

Technical Report: Appendices A-G

Phase I Cultural Resources Investigations and Phase II National Register Site Evaluations

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

Prepared for:
UniStar Nuclear Energy, LLC

Prepared by:
Barbara A. Munford, M.A.,
Lori A. Frye M.A., RPA
and Michael P. Kenneally, M.A.

GAI Consultants Inc.
385 East Waterfront Drive
Homestead, Pennsylvania

GAI Project No. C090846.00

October 11, 2010



*Note 1: Items in brackets have been
redacted per agency request.*



APPENDIX A

Correspondence

George Wrobel
Licensing Director



February 15, 2008

Mr. Douglas McLearen, Chief
Division of Archaeology and Protection
Pennsylvania Historical Museum Commission Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093

Subject: Request for Cultural Resource Information

Dear Mr. McLearen:

UniStar Nuclear Energy, LLC, requests information from your office on historic and/or archaeological resources on and in the vicinity of the Susquehanna Steam Electric Station (SSES) site. This information will assist us with characterization studies being undertaken in support of potential development of an additional nuclear power generation unit adjacent to the SSES site near Berwick, Pennsylvania. As currently envisioned, the generating facilities and construction and operation-phase support facilities would be located entirely on the PPL site except for water-dependent facilities (e.g., cooling water intake and discharge structures), which could be located on the Susquehanna River shoreline or a short distance offshore. The location of the site is shown within yellow boundaries on the attached figure (though we have performed some cultural reconnaissance in now-excluded areas outside the yellow boundary lines).

In view of the long lead times involved, we are planning initiation of field characterization studies to expedite the design, licensing, and permitting of the facility in the event a decision is made to construct the unit. In this context, we have initiated a Phase 1 cultural resource investigation to determine the presence and status of historic and archaeological resources on the site. We would appreciate information concerning the site's known resources and the potential for resources that have not yet been identified. Your prompt response will allow us to plan and perform any required field surveys prior to finalizing the proposed construction footprint. GAI, Consultants Inc., will be conducting the cultural resource investigation work for UniStar Nuclear Energy and PPL Nuclear Development, LLC.

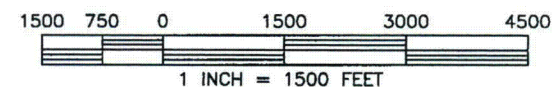
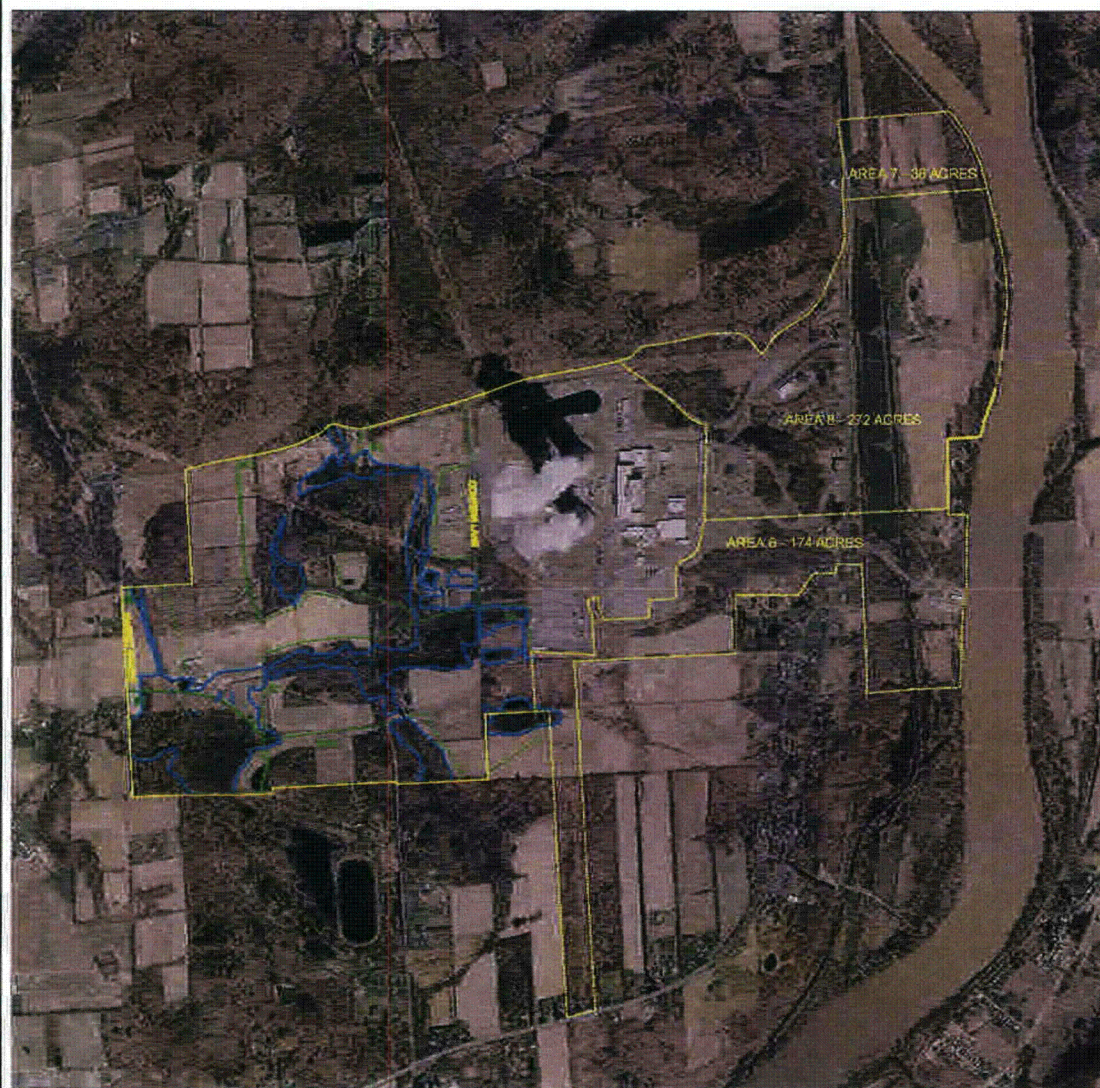
Thank you for your attention to this matter. If you have any questions or need additional information, please contact me at george.wrobel@unistarnuclear.com or (585) 771-3535.

Sincerely,

A handwritten signature in black ink, appearing to read "George Wrobel".

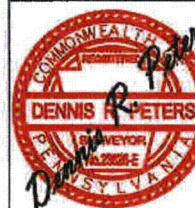
George Wrobel

Attachment



PLAN SHOWING
WETLAND DELINEATION PHASE AREAS - BERWICK NPP-1
PREPARED FOR
UNISTAR

SALEM TOWNSHIP - LUZERNE COUNTY - PENNSYLVANIA



PETERS CONSULTANTS, INC.
CONSULTING ENGINEERS & SURVEYORS

E-MAIL: info1@petersconsultants.com
 www.petersconsultants.com

100 Robbins Avenue Berwick, Pa. 18603
 1023 Mulberry Street Berwick, Pa. 18603
 29 East Main Street Bloomsburg, Pa. 17815

Scale: 1"=1500'	Dwn By: DHS	File No.:2085
Date: 01/14/08	Ck. By: DRP	Sheet 1 of 1



Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093
www.phmc.state.pa.us

8 April 2008

George Wrobel
UniStar Nuclear Energy
750 E. Pratt Street
14th Floor
Baltimore, MD 21202

TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER

Re: ER# 81-0658-079-G
Construction of Additional Nuclear Power
Generation Unit adjacent to the Susquehanna Steam
Electric Station Site, Salem Township, Luzerne
County, Pennsylvania

Dear Mr. Wrobel:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999 and 2004. These regulations require consideration of the project's potential effect upon both historic and archaeological resources.

Archaeological Resources

The archaeological sites listed below are located in your project area and others are likely to exist. These resources could be adversely affected by project activities. A Phase I archaeological survey is necessary to verify the extent of known sites and to locate other sites. Phase II investigations may also be needed to determine the eligibility of sites for listing in the National Register of Historic Places. It is our understanding that an archaeological investigation has been initiated and is on going. We look forward to working with you in this matter.

P.A.S.S. # 36Lu15, 36Lu16, 36Lu48, 36Lu49, 36Lu50, 36Lu51

Historic Structures

Additional information is needed for us to proceed with our review for historic structures. Please provide the date of construction of the power plant as well as an historical context on the development of nuclear power plants and where the Susquehanna plant fits into this context.

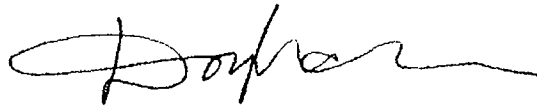
ER# 81-0658-079-G

8 April 2008

Page 2

If you need further information in this matter concerning archaeological resources please consult Steven McDougal at (717) 772-0923. For information concerning historic structures, please call Ann Safley at (717) 787-9121.

Sincerely,

A handwritten signature in black ink, appearing to read 'Douglas C. McLearen', with a long horizontal flourish extending to the right.

Douglas C. McLearen, Chief
Division of Archaeology &
Protection

cc: NRC

DCM/srm



750 East Pratt Street, 14th Floor
Baltimore, MD 21202
(410) 470-5531

April 15, 2008

Mr. Douglas McLearen, Chief
Division of Archaeology and Protection
Pennsylvania Historical and Museum Commission/Bureau of Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093

Subject: Phase IA Cultural Resources Reconnaissance
Bell Bend Nuclear Power Plant
Luzerne County, Pennsylvania
ER# 81-0658-079

Dear Mr. McLearen:

UniStar Nuclear Energy, LLC, is pleased to submit the enclosed two (2) reports on Phase IA Cultural Resources Reconnaissance of the proposed Bell Bend Nuclear Power Plant (formerly Berwick, PA NPP-1 or Project Leo) project area in Luzerne County, Pennsylvania, for your review and comment. This study was conducted in support of potential development of an additional nuclear power generation unit adjacent to PPL's existing Susquehanna Steam Electric Station (SSES) near the town of Berwick. UniStar initiated consultation about this project with your office in a February 15, 2008, letter, requesting cultural resource information for the proposed project vicinity.

The Phase IA reconnaissance studies were performed by GAI Consultants, Inc. (GAI) in June 2007 and February 2008, on behalf of UniStar. The June 2007 study (GAI 2007) investigated 760 acres within two potential project alternatives (West and Southeast Alternatives) for green space/power plant development for the project. The February 2008 (Munford and Hyland 2008) Phase IA project area consisted of 511 acres located between the previously surveyed West Alternative (selected as the preferred alternative) and the North Branch Susquehanna River. In total, GAI investigated approximately 1271 acres during Phase IA cultural resources reconnaissance. The enclosed reports provide a summary of the methods and results of Phase IA studies and recommendations for further work (i.e. Phase IB survey).

Based on refinements in project design we are anticipating that GAI will conduct Phase IB investigations within a 600-acre project area, located adjacent to the existing SSES facility, west of the river. (See enclosed Figure A, "Proposed Phase 1B Area of Potential Effect.") We would like to initiate Phase IB fieldwork as soon as possible to expedite the design, licensing, and permitting of the facility in the event a decision is made to construct the unit.

Thank you for your prompt attention to this matter. We expect to call your office within a week to ensure receipt of these reports and answer any possible questions. If you have any further questions or need additional information, please contact me at john.price2@unistarnuclear.com or at (410) 470-5531.

Sincerely,

A handwritten signature in black ink, appearing to read "John E. Price".

John E. Price

Enclosures

cc: Steve McDougal – PHMC-BHP (w/o enclosures)
Jerry Fields – PPL (w/o enclosures)
George Wrobel – UNE (w/o enclosures)

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Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093
www.phmc.state.pa.us

June 5, 2008

John E. Price
UniStar Nuclear Energy
750 E. Pratt Street, 14th floor
Baltimore, MD 21202

**TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER**

Re: ER 81-0658-079-H
NRC: Proposed Bell Bend Nuclear Power Plant
Salem Township, Luzerne County
Phase IA Cultural Resources Survey

Dear Mr. Price:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999 and 2004. These regulations require consideration of the project's potential effect upon both historic and archaeological resources.

We agree with the recommendations of the Phase IA archaeological study and look forward to working with you further as the successive phase of work proceeds.

We have reviewed the preliminary information concerning historic structures in the Area of Potential Effect of this project. Based on this information, no further survey work will be needed on the following properties.

1. Beach Grove Cemetery, Salem Twp., Luzerne County
2. Stone Walls, Bell Bend Rd., Salem Twp., Luzerne County
3. House 65 Bell Bend Rd., Salem Twp., Luzerne County
4. House, 115 Bell Bend Rd., Salem Twp., Luzerne County
5. House, 189 Bell Bend Rd., Salem Twp., Luzerne County
6. House, 193 Bell Bend Rd., Salem Twp., Luzerne County
7. House, 1021 Salem Blvd., Salem Twp., Luzerne County
8. Bell Bend Efficiency Apartments, 1043 Salem Blvd., Salem Twp., Luzerne County
9. House, 1047 Salem Blvd., Salem Twp., Luzerne County
10. House, 1091 Salem Blvd., Salem Twp., Luzerne County
11. House, 1069 Salem Blvd., Salem Twp., Luzerne County
12. Barn & Trailer, 998 Berwick-Hazleton Hwy, Nescopeck Twp., Luzerne County
13. House, 906 Berwick-Hazleton Hwy, Nescopeck Twp., Luzerne County

14. House, 809 Berwick-Hazleton Hwy, Nescopeck Twp., Luzerne County
15. House, 175 E. Cherry Rd., Nescopeck Twp., Luzerne County
16. House, 598 River Rd., Nescopeck Twp., Luzerne County
17. House, 546 River Rd., Nescopeck Twp., Luzerne County
18. House, 520 River Rd., Nescopeck Twp., Luzerne County
19. House, 510 River Rd., Nescopeck Twp., Luzerne County
20. Quarry, River Rd., Nescopeck Twp., Luzerne County
21. Bridge, N. Market St., Salem Twp., Luzerne County

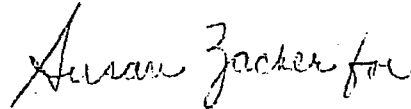
Additional survey information must be supplied for the following properties. Please submit a Historic Resource survey form for the following resources. This form and instructions can be obtained from our website at www.phmc.state.pa.us/bhp.

1. United Reformed and Lutheran Church, Conyngham Twp., Luzerne County
2. Woodcrest, Conyngham Twp., Luzerne County
3. Hummel Farmstead, Salem Twp., Luzerne County
4. Stone Arch Bridge, Salem Twp., Luzerne County
5. Kiliti Farm, Salem Twp., Luzerne County
6. Heller Farm, Salem Twp., Luzerne County
7. North Market Street Bridge, Salem Twp., Luzerne County
8. North Branch of the Pennsylvania Canal in the APE, Salem Twp., Luzerne County
9. Canadian Pacific/Bloomsburg Division of the Delaware, Lackawanna & Western Railway in the APE, Salem Twp., Luzerne County
10. Susquehanna and Tioga Turnpike, Salem Twp., Luzerne County
11. House, 29 Bell Bend Rd., Salem Twp., Luzerne County
12. House, 49 Bell Bend Rd., Salem Twp., Luzerne County
13. Valley View Farm, 1022 Salem Blvd., Salem Twp., Luzerne County
14. Michaels Farm, 4252 N. Market St., Salem Twp., Luzerne County
15. House, 1405 Berwick-Hazleton Highway, Nescopeck Twp., Luzerne County
16. PA Railroad-Sunbury Line/Delaware & Hudson Railroad, Nescopeck Twp., Luzerne County
17. Farm, 950 Berwick-Hazleton Hwy, Nescopeck Twp., Luzerne County
18. House, 944 Berwick-Hazleton Hwy, Nescopeck Twp., Luzerne County
19. Farm, 783 Berwick-Hazleton Hwy, Nescopeck Twp., Luzerne County
20. Farm, 212 E. Cherry Rd., Nescopeck Twp., Luzerne County
21. Wapwallopen Historic District, Wapwallopen, Luzerne County
22. Farm, 811 River Rd., Nescopeck Twp., Luzerne County

Page 3
J. Price
June 5, 2008

If you need further information in this matter please consult Susan Zacher at (717) 783-9920.

Sincerely,

A handwritten signature in cursive script that reads "Susan Zacher for".

Douglas C. McLearen, Chief
Division of Archaeology &
Protection

DCM/smz

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George Wrobel
Licensing Director



September 19, 2008

GAI Project No. C080204.00

Doug McClearen
Pennsylvania Historic and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093

Subject: Management Summary
Phase Ib Cultural Resources Investigation
Bell Bend Nuclear Power Plant
Luzerne County, Pennsylvania
ER No. 81-0658-079

Dear Mr. McClearen:

UniStar Nuclear Energy, LLC, is pleased to submit the enclosed Management Summary on Phase Ib Cultural Resources Investigations of the proposed Bell Bend Nuclear Power Plant (BBNPP), Luzerne County, Pennsylvania, for your review and comment. This study was conducted in support of potential development of an additional nuclear power generation unit adjacent to PPL's existing Susquehanna Steam Electric Station (SSES) near the town of Berwick. GAI Consultants, Inc. (GAI) conducted Phase Ia studies of potential project alternatives in June 2007 and February 2008 and presented the results of this work in two reports (GAI 2007; Munford and Tuk 2008). Your office's June 5, 2008, review of these reports concurred with recommendations for further archaeological studies and requested additional survey information for architectural and historical resources.

Phase Ib fieldwork of the 630 acre (255-hectare) project area was performed by GAI between May and July 2008. GAI's Phase Ib archaeological survey identified 11 archaeological sites (7 historic and 3 prehistoric) within the project area. Seven of these sites are recommended potentially eligible for listing in the National Register of Historic Places (NRHP) under Criterion D. As requested, supplemental architectural survey was also conducted to conclusively evaluate NRHP eligibility and/or define boundaries for 22 of the architectural and historic resources recorded during initial architectural survey. The enclosed report provides a summary of the methods and preliminary results of Phase Ib studies and provides recommendations for further work (i.e. Phase II testing). Pennsylvania Historic Resource Survey (PHRS) forms for the 22 architectural and historic resources identified in your June 5, 2008, letter are provided as an appendix and will also be submitted under separate cover.

George Wrobel
Licensing Director

Thank you for your prompt attention to this matter. We expect to call your office within a week to ensure receipt of this report and address any possible questions. If you have any further questions or need additional information, please contact me at george.wrobel@unistarnuclear.com or (585) 771-3535 or my address at 1503 Lake Road, Ontario, NY 14519.

Sincerely,



George Wrobel

Enclosures

cc: Steve McDougal – PHMC-BHP (w/o enclosures)
Jerry Fields – PPL (w/o enclosures)
Greg Gibson – UniStar (w/o enclosures)
Barbie Perdue - UniStar

GAI Consultants, Inc. (GAI)

2007 *Final Letter Report, Phase IA Cultural Resources Reconnaissance of PPL Lands in the Vicinity of Susquehanna Steam Electric Station, Luzerne County, Pennsylvania*. Prepared for UniStar Nuclear Development, LLC by GAI Consultants, Inc., Homestead Pennsylvania.

Munford, Barbara A. and Jared N. Tuk

2008 *Technical Report, Phase IA Cultural Resources Reconnaissance, Berwick, PA NPP-1, Areas 6, 7, 8 and Confers Lane Parcel, Luzerne County, Pennsylvania*. Prepared for Areva NP Inc. and UniStar Nuclear Development LLC by GAI Consultants, Inc., Homestead, Pennsylvania.



Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093
www.phmc.state.pa.us

RECEIVED
OCT 31 2008

October 28, 2008

GAI CONSULTANTS INC.
PROJ. NO. 080204.10

Barbara A. Munford
GAI Consultants
385 E. Waterford Drive
Homestead, PA 15120-5005

TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER

Re: ER 81-0658-079-M
NRC: Bell Bend Nuclear Power Plant
Luzerne County, Conyngham, Nescopek, Salem Townships
Management Summary Phase Ib Cultural Resource Investigations
Determinations of Eligibility

Dear Ms. Munford:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999 and 2004. These regulations require consideration of the project's potential effect upon both historic and archaeological resources.

The Bureau for Historic Preservation has reviewed 22 resources included in the above listed report. These resources included farms, farmsteads, a church, two bridges, a RR connector line, a highway, and a canal remnant. The overall submission is lacking in historic context, and evaluation.

Please submit the following additional information so that we can complete our review of the 22 properties submitted in this survey.

1. The farms are all inadequately documented as complete forms were not submitted. The narrative physical and historical sections are missing. The complete farm, including acreage, needs to be described and addressed. While for this particular region it will be difficult to find early documentation, and the agricultural context survey has not yet targeted this area, the consultant should still implement the Agricultural Researcher Checklist. The Agricultural Context can be obtained from our website at www.phmc.state.pa.us/bhp. Based on the photos, it appears that an analysis of the 1927 Agricultural Census data and investigation of 20th century agricultural patterns in this county will be very helpful in explaining the types of buildings and changes that will determine Criterion A and C significance for the farms and farmsteads. Historic and current aeriels should be submitted. Current use of the land and buildings should be noted.
2. The potential for a rural historic agricultural district should be investigated, as the area appears to retain an active agriculture base of contiguous farms.

Page 2

B. Munford

Oct. 28, 2008

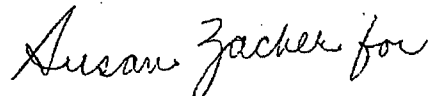
3. The vernacular architecture of the area must be addressed when evaluating for Criterion C. The photos show several farmhouses with distinctive windows in the attic story. Provide more details on the regional house types and features.

4. Provide a project map that shows the location of all resources and identify them with survey codes. It was difficult to understand the relationship of the resources in the Area of Potential Effect without a comprehensive map, and difficult to locate the resources on REGIS (our online database system) based solely on the individual resource USGS maps provided.

