Further Work*

Prehistoric Site 6 is located in the northwest corner of a cultivated field on a broad upland flat, 76 meters (250 feet) east of Walker Run, in the West Alternative, Section 3 (see Figure 2; Photograph 16). The site lies at an elevation of 680 feet amsl and is 15 meters (50 feet) south of the foot of a hillslope covered by an apple orchard. Identified during Phase Ib pedestrian survey, this site consists of a small, undated prehistoric lithic scatter with dimensions of 5 x 5 meters (16 x 16 feet) (Figure 17). The field containing Site 6 borders Site

10 (Kisner Farmstead) which is situated 91 meters (300 feet) to its south. Prehistoric Isolated Finds 6, 7, 8 and 9 were identified in the same field, 30 to 95 meters (100 to 310 feet) southwest and southeast of Site 6 (see Figure 17). These nearby isolated finds consist of nondiagnostic lithic artifacts, including one retouched flake, one utilized flake and two pieces of debitage.



Photograph 16. View of Site 6 Vicinity in Cultivated Field, Facing West

Phase Ib investigations in the area of Site 6 included pedestrian ground survey and judgmental shovel testing. Initial pedestrian survey, conducted in transects spaced at 15-meter intervals, identified two prehistoric lithic artifacts separated by four meters in the northwest portion of the field. Observed surface artifacts were marked with pin flags. A grid was then established over this locality using a compass and tapes. Because of the low density and dispersed nature of the observed surface artifacts in this field, individual artifacts were point provenienced by coordinates within this grid system, rather than being collected by 5-meter blocks. Following collection of surface artifacts, GAI excavated one shovel test immediately south of these surface finds to document stratigraphy and the depth of cultural deposits in the site locality.

Shovel testing revealed an Ap-B soil horizon sequence. As described for STP 1 the profile consists of a 27-cm-thick dark yellowish brown silt loam plowzone superimposing a yellowish brown silty clay loam B horizon (Figure 18). Prehistoric artifacts were recovered from the surface only. No cultural features were identified.

The two lithic artifacts recovered from Site 6 include one biface and one piece of debitage, both manufactured from black chert. The biface (FS 2) represents a complete mid stage biface and the debitage is a piece of block shatter. The Phase Ib assemblage from Site 6 includes no temporally diagnostic artifacts.

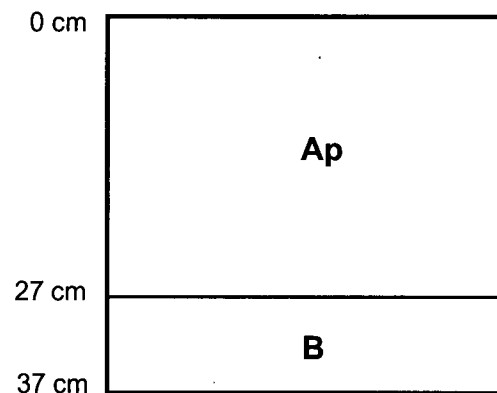
Site 6 Recommendations

Site 6 is a small, undated prehistoric lithic scatter on a cultivated upland flat east of Walker Run. Its minimal artifact assemblage (two lithics) suggests that this site represents a small, brief prehistoric occupation. Based on the absence of diagnostic artifacts or dateable cultural features the age of the site cannot be determined. The integrity of this site is moderate, with artifacts recovered the plowed surface. Based on the site's low artifact density and lack of diagnostic artifacts or features GAI concludes that the potential for Site 6 to contribute important information on the prehistoric utilization of this area is low. GAI recommends that Site 6 is Not Eligible to the National Register under Criterion D. No further archaeological investigations are recommended for this site.

This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

SITE 6

STP 1

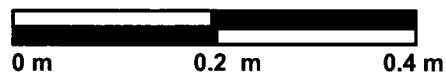


KEY:

Ap – DARK YELLOWISH BROWN (10YR 4/4) SILT LOAM

B – YELLOWISH BROWN (10YR 5/6) SILTY CLAY LOAM

SCALE



gai consultants

DWN LMD CHKD TJN

APPD BAM DATE 09/04/08

SCALE AS NOTED

DRAWING NUMBER C080204.10.002.C.A.SI 6

FIGURE 18. SITE 6: REPRESENTATIVE SOIL PROFILE (STP 1)

**BELL BEND NUCLEAR POWER PLANT
UNISTAR NUCLEAR DEVELOPMENT, LLC.**

Site 7

Location: West Alternative, Section 30

Site Type: Late 19th to Mid 20th Century Farmstead

Site Size: 52 x 145 meters (170 X 475 feet)

Recommendations: Potentially NRHP Eligible/Avoidance or Phase II Recommended

Historic Site 7 (Sink Site) was encountered during Phase Ia reconnaissance and was identified by PPL personnel as the location of the former Sink Farmstead. It is located on an upland flat in the West Alternative, Section 30 (see Figure 2; Photograph 17). It flanks the north edge of Confers Lane at this roadway's westernmost sharp bend. Site 7 consists of two loci (Loci 1 and 2) associated with two main foundations identified at the site (Figure 19). Locus 1 is centered on a barn/silo foundation (Structure 1) and associated artifact scatter (Photograph 18) situated at the western end of the site, immediately northwest of the bend in Confers Lane; a gravel farm lane borders the southern edge of the barn foundation. Current vegetation in the area of Locus 1 consists of sparse woods and thick underbrush. Locus 2, located approximately 75 meters (246 feet) east of Structure 1, at the site's eastern end, encompasses a house foundation (Structure 2) (Photograph 19) as well as a stone-lined well, a cement block-lined well/cistern and an associated artifact scatter. Locus 2 is vegetated in dense underbrush and is bordered to the south and west by large evergreen trees. A wetland is mapped in the central portion of the site. Disturbances in the site area result from cultivation as well as construction of the gravel farm lane and Confers Lane.



Photograph 17. Overview of Site 7 from Confers Lane, Showing Locus 1 in Area of Trees to Right, and Locus 2 at Bend in Road in Distance, Facing West



Photograph 18. Site 7, Locus 2, Showing Shovel Testing in Area of Structure 2 (House Foundation), Facing West



Photograph 19. Site 7, Locus 1, Showing Structure 1 (Barn Foundation), Facing East

Site 7 has dimensions of 52 x 145 meters (170 X 475 feet) and an elevation of approximately 670 feet amsl. Historic Sites 3 and 4 lie in cultivated fields 198 meters (650 feet) to the east and 20 meters (75 feet) to the southeast, respectively (see Figure 19). Historic Site 11 lies in a wooded lot 91 meters (300 feet) southwest of Site 7. Historic map review indicates the presence of a structure in the location of Site 7 in 1939 and 1955 (see Figures 8 and

9). No structures were depicted in this locality on the earlier, 1873 map of the project vicinity (see Figure 7).

Phase Ib investigations of Site 7 began with systematic 15-meter-interval shovel testing throughout the site area. Dense brush was cleared in the immediate area of identified foundations in order to expose the extent of structural remains. Close-interval (5-meter) shovel testing ($n=49$ STPs) and judgmental shovel testing was then conducted adjacent to the barn/silo foundation (Structure 1) and the house foundation (Structure 2) in Locus 1 and 2, for a total of 70 STPs. The foundations were mapped and documented with photographs.

The house foundation (Structure 2) in Locus 2 consists of a shallow surface depression measuring 8 x 9 meters (26 x 30 feet) (see Photograph 18) with a 1.5 x 1.5-meter (5 x 5-foot) extension along its east wall. Partially-exposed cut stone and brick are observed at ground level along portions of the wall, including the northwest, southwest, and southeast corners and the eastern extension. A stone-lined well (Well 2) lies 2 meters (7 feet) north of Structure 2. This well has water in its base and was uncovered when identified; it has no above-ground component. Another well/cistern (Well 1) is located approximately 10 meters (33 feet) northwest of Structure 2. This well/cistern is concrete-block lined, and includes a 2x2-meter (7x7-foot) square raised brick structure with a cement cap.

The barn foundation (Structure 1) in Locus 1 is a stone and concrete foundation with dimensions of approximately 14.5 x 25 meters (48 x 82 feet) (see Photograph 19). In general, its walls stand between 0.6 and 0.9 meters (2 and 3 feet) high. Four concrete pillars are located in the center of the structure and a concrete pad lies in the southeast portion of the structure, along the south wall. A 3.5-meter (12-foot) diameter, concrete-lined silo is attached to the northwest corner of the foundation.

Of the 70 STPs excavated within Site 7, 42 positive STPs produced 364 historic artifacts. Artifact density ranged from 1 to 38 artifacts per STP.

Shovel testing revealed an A-B horizon soil sequence throughout most of the site area, along with localized areas of disturbance (Figure 20). The profile of STP A8, located 5 meters (16 feet) west of Structure 1, consisted of a 27-cm-thick brown silt loam A horizon above a yellowish brown silt loam B horizon. Surface fill deposits, extending to a depth of 40 cm below surface, were observed in STP B3, situated 10 meters (33 feet) northeast of Structure 1 (see Figure 20-STP B3). STP A6, excavated 5 meters (16 feet) north of Structure 2

exposed a 35-cm-thick brown silt loam A horizon and a yellowish brown sandy loam B horizon.

Preliminary results of analysis indicate that Site 7 produced 364 artifacts, including one prehistoric lithic (Table 11). Over half of the artifact assemblage fell within the kitchen group. Kitchen artifacts include whiteware, redware, stoneware, yellowware, and porcelain ceramic sherds, bottle and jar glass in a variety of colors (amber, aqua, blue, clear, cobalt, emerald green, green, and sun colored amethyst), tumblers, canning jar lid liners, and pressed or other decorative glass.

Table 11. Site 7: Pattern Analysis, Historic Artifacts

Class	Sub-Class	Total	%
Activities	Farming	3	0.82
	Flowerpots	4	1.10
	Heating	3	0.82
	MachineParts/Hardware	9	2.47
	Toys	2	0.55
	Activities Total	21	5.77
Architecture	Brick, Block	7	1.92
	Nails, Spikes, etc.	39	10.71
	Window Glass	31	8.52
	Architecture Total	77	21.15
Arms	Ammunition	3	0.82
	Arms Related-Other	12	3.30
	Arms Total	15	4.12
Clothing	Clothing Fasteners	1	0.27
Faunal	Bone	8	2.20
Furnishings	Lighting	1	0.27
Kitchen	Bottles/Jars	95	26.10
	Ceramics	121	33.24
	Decorative Table Glass	5	1.37
	Tumblers, Stemware	1	0.27
	Kitchen Total	222	60.99
Personal	Cosmetics	2	0.55
	Personal-Other	1	0.27
	Pharmaceutical	1	0.27
	Personal Total	4	1.10
Prehistoric	Indeterminate	1	0.27
Unidentifiable	Indeterminate	14	3.85
Total		364	100.00

Nearly one-quarter of the artifact assemblage were architecture-related debris including brick, nails, and window glass. Most of the nails were heavily corroded; however, a small quantity of cut and wire nails were identified.

Other types of artifacts were present in smaller quantities. Activities-related artifacts include a glass marble and plastic truck, a machine part, wire, metal bar, terra cotta drain pipe, bolt and nut, and coal. Gun shells and clay pigeon pieces fell within arms group. Personal artifacts include a cosmetic jar and a prescription medicine bottle. A button was the only clothing-

related artifact. One lamp chimney glass fell within the furnishings group. Faunal remains included animal bone and tooth fragments. The remaining items were unidentified artifacts, mostly corroded metal pieces.

Based on preliminary analysis, the assemblage contains 97 temporally diagnostic specimens, consisting largely of ceramics along with some glass pieces and nails (Table 12). A mean date of 1913 was calculated for these diagnostic specimens. Based on the artifact assemblage the site dates from the late nineteenth century to mid- twentieth century. The cartographic sources support this conclusion and indicate that this domestic site was abandoned sometime between 1939 and 1955.

Table 12. Site 7: Dating Analysis, Historic Artifacts

Material	Description	Count	Begin Date	End Date	Reference
nail, cut		1	1790	1890	Nelson 1968
nail, wire		1	1880	2008	Nelson 1968; IMAC 1984
bottle glass	sun colored amethyst	9	1880	1915	Miller & Pacey 1985
bottle glass	patent finish	1	1860	1935	Jones & Sullivan 1987
canning jar lid liner	white opaque	2	1869	1950	Toulouse 1971
whiteware	overglaze decal floral	3	1890	2008	Haskell 1981
whiteware	shell edge, blue	1	1830	1860	Lofstrum et al. 1982; Miller & Hunter 1990
whiteware	banded	1	1830	1860	Majewski & O'Brien 1984
whiteware	annular	1	1830	1860	Price 1979; Mullins 1988
whiteware	plain	75	1830	2008	Price 1979; Noel Hume 1980
whiteware	hand painted	1	1840	1860	Lofstrum et al 1982; Majewski & O'Brien 1984
yellowware	plain	1	1830	1900	Ketchum 1983
	Total	97			
	Mean Date	1913			

Site 7 Recommendations

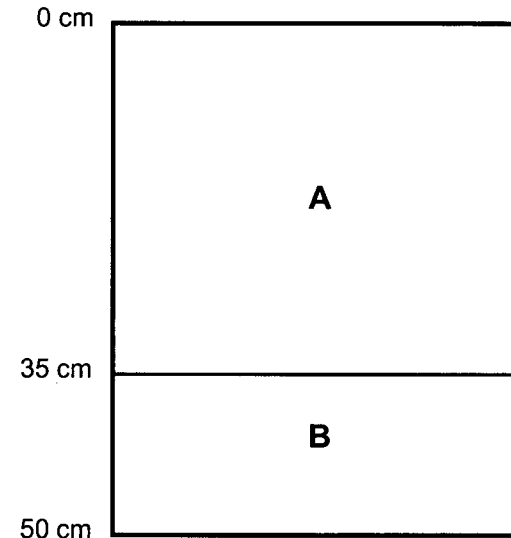
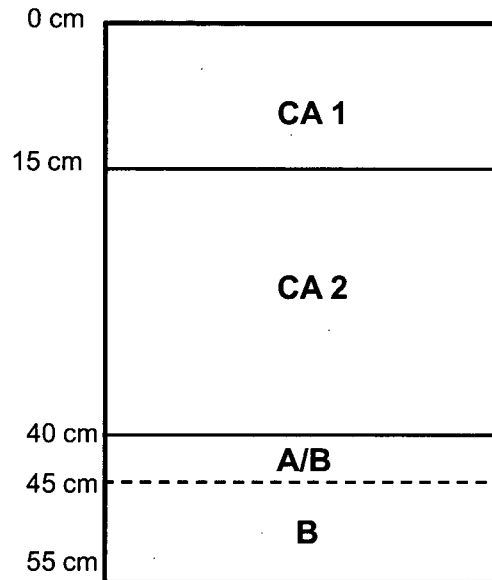
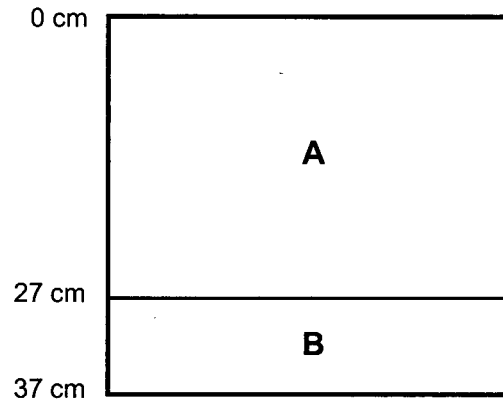
Site 7 represents the location of a late 19th to mid 20th century farmstead. It includes the foundations of two buildings (house and barn/silo), a stone-lined well, a well/cistern and a scatter of historic artifacts. This site consists of two loci; Locus 1 represents the barn/silo foundation and Locus 2 contains the house foundation. Based on Phase Ib shovel testing, the integrity of this site is good. Due to the site's relatively high artifact density, good integrity, and the presence of several foundations, GAI concludes that the potential for Site 7 to contribute important information on the historic utilization of this area is high. GAI recommends that Site 7 is Potentially Eligible to the National Register under Criterion D. If Site 7 cannot be avoided by proposed construction, GAI recommends Phase II testing to determine NRHP eligibility.

This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

**SITE 7—LOCUS 1
STP B 3**

**SITE 7—LOCUS 2
STP A6**

**SITE 7—LOCUS 1
STP A 8**



KEY:

A – BROWN (10YR 4/3) SILT LOAM
B – YELLOWISH BROWN (10YR 5/6) SILT LOAM

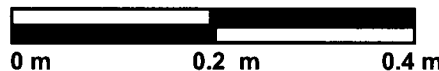
KEY:

CA 1 – DARK GRAYISH BROWN (10YR 4/2) SANDY LOAM (FILL)
CA 2 – VERY DARK GRAY (10YR 3/1) SANDY LOAM WITH CHARCOAL AND CINDERS (FILL)
A/B – DARK GRAYISH BROWN (10YR 4/2) SANDY LOAM
B – BROWNISH YELLOW (10YR 6/8) SANDY LOAM

KEY:

A – BROWN (10YR 4/3) SANDY LOAM
B – YELLOWISH BROWN (10YR 5/6) SANDY LOAM

SCALE



gai consultants

DWN	LMD	CHKD	TJN
APPD	BAM	DATE	09/04/08
SCALE	AS NOTED		
DRAWING NUMBER	C080204.10.002.C.A.SI 7		

**FIGURE 20. SITE 7: REPRESENTATIVE SOIL
PROFILES (LOCUS 1—STP A8 AND B3; LOCUS 2—A6)**

**BELL BEND NUCLEAR POWER PLANT
UNISTAR NUCLEAR DEVELOPMENT, LLC.**

Site 8

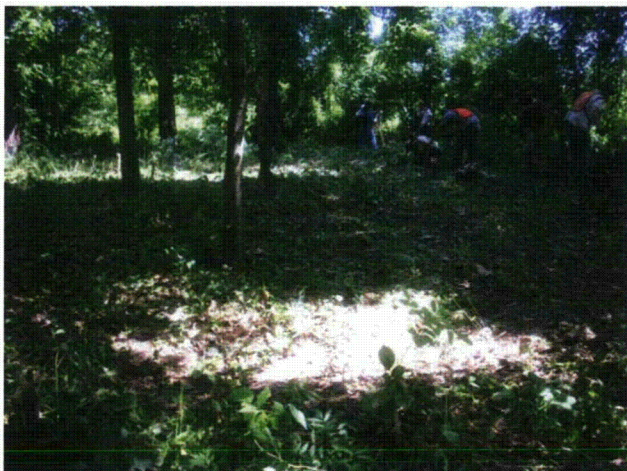
Location: *Confers Lane Parcel, Section 26*