5. Please support the eligibility findings for the Sunbury Line, the Lackawanna & Bloomsburg RR, the Susquehanna & Tioga Turnpike, both stone arch bridges, the United Reformed & Lutheran Church, the north branch of the PA Canal, and the Wapwallopen Historic District. The historic district form only provided info about the buildings that would be within the APE; the form must provide info about the entire district. The canal branch evaluation should consider Key#141673, the North Branch Canal district in adjacent Berwick Borough, and would likely be considered part of that larger resource. More info must be provided about the church, especially the 1952 restoration. The late date of the stone arch bridges (1935) was curious but not nearly enough info was provided to evaluate them. Do they have Department of Transportation identifying BMS numbers and have they been previously evaluated. Additional information must be provided to evaluate the railroad and Turnpike resources. Simply being associated with the theme of Transportation does not imply that they are significant.

If you need further information regarding historic structures please consult with Susan Zacher at (717) 783-9920.

Sincerely,

A handwritten signature in cursive script that reads "Susan Zacher for".

Douglas C. McLearen, Chief
Division of Archaeology &
Protection

DCM/smz



Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093
www.phmc.state.pa.us

2 March 2009

George Wrobel
UniStar Nuclear Energy
1503 Lake Road
Ontario, NY 14519

TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER

Re: ER# 81-0658-079-N
Management Summary, Phase Ib Cultural
Resources Investigation, Bell Bend Nuclear Power
Plant, Salem Township, Luzerne County,
Pennsylvania

Dear Mr. Wrobel:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999 and 2004. These regulations require consideration of the project's potential effect upon both historic and archaeological resources.

This report meets our standards and specifications as outlined in *Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations* (BHP 1991) and the Secretary of the Interior's Guidelines for Archaeological Documentation. This report documents survey of 11 previously unrecorded archaeological sites.

We agree with the recommendation that the following sites are not eligible for inclusion on the National Register of Historic Places: **Site 1 (36Lu278), Site 6 (36Lu282), Site 8 (36Lu284), and Site 11 (36Lu287)**. In our opinion, no further work is necessary at these sites.

We agree with the recommendation that the following sites have potential to be eligible for inclusion on the National Register of Historic Places: **Site 2 (36Lu279), Site 3 (36Lu280), Site 4 (36Lu281), Site 5 (36Lu288), Site 7 (36Lu283), Site 9 (36Lu285), and Site 10 (36Lu286)**. In our opinion, these sites should either be avoided by construction or Phase II archaeological investigations will be necessary.

ER# 81-0658-079-N
2 March 2009
Page 2

If you need further information in this matter please consult Steven McDougal at (717) 772-0923.

Sincerely,

A handwritten signature in black ink, appearing to read 'D. McLearen', with a long horizontal flourish extending to the right.

Douglas C. McLearen, Chief
Division of Archaeology &
Protection

cc: B. Munford, GAI Consultants
J. Davis, NRC

DCM/srm



Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093
www.phmc.state.pa.us

23 March 2009

T. L. Harpster
PPL Bell Bend, LLC
38 Bomboy Lane, Suite 2
Berwick, PA 18603

TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER

Re: ER# 81-0658-079-Q
Management Summary, Supplemental Phase Ib
Cultural Resources Investigation, 263 Acres of
Additional Project Area Bell Bend Nuclear Power
Plant, Salem Township, Luzerne County,
Pennsylvania

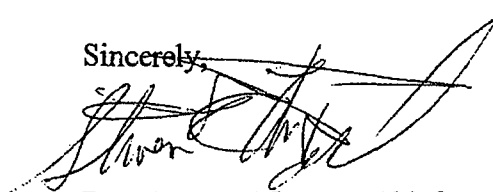
Dear Mr. Harpster:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999 and 2004. These regulations require consideration of the project's potential effect upon both historic and archaeological resources.

This report meets our standards and specifications as outlined in *Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations* (BHP 1991) and the Secretary of the Interior's Guidelines for Archaeological Documentation. This report documents archaeological survey of an additional 263 acres added to the original 630 acres reported in the previous Phase Ib Management Summary. No archaeological sites were found as a result of this survey and we agree with the recommendations that no further archaeological work is necessary within this area. We look forward to working with you further in this matter.

If you need further information in this matter please consult Steven McDougal at (717) 772-0923.

Sincerely,



Douglas C. McLearen, Chief
Division of Archaeology &
Protection

cc: B. Munford, GAI Consultants
S. Imboden, NRC

DCM/srm

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R. Sgarro
Manager-Nuclear Regulatory Affairs

PPL Bell Bend, LLC
38 Bomboy Lane, Suite 2
Berwick, PA 18603
Tel. 570.802.8102 FAX 570.802.8119
rrsgarro@pplweb.com



May 26, 2009

Pennsylvania Historic and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093

ATTN: Mr. Douglas C. McClearen, Chief
Division of Archaeology & Protection

**BELL BEND NUCLEAR POWER PLANT
SUBMITTAL OF WORKSCOPE FOR PHASE II
NATIONAL REGISTER EVALUATIONS OF
ARCHAEOLOGICAL SITES
BNP-2009-087**

PPL Bell Bend, LLC is pleased to submit the enclosed Scope of Work for Phase II National Register evaluations of archaeological sites 36LU279, 36LU280, 36LU281, 36LU288, 36LU283, 36LU285, and 36LU286, and an Assessment of Effects study for historic resources at the proposed Bell Bend Nuclear Power Plant, Luzerne County, Pennsylvania, for your review and comment. The proposed work is based on the results of Phase Ia and Phase Ib cultural resource investigations of the project area conducted by GAI Consultants, Inc. (GAI) (GAI 2007, Munford and Tuk 2008, Munford et al. 2008, and Munford 2008) and review of these studies by your office (letters dated June 5, 2008, October 28, 2008, March 2, 2009, and March 23, 2009). This document provides a summary of proposed archaeological investigations of seven archaeological sites designed to evaluate their eligibility for listing in the National Register of Historic Places (NRHP), and an assessment of the proposed project's effects on ten NRHP-eligible historic resources.

Thank you for your prompt attention to this matter. We will call your office within a few days to ensure receipt of this submittal and to address any questions you may have. In the interim if you need additional information, please contact me at rrsgarro@pplweb.com or at (570) 802-8102.

Respectfully,

Rocco R. Sgarro

Attachment: 1) Scope of Work: Phase II National Register Evaluations of Archaeological Sites and Assessment of Effects for Historic Resources

cc: (w/ Attachment)

Steve McDougal – PHMC-BHP



Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093
www.phmc.state.pa.us

11 June 2009

Rocco R. Sgarro
PPL Bell Bend, LLC
38 Bomboy Lane, Suite 2
Berwick, PA 18603

TO EXPEDITE REVIEW USE
BHP REFERENCE NUMBER

Re: ER# 81-0658-079-T
Scope of Work Proposal for Phase II
Archaeological Evaluations and Assessment of
Effects to Historic Resources, Bell Bend Nuclear
Power Plant, Salem Township, Luzerne County,
Pennsylvania

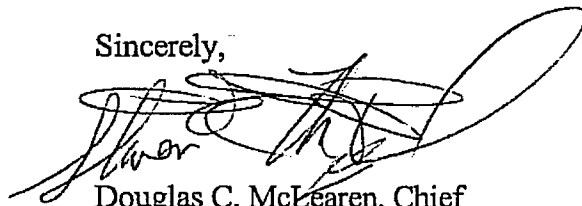
Dear Mr. Sgarro:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999 and 2004. These regulations require consideration of the project's potential effect upon both historic and archaeological resources.

We agree with the proposed scope of work for both the archaeological and historic structures investigations. We look forward to consulting further with you in this matter.

If you need further information in this matter please consult Steven McDougal at (717) 772-0923.

Sincerely,



Douglas C. McLearen, Chief
Division of Archaeology &
Protection

cc: B. Munford, GAI Consultants
S. Imboden, NRC, Mailstop T-6D38M
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November 16, 2009
GAI Project No. C080204.10

Douglas C. McLearen, Chief Division of Archaeology & Protection
Pennsylvania Historical and Museum Commission
State Museum Building
300 North Street
Harrisburg, PA 17120

Attention: Susan M. Zacher

RE: ER# 81-0658-079
NRC: Bell Bend Nuclear Power Plant
Management Summary Phase Ib Cultural Resource Investigation
Luzerne County, Conyngham, Nescopeck, Salem Townships

Dear Mr. McLearen:

GAI Consultants, Inc. (GAI) is pleased to provide clarification in response to your comments regarding the ***Management Summary Phase Ib Cultural Resource Investigation*** for the above-referenced project. We appreciate your comments and recommendations provided in your letter dated October 28, 2008. Upon your concurrence, the following revisions will be incorporated into the forthcoming ***Phase I/II Cultural Resources Survey Report***, to be prepared by GAI.

While underlined text provided below highlights our resource-specific responses and/or clarifications based on your information requests, please note that a full thematic historic context which underscores character-defining elements of the North Branch Susquehanna Valley will also accompany these revisions in the ***Phase I/II Cultural Resources Survey Report***.

1. Individual Agricultural Resources

***Revised, completed Farmstead Forms, including the narrative physical and historical sections, as presented below, are submitted as an attachment to this letter (Attachment 1).**

A. Woodcrest (GAI-04)

Physical Description

Originally dating from 1805, Woodcrest is a farmstead anchored by a 2-story, brick, Federal style house constructed in 1822. This house has a 1-story rear ell, and is constructed on a stone foundation with a common bond brick exterior. The gable roof is clad in asphalt shingles. Three brick interior chimneys pierce the roof, which is marked by a molded frieze and rakeboards and is trimmed with cornice returns and late-19th-century Italianate style corbels and brackets. The full-width, hip-roofed porch appears to date from the late 1800s, as it is executed in an Eastlake style with detailed spandrels and pendants. The fenestration consists of 2/2 and 2/4 double-hung, wood sash windows, all trimmed with shutters. Each gable end is also marked by a pair of quarter-round, attic story windows.

Associated with the main house is a 1.5-story, gable roofed, brick secondary living quarters (which possibly served as a tenant house). Built on a stone foundation, this building is constructed of brick laid in common bond and has a gable roof clad in asphalt shingles. There are entrances on the south and west elevations, marked by a gable-roofed portico and shed-roofed porch, respectively. The fenestration consists of 2/2 double-hung, wood sash windows, with shorter windows on the second story. A single brick interior chimney pierces the roofline. A second brick outbuilding is located to the south and east of the main house. Constructed on a

smaller scale, this building also is built of brick and has a gable roof, and may have been used as a summer kitchen during its history.

Located opposite these residential buildings is a large, gable-roofed, heavy timber-framed bank barn. This large barn is built on a stone foundation and is clad in horizontal wood siding. The roof is clad in V-crimp metal, and two gable-roofed cupola vents are located along the ridge line. The fenestration throughout consists of louvered vent openings with molded wood drip caps and surrounds. A sliding double door marks the entrance from the earthen embankment approach. A small, one-room concrete block addition is located on the south elevation. To the northeast of the barn is a 20th-century concrete block garage with a shed roof. The façade of this building is marked by a large, 40-light, central sliding door flanked by two smaller solid doors on strap hinges. Additionally, there is a small, 1-story, wood-framed shed to the west of these outbuildings. This shed-roofed building is clad in vertical wood siding and is in a deteriorated-to-ruinous condition.

Historical Narrative and Significance

Around 1840, the North (and West) Branch Susquehanna Diversified Farming Region emerged as a distinct region. Between 1840 and 1860, developments in transportation systems as well as the general temperance movement that was effecting the entire nation, facilitated a shift away from the trend of cultivating grain for whiskey and prompted a surge in the production of corn, wheat, pork, and butter (PHMC 2009: 152). Between 1860 and 1940, agriculture in the region was influenced by nearby growing industrial areas, easily reached by the newly constructed canal and rail transportation systems. Local farms focused on a diverse mix of products to satisfy these markets. However, the crops and livestock changed only subtly in this region, and farming in the area continued to exhibit a highly diversified approach consisting mainly of wheat, corn, hay, and oat crops, with the raising of milk cows, sheep, cattle, and swine (PHMC 2005: 153).

Typical of farmsteads in the North Branch Susquehanna Diversified Farming Region in the 1840-1860 period, the current Woodcrest property, historically the William Harter farmstead, witnessed a diversification of agriculture—characterized by crops of wheat, corn, hay, and oats, a small surplus of butter, small numbers of milk cows, sheep, and beef animals, and higher than average numbers of swine (PHMC 2005: 153). 1850 Agricultural Census Manuscripts reflect this diversification, indicating that William Harter held 140 acres of improved and 40 acres of unimproved land in Hollenback (present-day Conyngham) Township and owned four (4) milk cows, seven (7) sheep, eighteen (18) swine, and two (2) cattle. In 1849, Harter's farmstead produced 250 pounds of butter, 300 bushels of wheat, 600 bushels of Indian corn, and 600 bushels of oats (NARA 1850: Hollenback). Also indicative of subtle changes in the Harter Farmstead's product mix and consumption by both family and livestock is the presence of the Pennsylvania Barn which represents "an efficient adaptation to new conditions throughout eastern Pennsylvania in the early 19th century...as it reflected new grain and livestock systems in that it housed livestock on the lower level and accommodated hay storage, grain storage, and threshing on the upper level" (PHMC 2005: 165).

The Harter farmstead continued to adapt in the latter part of the 19th century and seemingly followed the trend of many farmers in the North and West Branch Susquehanna River Valley who when presented with stiff competition from western wheat and flour growers, decided to develop and sell more perishable products and local specialties (PHMC 2005: 173). 1880 Agricultural Census Manuscripts indicate that 750 pounds of butter were produced on the farm in 1879, as compared to only 250 in 1849 (NARA 1880: Conyngham).

Family labor still predominated on farms in the 1860-1940 period. On average, the 1880 manuscript census indicates that a typical farm seldom hired even a single laborer (usually male) for more than 28 weeks, and most were only kept for ten or fewer weeks (PHMC 2005: 180). However, the 1880 Agricultural Census Manuscripts for Conyngham Township indicated that \$250 was "paid for wages for farm labor during 1879 including value of board" by the Harter

farmstead. This agricultural census data is further supported by the presence of the secondary living quarters which could have served as a tenant house. Unfortunately, J. Hiram Miller, the owner of the farmstead in 1927 could not be located in the Agricultural Census Manuscripts for that year; therefore, 20th century agricultural census data is not available for comparison.

This collection of residential and agricultural buildings combines to form a resource that clearly reflects the rural agrarian life and agricultural practices of Conyngham (formerly Hollenback) Township in the 19th and 20th centuries. Further confirmed by 1938 aerial photography is the presence of these associated agricultural outbuildings identified extant by historical and architectural survey fieldwork (Penn Pilot 1938). As such, Woodcrest is recommended eligible for NRHP listing under Criterion A. No evidence could be located to connect this resource with any significant individuals in local or regional history. Therefore, this resource is recommended not eligible for NRHP listing under Criterion B. Both the main house and its outbuildings maintain sufficient integrity to convey their architectural significance. Additionally, the main house reflects elements of several historical styles from throughout its existence. Therefore, this resource is recommended eligible for NRHP listing under Criterion C.

B. Kiliti Farm (GAI-07)

Physical Description

Built circa 1925, the main house of the Kiliti Farm is a heavily-altered American Foursquare style house built on a stone and concrete foundation. This house is clad in aluminum siding, and the pyramidal roof is clad in asphalt shingles. Shed-roofed dormers project from two elevations of the roof. A modern shed-roofed porch spans the width of the façade, and it is marked by plain wood posts and a half wall. A large shed-roofed ell has been added to the rear of the house. The windows throughout are modern metal-framed replacements, including 1/1 double-hung sash and picture windows.

There are a number of wood framed agricultural outbuildings associated with this resource. In addition to the circa-1870 Pennsylvania Barn, which is clad in vertical wood siding with a V-crimp metal roof, there are a number of circa-1955 and circa-1970 gable-roofed pole buildings and circa-1970 grain storage bins on this property, all of which are in fair condition.

Historical Narrative and Significance

Reflective of farmsteads in the North Branch Susquehanna Diversified Farming Region in the 1840-1860 period, the current Kiliti *property*, historically the Alexander Jameson farmstead, witnessed a diversification of agriculture—characterized by crops of wheat, corn, hay, and oats, a small surplus of butter, small numbers of milk cows, sheep, and beef animals, and higher than average numbers of swine (PHMC 2005: 153). 1850 Agricultural Census Manuscripts reflect this diversification, indicating that Jameson held 120 acres of improved and 80 acres of unimproved land in Salem Township and owned four (4) milk cows, zero (0) sheep, seven (7) swine, and twenty (20) cattle. In 1849, Jameson's farmstead produced 320 pounds of butter, 120 bushels of wheat, 80 bushels of Indian corn, and 200 bushels of oats (NARA 1850: Salem). Similar to the Woodcrest farmstead in Conyngham Township, the Kiliti farm is marked by the presence of a Pennsylvania Barn which is indicative of subtle changes in the Jameson farmstead's product mix and consumption by both family and livestock. The Pennsylvania Barn represents "an efficient adaptation to new conditions throughout eastern Pennsylvania in the early 19th century...as it reflected new grain and livestock systems in that it housed livestock on the lower level and accommodated hay storage, grain storage, and threshing on the upper level" (PHMC 2005: 165).

Comparable to Woodcrest (historically the Harter farmstead) of Conyngham Township, the Jameson farmstead continued to adapt in the latter part of the 19th century and seemingly followed the trend of many farmers in the North and West Branch Susquehanna River Valley who when presented with stiff competition from western wheat and flour growers, decided to develop and sell more perishable products and local specialties (PHMC 2005: 173). 1880 Agricultural

Census Manuscripts indicate that 600 pounds of butter were produced on the farm in 1879, as compared to only 320 in 1849 (NARA 1880: Salem). Unfortunately, Henry J. Seely, the owner of the farmstead in 1927 could not be located in the Agricultural Census Manuscripts for that year; therefore, 20th century agricultural census data is not available for comparison.

While the Pennsylvania Barn on this property dates from the latter half of the 19th century, the remaining agricultural outbuildings buildings materials and massing suggest that they were constructed in the mid-to-late 20th century. Landscape disturbances consistent with construction activities are evident in 1959 aerial photography, which support these field survey findings (Penn Pilot 1959). As a result, these buildings do not collectively demonstrate an association with significant farming trends of the North Branch Susquehanna Diversified Farming Region in the 19th and early 20th centuries. Therefore, this resource is recommended not eligible for NRHP listing under Criterion A. No information could be located that connects this resource to a significant individual in local or regional history. As such, this resource is recommended not eligible for NRHP listing under Criterion B. While the main house in this complex maintains elements of its architectural integrity, it does not stand as a hallmark of late 19th-century vernacular architecture in the area. Additionally, the outbuildings are of recent construction and do not possess the requisite architectural significance for NRHP listing. Therefore, this resource is collectively recommended ineligible for NRHP listing under Criterion C.

C. Heller Farm (GAI-08)

Physical Description

Built circa 1880, the main house of the Heller Farm is a 1-story, brick, gable-roofed vernacular style house built on a stone and concrete foundation and constructed on an L-plan. Two gable roof additions have been appended to the west elevation, with exterior walls which are clad in vinyl siding. A concrete block stove flue has been adjoined to the the east elevation. The fenestration throughout consists of 1/1 double-hung vinyl sash windows.

Three agricultural outbuildings are associated with this resource. They include a circa 1880 Pennsylvania Barn with a catslide roof built on a raised concrete block foundation, a circa 1920, long, gable-roofed animal building (possibly a chicken house or horse stable), and a circa 1940, wood-framed, gable-roofed outbuilding of unknown function. Evidence of a former silo is seen by remnants of a circular foundation. A large modern shell building has been constructed on the property and currently functions as a commercial dog kennel.

Historical Narrative and Significance

Consistent with farmsteads in the North Branch Susquehanna Diversified Farming Region in the 1840-1860 period, the current Heller *property*, historically the Seybert farmstead, witnessed a diversification of agriculture—characterized by crops of wheat, corn, hay, and oats, a small surplus of butter, small numbers of milk cows, sheep, and beef animals, and higher than average numbers of swine (PHMC 2005: 153). 1850 Agricultural Census Manuscripts reflect this diversification, indicating that Sebastian Seybert held 30 acres of improved and twenty (20) acres of unimproved land in Salem Township and owned four (4) milk cows, zero (0) sheep, twelve (12) swine, and three (3) cattle. In 1849, Seybert's farmstead produced 240 pounds of butter, 200 bushels of wheat, 150 bushels of Indian corn, and 300 bushels of oats (NARA 1850: Salem).

Similar to Woodcrest in Conyngham Township and the Kiliti farm in Salem Township, the Heller Farm is marked by the presence of a Pennsylvania Barn, which is indicative of subtle changes in the farmstead's product mix and consumption by both family and livestock. The Pennsylvania Barn represents "an efficient adaptation to new conditions throughout eastern Pennsylvania in the early 19th century...as it reflected new grain and livestock systems in that it housed livestock on the lower level and accommodated hay storage, grain storage, and threshing on the upper level" (PHMC 2005: 165). 1880 Agricultural Census Manuscripts indicated that the Seybert farmstead experimented with crops of buckwheat and rye producing 50 bushels of buckwheat and 25 bushels of rye, in addition to 200 bushels of Indian corn, 150 bushels of oats, and 100 bushels of

wheat (NARA 1880: Salem). Unfortunately, the heirs of Phillip H. Seely, the owners of the farmstead in 1927 could not be located in the Agricultural Census Manuscripts for that year; therefore, 20th century agricultural census data is not available for comparison.

Presently, the farm is used as a commercial dog kennel facility. The buildings no longer reflect an association with the historic agricultural practices of the North and West Branch Susquehanna Diversified Agriculture region and compete in scale with the modern metal shell building. Therefore, this resource is recommended not eligible for NRHP listing under Criterion A. No information could be located that connects this resource to a significant individual in local or regional history. As such, this resource is recommended not eligible for NRHP listing under Criterion B. The main house of Heller Farm stands as an altered and typical example of a commonly-found vernacular architectural form in the region. The remaining agricultural buildings do not possess the requisite architectural significance for listing and were not constructed using any specialized techniques. Therefore, this resource is collectively recommended not eligible for NRHP listing under Criterion C.

D. Valley View Farm (GAI-20)

Physical Description

Dating from circa 1870, the main house at Valley View Farm is a 2-story, gable-roofed, frame vernacular house built on a stone foundation. The exterior of the house is clad in weatherboard, and the gable roof is covered with asphalt shingles. The front porch is 3 bays wide and is topped by a shed roof supported by turned wood posts with decorative brackets. The original porch deck has been replaced by modern wood decking. Additionally, a small hip-roofed portico extends from the north elevation of the house to function as a side porch. Also on the north gable end of the house stands a brick exterior chimney. The original windows of this house have been replaced with modern 1/1 double-hung vinyl sash windows, which are trimmed by decorative fixed shutters on the façade. The rear of the building has been altered.

There are two other remaining buildings on the Valley View Farm property. The first is a circa-1870 Pennsylvania Barn, which is built on a stone foundation. The exterior of this barn is clad in vertical board siding, and the gable roof is topped by modern V-crimp sheathing. The entrance doors have been recently replaced. Several window openings on the barn are marked by louvered vents, and basement-level fenestration includes 6-light windows. A small, concrete block, shed-roofed addition extends from the rear of the barn. The ell addition has been removed. Separating the barn from the house is a circa 1930 small, 1-story, gable-roofed, wood-framed machine shed. This building is built on a concrete foundation and is clad in horizontal siding and shingles. The gable roof is divided into two sections; the first with asphalt shingles and the second topped by rolled asphalt. The shallower pitched roof section also has exposed rafter tails. Windows in this building include 6/1 double-hung sash and awning windows.

Historical Narrative and Significance

Characteristic of farmsteads in the North Branch Susquehanna Diversified Farming Region in the 1840-1860 period, the current Valley View Farm *property*, historically the Meixell farmstead, witnessed a diversification of agriculture—characterized by crops of wheat, corn, hay, and oats, a small surplus of butter, small numbers of milk cows, sheep, and beef animals, and higher than average numbers of swine (PHMC 2005: 153). 1850 Agricultural Census Manuscripts reflect this diversification indicating that Peter Meixell held 100 acres of improved and thirty (30) acres of unimproved land in Salem Township and owned four (4) milk cows, four (4) sheep, sixteen (16) swine, and one (1) cattle. In 1849, Meixell's farmstead produced 200 pounds of butter, 150 bushels of wheat, 200 bushels of Indian corn, and 187 bushels of oats (NARA 1850: Salem).

Similar to Woodcrest in Conyngham Township and the Kiliti and Heller farms in Salem Township, the Valley View Farm is marked by the presence of a Pennsylvania Barn which is indicative of subtle changes in the farmstead's product mix and consumption by both family and livestock. The

Pennsylvania Barn represents “an efficient adaptation to new conditions throughout eastern Pennsylvania in the early 19th century...as it reflected new grain and livestock systems in that it housed livestock on the lower level and accommodated hay storage, grain storage, and threshing on the upper level” (PHMC 2005: 165).

Again comparable to Woodcrest and the Kiliti Farm, the Valley View Farm continued to adapt in the latter part of the 19th century and seemingly followed the trend of many farmers in the North and West Branch Susquehanna River Valley who when presented with stiff competition from western wheat and flour growers, decided to develop and sell more perishable products and local specialties (PHMC 2005: 173). 1880 Agricultural Census Manuscripts indicate that 550 pounds of butter were produced on the farm in 1879, as compared to only 200 in 1849 (NARA 1880: Salem). Unfortunately, J.F. Meixell, the owner of the farmstead in 1927 could not be located in the Agricultural Census Manuscripts for that year; therefore, 20th century agricultural census data is not available for comparison.

Presently, the farm is used for vehicle storage and modest livestock use. The buildings no longer reflect an association with the historic agricultural practices of the North and West Branch Susquehanna Diversified Agriculture region. The few remaining buildings at the Valley View Farm do not clearly reflect the nature and extent of agricultural practices of Salem Township or the Berwick area in the early 20th century. Therefore, this resource is recommended not eligible for NRHP listing under Criterion A. No evidence could be located that connects Valley View Farm to any significant individuals in local history. As such, this resource is recommended not eligible for NRHP listing under Criterion B. The main house of Valley View Farm has been altered and stands as a typical example of a commonly found architectural form in the region. The remaining agricultural buildings do not possess the requisite architectural significance for listing and were not constructed using any specialized techniques. Therefore, this resource is collectively recommended not eligible for NRHP listing under Criterion C.

E. Michaels Farm (GAI-25)

Physical Description

Constructed circa 1870, the main house of the Michaels Farm appears to have originally been a duplex. This 2-story, gable-roofed, frame vernacular house stands on a stone and concrete foundation, is clad in weatherboard trimmed with cornerboards, and has an asphalt shingle-clad gable roof. The full-width, shed-roofed porch is a replacement of the original porch, and is supported by plain wood posts. The roofline is marked by a molded frieze and rakeboards, and a modern concrete block chimney stands against the gable end of the house. The fenestration consists of 2/4 and 6/6 double-hung wood sash windows; most of which also have modern 1/1 double-hung vinyl sash storm windows on the outside. A 1-story, shed-roofed ell has been appended to the rear of the house.

There are a handful of small-scale agricultural and domestic outbuildings associated with the house. Located opposite the house stands a circa-1965 shed-roofed concrete block storage building/barn and silo. An earthen embankment leads to the sliding wood door at the entrance, and 4-light windows comprise this building's fenestration. Located to the southwest of the house is a gable-roofed, 2-bay, concrete block garage. This building has modern hinged doors, 4-light windows, and exposed rafter tails. Located immediately to the rear of the house are another concrete block garage and a small building that may serve as a smokehouse. The garage behind the house is a 1-bay replica of the 2-bay garage located to the southwest of the house, and has the same features and design. This building, as with the 2-bay garage, was likely constructed in the 1960s. The small frame smokehouse building is clad in drop siding and has a small flue piercing the roof. Further to the west of the house stands a circa-1965 concrete block equipment storage shed. This gable roofed building has three closed bays, as well as an open shed roofed extension. Near this outbuilding stands a wood-framed, shed-roofed storage building also dating from the late 20th century.

Historical Narrative and Significance

Typical of farmsteads in the North Branch Susquehanna Diversified Farming Region in the 1840-1860 period, the current Michaels Farm property, historically comprising two separate farmsteads belonging to Daniel Hill and Elijah Harris—witnessed a diversification of agriculture—characterized by crops of wheat, corn, hay, and oats, a small surplus of butter, small numbers of milk cows, sheep, and beef animals, and higher than average numbers of swine (PHMC 2005: 153). 1850 Agricultural Census Manuscripts reflect this diversification, indicating that Daniel Hill held 270 acres of improved and 150 acres of unimproved land in Salem Township and owned four (4) milk cows, zero (0) sheep, twenty-four (24) swine, and eleven (11) cattle. In 1849, Hill's farmstead produced 300 pounds of butter, 300 bushels of wheat, 200 bushels of Indian corn, and 200 bushels of oats (NARA 1850: Salem). 1850 Agricultural Census Manuscripts enumerate that Elijah Harris held 30 acres of improved and 15 acres of unimproved land in Salem Township and owned two (2) milk cows, zero (0) sheep, eleven (11) swine, and zero (0) cattle. In 1849, Harris' farmstead produced 300 pounds of butter, 80 bushels of wheat, 150 bushels of Indian corn, and zero bushels of oats (NARA 1850: Salem).

The Michaels Farm did not follow the trend of many farmers in the North and West Branch Susquehanna River Valley in the latter part of the 19th century who decided to develop and sell more perishable products and local specialties (PHMC 2005: 173). 1880 Agricultural Census Manuscripts indicated that Elliot Hill ceased butter production altogether on the farm in 1879 as compared to 300 pounds produced in 1849 (NARA 1880: Salem). Unfortunately, Miranda Hill owner of the farmstead in 1927 could not be located in the Agricultural Census Manuscripts for that year; therefore, 20th century agricultural census data is not available for comparison.

While the main house on this property dates from the 19th century, the associated agricultural outbuildings were constructed in the late 20th century and do not reflect the themes revealed as a result of a review of the historical agricultural context and census data. As a result, these buildings do not collectively demonstrate an association with significant farming practices of the North and West Branch Susquehanna River Valley in the 19th and early 20th centuries. Therefore, this resource is recommended not eligible for NRHP listing under Criterion A. No information could be located that connects this resource to a significant individual in local or regional history. As such, this resource is recommended not eligible for NRHP listing under Criterion B. While the main house in this complex maintains elements of its architectural integrity, it does not stand as a rare or well-preserved example of late 19th-century vernacular architecture in the area. Additionally, the outbuildings are of recent construction and do not possess the requisite architectural significance for NRHP listing. Therefore, this resource is collectively recommended ineligible for NRHP listing under Criterion C.

F. Farm at 950 Berwick-Hazleton Highway (SR 93) (GAI-29)

Physical Description

Built circa 1870, the main house of this property is a 2-story, gable-roofed, brick house built in the Greek Revival style. The foundation and exterior walls are common bond brick, and the gable roof is clad in composition shingles and is trimmed with a molded cornice, frieze, rakeboards, and cornice returns. Two brick chimneys constructed during different periods are located on either gable end. The front porch dates from the early 20th century, and consists of a hipped roof supported by tapered posts on brick piers, with a shingle-clad half wall. The fenestration consists of modern 1/1 double-hung vinyl sash windows, with triangular attic-story lights on the gable ends. The windows have cut stone lintels and sills. A 2-story, shed-roofed addition is currently under construction. It is appended to the 2-story rear ell, which is constructed in the same style and materials as the main block of the house. Additionally, a previous 2-story addition was placed at the rear of the ell, likely within the last 20 years.

Associated with this property are several outbuildings. Immediately to the rear of the main house stands a circa 1960, 2-story, gambrel-roofed barn constructed with a concrete base and a

shingle-clad second story. This building has gabled wall dormers on either side, and its entrance is located on the east elevation. Further to the north stands a modern metal-shell pole building. This gable-roofed building has two open bays on the east elevation and fixed windows on its side elevations. Beyond the pole building stands a circa 1910 Pennsylvania Barn serving as a dairy barn, which is constructed in two distinct sections. The western section is constructed of concrete block and is adjoined by a circa-1950 metal-skin silo, and the eastern section is constructed with a wood frame and is clad in horizontal wood siding. A 1.5-story, shed-roofed addition is located on the north elevation of the western end, opposite an open shed-roofed storage area, and a small gable-roofed addition is located on the eastern elevation of this barn. Further to the north stands a circa-1960, gable-roofed storage building. Presently, these farm buildings are used to store vehicles.

Historical Narrative and Significance

Reflective of farmsteads in the North Branch Susquehanna Diversified Farming Region in the 1840-1860 period, the current farm property at 950 Berwick-Hazleton Highway (SR 93), historically the Raber farmstead, witnessed a diversification of agriculture—characterized by crops of wheat, corn, hay, and oats, a small surplus of butter, small numbers of milk cows, sheep, and beef animals, and higher than average numbers of swine (PHMC 2005: 153). 1850 Agricultural Census Manuscripts reflect this diversification, indicating that Michael Raber held 100 acres of improved and 100 acres of unimproved land in Nescopeck Township and owned four (4) milk cows, nine (9) sheep, seventeen (17) swine, and three (3) cattle. In 1849, Raber's farmstead produced 200 pounds of butter, 150 bushels of wheat, 200 bushels of Indian corn, and 600 bushels of oats (NARA 1850: Nescopeck).

Similar to Woodcrest in Conyngham Township and the Kiliti, Heller, and Valley View farms in Salem Township, this farmstead is marked by the presence of a Pennsylvania Barn, which is indicative of subtle changes in the farmstead's product mix and consumption by both family and livestock. The Pennsylvania Barn represents "an efficient adaptation to new conditions throughout eastern Pennsylvania in the early 19th century...as it reflected new grain and livestock systems in that it housed livestock on the lower level and accommodated hay storage, grain storage, and threshing on the upper level" (PHMC 2005: 165).

1880 Agricultural Census Manuscripts indicated only an incremental 100-pound increase in butter production on the farm, enumerating 300 pounds produced in 1879 compared to 200 pounds produced in 1849 (NARA 1880: Salem). Agricultural Census Manuscripts from 1880 also enumerate the farm of George Raber as including 125 acres and producing dairy products, grains (wheat, rye, Indian corn, oats, buckwheat), Irish potatoes, honey, clover seed, hay, and butter. Raber also had planted an apple orchard. Livestock included horses, cattle, poultry, and swine.

Presently, the farm no longer functions in its original capacity, serving only as vehicle storage. As such, the buildings no longer reflect an association with the historic agricultural practices of the North and West Branch Susquehanna Diversified Agriculture region. The collection of buildings at this property does not clearly convey a sense of the historical role of this farm. Dating from various time periods, the buildings do not exhibit a clearly-defined role for this farmstead. Therefore, this resource is recommended not eligible for NRHP listing under Criterion A. Likewise, no information connecting this property to significant individual could be located. Therefore, this resource is recommended not eligible for NRHP listing under Criterion B. The main house of this property exhibits some characteristics of the Greek Revival style. However, recent large-scale additions have compromised its architectural integrity. Additionally, the vernacular domestic and agricultural outbuildings have lost integrity and are not exceptional examples of their types in the region. Therefore, this property is recommended not eligible for NRHP listing under Criterion C.

G. Farm at 783 Berwick-Hazleton Highway (SR 93) (GAI-33)

Physical Description

Dating from circa 1880, the main house of this farm complex is a 2-story, gable-roofed, masonry vernacular residence with elements of the Greek Revival, style built on an L plan. Constructed on a stone foundation, the exterior walls of the house are common bond brick, and the gable roof is clad in asphalt shingles. The roof is trimmed with a molded frieze and cornice returns. The recently constructed full-width front porch has a shed roof supported by turned posts with decorative brackets and a lattice balustrade. The windows throughout are primarily replacement 1/1 double-hung sashes trimmed with lintels and sills, and the gable ends have triangular attic story windows. An exterior brick chimney is located on the east elevation of the house.

There are several outbuildings associated with this property. The first is a circa-1910, gambrel-roofed, timber-framed, Three Gable barn. This T-shaped barn is built on a stone foundation and is clad in vertical wood siding. Its metal-clad roof is punctuated by four cupola vents. Its fenestration includes 6/6 double-hung sash windows. A mid-20th-century silo stands adjacent to the barn, and a circa-1950 concrete block wing connects the barn to a circa-1930, gable-roofed stone outbuilding that may have once served as a milk processing building. This building has an asphalt shingle-clad roof with flared eaves and a gable roof vent. The gable ends are clad in vertical wood siding. To the north of the barn is a group of several modern structures, including a shed-roofed, open bay, equipment shed with metal siding and several modern grain storage bins. Also in the complex is a modern metal-sided pole building, which is located to the northeast of the house, and a circa 1920, small wood-framed building that may have served as a spring house.

Historical Narrative and Significance

Consistent with farmsteads in the North Branch Susquehanna Diversified Farming Region in the 1840-1860 period, the current farm property at 783 Berwick-Hazleton Highway, historically the Thrash farmstead, witnessed a diversification of agriculture—characterized by crops of wheat, corn, hay, and oats, a small surplus of butter, small numbers of milk cows, sheep, and beef animals, and higher than average numbers of swine (PHMC 2005: 153). 1850 Agricultural Census Manuscripts reflect this diversification, indicating that W. Thrash et al. held 72 acres of improved and ninety (90) acres of unimproved land in Nescopeck Township and owned two (2) milk cows, four (4) sheep, four (4) swine, and two (2) cattle. In 1849, Thrash's farmstead produced 150 pounds of butter, 60 bushels of wheat, and 50 bushels of Indian corn.(NARA 1850: Salem).

Agricultural Census Manuscripts from 1880 enumerate the farm of James Thrash, including 170 acres, and producing grains (wheat, rye, Indian corn, oats, buckwheat), Irish potatoes, hay, honey, eggs, and butter. Two (2) acres of trees yielded 40 bushels of apples and three (3) acres of Irish potatoes yielded 140 bushels of crop. The farm's livestock consisted of horses, cattle, poultry, and swine (NARA 1880: Nescopeck). Also evident in the 1850 and 1880 Agricultural Census Manuscripts enumerating the Thrash farmstead is the marked mechanization. By this point, most townships included in the region showed a much higher than average (for Pennsylvania) level in the value of farm implements, more than likely due to the presence of nearby ironworks. The 1850 Agricultural Census Manuscript enumerates the Thrash farmstead's "farming implements and machinery" valued at \$50, versus the 1880 value of \$400 (NARA 1850 and 1880: Nescopeck).

This collection of buildings at this farm has changed over time, as many of the original buildings have been replaced by modern domestic and agricultural buildings that serve in capacities not consistent with the farm's history. After a review of the historical agricultural context and census data, it seems that other farm complexes throughout the region that have a more intact assemblage of outbuildings would better reflect late 19th and early 20th century farming practices of the Susquehanna Valley—Woodcrest (GAI-04) and the Benjamin Evans Farm (located off PA 93 in Nescopeck and NRHP-listed in 1993) best exemplify these themes. For these reasons, this

resource is recommended not eligible for NRHP listing under Criterion A. No evidence could be located that connects this resource to any significant individuals in local history. As such, this resource is recommended not eligible for NRHP listing under Criterion B. A number of better-preserved examples of late 19th century masonry vernacular farm houses exist throughout the area. Likewise, while several of the outbuildings retain a modicum of integrity, they do not stand out as exceptional examples of vernacular agricultural architecture in the area. This, coupled with the loss of integrity through additions and alterations to the buildings, as well as construction of modern infill, results in this resource being recommended not eligible for NRHP listing under Criterion C.

H. Farm at 811 River Road (SR 3036) (GAI-50)

Physical Description

Built circa 1880, the main house of this property is a 2-story, five-bay, gable-roofed house built in the Georgian style. The centered entrance is marked by a molded door surround with a transom and sidelights. An incised side porch on the rear ell is topped by a shed roof supported by turned wood posts and has modern decking. The fenestration throughout consists of modern 8/8 double-hung, vinyl sash windows, with modern triangular attic story lights on the gable ends. An original corbelled brick chimney is located on the west elevation.

To the rear of the house stands a large, wood-framed, circa-1920 Pennsylvania Barn. This barn was originally built in an L configuration, with an earthen ramp approach, but has subsequently been altered by a modern addition that nearly doubles the size of the original structure, resulting in a U shape. This barn is built on a concrete block foundation and is clad in wood siding. The roof of the original section of the barn is clad in V-crimp metal with four cupola vents, and the modern section of the barn is topped by asphalt shingles. Located to the southeast of the barn is a circa 1970, 1-story, gable-roofed, concrete block building that appears to function as a dairy. This building is partially obscured by a modern modular home located on the property.

Historical Narrative and Significance

Consistent with farmsteads in the North Branch Susquehanna Diversified Farming Region in the 1840-1860 period, the current farm property at 811 River Road, historically the Fortner farmstead, witnessed a diversification of agriculture—characterized by crops of wheat, corn, hay, and oats, small numbers of milk cows, sheep, and beef animals, and higher than average numbers of swine (PHMC 2005: 153). 1850 Agricultural Census Manuscripts reflect this diversification, indicating that George Fortner held seventy (70) acres of improved and thirty (30) acres of unimproved land in Nescopeck Township and owned three (3) milk cows, eleven (11) sheep, fourteen (14) swine, and three (3) cattle. In 1849, Fortner's farmstead produced 250 bushels of wheat, 200 bushels of Indian corn, and 150 bushels of oats (NARA 1850: Nescopeck).

Similar to Woodcrest in Conyngham Township, the Kiliti, Heller, and Valley View farms in Salem Township, and the farm at 950 Berwick-Hazleton Highway (SR 93) in Nescopeck Township, this farmstead is marked by the presence of a Pennsylvania Barn, which is indicative of subtle changes in the farmstead's product mix and consumption by both family and livestock. The Pennsylvania Barn represents "an efficient adaptation to new conditions throughout eastern Pennsylvania in the early 19th century...as it reflected new grain and livestock systems in that it housed livestock on the lower level and accommodated hay storage, grain storage, and threshing on the upper level" (PHMC 2005: 165).

The Fortner farmstead continued to adapt in the latter part of the 19th century and early 20th century and seemingly followed the trend of many farmers in the North and West Branch Susquehanna River Valley who when presented with stiff competition from western wheat and flour growers, decided to develop and sell more perishable products and local specialties (PHMC 2005: 173). 1880 Agricultural Census Manuscripts indicated a substantial increase in butter production on the farm, enumerating 300 pounds produced in 1879 compared to zero pounds produced in 1849 (NARA 1880: Nescopeck. Agricultural Census Manuscripts from 1880 also

enumerate the farm of Isaac Smith (formerly George Fortner) as including 83 total acres and producing dairy products, grains (wheat, rye, Indian corn, oats, buckwheat), Irish potatoes, and hay. Smith also had planted an apple orchard. Livestock included horses, cattle, poultry, and swine. The production of dairy products reached a commercial scale at the 811 River Road property during the mid-20th century, as deed research indicated that the farmstead was owned by John S. Lanning T/A Berwick Creamery Farm (Luzerne County Deed Book 1370: 128).

During the 1940-1960 period, farms in the North and West Branch Susquehanna Diversified Agriculture Region continued the pattern of local market production. The average number of milk cows per farm in 1950 was significantly below the statewide average in this area. It is important to note that some products were featured more than others within the context of a highly diversified mixed agriculture. It is the "pattern of diversification" that delineates the region, rather than simply the "fact of diversification" (PHMC 2005: 177). As in previous decades, very few farms could be called "specialized." Certainly some milk was produced and shipped out to urban markets on the eastern seaboard and in the anthracite region, but dairying did not have the presence it did in other regions such as the Northern Tier (PHMC 2005: 228). While many of the agricultural outbuildings associated with this farmstead reflect an association with mid-20th century dairying practices, this trend is not one revealed through an analysis of the historical agricultural context and census data.

As such, this collection of residential and agricultural structures do not collectively demonstrate an association with significant farming practices of the North and West Branch Susquehanna River Valley in the 19th and early 20th centuries. Therefore, this resource is recommended not eligible for NRHP listing under Criterion A. No information could be located that connects this resource to a significant individual in local or regional history. As such, this resource is recommended not eligible for NRHP listing under Criterion B. While the main house in this complex maintains elements of its architectural integrity, it does not stand as a rare, or well-preserved example of late 19th-century vernacular architecture in the area.