Site Type: *Mid to Late 20th Century Domestic Site*

Site Size: *122 x 168 meters (400 x 550 feet)*

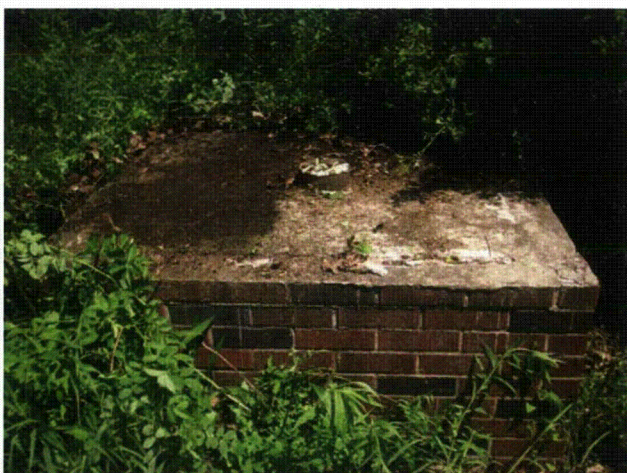
Recommendations: *Not NRHP Eligible/No Further Work*

Site 8 (Shortz Site) is located on a wooded upland flat, immediately east of a sharp bend in Confers Lane, in the Confers Lane Parcel, Section 26 (see Figure 2, Figure 21). It was identified during GAI's Phase IA archaeological reconnaissance of the project area and was described by PPL personnel as the location of the former Shortz house. Based on Phase Ib survey, Site 8 has dimensions of 122 x 168 meters (400 x 550 feet); it lies at an elevation of 682 feet amsl. A narrow paved lane extending southeast from Confers Lane, passes through the southern edge of the site and terminates in a clearing in its eastern portion. Site 8 includes a shallow surface depression, located in its western, wooded section, as well as a raised brick, concrete-capped well/cistern situated in the clearing (Photographs 20 and 21). A



light scatter of modern/historic artifacts (e.g. plastic and glass bottles, asphalt shingles) was observed on the ground surface in proximity to the surface depression. A pond and adjacent wetland lie south of the site. Numerous large boulders and cobbles were observed on the surface in the wooded area south of the paved lane. Historic Site 3 is situated in a cultivated field west of Confers Lane, approximately 43 meters (140 feet) to the west.

Photograph 20. Site 8 Showing Shovel Testing in Vicinity of Surface Depression, Facing Northeast



Photograph 21. Site 8 Showing Well/Cistern in Clearing, Facing North

Cartographic review indicates the presence of a complex of structures (possible farmstead) in the location of Site 8 in 1939 (see Figure 8). These structures appear at the southwest corner of a cultivated field; an orchard is located to their north and woodlands lie to their west and south. The 1955 USGS quadrangle (see Figure 9) depicts three structures in this locality, with a pond and wetland to their south.

The surface depression identified at Site 8 is a shallow, irregular, L-shaped depression, located approximately 12 meters (40 feet) north of the lane. It has maximum dimensions of approximately 7 x 8 meters (23 x 26 feet). Scattered brick fragments were observed along the east edge of the depression. Small saplings are growing within its interior. This depression may represent the location of a former structure.

The well/cistern is located approximately 12 meters (40 feet) east of the depression, at the west edge of a clearing. This well/cistern consists of an approximately one-meter (three-foot) high square brick structure (at least 10 courses high), capped by concrete. A covered metal pipe extends approximately 5 cm (2 inches) from the center of the structure. Based on the style of brick, the above-ground structure appears to date to the late 20th century.

Phase Ib investigations of Site 8 consisted of systematic 15-meter interval shovel testing followed by close-interval and judgmental shovel testing in the vicinity of the surface depression. GAI excavated 90 STPs within the site boundary, with 27 positive STPs producing 135 historic artifacts.

Based on shovel testing, soils within the site generally consist of an A-B soil horizon sequence. The soil profile exposed in STP A5, located approximately 2 meters (7 feet) north of the surface depression, consists of a 33-cm-thick dark yellowish brown silt loam A horizon and a yellowish brown silt loam B horizon (Figure 22). Historic artifacts were recovered predominantly from the A horizon.

Judgmental STP J1, excavated inside the southwest corner of the surface depression revealed a 52-cm-thick brown silt loam CA1 horizon and a 10-cm-thick very dark grayish brown silt loam CA 2 horizon above a rock impasse (see Figure 22). These fill deposits are likely associated with demolition of a former structure in this location.

STP G8, located in the clearing approximately 30 meters east of the well/cistern, yielded mortared brick at a depth of 33 cm below surface. This may represent the remains of a structural feature.

GAI recovered 135 historic artifacts from Site 8 during Phase Ib investigations (Table 13). Architectural and kitchen-related artifacts were common, which is typical of a domestic site. The thirteen kitchen ceramics include whiteware, earthenware, and porcelain ceramic sherds. The bottle glass was either clear glass or amber (beer) bottle glass pieces. There was a diversity of architecture-related items including asphalt shingles, mortar, nails (cut and wire varieties), window glass and wood. Many of the nails were roofing nails.

Other types of artifacts were present in smaller quantities. Activities-related items include tin can, aluminum pull tab, flower pot, and duct tape pieces. Furnishing remains included lamp chimney glass and electrical porcelain. There was also one unidentified artifact.

Table 13. Site 8: Pattern Analysis, Historic Artifacts

Class	Sub-Class	Total	Percent
Activities	Cans/Pull Tabs	4	2.96
	Flowerpots	6	4.44
	Duct Tape	1	0.74
	Activities Total	11	8.15
Architecture	Mortar, Cement	1	0.74
	Nails, Spikes, etc.	45	33.33
	Roofing Materials	1	0.74
	Window Glass	31	22.96
	Wood	1	0.74
	Architecture Total	79	58.52
Furnishings	Furniture Hardware	1	0.74
	Lighting/Electric Plug	1	0.74
	Furnishings Total	2	1.48

Class	Sub-Class	Total	Percent
Kitchen	Bottles/Jars	29	21.48
	Ceramics	13	9.63
	Kitchen Total	42	31.11
Unidentifiable	Indeterminate	1	0.74
Total		135	100.00

Based on preliminary analysis, the assemblage contains 43 temporally diagnostic specimens, consisting largely of nails (Table 14). Based on the artifact assemblage the site generally dates to the twentieth century. This is consistent with the cartographic sources (noted above) which indicate a structure at this location in 1939 and 1955.

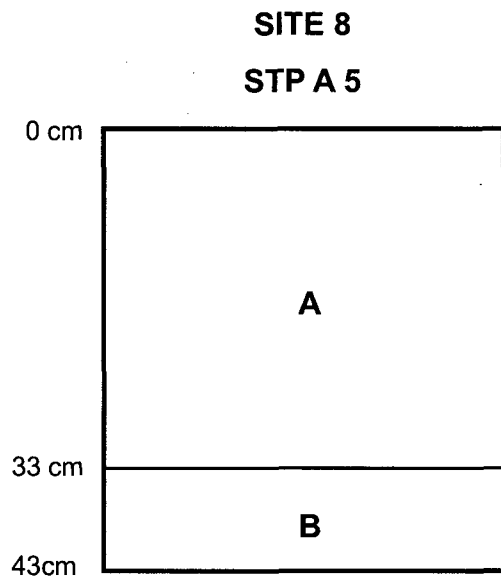
Table 14. Site 8: Dating Analysis, Historic Artifacts

Material	Description	Count	Begin Date	End Date	Reference
nail, cut		2	1780	1890	Nelson 1968
nail, wire		25	1880	2008	Nelson 1968; Noël Hume 1980
canning jar lid liner	white opaque	8	1869	1950	Toulouse 1971
whiteware	plain	3	1830	2008	Price 1979; Noël Hume 1980
whiteware	overglaze decal floral	5	1890	2008	Haskell 1991
electric plug	porcelain	1	Modern	Modern	
aluminum	pull tab	1	Modern	Modern	
nail, roofing			Modern	modern	
Total		43			

Site 8 Recommendations

Site 8 represents the remains of a mid to late 20th century domestic site on an upland flat east of Confers Lane. It includes a surface depression (possible foundation), a well/cistern, and an associated artifact scatter. The concrete-capped well/cistern appears to date to the late 20th century. Many of the artifacts were modern (e.g. duct tape, aluminum pull tab, zinc roofing nails). The presence of modern artifacts, well/cistern feature, and fill deposits (likely associated with demolition activities) has resulted in low integrity in parts of the site. GAI concludes that Site 8 has a low potential to contribute important information on mid-twentieth century historic utilization of this area. GAI recommends that Site 8 is Not Eligible to the National Register. GAI recommends no further work at this site.