I. Farm at 212 East Cherry Road (TR 379) (GAI-35)

Physical Description

This small farmstead is anchored by a 2-story, circa-1890, frame vernacular residence built on a modified cross plan. Constructed on a stone and concrete foundation, the exterior of this house is clad in asbestos shingle and vinyl siding. The roof, which has both gable and jerkinhead forms, is clad in asphalt shingles with pent gable end returns. These gable ends are clad in wood shingles, and the façade features a projecting polygonal bay. The hipped roof of the porch is supported by plain wood posts with an asbestos shingle-clad half wall. The windows throughout are modern 1/1 double-hung vinyl sashes, and the entrance doors on the front porch are topped by transom windows. Associated with this house is a series of 20th century outbuildings. Immediately to the rear of the house stand three long concrete block poultry shelters. These shed-roofed buildings date from circa 1960. Two of the three are constructed of concrete block, while the third is a wood-framed building on concrete block piers clad in vertical wood siding. Between these buildings and the house stands a small, circa-1950, wood-framed shed. This gable-roofed building is clad in plywood and has a 5V-crimp metal roof. Further to the east of the main house stands a circa-1960, gable-roofed, wood-framed barn. This barn is built on a concrete foundation, is clad in vertical wood siding, and has a roof capped by V-crimp metal.

Historical Narrative and Significance

Characteristic of farmsteads in the North Branch Susquehanna Diversified Farming Region in the 1840-1860 period, the current farm property at 212 East Cherry Road, historically the Croll farmstead, witnessed a diversification of agriculture—characterized by crops of wheat, corn, hay, and oats, a small surplus of butter, small numbers of milk cows, sheep, and beef animals, and higher than average numbers of swine (PHMC 2005: 153). 1850 Agricultural Census Manuscripts reflect this diversification, indicating that Heinz Croll held ninety (90) acres of improved and fifty

(50) acres of unimproved land in Nescopeck Township and owned two (2) milk cows, eleven (11) sheep, ten (10) swine, and five (5) cattle. In 1849 Croll's farmstead produced 125 pounds of butter, 154 bushels of wheat, 150 bushels of Indian corn, and 300 bushels of oats (NARA 1850: Nescopeck).

1880 Agricultural Census Manuscripts indicated only an incremental 175 pound increase in butter production on the farm enumerating 300 pounds produced in 1879 compared to 125 pounds produced in 1849 (NARA 1880: Nescopeck). Agricultural Census Manuscripts from 1880 also enumerate the farm of Benjamin Evans (formerly Heinz Croll) as including 202 total acres (100 improved) and producing dairy products, grains (wheat, rye, Indian corn, oats, buckwheat), Irish potatoes, honey, and hay. Evans also had planted an apple orchard. Livestock included horses, cattle, poultry, and swine. Also evident in the 1850 and 1880 Agricultural Census Manuscripts enumerating the Croll/Evans farmstead is the marked mechanization. By this point, most townships included in the region showed a much higher than average (for Pennsylvania) level in the value of farm implements, more than likely due to the presence of nearby ironworks. The 1850 Agricultural Census Manuscript enumerates the Croll/Evans farmstead's "farming implements and machinery" valued at \$100, versus the 1880 value of \$300 (NARA 1850 and 1880: Nescopeck).

This small farmstead no longer maintains its ability to convey its historic function, as none of its original associated agricultural outbuildings which would reflect mid-to-late 19th and early 20th century farming practices of the North and West Branch Susquehanna River Valley remain. As such, the extant mid-20th century outbuildings do not possess associations with significant events or themes. As a result, this resource is recommended not eligible for NRHP listing under Criterion A. No evidence linking this property to any significant individuals in local history could be identified. As such, this resource is recommended not eligible for NRHP listing under Criterion B. The buildings on this property do not have sufficient architectural significance or integrity to warrant NRHP listing. Therefore, this resource is recommended not eligible under Criterion C.

2. Potential for Rural Historic Agricultural District

A review of historic and current aerial photography reveals an introduction of non historic land uses—primarily the expansive Bell Bend Nuclear Power Plant in Salem Township and scattered residential, commercial, and industrial subdivisions along the Susquehanna River in Nescopeck Township. Considering these intrusions, along with the diverse topography, geographic barriers which separate many of the farmsteads located throughout the project area, and the omission of Luzerne County from the *Historic Agricultural Resources of Pennsylvania, c. 1700-1960: North and West Branch Susquehanna River Valleys*, it is not possible to draw a clear, specific connection between the farms in the area of the proposed project through documentary sources. Land use activities, including settlement patterns and responses to the natural environment, should be investigated through an expanded agricultural context, specifically in terms of how such practices differed between farms located south of the river in the river bottoms in Nescopeck Township and those in the highlands across the Susquehanna River in Salem Township. Preparation of such a context is not within the scope of the current project.

When viewed as a single landscape, a rural historic district should be inclusive of a number of farmsteads that reflect historic agricultural patterns of the area. However, the conditions noted above combine to result in a substantial reduction in a once much larger agricultural area. As such, delineating a rural agricultural district, while at the same time being attentive to both the historic-period and present-day relationship of the buildings to one another and to the surrounding landscape becomes nearly impossible.

3. Regional Vernacular Architecture & Recurring Features

The architectural and historical investigations for this project identified the dominant types of house forms found in the project APE. These included the Fivebay (central doorway), Four Square, Bungalow, Gable Front forms, dating from circa c.1805 to c.1950. Very few pure examples of definable architectural styles

were identified in the project area, as the rural region was historically associated with dairy farming, livestock raising, and extractive industries. However, a few examples of the Greek Revival, Federal, Georgian, and Colonial styles were acknowledged. The Wapwallopen Historic District (GAI-36-45) boasted a variety of styles including Italianate, Gothic Revival, Queen Anne, Stick, and Colonial Revival.

Triangular windows were noted in the attic stories of four farmhouses in the project area, suggesting a common architect, builder, or supplier. However, no information could be located specifying the identities of any such people, and chain of title research did not reveal any connection between the owners of the four houses. The use of the triangular windows does not appear to be for architectural scale, design, or effect; rather the choice, acquired skill, or perhaps trademark of the carpenter. No other recurring vernacular architectural details or features were identified in the project area.

4. Surveyed Architectural and Historical Resources in the Project Viewshed

As requested, a map showing the locations of all architectural and historical resources identified in the project area is provided as an attachment to this letter (Attachment 2). This project map was previously submitted as *Figure 3* in the **Management Summary Phase Ib Cultural Resource Investigation** (Munford 2008:10). Additionally, a second map showing the locations of only those 22 architectural and historical resources addressed in the **Management Summary Phase Ib Cultural Resource Investigation**, and their corresponding CRGIS key numbers, is provided so that these resources can be easily located on the database (Attachment 3).

5. Architectural Resources

1. PRR Sunbury Line/Delaware & Hudson Railroad (GAI-27)

Originally a Pennsylvania Railroad route constructed following the Civil War as part of a series of short routes in the region to interchange with the Reading Company, Delaware Lackawanna & Western, and other northeastern anthracite-hauling roads, the Sunbury Line historically ran from Sunbury to Wilkes-Barre. This line was operated by the Pennsylvania Railroad until 1968, when the PRR was merged with the New York Central to form the Penn Central. Following Penn Central's bankruptcy, Congress decided to grant trackage rights to the Delaware & Hudson Railroad. This move extended the Delaware & Hudson's southern terminus from Wilkes-Barre to Sunbury, stretching as far north as Albany and Montreal. Congress believed that new trackage rights would strengthen the Delaware & Hudson's position as a bridge route carrier. In 1976, most trackage in the northeast was conveyed to the Consolidated Rail Corporation. Trackage rights were gained on three major routes as a result (Nescopeck Centennial Committee 1996: 36).

The Pennsylvania Railroad's (PRR) Sunbury Line originally served as a connector line for its Sunbury Division. On the PRR's Sunbury and Shamokin Divisions and the Philadelphia and Erie and Northern Central Railroads were located nearly all the anthracite coal-lands owned or controlled by the coal companies allied in interest with the PRR, and on these Divisions by far the largest part of the anthracite tonnage moved over the PRR was mined, weighed, and classified. The Sunbury Division served as the route for freight between the West and Northeastern New York and the New England States—the business consisting largely of the distribution of empty cars to and the collection of loaded cars from the different anthracite coal-breakers. The Sunbury Division, began at Sunbury and extended along the east bank of the North Branch of the Susquehanna River, reached the Wyoming Valley anthracite coal region, and found one terminus at Wilkes-Barre (the extent of the PRR's Sunbury Line when it was merged with the New York Central in 1968). At Catawissa, 20 miles from Sunbury, it departed the Susquehanna River, and formed a letter "Y" with the line to Wilkes-Barre; it ran in an easterly direction, gradually climbed the mountains until it reached Hazleton. It then began a rapid descent towards Pottsville where the Sunbury Division joined the Schuylkill Division. In this direction it traversed the rich anthracite coal-fields of parts of Luzerne and Schuylkill Counties, and connected at Derringer with the extensive coal operations of Coxe Bros & Co (Wilson 1895: 263-264).

This railroad is significant for its role in the development and growth of the Pennsylvania Anthracite region. While only a small connector line, this railroad brought together important shipping centers such as Sunbury, Wilkes-Barre, and larger cities further away on major connecting routes from these local shipping centers. Because of this historical association, this resource is recommended eligible for NRHP listing under Criterion A. No information could be located that identifies a connection between this resource and a significant individual in local or regional history. As such, this resource is recommended not eligible for NRHP listing under Criterion B. This railroad does not possess any unique or distinctive engineering features in the vicinity of the project area. Since this is only a small, single-track configuration with no architecturally significant associated structures or buildings (e.g., bridges, yards, depots, etc.), it is recommended not eligible for NRHP listing under Criterion C. The recommended NRHP boundary of the Pennsylvania Railroad- Sunbury Line/Delaware & Hudson Railroad incorporates the Right-of-Way limits, including the ballast, ties, and track.

2. The Bloomsburg Division of The Delaware, Lackawanna & Western Railroad (GAI-11)

The Delaware, Lackawanna & Western Railroad Company had its origin as the Ligett's Gap Railroad which was chartered in 1832, although actual incorporation was not granted until 1849. In 1851, before construction was completed, the name was changed to the Lackawanna & Western Railroad Company. In October of that year, service actually began, with trains operating between Scranton and Great Bend, 54 miles to the north, where a connection was made with the New York and Erie.

The Delaware, Lackawanna & Western Railroad Company was formed in 1853 as a consolidation of the Lackawanna & Western and the Delaware & Cobb's Gap companies. The latter was in the process of construction eastward from Scranton across the Pocono Mountains to the Delaware River. Service between Scranton and Portland, on the Delaware, began in 1856.

The Lackawanna then worked on gaining access to the seaboard. First it leased the newly constructed Warren Railroad to provide a connection between Portland and New Hampton, New Jersey. The latter was a junction point with the Central Railroad of New Jersey, which hauled the coal received from the Lackawanna to its tidewater terminals. The Lackawanna, however, had ambitions for its own line into the New York area, and these were satisfied in 1869 with the leasing of the Morris & Essex Railroad, which stretched across northern New Jersey to Hoboken on the Hudson River.

The principal addition to the system in Pennsylvania occurred in 1873, when the Lackawanna & Bloomsburg, which had been chartered April 5, 1852, was merged with the Delaware, Lackawanna & Western. The Line of this road was along the Lackawanna River from Scranton to West Pittston and then through the coal-rich Wyoming Valley and on westward along the North Branch of the Susquehanna to Northumberland. There it connected with the Northern Central, now a part of the Pennsylvania. The western end of the line, from Northumberland to Beach Haven, is still in operation as the short line North Shore Railroad. Construction of this line began in Scranton in 1854. The line reached Berwick in 1858, and was the first railroad to reach Bloomsburg, in the same year (Bicentennial Committee 1976: 4 and Saylor 1964: 59).

Although this line was a relatively small spur of an overall larger system, it remains historically significant as being the principal addition to the Delaware, Lackawanna & Western Railroad in Pennsylvania, the first railroad line chartered in this part of the Susquehanna Valley and the first railroad line to reach Bloomsburg. Therefore, this resource is recommended eligible for NRHP listing under Criterion A for its association with transportation and commerce in the region. No documentary evidence could be located to connect this resource with any significant individuals in local or regional history. As such, it is recommended not eligible for NRHP listing under Criterion B. This railroad does not possess any unique or distinctive engineering features in the vicinity of the project area. Since this is only a small, single-track configuration with no architecturally significant associated structures or buildings (e.g., bridges, turntables, depots, etc.), it is recommended not eligible for NRHP listing under Criterion C. The recommended NRHP

boundary of the Canadian Pacific/Bloomsburg Division of the Delaware, Lackawanna & Western Railway incorporates the Right-of-Way limits, including the ballast, ties, and track.

3. The Susquehanna and Tioga Turnpike (GAI-12)

As the population and the productions and wealth of the Luzerne County increased, there was an urgent demand for better roads and easier communication between distant points. In 1802, a charter was procured for the Easton & Wilkes-Barre turnpike. It occupied a large portion of the old road, and it was chiefly through the exertions of Arnold Colt that the first twenty-nine miles, beginning at Wilkes-Barre, were completed in 1806. Soon after, the entire distance from Wilkes-Barre to Wind Gap, forty-six miles, was finished at a cost of \$75,000 (Bradsby 1893: 250)

A Pennsylvania act signed March 28, 1806, authorized construction of turnpikes. In 1807, a company called the President, Managers, and Company of the **Susquehanna and Tioga Turnpike** Road incorporated to build a turnpike from Berwick to the Tioga River at Elmira, New York, by the "best and nearest route." The resulting turnpike was in fact the shortest distance from Berwick to Elmira. Part of the road was located on 400 acres donated by the state and part on large land holdings of the corporation. Road construction started in Berwick and went north until completion in Elmira in 1825. As early as 1810, the **Susquehanna and Tioga Turnpike** was considered the first good wagon road in this part of the state. At Berwick, a bridge over the North Branch of the Susquehanna River connected the **Susquehanna and Tioga Turnpike** to the **Susquehanna and Lehigh Turnpike**, which was surveyed by Evan Owen in the 1790s (Nescopeck Centennial Committee 1996: 33-34).

During an embargo in 1812 and 1813, the farmers of Northampton County were unable to procure plaster from the seaboard, and were compelled to use New York plaster, which was conveyed down the Susquehanna in arks to Wilkes-Barre, and then in sleds and wagons over the turnpike. The old Nescopeck & Lehigh road was also made a turnpike under the name of the **Susquehanna & Lehigh turnpike** (Bradsby 1893: 250)

The **Susquehanna and Tioga Turnpike** played a significant role in the development of the interior **Susquehanna Valley**, bringing goods and people from outside the area. While this road played a significant role in the history of transportation and commerce in the region, additional research conducted for the forthcoming draft of the **Phase I/II Cultural Resources Survey Report** indicated that roadways such as the Easton & Wilkes-Barre, **Susquehanna and Tioga**, and the **Susquehanna & Lehigh** turnpikes collectively facilitated the economic growth and development of the area. Therefore, no evidence suggests that the **Susquehanna and Tioga Turnpike** played a more significant role than the aforementioned turnpikes in terms of its role in the history of transportation and commerce in the interior **Susquehanna Valley**. As such, it is recommended not individually eligible for NRHP listing under Criterion A. No evidence connecting this resource with any significant individuals in local or regional history could be identified. As such, it is recommended not eligible for NRHP listing under Criterion B. Currently, the road consists of a modern highway and appurtenances, and there is no extant engineering or design feature that was originally associated with the **Susquehanna and Tioga Turnpike**. Therefore, the resource is recommended not eligible for NRHP listing under Criterion C.

4. Stone Arch Bridge (GAI-06) and North Market Street Bridge (GAI-07)

Built circa 1935, the **Stone Arch Bridge** spans Walker Run. The bridge is constructed of stone with stone voussoirs marked by granite keystones. The stones are joined by beaded mortar joints, some of which have been repointed. The main span is extended by short wing walls on each end, and the superstructure is capped by pre-cast concrete coping. The bridge carries a single, asphalt-paved traffic lane.

Built circa 1935, the **North Market Street Bridge** spans Walker Run approximately 1 mile north of the small community of Beach Haven. The bridge is constructed of stone with stone voussoirs marked by keystones. The stones are joined by beaded mortar joints; some of which have been repointed. The main span reaches a pointed apex in the middle of the span and is extended by

short wing walls on each end, and the parapets of the superstructure are capped by granite coping.

These bridges are county bridges and are, therefore, are not identified by Department of Transportation BMS numbers. Likewise, these bridges bear no date stones and have not been previously inventoried. Only three (3) single span stone arch bridges, approximately 20 feet in length, were identified in Luzerne County—the Stone Arch and North Market Street Bridges — being the only ones in the project area. The other bridge, previously surveyed and located at the Creek Crossing of L.R. 40093 in Salem Township (092634), was constructed in 1941 by the Works Progress Administration (W.P.A.) and served as a reference for the both the Stone Arch Bridge (GAI-06) and North Market Street Bridge (GAI-07). Since no documentary evidence was available to evaluate these resources, a comparison was made to similar bridges in Luzerne County in terms of materials, number of spans, span type, length, date of construction, and builder. These bridges are not directly associated with any significant events or trends in local or regional history. As such, they are recommended not eligible for NRHP listing under Criterion A. No documentary evidence linking these bridges to any significant individuals in local or regional history could be identified. Therefore, these bridges are recommended not eligible for NRHP listing under Criterion B. These bridges, however, are rare and well-preserved examples of early 20th century stone arch bridges in the area as only three are known to exist in Luzerne County. Therefore, these are recommended eligible for NRHP listing under Criterion C.

5. The United Reformed & Lutheran Church (GAI-03)

The Old River Church was constructed in 1833 by the Union Reformed and Lutheran Congregations. The woodwork was hand-carved by Master Carpenter Daniel Walp, with the assistance of Michael Weiss and William Hess. Hardware for the building may have been supplied by Peter Maurer, a local blacksmith. On September 4, 1887, the Reformed congregation discontinued their use of the church, and on October 4, 1908, the Lutheran congregation did as well. The building underwent restoration in 1952 by the Wapwallopen Historical Society.

The cemetery at the Union Lutheran and Reformed Church includes the graves of many of Wapwallopen's prominent local founding families. For example, John Andress, Abraham Andress, Peter Ennes, John Fenstermacher, Philip Fenstermacher, Michael Weiss, Johann Martin Harter (a veteran of the American Revolution), Isaac Heller, Jeremiah Hess, Peter Maurer, and their families are buried here. The Heller and Fenstermacher families were prominent millers in Wapwallopen (Wapwallopen Historical Society 1964: 30-62). Being the second Lutheran Church established in Nescopeck, this church community building and cemetery illustrate the growth and development of the Lutheran church in Nescopeck Township. In 1860, the congregation included 52 German Reformed Lutherans and 70 Lutherans (Pearce 1860: 306).

The massing and plan, as well as the architectural refinement, of the church reflect theological attitudes of the Wapwallopen congregation toward the material world, as well as the transformation of ecclesiastical architecture on the national level. The Union Lutheran and Reformed Church's "squarish rectangular" design is a late example of the traditional meetinghouse form, which featured an entrance aperture in the long wall and a three-sided gallery embracing a pulpit positioned on the back wall (Figure 1).

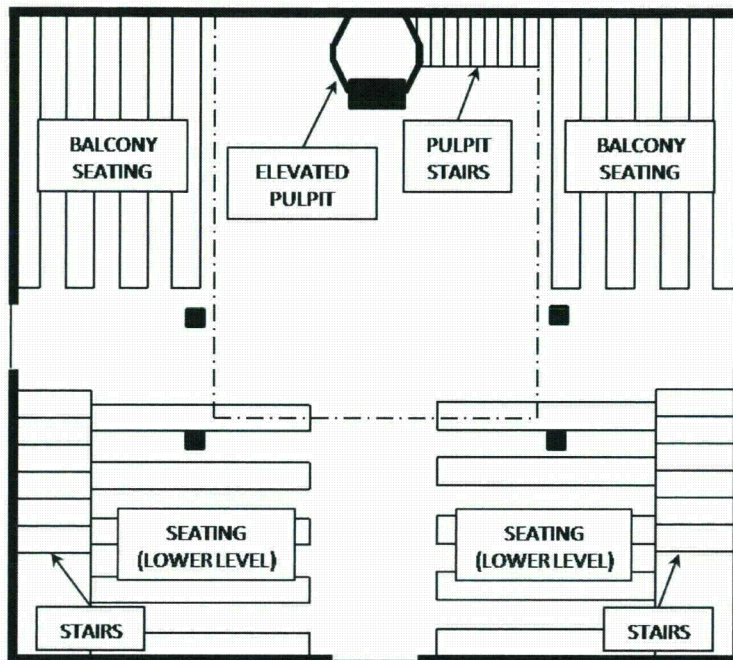


Figure 1— Plan of the United Reformed & Lutheran Church

Although the location of the communion table varied within this common meetinghouse form throughout the eighteenth and nineteenth centuries, at Wapwallopen, the table stood in an enclosed area before the pulpit. The original pulpit was replaced in the late nineteenth century by a low rostrum. This feature was removed and a new pulpit approximating the configuration of the original one was installed during the 1952 restoration (Lounsbury: 2006: 2) (Photograph 1).



Photograph 1—United Reformed & Lutheran Church Interior and Restored Pulpit (left)

By 1800, preferences in American ecclesiastical architecture were evolving in favor of decidedly rectangular and axial plans—with the principal entrance in the shorter gable end and larger window apertures. The intricate detailing in each doorway's frontispiece symbolizes the congregation's emphasis on music and the Eucharist in the liturgy. The pulpit and the altar in the interior mark the importance of the sacrament and scriptural exegesis in Lutheran worship

in comparison to other Protestant sects. Furthermore, the church's ornamentation illustrates the Lutheran's appreciation for embellishments that "glorify the majesty of God." While the church's design and style symbolize Lutheran spiritual practices, the church's character also manifests a historic period during the Second Great Awakening when a church building's components, which had been indexical of the denomination worshipping there, no longer clearly differentiated regional or denominational attributes and preferences (Lounsbury 2006: 1-18).