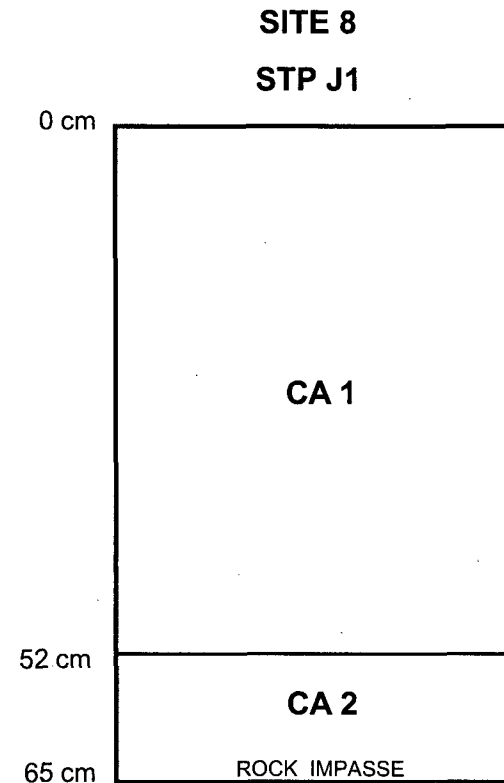
This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)



KEY:

A – DARK YELLOWISH BROWN (10YR 4/4)
SILT LOAM

B – YELLOWISH BROWN (10YR 5/6) SILT
LOAM

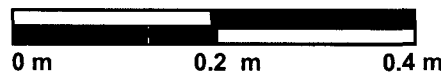


KEY:

CA 1 – BROWN (10YR 4/3) SILT LOAM (FILL)

CA 2 – VERY DARK GRAYISH BROWN (10YR
3/2) SILT LOAM (FILL)

SCALE



gai consultants

DWN LMD CHKD TJN

APPD BAM DATE 09/04/08

SCALE AS NOTED

DRAWING NUMBER C080204.10.002.C.A.SI 8

**FIGURE 22. SITE 8: REPRESENTATIVE SOIL
PROFILES (STP A5 AND J1)**

**BELL BEND NUCLEAR POWER PLANT
UNISTAR NUCLEAR DEVELOPMENT, LLC.**

Site 9

Location: West Alternative, Section 17

Site Type: Mid to Late 19th Century Domestic Site and 20th Century Domestic Site

Site Size: 25 x 115 meters (82 x 377 feet)

Recommendations: Potentially NRHP Eligible/Avoidance or Phase II Recommended

Site 9 (Johnson/Folk Site) is situated along the south edge of Beach Grove Road, just west of a distinctive jog in this roadway, in the West Alternative, Section 17 (see Figure 2; Figure 23). During Phase IA reconnaissance this area was identified by PPL personnel as the location of the former Johnson/Folk Barn, although no surface remains of a structure were observed during the course of that study. The site is located on an upland flat at an elevation of 720 feet amsl. Immediately north of Beach Grove Road, a steep, wooded hillside rises to a height of 1060 feet amsl; an open field and a lower hill (elevation 800 feet amsl) are located south of the site. Site 8 has dimensions of 25 x 115 meters (82 x 277 feet). It lies below the grade of



the roadway and its central portion is disturbed by a gravel access lane/parking pad that borders the road. The site's western portion is vegetated in sparse trees and brush; its eastern portion contains a row of large, evergreen trees that line the roadway and continue in rows up the steep hillside to the north (Photograph 22).

Photograph 22. Site 9 Showing Possible Surface Depression at Eastern End Adjacent to Beach Grove Road, Facing Northeast

Historic map review indicates a structure on the east end of Site 8 in 1873 (see Figure 7). The 1939 aerial photograph (see Figure 8) of the vicinity shows multiple structures (at least two) in the western portion of the site and additional structures north of Beach Grove Road, outside the project boundary. The 1955 quad map (see Figure 9) depicts an outbuilding in the western portion of the site (possibly the Johnson/Folk Barn) as well as two houses north of Beach Grove Road. The evergreen trees noted above likely lined former lanes associated a farmstead situated primarily north of the road.

During Phase Ib survey, a shallow, irregular surface depression was observed in the eastern portion of the site, just south of the row of large evergreens along Beach Grove Road. This depression measures approximately 2.5 x 4.5 meters (8 x 15 feet). It may represent the remains of a former small structure.

Phase Ib investigations consisted of close-interval (5-meter) and judgmental shovel testing within the site area. Nine STPs were placed in proximity to the depression in the eastern portion of the site and 11 STPs were excavated west of the gravel pad, in the area of the structures observed on the 1939 aerial photograph and 1955 map (see Figures 8 and 9). Of the 19 STPs excavated within the site, eight positive STPs—all located in the eastern portion of the site—produced 76 historic artifacts.

Shovel tests typically exposed an A-B soil horizon sequence. No evidence of plowing was observed in the site area. As described for STP A4, located 2 meters (6 feet) south of the

depression, the profile consists of a 42-cm-thick dark grayish brown silt loam A horizon above a yellowish brown sandy loam B horizon (Figure 24). STP B2, located in the western portion of the site, revealed a 29-cm-thick brown sandy loam A horizon and a yellowish brown sandy loam B horizon (see Figure 24). Historic artifacts were generally recovered from the A horizon. No cultural features were identified.

Phase Ib shovel testing yielded 74 historic artifacts and two prehistoric lithics (Table 15). The two lithic artifacts include a utilized flake and a biface reduction flake, both recovered from the A horizon in STP A4, in association with historic artifacts. These artifacts are in a disturbed context and do not represent a prehistoric occupation in this locality.

The sample of 74 historic artifacts from the site is composed overwhelmingly (nearly 90 percent) of kitchen-related specimens; this distribution pattern is more typical of a field scatter than of a domestic site. Since map research indicates a structure in this location in 1873, the lack of architectural-related artifacts may indicate that the house was constructed of log. Kitchen artifacts include whiteware, redware, stoneware, and bottle glass in a variety of colors (aqua, blue, and clear). Nineteenth-century redware ceramics dominate the assemblage. The few architecture-related specimens ($n=6$) consist of nails and window glass. The window glass is thin, a characteristic typical of early to mid-nineteenth century window glass. One unidentified item was also recovered.

Table 15. Site 9: Pattern Analysis, Artifacts

Class	Sub-Class	Total	Percent
Architecture	Nails, Spikes, etc.	2	2.63%
	Window Glass	4	5.26%
	Architecture Total	6	7.89%
Kitchen	Bottles/Jars	10	13.16%
	Ceramics	57	75.00%
	Kitchen Total	67	88.16%
Unidentifiable	Indeterminate	1	1.32%
Prehistoric	Lithics	2	2.63%
	Total	76	100.00%

In addition to the 19th century redware and window glass, the assemblage contains other temporally diagnostic artifacts including shell-edge decorated whiteware (1830-1890), blue hand-painted whiteware (1840-1860) and red transfer-printed whiteware (1828-1850)(Table 16). A mean date of 1869 was calculated for these diagnostic specimens. More recent bottle glass (dating from 1939 -2008) was found on the site, but this likely represents roadside refuse.

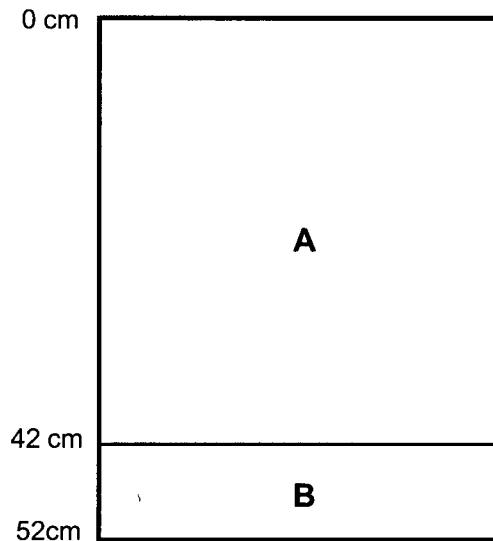
Temporally-diagnostic artifacts indicate that the site dates to the mid- to late nineteenth century. Based on a review of maps, it appears that by 1939 (see Figure 8), the earlier (1873-mapped) house was demolished and a new house was erected to the north of the earlier homestead. Also by 1939, a barn or other outbuilding was build west of the earlier house site. This more recent outbuilding was still shown in this location in 1955 (see Figure 9). The recovered artifacts appear to be associated with the earlier house location at the east edge of the site. All artifacts in the Phase Ib assemblage were recovered from close-interval shovel testing in the eastern portion of the site.

Site 9 Recommendations

Site 9 appears to represent the remains of two horizontally distinct historic components, situated on the south edge of Beach Grove Road. The east side of the site includes the remains of a mid-to-late 19th century domestic site. This part of the site yielded a relatively high artifact density and possessed good integrity. The west side of Site 9 was the location of a 20th century outbuilding, likely a barn, but not an accompanying 20th century domestic occupation. The house appears to have been located on the north side of Beach Grove Road (outside of the project area). Phase Ib survey documented a gravel pad in center of the site but shovel testing failed to produce any artifacts associated with this 20th century component. GAI recommends that the mid-to-late 19th century component (east end of the site) has a high potential to contribute important information on the historic occupation of this area. GAI recommends that Site 9 is Potentially Eligible to the National Register under Criterion D. If Site 9 cannot be avoided by proposed construction, GAI recommends Phase II testing to determine NRHP eligibility.

This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

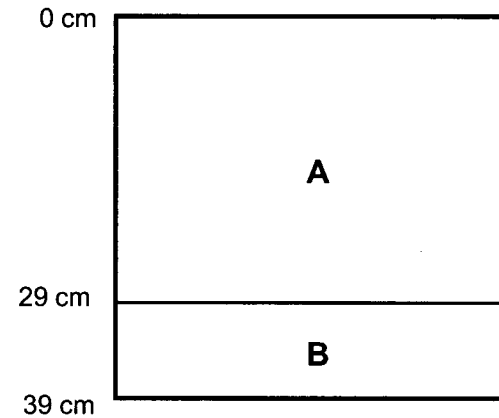
**SITE 9
STP A 4**



KEY:

A – DARK GRAYISH BROWN (10YR 4/2) SILT LOAM
B – YELLOWISH BROWN (10YR 5/4) SANDY LOAM

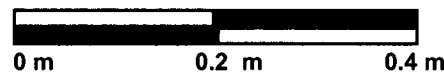
**SITE 9
STP B2**



KEY:

A – BROWN (10YR 4/3) SANDY LOAM
B – YELLOWISH BROWN (10YR 5/4) SANDY LOAM

SCALE



gai consultants

DWN	LMD	CHKD	TJN
APPD	BAM	DATE	09/05/08
SCALE	AS NOTED		
DRAWING NUMBER C080204.10.002.C.A.SI 9			

**FIGURE 24. SITE 9: REPRESENTATIVE SOIL
PROFILES (STP A4 AND B2)**

**BELL BEND NUCLEAR POWER PLANT
UNISTAR NUCLEAR DEVELOPMENT, LLC.**

Site 10

Location: West Alternative, Section 31

Site Type: Mid 19th to 20th Century Farmstead

Site Size: 128 x 137 meters (420 x 450 feet)

Recommendations: Potentially NRHP Eligible/Avoidance or Phase II Recommended

Site 10 (Kisner Farmstead) consists of the remains of a farmstead situated on a broad upland flat east of Walker Run, in the West Alternative, Section 31, near the western edge of the project area (see Figure 2). During GAI's Phase IA reconnaissance in June 2007, this area was identified by PPL personnel as the location of the former Kisner Farmstead. PPL provided photographs of the former farmhouse (Photographs 23-25). Aerial imagery of the project area, dating to 2005, illustrates a farmstead complex consisting of ten major buildings clustered northeast of a pond (Figure 25). These structures were demolished by PPL at some point between 2005 and the start of Phase IA investigations in 2007. Site 10 has dimensions of 128 x 137 meters (420 x 450 feet) and lies at an elevation of 660 feet amsl. It is surrounded by cultivated fields to the north, east and west and by grass-and brush-covered wetlands to the south. A large pond lies in the southwest corner of the site. An east/west trending gravel access road crosses Walker Run and connects the site area to North Market Street, approximately 183 meters (600 feet) to the west. At the time of Phase Ib fieldwork, a project work trailer was located near the center of the site. The central portion of the site area was covered in gravel. The remainder was vegetated in grass and low brush. Several large trees, shown on the 2005 aerial image, remain standing.



Street, approximately 183 meters (600 feet) to the west. At the time of Phase Ib fieldwork, a project work trailer was located near the center of the site. The central portion of the site area was covered in gravel. The remainder was vegetated in grass and low brush. Several large trees, shown on the 2005 aerial image, remain standing.

Photograph 23. Overview of Site 10 Showing Gravel Lane through Site Area, Facing West



Photograph 24. Site 10 Showing Brush Clearing in Area of Former Structure 1, Work Trailer in Background, Facing East



Photograph 25. Site 10 Showing Area of Former Structure 2, Facing West

Cartographic research indicates that a structure, identified as “J Hess” was located in the vicinity of Site 10 in 1873 (see Figure 7). The 1939 aerial photograph (see Figure 8) of the project area depicts a farmstead complex (consisting of numerous structures) in this area. The 1955 quadrangle map illustrates eight structures and a pond at the end of an access road in this locality (see Figure 9).

Phase Ib survey of Site 10 consisted of pedestrian survey, brush clearing and close-interval (5-meter) and judgmental shovel testing in the mapped vicinity of former structures. Of the 56 STPs excavated within the site, 17 positive STPs yielded over 137 historic artifacts. Shovel test artifact density ranged from one to 24 artifacts per STP.

GAI documented three areas of structural remains at Site 10. The most extensive remains are associated with Structure 1, the former farmhouse (see Figure 25); the other structural remains are minimal. Structure 1 is represented by an L-shaped stone foundation with estimated maximum dimensions of 10 x 15 meters (33 x 49 feet). It appears to consist of a main house block and a northern extension. Lines of partially exposed stones mark the structure’s north and west walls and portions of its south wall.

Based on aerial photography, Structure 2 (a barn complex) was formerly located approximately 15 meters (50 feet) north of the farmhouse opposite the farm lane (see Figure 25). A scatter of structural remains was observed on the ground surface in this general area. Located within a 15 x 22-meter (50 x 72-foot) radius, these structural remains include an approximately 3 x 11-meter (10 x 36-foot) gravel pad, a 2.4 meter (8-foot) section of poured concrete wall, 1.5 meter (5-foot) square stone-outlined feature and an approximately 3.5 x 8-meter (11 x 26 foot) shallow surface depression.

Stone debris was also observed in the location of Structure 10, a former springhouse situated along the northern edge of the pond (see Figure 25).

Shovel testing and pedestrian survey in the locations of the other structures exposed no evidence of structural remains.

Close-interval shovel tests, excavated in proximity to the location of former structures generally exposed an A-B soil horizon sequence and evidence of disturbance resulting from structure demolition and subsequent emplacement of gravel across the surface (Figures 26 and 27). STP 2, located 5 meters (16 feet) west of the Structure 1 foundation, consisted of a 22-cm-thick brown silt loam A horizon above a yellowish brown silt loam B horizon. Situated approximately 5 meters (16 feet) east of former Structure 5, in the site’s northern portion, STP J1 exposed a 13-cm-thick grayish brown silt loam A horizon with gravel and a yellowish brown silt loam B horizon. STP J4 was excavated at the northern edge of former Structure 8, in the southeast portion of the site; the profile of this shovel test consisted of a 38-cm-thick brown silt loam A horizon with a high percentage of cobbles/gravels and a yellowish brown silty clay loam B horizon. Excavated near the site’s western edge, north of former Structure 4, STP 4 revealed a 49-cm-thick brown silt loam A/CA horizon with 50 percent gravel above a

yellowish brown silt loam B horizon. Historic artifacts were recovered from the A horizon. No cultural features or intact structural remains were identified in the shovel tests.

Phase Ib investigations at Site 10 yielded over 137 artifacts. Architectural and kitchen-related artifacts were common, which is typical of a domestic site. Architectural remains include asphalt shingles, brick, window glass and wood pieces. Kitchen artifacts include bottle glass and whiteware, redware, and stoneware ceramics. One stainless steel knife was also recovered. Other remains from the investigation include bone and plastic.

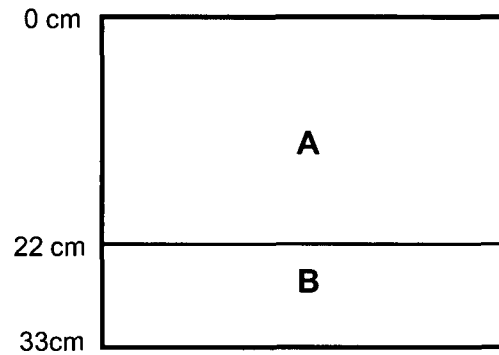
Based on preliminary analysis, the assemblage contains mid-nineteenth century decorated whiteware ceramics including hand-painted (1840-1860), shell edge decorated (1830 – ca, 1890), transfer print (1830-1860), annular (1830-1860) and sponge (1830-1871). The assemblage also includes cut nails (ca.1790s-1890s), and thin window glass, which is typically found on early to mid-nineteenth century domestic sites. There is also a small quantity of twentieth century artifacts, including a post-1939 bottle glass fragment and plastic. Based on the artifact assemblage the site dates from the mid-nineteenth century through the mid-twentieth century. Map research indicates that a structure was built at this site by 1873 (see Figure 7). By 1939 the complex expanded to include numerous outbuildings, many of which were still present in 2005 (see Figures 8 and 25).

Site 10 Recommendations

Site 10 represents a mid 19th to 20th century farmstead located on an upland flat east of Walker Run. Structures at the farmstead were demolished between 2005 and 2007. A house was built in this location prior to 1873. The Phase Ib artifact assemblage contains a surprising number of temporally diagnostic artifacts dating to the 19th century. The footprints of the 20th century structures may have obscured some of the 19th century archaeological deposits; however, based on the Phase Ib survey, the archaeological deposits have good integrity. Site 10 has a high potential to contribute important information on changes in farms from the mid 19th century to the present in this region. GAI recommends that Site 10 is Potentially Eligible to the National Register under Criterion D. If Site 10 cannot be avoided by project construction, GAI recommends Phase II investigations to determine the site's NRHP eligibility.