This resource demonstrates an association with early 19th-century rural and religious life, as the church building served as the focal point of the community's activities. The surviving church building (and its associated cemetery) reflects the theme of religious and cultural values of the surrounding community and therefore is recommended eligible for NRHP listing under Criterion A. Although the burial population includes significant individuals in the history of the church, these individuals have not been proven significant in the history of the region as persons of transcendent importance. Therefore, this resource is recommended not NRHP eligible under Criterion B. The church building has been restored, but clearly the restoration was carried out to



preserve and retain the massing and plan intended by the Union Reformed and Lutheran Congregations, specifically concerning the replacement of the original pulpit. Likewise; the restoration did not rob the building of any of its architectural refinement as the building is still trimmed with a number of delicate features. Special flourishes include the “stylized patera and cabling in the breastwork” of the gallery and the Christian symbolism carved in the entablature of the main entrance frontispiece consisting of lyres, harps, flagon, and a chalice (Photograph 2).

Photograph 2— Detail of the south frontispiece, United Reformed & Lutheran Church. A row of lyres decorates the frieze above the transom. Just below are symbols of the Eucharist with a flagon on the left and chalice on the right.

Additionally, since the exquisite hand-carved woodwork executed by Master Carpenter Daniel Walp (with assistance from Michael Weiss and William Hess) survives on this church building, it is recommended NRHP eligible under Criterion C.

6. North Branch of the Pennsylvania Canal (GAI-10)

Built in 1828 as the North Branch Canal, this canal line was constructed to provide a connection between Northumberland and the New York state line. By 1858, however, the canal system was sold to the Sunbury and Erie Railroad Company. They operated a 65-mile-long section of the line from Northumberland to Wilkes-Barre. In 1869, it was sold to the Pennsylvania Canal Company, who operated it until its closure in 1901.

Beach Haven became an important node in the canal system, as it was the site of locks and scales. Additionally, a boat yard at Beach Haven serviced canal boats in need of repairs. At this location, Hick's Ferry crossed the North Branch of the Susquehanna River to connect the powder works, farmers, and millers of Wapwallopen to the canal. Other local businesses, such as a tannery and a brickyard, relied on canal transportation for their profits (Bicentennial Committee 1976: 3-4).

This section of the North Branch Pennsylvania Canal reflects a clear association with the 19th-century canal- building transportation movement throughout Pennsylvania and retains sufficient integrity to convey its historical associations. As such, it is recommended eligible for NRHP listing under Criterion A. No information could be located that connects the canal to a significant individual in local or regional history. Therefore, this resource is recommended not eligible for NRHP listing under Criterion B. The section of canal in the project vicinity retains sufficient integrity to convey the details of canal building technology in the early 19th century in eastern Pennsylvania. Therefore, it is recommended eligible for NRHP listing under Criterion C. The proposed NRHP boundary of the North Branch of the Pennsylvania Canal in the project area encompasses the main resource and includes the current Right-of-Way to its limits. However, the historical significance of the section of canal in the project vicinity cannot be conveyed in its entirety apart from the North Branch Canal District (141673) in adjacent Berwick Borough. As such, it should be considered as a contributing resource to the North Branch Canal District, which has been previously surveyed.

7. The Wapwallopen Historic District (GAI-36-45)

Physical Description and Integrity

The extant collection of buildings in Wapwallopen ranges from commercial and ecclesiastical to residential, and many are very well preserved. For the purposes of the current study, ten resources located along South River Street were defined as within the APE for the project. While these resources were inventoried and photographed, there remain a number of additional resources located outside the current study area that contribute to a collective historic district. The ten resources on South River Street date roughly from circa 1870 through circa 1900, and include representative examples of vernacular variants of several styles popular during the period, including Italianate, Gothic Revival, Queen Anne, Stick, and even Colonial Revival. While the wood frame residences typically exhibit meticulously crafted woodwork, such as highly detailed spindlework, pedimented window moldings, and ornate brackets and corbels, some masonry buildings use unusual joinery and brick configurations in addition to fine woodwork. Overall, the resources located along South River Street maintain good integrity and clearly display much of the original craftsmanship employed in late 19th-century construction.

The Wapwallopen Historic District contains 94 resources. There are 77 contributing resources, and 17 non-contributing resources. Contributing resources include: two churches, a church bell, orchards, garages, single family dwellings, multiple family dwellings, a mill, and a fruit retailer (Heller Orchards). Non-contributing resources are buildings constructed in the recent past and after the historic district's period of significance.

History and Significance

Wapwallopen's early history begins with missionary contact with Delaware and Shawnee groups and later the arrival of agricultural pioneers. European missionaries visited native groups at Wapwallopen in 1744. At that time, John Martin Mack and Christian Fröhlich, Moravian missionaries, called the area Hallobanck. In 1748, John Martin Mack and David Zeisberger noted one family living there. Colonial land grants to tracts in the Wapwallopen area date from 1769. Early Euro-American settlers of German, Swiss, and Alsatian ancestry arrived from Northampton County, Pennsylvania. Nescopeck Township was formed in 1792 after the American Revolution. Local trade in agricultural products and merchandise utilized road networks that connected Wapwallopen to Easton and Philadelphia. Residents established a school in Wapwallopen in 1808. Classes were taught in German. After 1811, Wapwallopen featured a grist mill, a sawmill, and a distillery. A ferry across the Susquehanna River connected Wapwallopen to Beach Haven, and later to the improved transportation networks of the canal and railroad on the opposite shore (Wapwallopen Historical Society 1964: 3, 14-20).

Wapwallopen's domestic economy remained agricultural in character throughout the nineteenth century until the duPont Powder Company recapitalized an existing powder works in 1859. Established in 1856, the Parrish, Silver & Company powder works operated a mill along Wapwallopen Creek until 1859, when bankruptcy forced a sale to the duPont Company. These powder companies profited from the anthracite industry's demand for blasting powder. The duPont Company closed the mill in 1912 (Janosov 1991: 84-85).

The multiple family dwellings in the Wapwallopen Historic District relate to the community's growth from the expansion of the powderworks by duPont. DuPont workers lived here during the powderworks operation. Life in Wapwallopen was closely related to the powderworks. For example, mill explosions frequently caused property damage in Wapwallopen (Janosov 1991: 85).

The ten resources identified along South River Street defined as within the APE for this project contribute to an overall Wapwallopen Historic District. Based on the history of the town's development and its relatively self-contained nature, and based upon the well-preserved extant examples of architectural styles popular in the late 19th and early 20th centuries, the resources that comprise the potential Wapwallopen Historic District are collectively recommended eligible

for NRHP listing under Criteria A and C (see list below, with photo numbers as provided in the PHRS Form—prior submittal). No information could be located that connects this potential historic district to any significant individuals; therefore, it is recommended not eligible for NRHP listing under Criterion B. The recommended boundary of the Wapwallopen Historic District includes the 77 contributing resources, and is bounded the north by the north side of South River Street, on the east by State Route 239, on the south by the south side of South Main Street, and on the west by South Main Street and South River Street, forming a generally triangular shape. This boundary is shown in the revised PHRS form for the district, previously submitted to the PHMC-BHP.

Recommended Contributing Resources

- 1-2. House at 404 S. Church Street and garage (2)
3. House at 406 S. Church Street
4. House at 408 S. Church Street
- 5-6. House at 410 S. Church Street and garage (2)
- 7-8. Holy Trinity Evangelical Lutheran Church and bell (2)
9. St. John's U.C.C. (formerly St. John's Reformed Chapel)
10. House at 476 S. River Street
11. House at 480 S. River Street
- 12-13. House at 484 S. River Street and garage (2)
- 14-16. House at 486 S. River Street, garage, and outbuilding (3)
17. House at 487 S. River Street
18. House at 491 S. River Street
- 19-20. House at 494 S. River Street and garage (2)
- 21-22. House at 409 S. Main Street and shed (2)
23. House at 405 S. Main Street
24. House at 406 S. Main Street
25. House at 409 S. Main Street
- 26-27. House at 410 S. Main Street and garage (2)
- 28-29. House at 411 S. Main Street and garage (2)
30. House at 413 S. Main Street
31. House at 414 S. Main Street
32. House at 416 S. Main Street
- 33-34. House at 417 S. Main Street and garage (2)
35. House at 418 S. Main Street
36. House at 419 S. Main Street
37. House at 421 S. Main Street
38. House at 422 S. Main Street
39. House at 424 S. Main Street
40. House at 426 S. Main Street
41. House at 428 S. Main Street
42. House at 431 S. Main Street
43. House at 432 S. Main Street
44. House at 434 S. Main Street
45. E.R. Heller Milling Company
46. House at Corner of South River Street and South Main Street (Beside Heeler Gas Office)
- 47-49. House at 472 South River Street, garage, garden house, and hothouse (3)
- 50-51. House at 470 South River Street and garage (2)
- 52-53. House at 468 South River Street and garage (2)
- 54-55. House at 466 South River Street and garage (2)
- 56-57. House at 464 South River Street and garage (2)
- 58-59. House at 462 South River Street and garage (2)
- 60-62. House at 458 South River Street, garage, and outbuilding (3)

- 63-64. House at 454 South River Street and garage (2)
- 65-66. House at 452 South River Street and garage (2)
- 67-68. House at 54 Orchard Street and garage (2)
- 69-73. Heller Orchards (Orchard Street), apple house, pole barn, heavy timber frame barn, and granary
- 74. House at 425 South River Street
- 75-76. House at 423 South River Street and a garage (2)
- 77. House at 411 South River Street

We request your review of these responses and your concurrence with our recommendations. If you have any questions, please contact me at 412.476.2000 or via email at h.cole@gaiconsultants.com. We look forward to your timely response.

Sincerely,
GAI Consultants, Inc.



Hannah L. Cole
Senior Architectural Historian

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Bicentennial Committee

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Pennsylvania Department of Agriculture

Pennsylvania State Archives, Harrisburg; record Group 1, Records of the Department of Agriculture; Division of Crop Reporting; Farm Census Returns, 1927, Luzerne, Conyngham.

Pennsylvania Department of Agriculture

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Pennsylvania Department of Agriculture

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NARA

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NARA

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NARA

National Archives, Washington; Record Group 029, National Archives and Records Service, General Services Administration; Federal Decennial Census, 1850, Luzerne, Salem.

NARA

National Archives, Washington; Record Group 029, National Archives and Records Service, General Services Administration; Federal Decennial Census, 1880, Luzerne, Conyngham.

NARA

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Commonwealth of Pennsylvania
Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Commonwealth Keystone Building, 2nd Floor
400 North Street
Harrisburg, PA 17120-0093
www.phmc.state.pa.us

RECEIVED

MAR 22 2010

GAI CONSULTANTS INC.
PROJ. NO. C090204.10

March 17, 2010

CC: JNT
BAM
BR
CF
MPK

TO EXPEDITE REVIEW USE
GHP REFERENCE NUMBER

Hannah L. Cole
GAI Consultants, Inc.
385 E. Waterfront Drive
Homestead, PA 15120-5005

Re: ER 81-0658-079-U
NRC: Bell Bend Power Plant Phase IB Investigations Management
Summary: Historic Resources
Conyngham, Nescopeck, Salem Townships, Luzerne County

Dear Ms. Cole:

The Bureau for Historic Preservation (the State Historic Preservation Office) has reviewed the above named project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended in 1980 and 1992, and the regulations (36 CFR Part 800) of the Advisory Council on Historic Preservation as revised in 1999 and 2004. These regulations require consideration of the project's potential effect upon both historic and archaeological resources.

We concur with the findings of the agency that the following resources are eligible for the National Register of Historic Places.

1. United Reformed & Lutheran Church (Old River Church), Conyngham Township, Luzerne County: This church is an excellent example of the Federal style of architecture and meets National Register criterion C.
2. Woodcrest, 3209 SR 239, Conyngham Township, Luzerne County: This farm is eligible for its local agricultural significance and meets National Register criterion A. It may also be eligible under criterion C, for its architectural significance, however, information and photographs of its interior would need to be submitted to evaluate for this criterion.

We disagree with the findings of the agency concerning the eligibility of the following resource. In our opinion, this resource is eligible for the National Register of Historic Places.

3. North Branch of the Pennsylvania Railroad, Salem Township, Luzerne County: This intact section of the canal reflects the significance of the canal in the mid to late 19th century and therefore is eligible under National Register criterion A.

We concur with the findings of the agency that the following properties are not eligible for the National Register of Historic Places. Based on the information supplied they are not historically or architecturally significant.

4. Thrash Farm, 783 Berwick-Hazleton Highway, Nescopeck Township, Luzerne County
5. Fortner Farm, 212 E. Cherry Road, Nescopeck Township, Luzerne County
6. Croll Farm, 811 River Road, Nescopeck Township, Luzerne County
7. Raber Farm, 950 Berwick-Hazleton Highway, Nescopeck Township, Luzerne County
8. Michaels Farm, 4252 N. Market Street, Salem Township, Luzerne County
9. Heller Farm, 4210 N. Market Street, Salem Township, Luzerne County
10. Valley View Farm, Salem Township, Luzerne County
11. Susquehanna & Tioga Turnpike, Salem Township, Luzerne County
12. Jameson Farm, 62 Kiliti Road, Salem Township, Luzerne County

We disagree with the findings of the agency concerning the National Register eligibility of the following resources. In our opinion, these railroads are not eligible.

13. Pennsylvania & Sunbury Line of the Delaware and Hudson Railroad, Nescopeck Township, Luzerne County: This line was a connection between major Railroad lines of the Pennsylvania Railroad. While Sunbury, Wilkes-Barre and Hazleton Were all major economic centers at the time, it does not make this spur Significant nor played a significant role in the transportation of anthracite coal.
14. The Bloomsburg Division of the Delaware, Lackawanna and Western Railroad, Salem Township, Luzerne County: Based on the information provided the Significance of this section of the DL& W is unproven. It does not appear to have provided significant competition to other railroad lines or to have been an important carrier in relation to other railroads.

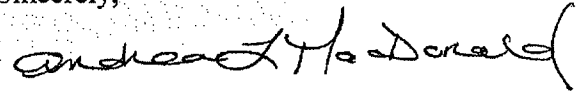
We are unable to complete our review of the following resources until additional information is submitted.

15. Stone Arch Bridge/North Market Street Bridge, Salem Township, Luzerne County: Please supply the correct length measurement of this bridge (see attached guidance for measuring bridges). The submission states that there are only 3 intact stone arch bridges in the county. Our on-line Geographical Information Submission shows that there are over 50 stone arch bridges. Please evaluate this bridge in the context of the bridge survey.
16. Wapwallopen Historic District (potential), Conyngham Township, Luzerne County: Please contact our agency to schedule a site visit to verify the presence and boundaries of a historic district.

Page 3
H. Cole
March 17, 2010

If you need further information in this matter please consult Susan Zacher at (717)
783-9920.

Sincerely,

A handwritten signature in cursive script, reading "Andrea L. MacDonald". The signature is written in dark ink and is positioned to the right of the word "Sincerely,".

Andrea L. MacDonald, Chief
Division of Preservation Services

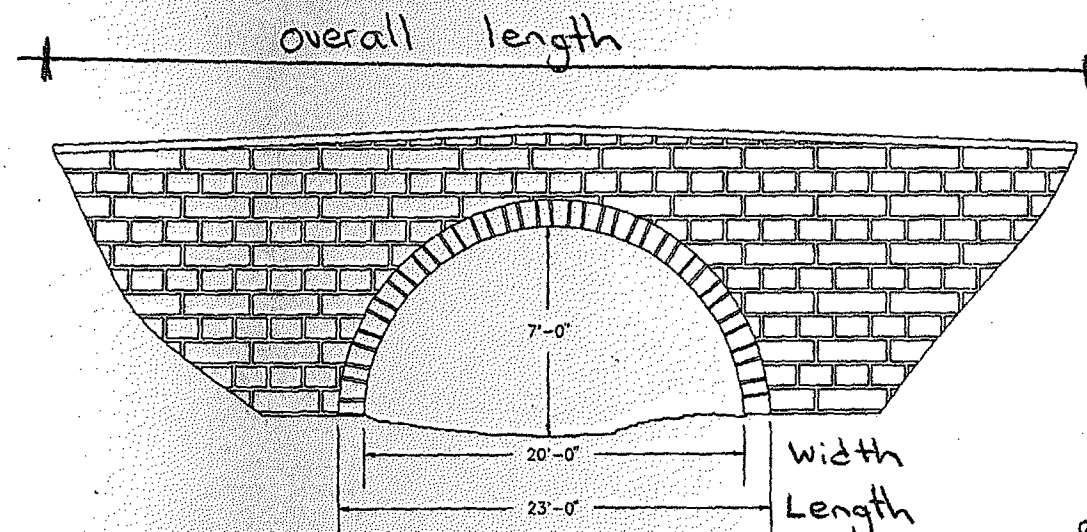
Enclosure
AM/smz

Enclosure for Bridge Measurements

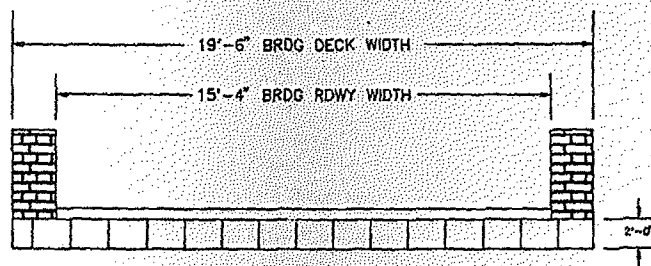
46 7420 0486 2502

Stone Arch Bridge (GAI-06) & North
Market St Bridge (GAI-07), Salem Twp, Luzerne Co

Example for
Bridge Measuring



ELEVATION



SECTION "A-A"

LUZERNE COUNTY		
ROAD AND BRIDGE DEPARTMENT		
BRIDGE # 42502		
NEW COLUMBUS BOROUGH		
DRAWN	CHECKED	DWG
GAS	JJB	2/2
SCALE	DATE	
NOTED	AUGUST-94	

APPENDIX B
Phase Ib and Phase II Workplans

April 25, 2008

GAI Project No. C080204

Lannis N. Selz
Project Manager
Areva NP Inc.
3315 Old Forest Road
Lynchburg, Virginia 24501

Re: Scope of Work
Phase IB Cultural Resources Investigation
Bell Bend Nuclear Power Plant
Luzerne County, Pennsylvania

Dear Mr. Selz:

GAI Consultants, Inc. (GAI) will conduct Phase IB cultural resource investigations of the Bell Bend Nuclear Power Plant (BBNPP) project area in Luzerne County, Pennsylvania, on behalf of UniStar Nuclear Development, LLC (UniStar). The proposed study will include supplemental background research, supplemental architectural survey, archaeological fieldwork, laboratory analysis, and preparation of a Phase IB technical report. As requested, this scope of work also encompasses a 10-mile-radius records search (research and brief report) for the proposed project and out-of-scope items undertaken as part of the previous Phase IA study.

The Bell Bend project area is 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. In June 2007 and January 2008, GAI conducted Phase IA archaeological and geomorphological reconnaissance of potential project locations, totaling approximately 1,271 acres (GAI 2007; Munford and Tuk 2008). Based on refinements in project design provided by Areva NP Inc. (Areva) and Unistar following completion of Phase IA investigations, the Area of Potential Effect (APE) for GAI's Phase IB study is defined as an approximately 600-acre area representing the footprint of the proposed project. The Phase IB APE encompasses the West Alternative (408.3 acres), the Confers Lane Parcel (27.4 acres), and portions of Area 6 (130.1 acres), Area 7 (27.8 acres) and Area 8 (6.1 acres) (Figure A).

The goals of Phase IB investigations are to: 1) identify prehistoric or historic archaeological sites within the project area, and 2) assess their potential eligibility for listing in the National Register of Historic Places (NRHP). Supplemental architectural survey will: 1) define boundaries for the 10 resources recommended as NRHP eligible by GAI's previous architectural survey and 2) inventory one resource--the Heller Farm (GAI-08)--which was inaccessible at the time of previous fieldwork. The goal of the 10-mile radius records search is to identify previously-recorded cultural resources mapped within 10 miles of the project area. GAI will conduct cultural resources work in accordance with the standards and guidelines of the Pennsylvania Historical and Museum Commission/Bureau for Historic Preservation (PHMC-BHP) as provided in the *Guidelines for Archaeological Investigations* (PHMC-BHP 1991).

Work Plan

Task 1—Project Management, Logistics and Meetings

Project management will ensure that assignments are clearly delineated and efficiency is maintained throughout the project. GAI will assist Areva and UniStar in consulting and coordinating with the Pennsylvania Historical and Museum Commission/Bureau of Historic Preservation (State Historic Preservation Office) during the course of the project. As necessary, GAI can also assist Areva and UniStar in consultation with appropriate Native



American tribal entities. This task is expected to include phone calls, preparation of memos involving discussions of project methods and results, and drafting letters.

Task 2—Supplemental Background Research

In support of Phase IB archaeological studies, GAI will conduct background research to gather preliminary information on the five possible archaeological sites identified during Phase IA reconnaissance and on the National Register-eligible North Branch Pennsylvania Canal, which is located within the project APE. As part of this research, GAI will examine historic maps, directories, and county histories available through on-line sources and at local libraries and repositories, including the Luzerne County Courthouse and Luzerne County Historical Society in Wilkes-Barre, and the Columbia County Office of Planning and Development and the Columbia County Historical and Genealogical Society in Bloomsburg. The goal of this task is to identify historic period land uses and to provide contextual information for identification of archaeological resources during the Phase IB archaeological survey.

GAI will also carry out supplemental background research to refine and recommend the NRHP eligibility of four of the architectural and historical resources identified during the initial Phase IA survey: Stone Walls (GAI-02), Union Reformed and Lutheran Church (GAI-03), Heller Farm (GAI-08), and the potential Wapwallopen Historic District (GAI-36 through -45). Research for these resources will be conducted both on-line and at the repositories identified above, as well as at other regional facilities, including the Pennsylvania Room of the Carnegie Library and the Senator John Heinz History Center in Pittsburgh, and the libraries of Penn State University's Wilkes-Barre and Hazleton campuses.

Task 3—Supplemental Architectural Survey

GAI will perform supplemental architectural fieldwork to define the NRHP boundaries for the 10 resources recommended eligible for NRHP listing during the initial architectural survey, performed in concurrence with the Phase IA reconnaissance. This task, in conjunction with supplemental background research, will guide GAI in determining accurate NRHP boundaries for recommended eligible resources. Additionally, GAI will conduct fieldwork to inventory and record the Heller Farm (GAI-08), which was inaccessible during the initial survey, as well as fieldwork to determine the physical extent of and contributing resources within the potential Wapwallopen Historic District (GAI-36 through -45). (Note that access to the Heller Farm property will be required prior to fieldwork. It is not expected that architectural fieldwork will be conducted for any resources beyond those identified above.)