This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

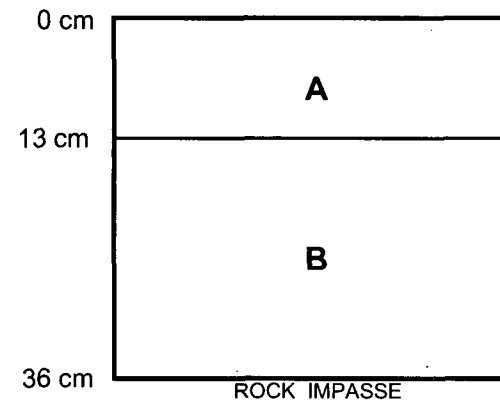
**SITE 10
STRUCTURE 1 VICINITY
STP 2**



KEY:

- A – BROWN (10YR 4/3) SILT LOAM
- B – YELLOWISH BROWN (10YR 5/6) SILT LOAM

**SITE 10
STRUCTURE 5 VICINITY
STP J1**



KEY:

- A – GRAYISH BROWN (10YR 5/3) SILT LOAM WITH GRAVEL
- B – YELLOWISH BROWN (10YR 5/6) SILT LOAM

SCALE



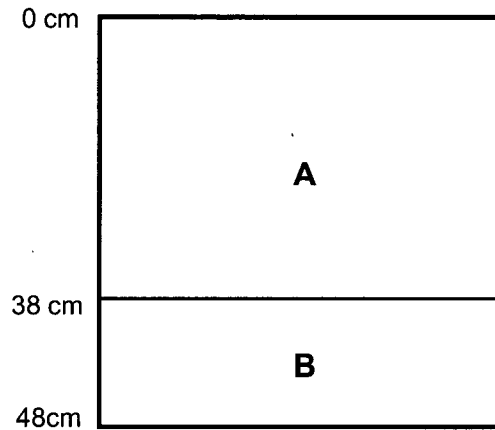
gai consultants

DWN	LMD	CHKD	TJN
APPD	BAM	DATE	09/04/08
SCALE	AS NOTED		
DRAWING NUMBER C080204.10.002.C.A.Si 10a			

**FIGURE 26. SITE 10: REPRESENTATIVE SOIL PROFILES
(STRUCTURE 1 VICINITY—STP 2; STRUCTURE 5 VICINITY—STP J1)**

**BELL BEND NUCLEAR POWER PLANT
UNISTAR NUCLEAR DEVELOPMENT, LLC.**

**SITE 10
STRUCTURE 8 VICINITY
STP J 4**

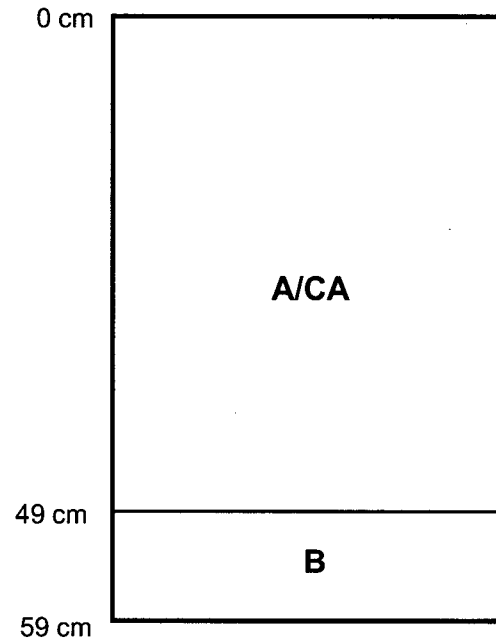


KEY:

A – BROWN (10YR 4/3) SILT LOAM WITH HIGH PERCENTAGE OF COBBLES

B – YELLOWISH BROWN (10YR 5/6) SILT CLAY LOAM

**SITE 10
STRUCTURE 4 VICINITY
STP 4**



KEY:

A/CA – BROWN (10YR 4/3) SILT LOAM WITH 50% GRAVEL

B – YELLOWISH BROWN (10YR 5/6) SILT LOAM

SCALE



gai consultants

DWN	LMD	CHKD	TJN
APPD	BAM	DATE	09/04/08
SCALE	AS NOTED		
DRAWING NUMBER C080204.10.002.C.A.Si 10b			

**FIGURE 27. SITE 10: REPRESENTATIVE SOIL PROFILES
(STRUCTURE 8 VICINITY—STP J4 ; STRUCTURE 4 VICINITY—STP 4)**

**BELL BEND NUCLEAR POWER PLANT
UNISTAR NUCLEAR DEVELOPMENT, LLC.**

Site 11

Location: West Alternative, Section 21

Site Type: Mid 19th Century Historic Artifact Scatter

Site Size: 10 x 20 meters (33 x 66 feet)

Recommendations: Not NRHP Eligible/No Further Work

Site 11 consists of a small, low-density historic artifact scatter situated at the foot of a wooded hill above a broad upland flat in the West Alternative, Section 21 (see Figure 2, Figure 28, Photograph 26). It lies 100 meters (330 feet) west of a bend in Confers Lane, at an elevation



of 680 feet amsl. Cultivated fields border the northern and western edges of this woodland. Site 7 (Sink Site), Locus 1, containing a barn/silo foundation, is located 85 meters (280 feet) to the northeast, opposite a gravel farm lane. Based on Phase Ib investigations, Site 11 has dimensions of 10 x 20 meters (33 x 66 feet).

Photograph 26. Site 11 Showing Shovel Testing in Woodlands, Facing North

Phase Ib investigations consisted of systematic 15-meter interval shovel testing followed by radial shovel testing. Of the 11 STPs excavated in the site vicinity (two 15-meter STPs and nine radials), three positive STPs produced 23 historic artifacts.

Shovel tests in Site 11 encountered an A-B soil horizon sequence. As described for STP J3 the soil profile included a 28-cm-thick brown silt loam A horizon superimposing a yellowish brown sandy loam B horizon (Figure 29). No clear plowzone was identified in this wooded area. Historic artifacts were recovered exclusively from the A horizon.

The small assemblage of 23 artifacts from Site 11 consists of one cut nail and 22 ceramics (whiteware, redware, and yellowware types) (Table 16). Based on the few temporally diagnostic artifacts, including one cut nail (ca. 1790-1890), one hand-painted whiteware (1840-1860), and one yellowware (1830-1900), this site appears to date to the mid-nineteenth century (Table 17).

Table 16. Site 11: Pattern Analysis, Historic Artifacts

Class	Sub-Class	Total	%
Architecture	Nails, Spikes, etc.	1	4.35
Kitchen	Ceramics	22	95.65
Total		23	100.00

Table 17. Site 11: Dating Analysis, Historic Artifacts

Material	Description	Count	Begin Date	End Date	Reference
nail, cut		1	1790	1890	Nelson 1968
whiteware	hand painted	1	1840	1860	Lofstrum et al 1982; Majewski & O'Brien 1984
whiteware	plain	2	1830	2008	Price 1979; Noël Hume 1980
yellowware	plain	1	1880	1900	Ketchum 1987
Total		5			
Mean date		1884			

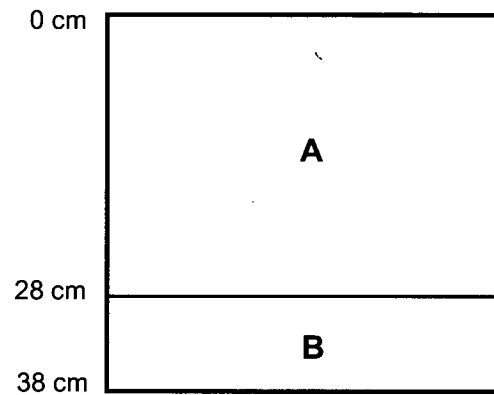
Site 11 Recommendations

Site 11 represents a small, low-density, mid 19th century artifact scatter. The integrity of this site is good. Because of its small size, low density, and lack of associated features or structures GAI concludes that the potential for Site 11 to contribute important information on the historic utilization of this area is low. GAI recommends that Site 11 is Not Eligible to the National Register under Criterion D. No further archaeological investigations are recommended for this site.

This figure in the Joint Permit Application are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

SITE 11

STP J3

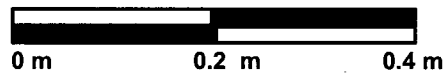


KEY:

A – BROWN (10YR 4/3) SILT LOAM

B – YELLOWISH BROWN (10YR 5/4) SANDY LOAM

SCALE



gai consultants

DWN LMD CHKD TJN

APPD BAM DATE 09/04/08

SCALE AS NOTED

DRAWING NUMBER C080204.10.002.C.A.SI 11

FIGURE 29. SITE 11: REPRESENTATIVE SOIL PROFILE (STP J3)

BELL BEND NUCLEAR POWER PLANT
UNISTAR NUCLEAR DEVELOPMENT, LLC.

Isolated Finds

GAI identified 25 prehistoric Isolated Finds during Phase Ib survey. In accordance with PHMC/BHP guidelines (PHMC/BHP 1991), these resources represent localities that produced fewer than three artifacts within a 15-meter (50-foot) radius. (Note that IFs 13 and 26 have been deleted; IF 13 was determined to be noncultural and IF 26 was incorporated into Site 1). Each of these isolated finds consists of a single lithic artifact. All but two of the isolated finds were found on the surface of cultivated fields during pedestrian survey; IFs 22 and 23 were recovered from shovel tests. Twenty of the isolated finds (80 percent) were found on upland flats within the West Alternative; five were located on the low terrace/floodplain in Area 7, adjacent to the Susquehanna River. Table 18 presents a summary of these isolated finds.