Task 4—Phase IB Archaeological Fieldwork

GAI will conduct Phase IB archaeological field investigations to identify historic or prehistoric archaeological sites in the project APE. Based on the results of GAI's Phase IA reconnaissance (GAI 2007; Munford and Tuk 2008), the 600-acre project area encompasses both upland and low terrace/floodplain settings adjacent to the existing SSES facility, west of the North Branch Susquehanna River. Current land use includes cultivated fields, woodlands, areas of disturbance resulting from prior construction, and wetlands (see Figure A).

Phase IA reconnaissance and project information provided by UniStar indicate variability in the expected depth of cultural resources and in ground surface visibility within the project area. In upland portions of the project, potential cultural resources are expected to be near-surface in nature. In low terrace/floodplain settings within the project area, potential cultural resources may be both near-surface and deeply buried. In terms of ground surface visibility, it is assumed that previously cultivated fields that have been recently plowed and disked will have good ground surface visibility while fallow fields, orchards, and woodlands will have poor visibility.

Additionally, based on information provided by UniStar, the depth of anticipated project impacts is expected to be variable. Deep project impacts (at least 15 feet [4.6m] below surface) will occur in areas of proposed construction, including the power generation unit and intake facility. In portions of the project

APE designated as temporary lay down or equipment storage areas, however, project impacts will be shallow, extending only 6 to 7 inches (15 to 18 cm) below surface.

Due to the project's variability in topographic setting, ground surface visibility and depth of proposed project impacts, Phase IB survey will consist of shovel testing, pedestrian (surface) survey, or deep testing (backhoe trenching and 1x1-meter test units) in areas of moderate to high archaeological potential. Disturbed areas, wetlands, and settings with slopes in excess of 15 percent will be examined by surface walkover but will not be subject to subsurface testing or systematic pedestrian survey. The following section describes Phase IB field methods by general topographic setting.

Upland Settings

Phase IB investigations in moderate to high potential upland portions of the project area will consist of shovel testing or pedestrian ground survey to identify near-surface archaeological sites. GAI will conduct **shovel testing** in upland settings with poor ground surface visibility (West Alternative, Confers Lane Parcel and Area 6). Systematic shovel test pits will be excavated at 15-meter intervals within transects spaced 15-meters apart. Judgmental STPs may be excavated in select areas to confirm the presence of disturbed soils or recent deposits. When artifacts are recovered during survey, GAI archaeologists will excavate additional radial STPs at reduced intervals to evaluate initial findspots and delineate preliminary site dimensions within the project APE. In areas of possible archaeological sites identified during Phase IA reconnaissance, close-interval shovel testing at 3 to 6-meter (10 to 20-foot) intervals will be conducted.

STPs will measure approximately 50x50 cm in diameter and will be hand-excavated by natural stratigraphy. STPs will extend at least 10 cm into the subsoil and 10 cm below the deepest artifact recovery. It is expected that shovel tests in upland areas will extend no more than 50 cm below surface. Excavated soils will be screened through 0.25-inch (6-mm) wire mesh for systematic artifact recovery. Prehistoric and historic artifacts recovered during survey will be bagged and labeled with appropriate provenience information. GAI archaeologists will record results of individual STPs on standardized field forms, including depths of soil horizons, soil texture and Munsell color, and artifact recovery. STP locations will be recorded on project maps. Following excavation and recording, individual STPs will be backfilled. In general, identified cultural resources will be plotted on project maps, documented with photographs, and their location will be recorded using mapping-grade GPS equipment.

GAI will perform **systematic pedestrian surface survey** in previously cultivated upland fields that have been recently plowed and disked to provide good ground surface visibility (West Alternative, Area 6 and Area 7). Archaeologists will systematically walk these areas along transects spaced at 5 to 10-meter intervals. Tools and at least a representative sample of nondiagnostic artifacts (e.g., lithic debris) observed on the ground surface will be plotted on project maps, bagged and provenienced according to appropriate surface collection unit. Judgmental shovel test pits may be excavated in select localities within plowed and disked fields to document soil stratigraphy and assess the presence of subplowzone cultural deposits.

Low Terrace/Floodplain Settings

Moderate to high potential low terrace/floodplain portions of the project APE may contain both near-surface and deeply-buried archaeological sites, potentially requiring deep archaeological testing. In an April 8, 2008, phone conference Barbara Munford (GAI) discussed proposed field investigations with Steve McDougal (PHMC-BHP) and received his concurrence that Phase IB deep testing will not be required in lowland areas with anticipated shallow (~15-18 cm) project impacts (e.g., Areas 7 lay down and equipment storage areas). Phase IB deep testing will be limited to locations of proposed deep project impacts in Area 6 (ca. 15 ft [4.6m] below surface).

As approved by PHMC-BHP (April 8, 2008 phone conference), low terrace/floodplain settings with shallow project impacts (Area 7) will be investigated by pedestrian survey or shovel testing to sample near-surface deposits. **Systematic pedestrian surface survey** (described above) will be conducted in

previously cultivated fields that have been recently plowed and disked to provide good ground surface visibility. Judgmental STPs may be excavated in select localities within these fields.

Systematic shovel testing (also described above) will be performed in areas of poor ground surface visibility within these shallow-impact, low terrace/floodplain settings. Although cultural resources may be deeply buried, STPs in this area will extend up to a depth of approximately 80 cm below surface to sample the upper portion of the soil profile.

In low terrace/floodplain portions of the project APE with proposed deep project impacts (Area 6) GAI will conduct **deep testing**, consisting of backhoe trenches and test unit excavation. Deep testing will begin with the excavation of **backhoe trenches** in select locations to expose soil stratigraphy. GAI's Senior Staff Soil Scientist will examine and record soil profiles of backhoe trenches and will assess the project area's potential for deeply buried cultural deposits and the depth to Pleistocene surfaces.

Based in part on the results of backhoe trenching, GAI will excavate 1x1-meter **test units** to identify near surface and buried archaeological sites in these low terrace/floodplain settings. As required by the *Guidelines for Archaeological Investigations* (PHMC-BHP 1991), GAI will excavate four 1x1-meter test units per acre in these portions of the project APE. For purposes of this workplan, GAI assumes that Pleistocene deposits will be encountered at a depth of no more than 2.3 meters below surface. In the event that a layer of surface fill is documented in the area of proposed test unit excavations, this fill may be mechanically removed prior to test unit excavation.

Test units will be hand-excavated by 10-cm levels according to natural stratigraphy to a depth of approximately 1.5 meter below surface. At the base of each test unit, a shovel test will be excavated an additional 80 cm, for a maximum total depth of approximately 2.3 meters below surface. Excavated soils will be screened through 0.25-inch (6-mm) wire mesh for systematic artifact recovery. Recovered artifacts will be bagged and labeled with appropriate provenience information. GAI archaeologists will record results of excavation levels on standardized field forms noting soil texture and Munsell color, and artifact recovery. Test units will be plotted on project maps and documented with photographs. Following excavation and recording, test units will be backfilled.

Field Assumptions

Based on the results of Phase IA investigations, project information provided by Areva and UniStar, and a review of topographic maps and soils data, GAI assumes that approximately 334 acres of the project APE, consisting of both relatively level to gently sloping uplands (295 acres) and low terrace/floodplains (39 acres) with moderately to well-drained soils, are considered to have a moderate to high archaeological potential and will be subject to Phase IB testing (see Figure A). The remaining approximately 266 acres of the 600-acre project APE will be excluded from Phase IB subsurface testing or systematic pedestrian survey due to prior disturbances (115 acres) or to slopes in excess of 15 percent, wetlands or recent deposits (151 acres).

GAI's Phase IB scope of work is based on the following assumptions:

- Total Phase IB fieldwork includes pedestrian ground survey of 114 acres, and excavation of up to 3,907 STPs, 44 1x1-meter test units, and six (6) backhoe trenches;
- Approximately 199 acres uplands with poor ground surface visibility requiring systematic Phase IB shovel testing (16 STPs per acre); excavation of up to 3,184 15-meter interval STPs, 250 radial STPs and 50 judgmental STPs, for a total of 3,484 STPs;
- 96 acres of recently plowed and disked upland fields requiring systematic pedestrian ground survey and excavation of up to 50 judgmental STPs; [an additional 12 acres of recently plowed and disked upland fields are considered to have low archaeological potential due to eroded soils; these areas will be subject to a pedestrian walkover to confirm eroded nature of soils];

- 18 acres of recently plowed and disked low terrace/floodplain fields with anticipated shallow project impacts requiring systematic pedestrian ground survey and excavation of up to 20 judgmental STPs;
- Approximately 8 acres of low terrace/floodplains with anticipated shallow project impacts and with poor ground surface visibility requiring systematic Phase IB shovel testing (16 STPs per acre); excavation of up to 128 15-meter interval STPs and 25 radial STPs a total of 153 STPs;
- Approximately 11 acres of low terrace/floodplains with proposed deep project impacts requiring deep testing; up to six (6) backhoe trenches to Pleistocene deposits and up to 44 1x1-meter units [four (4) units per acre] to 1.5 m below surface with STP in base of unit to maximum depth of 2.3 m below surface;
- Investigation of five (5) possible archaeological sites located during Phase IA with up to 30 close-interval STPs at each location, for total of 150 close interval STPs;
- Relocation of previously recorded Site 36LU51, requiring excavation of up to 50 close interval STPs for boundary definition;
- Recordation of currently exposed fill prism for portions of the North Branch Pennsylvania Canal located within the project APE;
- Completion of Pennsylvania Archeological Site Survey Form (PASS) for up to seven (7) sites and updating of PASS form for one previously recorded site (36LU51);
- Updating of Pennsylvania Historic Site Survey (PHRS) form for the North Branch Pennsylvania Canal;
- In upland settings cultural resources will be near-surface in nature and shovel tests will extend no more than 50 cm in depth;
- In low terrace/floodplain settings with anticipated shallow depth of proposed impacts shovel tests will extend no more than 80 cm in depth;
- In low terrace/floodplain areas with proposed deep project impacts, hand excavations (test units with STP in base) will extend up to 2.3 meters below surface
- Field logistics associated with the expanse of the 600-acre project area will result in average daily excavation rate of 12 STPs per person per day in upland settings
- Deep shovel testing (to 80 cm below surface) in low terrace/floodplain settings will result in an average daily excavation rate of 8 STPs per person
- Test excavation rate of 0.25 cubic meters per day

Task 5—Laboratory Analysis

Subsequent to Phase IB survey, GAI will conduct laboratory analysis of recovered artifacts to characterize age, type, and function of recovered archaeological remains. Historic and/or prehistoric artifacts recovered during the Phase I survey will be transported to GAI's archaeological laboratory in Homestead, Pennsylvania, and will be processed according to the *Curation Guidelines* of the PHMC-BHP (PHMC-BHP 2005). These materials will be washed, sorted, and labeled with the site number, if appropriate. Prehistoric artifacts will be segregated into material types and functional classes (e.g., lithic tools, debitage, prehistoric pottery) and subjected to typological and technological analyses including the identification of temporal and cultural affiliation, if possible. Historic artifacts will be separated into various material groups, including ceramics, glass, metal, faunal, etc. These artifacts will be cataloged according to established typologies using the class-type-variety method. If possible, historic proveniences will be assigned date ranges, based on the presence of diagnostic artifacts (e.g., bottle technological attributes, ceramic types). The final artifact repository for these materials will be determined in consultation with Areva, UniStar and the PHMC-BHP.

For the purpose of this proposal, GAI assumes the identification of up to seven archaeological sites (five possible sites noted during Phase IA fieldwork and up to two additional sites) and the relocation of one previously recorded site (Site 36LU51). It is assumed that Phase IB investigations will result in the recovery of no more than 1600 artifacts.

Task 6—Report Preparation

GAI will prepare a Phase IB Technical Report on the cultural resources investigation, including results of background research, environmental and historic contexts, Phase IB archaeological fieldwork, and laboratory analysis. The report will contain recommendations regarding the need for additional work, if necessary, the potential National Register eligibility of any archaeological resources identified in the project area (GAI assumes up to eight sites), and whether portions of the North Branch Pennsylvania Canal within the project APE contribute to its overall NRHP eligibility. Report appendices will include completed Pennsylvania Archaeological Site Survey (PHRS) forms for identified site(s) (GAI assumes completion of seven new site forms and one site form update) and a catalog of recovered artifacts. The Phase IB study, artifact analysis, and report preparation will be conducted in accordance with the *Guidelines for Archaeological Investigations* (PHMC-BHP 1991).

GAI assumes the completion of the following project deliverables:

- Five (5) hardcopies and electronic copy of Draft Report for client review;
- Five (5) hardcopies of Final Report, as well as disc with PDF, within two (2) weeks of receipt of comments on Draft Report;
- Project records (photographs, maps, notes, etc.) submitted to the client or PHMC-BHP as requested by client upon submittal of Final Report

Task 7—10-Mile Records Search

Per your request, GAI will complete a 10-Mile radius cultural resources files and records search for the Bell Bend Nuclear Power Plant. This study will include research as well as preparation of a brief report, to be submitted separately from the Phase IB Technical Report.

GAI will conduct a files and records search to identify previously recorded cultural resources (archaeological sites and architectural resources) within a 10-mile radius of the CCNPP project area. GAI will examine archaeological site files, historic structure files and National Register listings available through the PHMC-BHP's on-line CRGIS database and at the PHMC-BHP offices in Harrisburg. GAI will also examine cultural resource files at county and local repositories including the Luzerne County Courthouse and Luzerne County Historical Society in Wilkes-Barre and the Columbia County Office of Planning and Development and the Columbia County Historical and Genealogical Society in Bloomsburg.

For each previously-recorded resource in the study area, GAI will collect available information on location, resource description, land status, National Register of Historic Places status (including SHPO concurrence, when available), and its listing on state, county or local registers or inventories.

Based on initial review of PHMC-BHP's CRGIS data, the current scope of work assumes that up to 500 previously-recorded cultural resources will be located within the 10-mile-radius study area. GAI's recent background research for the Phase IA reconnaissance of the project area identified 24 previously recorded archaeological sites within a 1-mile (1.6-kilometer) radius of the APE and five architectural resources within approximately 0.5 miles (0.8 kilometers) of the APE. Because GAI already has information for 29 resources, it will be necessary to collect data on approximately 471 previously recorded cultural resources within the 10-mile radius study area. This scope is based on the following assumptions:

- Up to 500 *previously-recorded cultural resources* will be located within the 10-mile-radius study area.
- Data collection will be required for up to 471 *previously-recorded cultural resources*.

GAI will prepare a brief report on the records search which will include a description of methodology, a table listing resources identified and the data collected, and color maps illustrating the location of each previously identified resource. This report will be submitted as a separate document.

Task 8—Out-of-Scope Phase IA Work

This task encompasses out-of-scope work required in support of Phase IA investigations. GAI's expanded Phase IA scope of work dated January 23, 2008, estimated up to 20 architectural resources over 50 years of age within the project viewshed. Architectural survey of the project viewshed, conducted in January 2008, identified a total of 52 architectural resources, or 32 more resources than estimated. This task includes additional work associated with documentation and completion of Pennsylvania Historic Resource forms for each of these 32 resources.

As requested by UniStar in support of the February 2008, Nuclear Regulatory Commission's Readiness Assessment site visit, GAI also prepared a power point presentation on the methods and results of cultural resources studies at the project area. This task includes out-of-scope work required for preparation, review and revisions to this presentation.

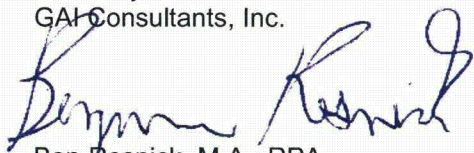
Cost and Schedule

GAI can complete this Phase IB cultural resource investigation, as described above, for a cost of XXXXXXXXX. Assuming initiation of fieldwork in early May, Phase IB archaeological fieldwork will require 57 field days (approximately 12 calendar weeks). Laboratory analysis will take approximately three (3) weeks and will be performed, in part, concurrently with fieldwork. GAI will submit the Phase IB technical report ten (10) weeks after completion of fieldwork.

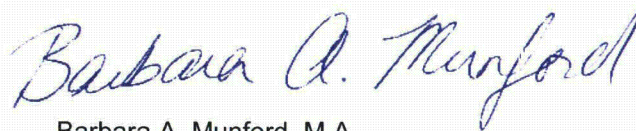
The 10-mile records search will be conducted concurrently with Phase IB fieldwork. It is anticipated that data collection will extend for approximately three (3) weeks followed by approximately eight (8) weeks of report preparation. The brief report on results of the 10-mile records search will be submitted separately from, and prior to, the Phase IB technical report

If you have any questions, please do not hesitate to contact me at (412) 476-2000 x1200 (b.resnick@gaiconsultants.com) or Barbara Munford at (412) 476-2000 x1203 (b.munford@gaiconsultants.com). We look forward to continuing to provide you with cultural resources services for this project.

Sincerely,
GAI Consultants, Inc.



Ben Resnick, M.A., RPA.
Group Manager, Cultural Resources
/bam



Barbara A. Munford, M.A.
Principal Investigator

References

GAI Consultants, Inc.

- 2007 *Final Letter Report, Phase IA Cultural Resources Reconnaissance of PPL Lands in the Vicinity of Susquehanna Steam Electric Station, Luzerne County, Pennsylvania.* Prepared by GAI Consultants, Inc. for Constellation Power Generation and UniStar Nuclear Development LLC.

Munford, Barbara A. and Jared N. Tuk

- 2008 *Technical Report, Phase IA Cultural Resources Reconnaissance, Berwick, PA NPP-1, Areas 6, 7, 8 and Confers Lane Parcel, Luzerne County, Pennsylvania.* Prepared by GAI Consultants, Inc. for Areva NP Inc. and UniStar Nuclear Development LLC.

Pennsylvania Historical and Museum Commission/Bureau of Historic Preservation

- 1991 *Cultural Resource Management in Pennsylvania: Guidelines for Archaeological Investigations.* PHMC-BHP, Harrisburg.
- 2005 *Curation Guidelines: Preparing Archaeological Collections for Submission to the State Museum of Pennsylvania.* PHMC-BHP, Harrisburg.

May 29, 2009

GAI Project No. C080204.00

Mr. David F. Sullivan, P.E.
Project Manager—Bell Bend Nuclear Project
UniStar Nuclear Energy
750 East Pratt Street
Baltimore, Maryland 21202

Re: Revised Scope of Work
Phase II National Register Evaluations of Archaeological Sites 2, 3, 4, 5, 7, 9, and 10
(36LU279, 36LU280, 36LU281, 36LU288, 36LU283, 36LU285, and 36LU286) and
Assessment of Effects for Historic Resources
Bell Bend Nuclear Power Plant
Luzerne County, Pennsylvania
ER 81-0658-079

Dear Mr. Sullivan:

GAI Consultants, Inc. (GAI) is pleased to submit this revised scope of work to UniStar Nuclear Energy (UniStar) to conduct Phase II National Register Evaluations of archaeological Sites 2, 3, 4, 5, 7, 9, and 10 (36LU279, 36LU280, 36LU281, 36LU288, 36LU283, 36LU285, and 36LU286) and an Assessment of Effects for historic resources at the Bell Bend Nuclear Power Plant (BBNPP), Luzerne County, Pennsylvania, on behalf of UniStar Nuclear Development, LLC. These cultural resources lie within the Area of Potential Effect (APE) of the 893-acre proposed project area located 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. GAI identified these resources during Phase Ib survey of the proposed project area in 2008 (Munford et al. 2008, Munford 2008).

The goal of GAI's Phase II archaeological study is to evaluate the eligibility of Sites 2, 3, 4, 5, 7, 9, and 10 (36LU279, 36LU280, 36LU281, 36LU288, 36LU283, 36LU285, and 36LU286) for listing in the National Register of Historic Places (NRHP). The Assessment of Effects will evaluate the proposed project's effects on ten NRHP-eligible historic resources: Union Reformed and Lutheran Church (Old River Church) and Cemetery (GAI-03, 086572), Woodcrest (GAI-04), Stone Arch Bridge (GAI-06), North Market Street Bridge (GAI-09), North Branch Pennsylvania Canal (GAI-10, 141673), Canadian Pacific/Bloomsburg Division of the Delaware, Lackawanna & Western Railway (GAI-11), Susquehanna and Tioga Turnpike (GAI-12), House (Red Brick Studios) (GAI-26), Pennsylvania Railroad-Sunbury Line/Delaware & Hudson Railroad (GAI-27), and the Wapwallopen Historic District (GAI-36 through GAI-45).

GAI's Phase II investigations will include site-specific archival research, fieldwork, laboratory analysis, and technical report preparation. This work will be 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 the *Guidelines for Archeological Investigations in Pennsylvania* (PHMC/BHP 2008). These proposed project tasks are described below.

Workplan

Task 1: Project Management/Section 106 Coordination/Meetings

At various points in the proposed project, GAI will assist UniStar in consulting and coordinating with the Pennsylvania Historical and Museum Commission/Bureau for Historic Preservation (PHMC/BHP). This is expected to include phone calls and preparation of memos involving discussions of project methods and results, drafting letters, and attendance at up to one (1) meeting either on-site or in Harrisburg, Pennsylvania.

Task 2: Archival Research

Prior to Phase II field investigations, GAI will conduct site specific archival research for each of the six historic period archaeological sites (Sites 2, 3, 4, 7, 9, and 10/36LU279, 36LU280, 36LU281, 36LU283, 36LU285, and 36LU286). This work will include a chain-of-title and census research for each of the properties and a detailed review of pertinent historic maps available at the Luzerne County Historical Society, Luzerne County Courthouse, and Osterhout Free Library (Wyoming Valley Historical and Genealogical Society) in Wilkes-Barre; the Luzerne County Community College Local History Reading Room in Nanticoke; the McBride Memorial Library Local History Reading Room in Berwick; the Columbia County Historical and Genealogical Society in Bloomsburg; and the Pennsylvania State Archives in Harrisburg. Additional sources such as tax records and appropriate published and unpublished histories will also be consulted and will be used to illustrate the historical development of the project area. The collected research will also enhance the existing historical context to support NRHP eligibility recommendations for architectural and historical resources such as the Pennsylvania Railroad-Sunbury Line/Delaware & Hudson Railroad, Lackawanna & Bloomsburg Railroad, the Susquehanna & Tioga Turnpike, two stone arch bridges, the United Reformed & Lutheran Church, the North Branch of the Pennsylvania Canal, and the Wapwallopen Historic District, as requested by the Pennsylvania Historical and Museum Commission Bureau for Historic Preservation (October 28, 2008, project review letter).