Table 18. Summary of Identified Isolated Finds

IF	Area	Section	Setting	Age	Description	Recommended NRHP Eligibility
IF 1	West Alt.	1	Upland	Unknown Prehistoric	Untyped projectile point	NE
IF 2	West Alt.	6	Upland	Early Archaic	Kirk corner-notched projectile point	NE
IF 3	West Alt.	6	Upland	Early Archaic	MacCorkle-like projectile point	NE
IF 4	West Alt.	6	Upland	Middle to Late Archaic	Piney Island projectile point	
IF 5	West Alt.	6	Upland	Early Archaic	Kanawha projectile point	NE
IF 6	West Alt.	3	Upland	Unknown Prehistoric	Debitage	NE
IF 7	West Alt.	3	Upland	Unknown Prehistoric	Utilized flake	NE
IF 8	West Alt.	3	Upland	Unknown Prehistoric	Debitage	NE
IF 9	West Alt.	3	Upland	Unknown Prehistoric	Retouched flake	NE
IF 10	West Alt.	6	Upland	Unknown Prehistoric	Untyped projectile point tip	
IF 11	West Alt.	7	Upland	Late Archaic	Brewerton eared-notched projectile point	
IF 12	West Alt.	7	Upland	Unknown Prehistoric	Untyped projectile point	NE
IF 13	DELETED					
IF 14	West Alt.	7	Upland	Unknown Prehistoric	Debitage	NE
IF 15	West Alt.	12	Upland	Early Archaic	Palmer projectile point	NE
IF 16	Area 6	3	Upland	Unknown Prehistoric	Late stage biface	NE
IF 17	Area 7	2	Low Terrace/ Floodplain	Unknown Prehistoric	Debitage	NE
IF 18	Area 7	2	Low Terrace/ Floodplain	Unknown Prehistoric	Late stage biface	NE
IF 19	Area 7	2	Low Terrace/ Floodplain	Unknown Prehistoric	Debitage	NE
IF 20	Area 7	2	Low Terrace/ Floodplain	Unknown Prehistoric	Mid stage biface	NE
IF 21	Area 7	2	Low Terrace/ Floodplain	Unknown Prehistoric	Debitage	NE
IF 22	West Alt.	17	Upland	Unknown Prehistoric	Debitage	NE
IF 23	West Alt.	29	Upland	Unknown Prehistoric	Debitage	NE
IF 24	West Alt.	1	Upland	Unknown Prehistoric	Debitage	NE
IF 25	West Alt.	1	Upland	Unknown Prehistoric	Debitage	NE
IF 26	DELETED					
IF 27	West Alt.	1	Upland	Unknown Prehistoric	Untyped projectile point tip	NE

* NE=Not Eligible

V. Summary and Recommendations

Project Summary

GAI conducted Phase Ib cultural resources investigations at the Bell Bend Nuclear Power Plant (BBNPP), Luzerne County, Pennsylvania, for UniStar Nuclear, under a contract to Areva NP, Inc. Phase Ib archaeological survey and supplemental architectural and historical survey of the project area were performed between May and August, 2008. Phase Ib archaeological survey was conducted of approximately 350 acres (142 hectares) of moderate to high archaeological potential within the 630-acre (255-hectare) project area. Phase Ib fieldwork included pedestrian ground survey of cultivated fields, the excavation of 3,789 shovel test pits, and a program of deep testing (11 mechanical trenches, soil corings, and 8 1x1-meter hand-excavated test unit column samples) in one low terrace adjacent to the Susquehanna River. The supplemental architectural field survey included examination of 22 of the 52 resources initially identified within the project viewshed to conclusively evaluate their NRHP eligibility and to define the boundaries of NRHP-eligible resources.

Architectural Resources

Summary and Recommendations

The architectural and historical survey portion of the investigation initially identified 52 resources greater than 50 years of age within the APE. The property types included residences and farmsteads, outbuildings, structures, a railroad, a canal, a highway, bridges, a church, cemeteries, and an extraction facility. All surveyed resources meeting the NRHP age criterion within the project APE were evaluated for NRHP eligibility according to NRHP criteria for significance and standards of integrity. GAI prepared a Phase Ia cultural resources report with preliminary recommendations of NRHP eligibility for architectural and historical resources. Additionally, further work was recommended for four resources, as described in Section III above.

Subsequent to review of the Phase Ia report, the PHMC-BHP provided comments in a letter dated June 5, 2008 which stated that no further work was recommended for 21 resources identified during the Phase Ia study. The PHMC-BHP further requested that for the remaining 22 resources (which included a potential historic district composed of ten of the individually-identified resources), PHRS forms should be prepared (see Appendix A). Supplemental work was conducted between August 25 and 28, 2008 to collect the necessary information for thorough evaluation of the 22 resources for which PHRS forms were being completed. Boundaries for the ten NRHP-eligible resources identified during the architectural field investigation were delineated according to National Register Bulletin 21 (NPS 1992b). The 10 resources recommended eligible for NRHP listing are summarized in Table 19 below.

**Table 19. Architectural and Historical Resources in Project Viewshed
Recommended Eligible for NRHP Listing**

ID No.	Name	Address	Style and Type	Date	NRHP Eligibility Recommendation
GAI-03 (086572)	Union Reformed and Lutheran Church (Old River Church and Burying Ground)	3200 SR 239, Conyngham Twp	Greek Revival Church and Cemetery	1833 (Church), 1805 (Cemetery)	Eligible, Criteria A, B, and C
GAI-04	Woodcrest	3209 SR 239, Conyngham Twp	Federal, Vernacular	1805, 1822	Eligible, Criteria A and C

ID No.	Name	Address	Style and Type	Date	NRHP Eligibility Recommendation
			Farmstead		
GAI-06	Stone Arch Bridge	Beach Grove Road at Stone Church Road, Salem Twp	Vernacular Stone Arch Bridge	c1935	Eligible, Criterion C
GAI-09	North Market Street Bridge	North Market Street, Salem Twp	Vernacular Stone Arch Bridge	c1935	Eligible, Criterion C
GAI-10 (141673)	North Branch Pennsylvania Canal	Along Susquehanna River, US Rt. 11 Vicinity, Salem Twp	Vernacular Canal	1828	Eligible, Criteria A and C
GAI-11	Canadian Pacific/ Bloomsburg Division of the Delaware, Lackawanna & Western Railway	Along Susquehanna River, US Rt. 11 Vicinity, Salem Twp	Vernacular Railroad	1858	Eligible, Criterion A
GAI-12	Susquehanna and Tioga Turnpike	US Rt. 11, Salem Twp	Vernacular Highway	1807-1810	Eligible, Criterion A
GAI-26	House (Red Brick Studios)	1405 Berwick-Hazleton Highway (SR 93), Nescopeck Twp	Masonry Vernacular, Gothic Revival Residence	c1880	Eligible, Criterion C
GAI-27	Pennsylvania Railroad-Sunbury Line/ Delaware & Hudson Railroad	Along Susquehanna River in Vicinity of River Road and SR 239, Nescopeck Twp	Vernacular Railroad	c1870	Eligible, Criterion A
GAI-36 through GAI-45	Wapwallopen Historic District	454 through 480 South River Street, Wapwallopen	Vernacular, Italianate, Gothic Revival, Queen Anne, Stick, Colonial Revival Historic District	c1870-c1900	Eligible, Criteria A and C

Assessment of Effects

In consideration of impacts from the undertaking, since the existing facility includes two cooling towers that reach 570 feet in height, it is unlikely that proposed construction activities will result in a visual effect that diminishes the significant historical and/or architectural features of these resources. However, GAI recommends the preparation of a Criteria of Effects Evaluation Report once concurrence on eligibility recommendations for the architectural and historical resources identified in the survey is received from the PHMC-BHP. This report will include a full assessment of the direct physical impacts to resources from the proposed project, as well as secondary effects.

Archaeological Sites

Summary and Recommendations

GAI identified 11 archaeological sites and 25 isolated finds during the Phase Ib archaeological survey. The 25 isolated finds each represent single prehistoric findspots (see Table 18, Chapter IV). These isolated finds do not meet PHMC-BHP's criteria to qualify as archaeological sites and do not represent significant archaeological resources; these isolated finds warrant no further investigations. The 11 archaeological sites identified during Phase Ib

survey include 8 historic and 3 prehistoric sites. Summaries and recommendations for these sites are presented in Table 20 and reviewed briefly below.

Table 20. Identified Archaeological Sites: Summary and Recommendations

Site #	Area	Section	Dimensions (m)	Artifacts (Prehist)	Artifacts (Hist)	Site Type	Age	NRHP Eligibility Recommendations	Recommendations
Site 1	West Alt	1	3 x 21	3	--	Lithic scatter	Unknown Prehistoric	Not Eligible	No Further Work
Site 2	West Alt	7	38 x 76	--	159	Domestic Site	Early to mid 19 th c	Potentially Eligible	Avoid/Phase II
Site 3	West Alt	13	20 x 20	--	102	Domestic Site	Early to mid 20 th c	Potentially Eligible	Avoid/Phase II
Site 4	West Alt	14	30 x 45	--	361	Domestic Site	Mid 19 th to Early 20 th c	Potentially Eligible	Avoid/Phase II
Site 5 / 36LU51	Area 7	2	152 x 260	48	35	Lithic scatter	EA, LA, EW*	Potentially Eligible	Avoid/Phase II
Site 6	West Alt	3	5 x 5	2	--	Lithic scatter	Unknown Prehistoric	Not Eligible	No Further Work
Site 7	West Alt	30	52 x 145	1	364	Farmstead / Foundations	Late 19 th to Mid 20 th c	Potentially Eligible	Avoid/Phase II
Site 8	Confers Lane	26	122 x 168	--	135	Domestic Site / Possible Foundation	Mid to late 20 th	Not Eligible	No Further Work
Site 9	West Alt	17	25 x 115	2	74	Domestic Site	Mid to Late 19 th c and 20 th c	Potentially Eligible	Avoid/Phase II
Site 10	West Alt	31	128 x 137	--	Over 137	Farmstead / Foundations	Mid 19 th to 20 th c	Potentially Eligible	Avoid/Phase II
Site 11	West Alt	21	10 x 20	--	23	Artifact Scatter	19 th c	Not Eligible	No Further Work