Task 3: Archaeological Fieldwork

Prior to the start of Phase II field investigations sites will be prepared either by plowing and disking or by brush clearing, as appropriate. Four of the seven Phase II sites (Sites 2, 3, 4, and 5/36LU279, 36LU280, 36LU281, and 36LU288) are located within previously cultivated fields which will be plowed and disked to produce adequate visibility for subsequent surface collection. The three sites (Sites 7, 9 and 10/36LU283, 36LU285 and 36LU286), situated in wooded or brush/grass-covered settings, will be cleared with a brush hog and/or by hand to expose surface features and structural remains. Mechanical removal of a surface gravel layer will also be required in portions of Site 10 (36LU286) to permit hand excavations.

Following site preparation at each site, GAI surveyors will establish a grid over the site using a total station. The grid will be tied into a permanent datum. Subsequent excavations will be designated by coordinates within this grid. Where possible, Phase Ib shovel tests will be relocated and plotted according to the Phase II grid system.

For sites situated in cultivated fields (Sites 2, 3, 4, and 5/36LU279, 36LU280, 36LU281 and 36LU288), fieldwork will begin with a Phase II surface collection of each recently plowed and disked site area. This task is performed in accordance with state guidelines (PHMC/BHP 2008) that require at least two surface collections of potentially eligible sites (including the Phase I surface collection). Each site will be gridded into 5-meter (15-foot) collection blocks and artifacts observed on the surface will be collected and provenienced by block. Diagnostic artifacts will be point provenienced, as appropriate. Based on the results of surface collection, judgmental STPs will be excavated to sample artifact concentrations or locations of possible cultural features within the site area.

Phase II fieldwork for sites in wooded and/or brush-covered settings (Sites 7, 9 and 10/36LU283, 36LU285 and 36LU286) will begin with a metal detector survey, where appropriate. GAI will conduct a metal detector survey within portions of Sites 7 and 9 (36LU283 and 36LU285) to assist in identifying subsurface remains. Metal detector survey will not be performed within Site 10 (36LU286) due to the remains of surface gravel, which is expected to be present after the mechanical removal of the majority of this deposit. The metal detector survey identifies metal "hits" or "targets" and will be used in areas which may contain former structures. These "targets" will be sampled by excavating a small pit at "target" locations, using a post hole digger. Each sample location will be identified by coordinates within the site grid. The soil from each sample pit will be screened through 0.6-mm (0.25-inch) mesh and recovered artifacts will be retained for laboratory analysis.

Due to low ground surface visibility, close-interval shovel testing will be required within Sites 7, 9 and 10 (36LU283, 36LU285 and 36LU286) to refine site boundaries within the project APE and to delineate within-site artifact concentrations. GAI will excavate shovel test pits at 5-meter (15-foot) intervals within transects spaced 5-meters (15-feet) apart. STPs will measure approximately 50x50 cm (1.5 x 1.5 feet) in diameter and will be hand-excavated by natural strata into the subsoil.

Based on the results of shovel testing or surface collection, GAI will excavate test units in areas of higher artifact density, unusual stratigraphy or potential cultural features within each of the seven Phase II sites. Test unit excavations will serve to define site stratigraphy, sample artifact concentrations and/or activity areas, determine the potential for subsurface features, and assess the integrity of archaeological remains. At each historic period site (Sites 2, 3, 4, 7, 9, and 10/36LU279, 36LU280, 36LU281, 36LU283, 36LU285, and 36LU286) test units will consist of a combination of 1.5-meter (5 x 5-foot) and 1.5 x 0.75 meter (5 x 2.5-foot) units. Test units at prehistoric Site 5 (36LU288) will measure 1x1-meter (3x3-feet). Test units will be hand-excavated in 10-cm (0.3-foot) levels according to natural stratigraphy and will extend into subsoil. At the completion of each test unit, measured profiles will be drawn and photographs taken of at least one wall of each unit.

Due to the upland setting of Sites 2, 3, 4, 7, 9, and 10 (36LU279, 36LU280, 36LU281, 36LU283, 36LU285, and 36LU286), cultural resources in these localities will be near-surface in nature and excavations are anticipated to extend to a maximum depth of 50 cm (1.6 feet). Site 5 (36LU288), located on a low terrace/floodplain, has a potential for deeply buried cultural resources, however, due to the proposed shallow (15-18 cm) project impacts anticipated from use of this locality as a temporary laydown area, excavations will extend to a maximum depth of 80 cm (2.6 feet). Phone consultation with Steve McDougal (PHMC/BHP) on April 8, 2008, resulted in PHMC/BHP's concurrence on this excavation depth.

For both STPs and test units, excavated soils will be screened through 6-mm (0.25-inch) hardware cloth for systematic artifact recovery. Recovered artifacts will be bagged and labeled with appropriate provenience information. GAI archaeologists will record results of individual STPs and test units on standardized field forms, including depths of soil horizons, soil texture and Munsell color, and artifact recovery. Testing locations will be plotted on project maps and documented with photographs. Following excavation and recording, STPs and test units will be backfilled.

Following test unit excavations at the four sites in cultivated fields (Sites 2, 3, 4, and 5/36LU279, 36LU280, 36LU281, and 36LU288), mechanical removal of plowzone strips will be conducted in portions of these sites to expose cultural features at the plowzone/subsoil interface. A backhoe with a flat blade will be used to remove the plowzone in approximately 2-meter (6.5-foot)-wide strips to the top of the B horizon. This activity will be monitored by GAI personnel. Plowzone strips will be plotted on project maps and documented with photographs. Hand shovel-scraping of these strips will be conducted to define and delineate features.

Potential cultural features identified during testing will be troweled clean, cross-sectioned and documented in plan view and profile with measured drawings and photographs. As appropriate, a portion of the feature fill will be collected as a flotation sample and the remaining feature fill will be screened through 6-mm (0.25-inch) hardware cloth. Artifacts and samples collected from the feature fill will be bagged and labeled with appropriate provenience information. The feature will be recorded on a

standardized GAI Feature Form and plotted on project maps. Features are assumed to have a maximum dimension of 60 cm (2 feet) and a maximum depth of 50 cm (2.5 feet); if deep features (e.g. wells, privies) are encountered, GAI will sample only the upper few feet of feature fill.

Excavations (e.g. STPs, TUs, plowzone strips) will be backfilled upon completion. GAI will coordinate plans for plowing/disking and mechanical clearing activities with UniStar.

For purposes of this proposal GAI estimates the excavation of a total of up to 965 STPs and 76 test units (approximately 63 m³); identification of up to 45 features; surface collection of approximately 11 acres (four sites); plowzone stripping/hand shovel scraping of approximately 4,350 m² (four sites); and metal detector survey at two sites. As noted above, due to the upland setting of six of the seven sites, GAI assumes that cultural resources at these sites will be near-surface in nature and test excavations will extend no more than 50 cm (1.6 feet) in depth. Although Site 5 is situated in a low terrace/floodplain setting with a potential for deeply buried cultural resources, due to the anticipated shallow depth of proposed project impacts (15 to 18 cm) in this locality, excavations will extend to a maximum depth of 80 cm (2.6 feet).

The field effort at each of the seven sites is anticipated to consist of the following:

- Site 2 (36LU279)—plow/disc 0.7 acres, surface collection, 20 judgmental STPs, 8 units [4 1.5x1.5-meter (5x5-foot) and 4 1.5x0.75-meter (5x2.5-foot) units], 5 features, plowzone stripping/hand shovel scraping of 300 m², mapping, backfill;
- Site 3 (36LU280)—plow/disc 0.2 acres, surface collection, 10 judgmental STPs, 4 units [2 1.5x1.5-meter (5x5-foot) and 2 1.5x0.75-meter (5x2.5-foot) units], 5 features, plowzone stripping/hand shovel scraping of 100 m², mapping, backfill;
- Site 4 (36LU281)—plow/disc 0.3 acres, surface collection, 20 judgmental STPs, 8 units [4 1.5x1.5-meter (5x5-foot) and 4 1.5x0.75-meter (5x2.5-foot) units], 5 features, plowzone stripping/hand shovel scraping of 150 m², mapping, backfill;
- Site 5 (36LU288)—plow/disc 9.4 acres, surface collection, 50 judgmental STPs, 20 1x1-meter (3x3-foot) units, 5 features, plowzone stripping/hand shovel scraping of 3,800 m², mapping, backfill;
- Site 7 (36LU283)—brush hog/hand clearing, metal detector survey, 300 5-meter (15-foot) interval STPs, 12 units [6 1.5x1.5-meter (5x5-foot) and 6 1.5x0.75-meter (5x2.5-foot) units], 10 features, mapping, backfill;
- Site 9 (36LU285)—brush hog/hand clearing, metal detector survey, 65 5-meter (15-foot) interval STPs, 8 units [4 1.5x1.5-meter (5x5-foot) and 4 1.5x0.75-meter (5x2.5-foot) units], 5 features, mapping, backfill;
- Site 10 (36LU286)—brush hog/hand clearing, mechanical removal of gravel, 500 5-meter (15-foot) interval STPs, 16 units [8 1.5x1.5-meter (5x5-foot) and 8 1.5x0.75-meter (5x2.5-foot) units], 10 features, mapping, backfill.

Task 4: Laboratory Analysis

Subsequent to Phase II fieldwork, GAI will conduct laboratory analysis of recovered artifacts to characterize age, type, and function of recovered archaeological remains. Artifacts recovered during Phase II testing will be transported to GAI's archaeological laboratory in Homestead, Pennsylvania, and will be processed according to the *Revised Curation Guidelines* (PHMC/BHP 2006). These materials will be washed, sorted, and labeled with the site number, if appropriate. Historic artifacts will be separated into various material groups, including ceramics, glass, metal, faunal, etc. These artifacts will be cataloged according to established typologies using the class-type-variety method. If possible, historic proveniences will be assigned date ranges, based on the presence of diagnostic artifacts (e.g., bottle technological attributes, ceramic types). Soil flotation samples collected from feature fill will be processed to recover small specimens such as seeds, nuts or small bones. Select samples will be analyzed to identify archaeobotanical materials. The final artifact repository for these materials will be determined in consultation with UniStar and the PHMC/BHP.

For the purpose of this proposal, GAI assumes the recovery of a total of up to 9,000 artifacts and the processing of up to 45 flotation samples. These totals are based on the following assumptions for each site:

- Site 2 (36LU279)—1,000 artifacts, 5 flotation samples
- Site 3 (36LU280)—800 artifacts, 5 flotation samples
- Site 4 (36LU281)—2,000 artifacts, 5 flotation samples
- Site 5 (36LU288)—500 artifacts, 5 flotation samples
- Site 7 (36LU283)—2,200 artifacts, 10 flotation samples
- Site 9 (36LU285)—500 artifacts, 5 flotation samples
- Site 10 (36LU286)—2,000 artifacts, 10 flotation samples

Task 5: Combined Phase I/II Technical Report Preparation

GAI will prepare a combined Phase I/II Technical Report on the previous Phase Ib survey of the project area and the Phase II National Register Evaluations of Sites 2, 3, 4, 5, 7, 9, and 10 (36LU279, 36LU280, 36LU281, 36LU288, 36LU283, 36LU285, and 36LU286). The report will include methods and results of background research, historic context, archaeological fieldwork, and laboratory analysis. It will present recommendations regarding the NRHP eligibility of these archaeological sites and, if necessary, the need for additional work (i.e. Phase III Data Recovery Investigations). The report will also contain a summary of architectural and historical investigations, including the results of supplemental work to provide additional context for resource evaluation. Final recommendations of NRHP eligibility for the identified architectural and historical resources will be presented, as will recommendations for the need to conduct additional work to evaluate project effects on NRHP-listed and/or -eligible resources. Report appendices will include updated Pennsylvania Archaeological Site Forms and catalogs of recovered artifacts, as well as revised Pennsylvania Historic Resource Survey (PHRS) forms.

The Phase II field investigation, artifact analysis, and Phase I/II report preparation will be conducted in accordance with National Register Criteria and guidelines contained in *National Register Bulletin 15—How to Apply the National Register Criteria for Evaluation* (National Park Service 1998) and *National Register Bulletin 21—Defining Boundaries for National Register Properties* (National Park Service 1997).

GAI assumes the completion of the following project deliverables:

- Five (5) hardcopies and electronic copy of Draft Report for client review;
- Five (5) hardcopies of Final Report, as well as disc with PDF and MS Word files, within two (2) weeks of receipt of comments on Draft Report;
- Project records (photographic negatives, maps, notes, etc.) submitted to the Client or PHMC/BHP as requested by Client upon submittal of Final Report.

Task 6: Assessment of Effects—Historic Resources

Based on the results of GAI's Phase Ia and Ib surveys and recommendations outlined in the Phase Ib Management Summary (Munford et al. 2008), GAI assumes that ten historic resources within the project APE will be considered eligible for NRHP listing: Union Reformed and Lutheran Church (Old River Church) and Cemetery (GAI-03, 086572), Woodcrest (GAI-04), Stone Arch Bridge (GAI-06), North Market Street Bridge (GAI-09), North Branch Pennsylvania Canal (GAI-10, 141673), Canadian Pacific/Bloomsburg Division of the Delaware, Lackawanna & Western Railway (GAI-11), Susquehanna and Tioga Turnpike (GAI-12), House (Red Brick Studios) (GAI-26), Pennsylvania Railroad-Sunbury Line/Delaware & Hudson Railroad (GAI-27), and the Wapwallopen Historic District (GAI-36 through

GAI-45). GAI will conduct a formal assessment of the project's effects to these historic resources under 36CFR800.5.

The assessment of effects study will include archival research, fieldwork, and report preparation. Archival research will include detailed site-specific historical research to firmly establish the historic context for assessing project effects to each specific historic resource, according to methods outlined in *National Register Criteria and guidelines contained in National Register Bulletin 15—How to Apply the National Register Criteria for Evaluation (National Park Service 1998)*, *National Register Bulletin 21—Defining Boundaries for National Register Properties (National Park Service 1997)*, and any other applicable state guidelines.

Fieldwork will involve visits to each of the ten NRHP-eligible historic resources to assess the project's effects, based on the contextual and site-specific background information. GAI will consider proposed construction activities in relation to each historic resource. GAI will conduct a visual impact assessment by photographing the location of proposed nuclear power plant buildings and transmission lines from each of the ten aforementioned historic resources. Computer modeling and rendering techniques will be employed to produce visual simulation images illustrating "before" and "after" visual conditions in the project area. The nature and extent of possible adverse effects to each resource will be carefully considered by applying the Criteria of Adverse Effect (36 CFR 800.5(a)(1)) to determine if any direct or indirect effects to the historic resource will result from the proposed project (National Park Service 1992a and 1992b).

GAI will prepare a Criteria of Effects report to be submitted under separate cover following submittal of and comments on the Combined Phase I/II Technical Report. The report will include results of archival research, fieldwork, and the application of the Criteria of Adverse Effect, as well as recommendations for avoidance, mitigation, or further consultation.

Cost Proposal and Schedule

GAI can conduct Phase II National Register Evaluations of Sites 2, 3, 4, 5, 7, 9, and 10 (36LU279, 36LU280, 36LU281, 36LU288, 36LU283, 36LU285, and 36LU286) and an assessment of effects for historic resources, as delineated above, for a not-to-exceed cost of \$XXXXXXXX. In the event that Site 5 (36LU288) can be avoided by project impacts the cost will be reduced by \$XXXXXXXX, resulting in a not-to-exceed cost of \$XXXXXXXX for Phase II investigations of six sites. This cost includes the preparation of a combined Phase I/II Technical Report and a separate Criteria of Effects report. Based on the assumptions stated in the workplan, it is anticipated that fieldwork will extend for a period of approximately twelve (12) calendar weeks. Laboratory work and report preparation will take approximately twenty-five (25) calendar weeks and will, in part, run concurrently with fieldwork. GAI will submit a Preliminary Draft Phase I/II Technical Report within twenty-two (22) calendar weeks following the end of fieldwork. The Criteria of Effects report will be submitted under separate cover following receipt of comments from the PHMC/BHP.

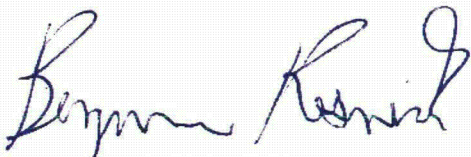
Costs are based on the workplan described above as well as the following assumptions:

- One mobilization/demobilization for all fieldwork;
- Field crew consisting of Senior Archaeologist (field director), 2 Senior Technicians (crew chiefs), and 12 technicians;
- 8-hour work day;
- 10-day work sessions with lodging provided for crew over 4-day break, when necessary;
- Fieldwork includes clearing, mapping, metal detector survey, surface collection, plowzone stripping/hand shovel scraping, excavation (STPs, test units and features) and travel;
- Excavation of up to 965 STPs and up to 76 test units (approximately 63 m³);
- STP and test unit excavations will extend to a maximum depth of 50 cm (1.6 feet) in uplands and to a maximum depth of 80 cm (2.6 feet) in low terrace/floodplain settings (Site 5/36LU288);

- Identification of up to 45 features; features are assumed to have maximum dimensions of 60 cm (2 feet) and a maximum depth of 50 cm (1.6 feet); if deep features (e.g. wells, privies) are encountered, GAI will sample only the upper few feet of feature fill;
- Sites in cultivated fields (Sites 2, 3, 4, and 5/36LU279, 26LU280, 36LU281 and 36LU288) will be plowed and disked prior to start of Phase II fieldwork;
- Cost assumes no crop damages will be incurred and no crop removal will be required;
- Mechanical removal of surface gravel deposit in portions of one site (Site 10/36LU286);
- Costs for writing and implementation of Erosion and Sedimentation (E&S) Control plan (stabilization, reseeding, inspection, etc.) associated with mechanical soil removal are not included in this cost;
- Curation rates of \$350 per box (as per PHMC/BHP requirements);
- No extreme weather conditions or winter fieldwork (e.g., frozen ground or flooding);
- No more than two (2) days of down time due to inclement weather;
- Submittal of a Combined Phase I/II Technical Report (no management summary or interim report) including one round of report revisions;
- Submittal of a separate Assessment of Effects report.

If you have any questions, please do not hesitate to contact me at (412) 476-2000 x1200 (b.resnick@gaiconsultants.com) or Barbara Munford at (412) 476-2000 x1203 (b.munford@gaiconsultants.com). We look forward to working with you and continuing to provide UniStar with cultural resources services for the Bell Bend project.

Sincerely,
GAI Consultants, Inc.



Ben Resnick, M.A., RPA
Group Manager
Cultural Resources Group
/bam



Barbara A. Munford, M.A.
Lead Archaeologist
Cultural Resources Group

References

Munford, Barbara

2008 *Management Summary, Supplemental Phase Ib Cultural Resources Investigation, Bell Bend Nuclear Power Plant, Luzerne County, Pennsylvania*. Prepared by GAI Consultants, Inc. for AREVA NP Inc. and UniStar Nuclear Development, LLC.

Munford, Barbara A., Lori A. Frye, M.A., Jared N. Tuk, and Matthew G. Hyland, Ph.D

2008 *Management Summary, Phase Ib Cultural Resources Investigation, Bell Bend Nuclear Power Plant, Luzerne County, Pennsylvania*. Prepared by GAI Consultants, Inc. for AREVA NP Inc. and UniStar Nuclear Development, LLC.

National Park Service

1992a *National Register Bulletin 15 – How to Apply the National Register Criteria for Evaluation*. Department of the Interior, National Park Service, Washington, D.C.

1992b *National Register Bulletin 21 – Defining Boundaries for National Register Properties*. Department of the Interior, National Park Service, Washington, D.C.

Pennsylvania Historical and Museum Commission/Bureau for Historic Preservation

2006 *Revised Curation Guidelines*. Harrisburg, Pennsylvania.

Pennsylvania Historical and Museum Commission/Bureau for Historic Preservation

2008 *Guidelines for Archaeological Investigations in Pennsylvania*. Harrisburg, Pennsylvania.

APPENDIX C
BHP Report Summary Form



Archaeological Report Summary Form

ER# _____
DATE 10/13/2010

PROJECT CHECKLIST: Please fill out a copy of this checklist and include it with your initial report submission, (including with management summaries or draft reports). This form may be downloaded and expanded as needed, but please do not eliminate any fields.

1. **Report Title** Phase I Cultural Resources Investigations and Phase II National Register Site Evaluations, Bell Bend Nuclear Power Plant, Luzerne County, Pennsylvania, Prepared for UniStar Nuclear Development, LLC, by GAI Consultants, Inc. Homestead, Pennsylvania.
2. **PI** Barbara A. Munford and Lori A. Frye (☒ MA, ☐ PhD) / **Firm** or Institution
GAI Consultants, Inc.

3. **Report Date** (Month/Day/Year) October 11, 2010

4. **Number of Pages** 680 + appendices

5. **Agency Name** NRC Federal ☒ State ☐

6. **Project Area County/Municipality** (list all)

County	Municipality
Luzerne	Salem Township

7. **Project Area Drainage(s)**, (list all)

Sub-basin	Watershed
Central Susquehanna (Number 5)	Toby-Wapwallopen Creek (B) Nescopeck Creek (D)

8. **Project Area Physiographic Zone(s)** (list All) (Use DCNR Map 13 compiled by W.D. Sevon, Fourth Edition, 2000.)