*EA=Early Archaic; LA=Late Archaic; EW=Early Woodland

Historic Sites

Phase Ib survey documented eight archaeological sites with historic components. All of these sites occur in upland settings in the western portion of the project. Seven sites were located in the West Alternative and one was identified in the Confers Lane Parcel, along the east edge of the West Alternative. Historic sites include two farmsteads with foundations (Sites 7 and 10), five domestic sites (Sites 2, 3, 4, 8 and 9) and one artifact scatter (Site 11)

Farmsteads with Foundations (n=2)

Sites 7 and 10 represent 19th to 20th century farmsteads with associated foundations. Site 7 (Sink Site) consists of a relatively high density of 19th to mid 20th century kitchen and architectural debris found in association with a stone house foundation, a stone and concrete barn foundation, a stone-lined well and a well/cistern. Phase Ib shovel testing indicates that the site has good integrity. GAI concludes that Site 7 has a potential to yield dateable features and additional diagnostic artifacts which may contribute important information on the historic occupation of this locality. *Based on its information potential, Site 7 is recommended as Potentially Eligible to the NRHP under Criterion D. If Site 7 cannot be avoided by proposed construction, Phase II archaeological investigations are recommended to evaluate the site's NRHP eligibility.*

Site 10 (Kisner Farmstead) represents the remains of a mid 19th to 20th century farmstead. At least ten structures (including a farmhouse, barns, outbuildings and a springhouse) were standing at the site as recently as 2005; all structures were demolished prior to 2007. The site includes a relatively high density of mid 19th to mid 20th century artifacts as well as the surface remains of three structures. Historic mapping indicates a house in this locality prior to

1873. The recovery of 19th century artifacts during shovel testing suggests that intact deposits exist beneath the footprints of the site's 20th century structures. Site 10 has a potential to yield dateable features and additional diagnostic artifacts which may contribute important information on changes in farms from the mid 19th century to the present in the area. *Based on its information potential, Site 10 is recommended as Potentially Eligible to the NRHP under Criterion D. If Site 10 cannot be avoided by proposed construction, Phase II archaeological investigations are recommended to evaluate its NRHP eligibility.*

Domestic Sites (n=5)

Sites 2, 3, 4, 8, and 9 consist of the remains of domestic sites ranging in age from the early 19th century to the late 20th century. Site 2 is composed of an early to mid 19th century surface artifact scatter consisting largely of kitchen-related specimens, with low quantities of architectural debris and other artifacts. This artifact sample likely represents a domestic occupation. Historic map review identified no structure in this location. The low quantity of architectural-related artifacts may indicate that the area formerly contained a log house, possibly dating to the second and third quarters of the 19th century. Because of its good integrity and likely association with a domestic occupation, GAI concludes that Site 2 has a potential to contribute important information on the early to mid 19th century utilization of the area. *Site 2 is recommended as Potentially Eligible to the NRHP under Criterion D. If Site 2 cannot be avoided by proposed construction, Phase II archaeological investigations are recommended to determine the site's NRHP eligibility.*

Site 3 consists of an early to mid 20th century surface artifact scatter, composed predominantly of kitchen-related artifacts, along with limited architectural debris and activities-related specimens. Cartographic research documents a complex of structures in this locality in 1939; these structures were apparently demolished prior to 1955. Site 3 appears to have good integrity. Based on its integrity, early to mid 20th century temporal affiliation, and possible association with former structures, GAI concludes that Site 3 has a potential to contribute important information on the historic occupation of this locality. *Site 3 is recommended as Potentially Eligible to the NRHP under Criterion D. If Site 3 cannot be avoided by proposed construction, Phase II archaeological investigations are recommended to determine the site's NRHP eligibility.*

Site 4 is composed of a relatively high density, mid 19th to early 20th century surface artifact scatter. As with Sites 2 and 3, the overwhelming majority of artifacts are kitchen-related specimens; low frequencies of architectural debris and other items are also present. The artifact assemblage suggests a domestic occupation. Historic map review indicates the presence of a structure in this vicinity in 1873. Due to the site's good integrity, relatively high artifact density, and likely association with a former structure, GAI concludes that Site 4 has a potential to contribute important information on the historic utilization of this area. *Site 4 is recommended as Potentially Eligible to the NRHP under Criterion D. If Site 4 cannot be avoided by proposed construction, Phase II archaeological investigations are recommended to evaluate the site's NRHP eligibility.*

Site 8 (Shortz Site) consists of a mid to late 20th century artifact scatter associated with a shallow, surface depression (possible foundation) and an above-ground well/cistern. The artifact assemblage is composed predominantly of kitchen-related specimens and architectural debris, characteristic of a domestic site; many of these artifacts are modern. Cartographic review documents structures in this locality in 1939 and 1955. The concrete-capped well/cistern appears to date to the 20th century. The presence of modern artifacts, a 20th century well/cistern feature, and localized fill deposits (likely associated with demolition

activities) indicates a reduced integrity in portions of the site. Accordingly, GAI concludes that Site 8 has a low potential to contribute important information on mid-twentieth century historic utilization of this area. *Based on its low information potential Site 8 is recommended as Not Eligible to the NRHP. No further archaeological investigations are recommended at this site.*

Site 9 represents the remains of two horizontally distinct historic components—a mid-to-late 19th century domestic site (eastern portion) and a 20th century domestic site (western portion). The eastern portion of the site includes a scatter of mid-to-late 19th century artifacts and a surface depression (possible foundation) possibly associated with a house mapped in this area prior to 1873. Integrity in this portion of the site was good. Shovel testing in the site's western portion yielded no artifacts in the mapped vicinity of a 20th century outbuilding (likely a barn). GAI recommends that the mid-to-late 19th century component (eastern portion of the site) has a high potential to contribute important information on the historic occupation of this area. *Site 9 is recommended as Potentially Eligible to the NRHP under Criterion D. If Site 9 cannot be avoided by proposed construction, Phase II archaeological investigations are recommended to evaluate the site's NRHP eligibility.*

Artifact Scatters (n=1)

Site 11 represents a small, low density, mid 19th century artifact scatter in a wooded upland setting. The artifact assemblage consists of kitchen and architectural debris (22 ceramics and 1 cut nail). The integrity of this site is good. Because of its small size, low density, and lack of associated features or structures, GAI concludes that Site 11 has a low potential to contribute important information on the historic utilization of this locality. *Based on its low information potential Site 11 is recommended as Not Eligible to the NRHP. No further archaeological investigations are recommended at this site.*

Prehistoric Sites

GAI identified three prehistoric sites (Sites 1, 5 and 6) in the project area. Site 1 is a small, low-density prehistoric artifact scatter ($n=3$ lithics) located in a cultivated upland field. This site likely represents the remains of a small, brief prehistoric occupation. Because of the absence of diagnostic artifacts and cultural features, the age of the site is indeterminate. *Based on its low density and indeterminate age, Site 1 is recommended as Not Eligible to the NRHP and no further investigations of this site are recommended.*

Site 5 (36LU51) represents a low-density, widely-dispersed prehistoric artifact scatter occupying a cultivated field on a low terrace/floodplain bordering the Susquehanna River. The site likely represents or is associated with previously-recorded Site 36LU51, a small Woodland/Late Woodland period site, mapped within the northeast corner of Site 5. The Phase Ib artifact sample ($n=48$) contains three diagnostic projectile points (Late Archaic Brewerton corner-notched point, Terminal Archaic to Early Woodland Frost Island or Orient Fishtail point, and possible Early Archaic Kirk corner-notched point). Based on this artifact assemblage, the site represents the remains of brief, prehistoric occupations dating to the Early Archaic, Late Archaic, and Terminal Archaic/Early Woodland periods. Based on the site's good integrity and the recovery of temporally diagnostic artifacts Site 5 has a potential to yield additional diagnostic artifacts and, possibly, prehistoric cultural features. GAI concludes that Site 5 has a high potential to contribute important information on the prehistoric occupation of this area. *Site 5 is recommended as Potentially Eligible to the NRHP under Criterion D. If Site 5 cannot be avoided by proposed construction, Phase II archaeological investigations are recommended to evaluate the site's NRHP eligibility.*

Site 6 consists of a small, low-density prehistoric artifact scatter situated in a cultivated upland field. Its minimal artifact assemblage ($n=2$ lithics) suggest that this site represents a small, brief prehistoric occupation. Because of the absence of diagnostic artifacts and cultural features, the age of the site is indeterminate. *Based on its low density and indeterminate age, Site 6 is recommended as Not Eligible to the NRHP and no further investigations of this site are recommended.*

In addition to these prehistoric sites, one to two nondiagnostic prehistoric artifacts were recovered from disturbed contexts in association with historic artifacts in historic Sites 7 ($n=1$) and 9 ($n=2$), as well as from Area 6, Section 1 (Test Unit 3) ($n=2$). *Due to their disturbed context, these prehistoric artifacts do not represent archaeological sites and do not warrant further investigations.*

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