Physiographic Zone
Ridge and Valley Province, Susquehanna Lowlands Section



Archaeological Report Summary Form

ER# _____
DATE 6/3/2010

9. **Report Type** (some reports are combinations, check as many as apply to this report)

- | | |
|---|---|
| <input type="checkbox"/> Phase IA/Sensitivity Study | <input checked="" type="checkbox"/> Historic Structures |
| <input checked="" type="checkbox"/> Phase I | <input type="checkbox"/> Geomorphology |
| <input checked="" type="checkbox"/> Phase II | <input type="checkbox"/> Determination of Effects |
| <input type="checkbox"/> Phase III | <input type="checkbox"/> Other _____ |

10. **Total Project Area** 365 hectares

11. **Low Probability/Disturbed Areas** 176 hectares = 48 % of project area

12. **Phase I Methods used for total project** (check as many as apply)

- ☒ shovel tests, ☐ controlled test units/deep tests,
☒ surface survey, ☐ informant interview, ☒ other: backhoe trenching/soil coring/mechanically-excavated 1x1-m column samples -- floodplain deep testing

13. **Total Number of Sites** Encountered/Phase I eleven (11)

Total Sites Tested/Phase II seven (7)

Total Sites Excavated/Phase III _____

14. Updated PASS Information: Please complete an updated PASS form **for each site** reported by this report. Updated forms need only include the new information and the site number and name.

15. PASS Site Specific Information: In addition, the following pages must also be completed **for each site**. Complete only the portions that pertain to the current report. If the report is a stand-alone Phase II, you do not need to fill in the Phase I methods, since they should have been included in the summary form for the previous report.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36LU278

A. Phase I Methods (how the site was located - check as many as apply)

- | | |
|---|---|
| <input type="checkbox"/> shovel tests, | <input type="checkbox"/> controlled test units/deep tests, |
| <input checked="" type="checkbox"/> surface survey, | <input type="checkbox"/> informant interview, |
| <input type="checkbox"/> test | <input checked="" type="checkbox"/> other: <u>judgmental shovel</u> |

B. Phase II Methods

- ☐ controlled surface collection
- ☐ controlled excavation w. screening of plowzone, > 5 units
- ☐ mechanical stripping of plowzone (_____%)
- ☐ deep excavation units
- ☐ remote sensing
- ☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

C. Phase III Methods

- ☐ controlled surface collection
- ☐ controlled excavation w. screening of plowzone, > 5 units
- ☐ mechanical stripping of plowzone _____%
- ☐ deep excavation
- ☐ block excavations
- ☐ remote sensing
- ☐ environmental reconstruction (soils, floral, pollen)
- ☐ dietary reconstruction (floral, faunal)
- ☐ intensive lithic analysis (functional)
- ☐ intensive lithic analysis (technological)
- ☐ raw material sourcing
- ☐ ceramic analysis (seriation)
- ☐ ceramic analysis (functional)
- ☐ blood residue
- ☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☒ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☐ ineligible☐ disturbed☐ ephemeral occupation☐ redundant information☒ undatable☒ other (specify): low density, limited range of artifact types**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State
Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

☐ curation agreement enclosed

☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

☐ expanded documentation enclosed for items retained

☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

☐ letter from owner indicating desire to retain collection

- or -

☐ agency or representative discussed donation option with owner on _____(date)

- and -

☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36LU279

A. Phase I Methods (how the site was located - check as many as apply)

- | | |
|--|---|
| <input type="checkbox"/> shovel tests, | <input type="checkbox"/> controlled test units/deep tests, |
| <input checked="" type="checkbox"/> surface survey,
test pits | <input type="checkbox"/> informant interview, <input checked="" type="checkbox"/> other: <u>judgmental shovel</u> |

B. Phase II Methods

- ☒ controlled surface collection
- ☒ controlled excavation w. screening of plowzone, > 5 units
- ☒ mechanical stripping of plowzone (_____%)
- ☐ deep excavation units
- ☐ remote sensing
- ☒ other 53 shovel test pits

square meters of site tested: 260.5 sq. m

% of site area tested: 6.5 %

C. Phase III Methods

- ☐ controlled surface collection
- ☐ controlled excavation w. screening of plowzone, > 5 units
- ☐ mechanical stripping of plowzone _____%
- ☐ deep excavation
- ☐ block excavations
- ☐ remote sensing
- ☐ environmental reconstruction (soils, floral, pollen)
- ☐ dietary reconstruction (floral, faunal)
- ☐ intensive lithic analysis (functional)
- ☐ intensive lithic analysis (technological)
- ☐ raw material sourcing
- ☐ ceramic analysis (seriation)
- ☐ ceramic analysis (functional)
- ☐ blood residue
- ☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

- NR Eligibility recommendation
☐ eligible, ☒ ineligible, ☐ undetermined
- reasons for determination (check as many as apply; expand as needed)

- ☐ eligible: Criterion A. Explain _____
☐ eligible: Criterion B. Explain _____
☐ eligible: Criterion C. Explain _____
☐ eligible: Criterion D:
☐ settlement patterning (intersite patterning)
☐ intrasite artifact patterning
☐ features
☐ radiocarbon dating
☐ organic preservation
☐ evidence of culture change through time
☐ stratified ☐ temporally discrete clusters
☐ burials/human remains
☐ technological
☐ economics
☐ ethnicity
☐ dietary
☐ other(specify): _____
- ☒ ineligible
☐ disturbed
☐ ephemeral occupation
☐ redundant information
☐ undatable
☒ other (specify): no features; plowzone context

E. Artifacts/Collections

- ☒ will be donated to the State Museum of Pennsylvania
☐ gift agreement from private owner enclosed
- or -
☐ transfer of responsibility from State Agency enclosed
☐ election of repository from Federal Agency enclosed
☒ artifacts washed/marked/cataloged following State
Museum guidelines
-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

☐ curation agreement enclosed

☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

☐ expanded documentation enclosed for items retained

☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

☐ letter from owner indicating desire to retain collection

- or -

☐ agency or representative discussed donation option with owner on _____(date)

- and -

☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36LU280

A. Phase I Methods (how the site was located - check as many as apply)

- | | |
|---|---|
| <input type="checkbox"/> shovel tests, | <input type="checkbox"/> controlled test units/deep tests, |
| <input checked="" type="checkbox"/> surface survey, | <input type="checkbox"/> informant interview, |
| <input type="checkbox"/> test pits | <input checked="" type="checkbox"/> other: <u>judgmental shovel</u> |

B. Phase II Methods

- ☒ controlled surface collection
- ☐ controlled excavation w. screening of plowzone, > 5 units
- ☒ mechanical stripping of plowzone (10.7%)
- ☐ deep excavation units
- ☐ remote sensing
- ☒ other 61 shovel test pits, 4 test units

square meters of site tested: 197 sq. m

% of site area tested: 12 %

C. Phase III Methods

- ☐ controlled surface collection
- ☐ controlled excavation w. screening of plowzone, > 5 units
- ☐ mechanical stripping of plowzone _____%
- ☐ deep excavation
- ☐ block excavations
- ☐ remote sensing
- ☐ environmental reconstruction (soils, floral, pollen)
- ☐ dietary reconstruction (floral, faunal)
- ☐ intensive lithic analysis (functional)
- ☐ intensive lithic analysis (technological)
- ☐ raw material sourcing
- ☐ ceramic analysis (seriation)
- ☐ ceramic analysis (functional)
- ☐ blood residue
- ☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☒ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☒ ineligible☐ disturbed☐ ephemeral occupation☐ redundant information☐ undatable☒ other (specify): no deep shaft features or foundations, plowzone context, lack of discrete temporally diagnostic deposits**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

☐ curation agreement enclosed

☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

☐ expanded documentation enclosed for items retained

☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

☐ letter from owner indicating desire to retain collection

- or -

☐ agency or representative discussed donation option with owner on _____(date)

- and -

☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36LU281

A. Phase I Methods (how the site was located - check as many as apply)

- | | |
|---|---|
| <input type="checkbox"/> shovel tests, | <input type="checkbox"/> controlled test units/deep tests, |
| <input checked="" type="checkbox"/> surface survey,
<u>test pits</u> | <input type="checkbox"/> informant interview, <input checked="" type="checkbox"/> other: <u>judgmental shovel</u> |

B. Phase II Methods

- ☒ controlled surface collection
- ☒ controlled excavation w. screening of plowzone, > 5 units
- ☒ mechanical stripping of plowzone (7.5%)
- ☐ deep excavation units
- ☐ remote sensing
- ☒ other 81 shovel tests; 8 test units

square meters of site tested: 208.8 sq. m

% of site area tested: 9 %

C. Phase III Methods

- ☐ controlled surface collection
- ☐ controlled excavation w. screening of plowzone, > 5 units
- ☐ mechanical stripping of plowzone _____%
- ☐ deep excavation
- ☐ block excavations
- ☐ remote sensing
- ☐ environmental reconstruction (soils, floral, pollen)
- ☐ dietary reconstruction (floral, faunal)
- ☐ intensive lithic analysis (functional)
- ☐ intensive lithic analysis (technological)
- ☐ raw material sourcing
- ☐ ceramic analysis (seriation)
- ☐ ceramic analysis (functional)
- ☐ blood residue
- ☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☒ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☒ ineligible☐ disturbed☐ ephemeral occupation☐ redundant information☐ undatable☒ other (specify): bulk of artifacts from disturbed fill context or plowzone;
artifacts cannot be associated with specific historic occupation**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State
Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

☐ curation agreement enclosed

☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

☐ expanded documentation enclosed for items retained

☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

☐ letter from owner indicating desire to retain collection

- or -

☐ agency or representative discussed donation option with owner on _____(date)

- and -

☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36LU282

A. Phase I Methods (how the site was located - check as many as apply)

- | | |
|---|---|
| <input type="checkbox"/> shovel tests, | <input type="checkbox"/> controlled test units/deep tests, |
| <input checked="" type="checkbox"/> surface survey, | <input type="checkbox"/> informant interview, |
| <u>test pits</u> | <input checked="" type="checkbox"/> other: <u>judgmental shovel</u> |

B. Phase II Methods

- ☐ controlled surface collection
- ☐ controlled excavation w. screening of plowzone, > 5 units
- ☐ mechanical stripping of plowzone (_____%)
- ☐ deep excavation units
- ☐ remote sensing
- ☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

C. Phase III Methods

- ☐ controlled surface collection
- ☐ controlled excavation w. screening of plowzone, > 5 units
- ☐ mechanical stripping of plowzone _____%
- ☐ deep excavation
- ☐ block excavations
- ☐ remote sensing
- ☐ environmental reconstruction (soils, floral, pollen)
- ☐ dietary reconstruction (floral, faunal)
- ☐ intensive lithic analysis (functional)
- ☐ intensive lithic analysis (technological)
- ☐ raw material sourcing
- ☐ ceramic analysis (seriation)
- ☐ ceramic analysis (functional)
- ☐ blood residue
- ☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☒ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☒ ineligible☐ disturbed☒ ephemeral occupation☐ redundant information☒ undatable☐ other (specify): _____**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State
Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

☐ curation agreement enclosed

☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

☐ expanded documentation enclosed for items retained

☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

☐ letter from owner indicating desire to retain collection

- or -

☐ agency or representative discussed donation option with owner on _____(date)

- and -

☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36LU283

A. Phase I Methods (how the site was located - check as many as apply)

- | | |
|---|---|
| <input checked="" type="checkbox"/> shovel tests, | <input type="checkbox"/> controlled test units/deep tests, |
| <input type="checkbox"/> surface survey, | <input type="checkbox"/> informant interview, <input type="checkbox"/> other: _____ |

B. Phase II Methods

- ☐ controlled surface collection
- ☒ controlled excavation w. screening of plowzone, > 5 units
- ☐ mechanical stripping of plowzone (_____%)
- ☐ deep excavation units
- ☐ remote sensing
- ☒ other 310 shovel tests, 12 test units

square meters of site tested: 97.8 sq. m

% of site area tested: 0.64 %

C. Phase III Methods

- ☐ controlled surface collection
- ☐ controlled excavation w. screening of plowzone, > 5 units
- ☐ mechanical stripping of plowzone _____%
- ☐ deep excavation
- ☐ block excavations
- ☐ remote sensing
- ☐ environmental reconstruction (soils, floral, pollen)
- ☐ dietary reconstruction (floral, faunal)
- ☐ intensive lithic analysis (functional)
- ☐ intensive lithic analysis (technological)
- ☐ raw material sourcing
- ☐ ceramic analysis (seriation)
- ☐ ceramic analysis (functional)
- ☐ blood residue
- ☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☒ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☒ ineligible☒ disturbed☐ ephemeral occupation☐ redundant information☐ undatable

☒ other (specify): lack of deep shaft features, artifacts recovered from disturbed deposits, cannot segregate artifacts from various time periods ,lack of discrete temporally diagnostic deposits

E. Artifacts/Collections☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State

Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

- ☐ curation agreement enclosed
☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

- ☐ expanded documentation enclosed for items retained
☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

- ☐ letter from owner indicating desire to retain collection

- or -

- ☐ agency or representative discussed donation option with owner on _____(date)

- and -

- ☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36LU284

A. Phase I Methods (how the site was located - check as many as apply)

- ☒ shovel tests, ☐ controlled test units/deep tests,
☐ surface survey, ☐ informant interview, ☐ other: _____

B. Phase II Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

C. Phase III Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____ %
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☒ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☒ ineligible☒ disturbed☐ ephemeral occupation☐ redundant information☐ undatable☒ other (specify): mixed mid to late 20th century and modern artifacts, 20th century well/cistern feature, localized fill deposits**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

☐ curation agreement enclosed

☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

☐ expanded documentation enclosed for items retained

☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

☐ letter from owner indicating desire to retain collection

- or -

☐ agency or representative discussed donation option with owner on _____(date)

- and -

☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36LU285

A. Phase I Methods (how the site was located - check as many as apply)

- ☒ shovel tests, ☐ controlled test units/deep tests,
☐ surface survey, ☐ informant interview, ☐ other: _____

B. Phase II Methods

- ☐ controlled surface collection
☒ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☒ other 108 STPs, 12 test units

square meters of site tested: 46.4 sq. m

% of site area tested: 1.4 %

C. Phase III Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____ %
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☒ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☒ ineligible☒ disturbed☐ ephemeral occupation☐ redundant information☐ undatable☐ other (specify): _____**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State
Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

☐ curation agreement enclosed

☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

☐ expanded documentation enclosed for items retained

☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

☐ letter from owner indicating desire to retain collection

- or -

☐ agency or representative discussed donation option with owner on _____(date)

- and -

☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36LU286

A. Phase I Methods (how the site was located - check as many as apply)

- ☒ shovel tests, ☐ controlled test units/deep tests,
☐ surface survey, ☐ informant interview, ☐ other: _____

B. Phase II Methods

- ☐ controlled surface collection
☒ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☒ other 502 STPs, 16 test units

square meters of site tested: 152.5 sq. m

% of site area tested: 1.1 %

C. Phase III Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____%
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☒ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☒ ineligible☒ disturbed☐ ephemeral occupation☐ redundant information☐ undatable☒ other (specify): lack of deep shaft features and discrete temporally diagnostic deposits**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

☐ curation agreement enclosed

☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

☐ expanded documentation enclosed for items retained

☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

☐ letter from owner indicating desire to retain collection

- or -

☐ agency or representative discussed donation option with owner on _____(date)

- and -

☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36LU287

A. Phase I Methods (how the site was located - check as many as apply)

- ☒ shovel tests, ☐ controlled test units/deep tests,
☐ surface survey, ☐ informant interview, ☐ other: _____

B. Phase II Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone (_____%)
☐ deep excavation units
☐ remote sensing
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

C. Phase III Methods

- ☐ controlled surface collection
☐ controlled excavation w. screening of plowzone, > 5 units
☐ mechanical stripping of plowzone _____ %
☐ deep excavation
☐ block excavations
☐ remote sensing
☐ environmental reconstruction (soils, floral, pollen)
☐ dietary reconstruction (floral, faunal)
☐ intensive lithic analysis (functional)
☐ intensive lithic analysis (technological)
☐ raw material sourcing
☐ ceramic analysis (seriation)
☐ ceramic analysis (functional)
☐ blood residue
☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☒ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☒ ineligible☐ disturbed☒ ephemeral occupation☐ redundant information☐ undatable☐ other (specify): _____**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State
Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

☐ curation agreement enclosed

☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

☐ expanded documentation enclosed for items retained

☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

☐ letter from owner indicating desire to retain collection

- or -

☐ agency or representative discussed donation option with owner on _____(date)

- and -

☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

15. PASS Site Specific Information

Please complete the following **for each site** reported by this report.

PASS NUMBER 36LU288

A. Phase I Methods (how the site was located - check as many as apply)

- | | |
|---|---|
| <input checked="" type="checkbox"/> shovel tests, | <input type="checkbox"/> controlled test units/deep tests, |
| <input checked="" type="checkbox"/> surface survey, | <input type="checkbox"/> informant interview, <input type="checkbox"/> other: _____ |

B. Phase II Methods

- ☒ controlled surface collection
- ☒ controlled excavation w. screening of plowzone, > 5 units
- ☒ mechanical stripping of plowzone (17.7%)
- ☐ deep excavation units
- ☐ remote sensing
- ☐ other _____

square meters of site tested: 7154 sq. m

% of site area tested: 17.8 %

C. Phase III Methods

- ☐ controlled surface collection
- ☐ controlled excavation w. screening of plowzone, > 5 units
- ☐ mechanical stripping of plowzone _____%
- ☐ deep excavation
- ☐ block excavations
- ☐ remote sensing
- ☐ environmental reconstruction (soils, floral, pollen)
- ☐ dietary reconstruction (floral, faunal)
- ☐ intensive lithic analysis (functional)
- ☐ intensive lithic analysis (technological)
- ☐ raw material sourcing
- ☐ ceramic analysis (seriation)
- ☐ ceramic analysis (functional)
- ☐ blood residue
- ☐ other _____

square meters of site tested: _____ sq. m

% of site area tested: _____ %

Recommendations (normally completed only after Phase II):

-- NR Eligibility recommendation

☐ eligible, ☒ ineligible, ☐ undetermined

-- reasons for determination (check as many as apply; expand as needed)

☐ eligible: Criterion A. Explain _____☐ eligible: Criterion B. Explain _____☐ eligible: Criterion C. Explain _____☐ eligible: Criterion D:☐ settlement patterning (intersite patterning)☐ intrasite artifact patterning☐ features☐ radiocarbon dating☐ organic preservation☐ evidence of culture change through time☐ stratified ☐ temporally discrete clusters☐ burials/human remains☐ technological☐ economics☐ ethnicity☐ dietary☐ other(specify): _____☒ ineligible☐ disturbed☒ ephemeral occupation☒ redundant information☐ undatable☒ other (specify): extremely low-density artifact scatter; temporallydiagnostic artifacts cannot be segregated horizontally or vertically; bulk of assemblage recovered from plow-disturbed contexts; small, localized areas of intact cultural deposits**E. Artifacts/Collections**☒ will be donated to the State Museum of Pennsylvania☐ gift agreement from private owner enclosed**- or -**☐ transfer of responsibility from State Agency enclosed☐ election of repository from Federal Agency enclosed☒ artifacts washed/marked/cataloged following State Museum guidelines

-- collection will be submitted by _____(date)

- ☐ will be donated to other approved repository (**this option must be negotiated with the BHP and State Museum or stated as stipulation in MOA**)

☐ curation agreement enclosed

☐ artifacts washed/marked/cataloged following host guidelines

-- collection will be submitted by _____(date)

- ☐ will be retained by land owner (☐ whole or ☐ partial collection)

☐ expanded documentation enclosed for items retained

☐ proof enclosed that owner was notified of the option to

donate the collection to the State Museum and chose to retain the collection:

☐ letter from owner indicating desire to retain collection

- or -

☐ agency or representative discussed donation option with owner on _____(date)

- and -

☐ copy of letter and certified letter receipt indicating that the owner was offered this option in writing.

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APPENDIX D
Updated Pennsylvania Archaeological Site Survey Forms

REDACTED all of Appendix D

APPENDIX E
Updated Pennsylvania Historic Resource Survey Forms

REDACTED all of Appendix E

APPENDIX F

Qualifications of Key Personnel

Barbara A. Munford

Principal Investigator

Education

1982 M.A. Anthropology George Washington University

1977 B.A. Anthropology American University

Affiliation

Member, West Virginia Archaeology Society, Eastern States Archaeological Federation

Areas of Specialization

Prehistory of the eastern and southwestern United States; lithic analysis; collections management; field and laboratory methods.

Professional Experience

Principal Investigator

2010

- Principal Investigator. Phase II National Register Site Evaluations, Nine Mile Point Nuclear Station, Proposed Unit 3 (NMP Unit 3), Oswego County, New York, for UniStar Nuclear Energy, LLC.

2009

- Principal Investigator. Phase I Cultural Resources Investigations and Phase II National Register Site Evaluations, Calvert Cliffs Nuclear Power Plant, Calvert County, Maryland, for UniStar Nuclear Development, LLC.
- Co-Principal Investigator and Report Co-Author. Phase Ib Archaeological Survey, Rural Valley Pipeline Project, Armstrong, Westmoreland, Elk, and McKean Counties, Pennsylvania, for Dominion Transmission, Inc.
- Co-Principal Investigator and Primary Author. Supplemental Phase Ib Archaeological Survey, NIJUS-0002 MD-101 Pipeline Project, Morris Township, Greene County, Pennsylvania, for Equitable Gathering, LLC.
- Co-author. Phase Ib Archaeological Survey, Rural Valley Pipeline Project, Armstrong, Westmoreland, Elk, and McKean Counties, Pennsylvania, for Dominion Transmission, Inc.
- Data Recovery Plan: Site 18Cv474, Calvert Cliffs Nuclear Power Plant, Calvert County, Maryland, for UniStar Nuclear Development, LLC.

2008

- Phase Ib Cultural Resources Investigation, Bell Bend Nuclear Power Plant, Luzerne County, Pennsylvania, for UniStar Nuclear Development, LLC.
- Phase I Cultural Resources Investigations and Phase II National Register Site Evaluations, Calvert Cliffs Nuclear Power Plant, Calvert County, Maryland, for UniStar Nuclear Development, LLC.
- Phase I Cultural Resources Survey, Limestone Compressor Station and Pipeline Project, Clarion County, Pennsylvania, for Equitable Gas.
- Phase IA Cultural Resources Reconnaissance, Susquehanna Steam Electric Station, Luzerne County, Pennsylvania, for Constellation Power Generation.
- Phase I Cultural Resources Survey, Franklin 20-inch Storage Pipeline Project, Wayne and Summit Counties, Ohio, for Dominion East Ohio Gas.

- Phase IA Cultural Resources Reconnaissance, Berwick PA NPP-1, Areas 6, 7, and 8, and Confers Lane Parcel, Luzerne County, Pennsylvania, for Areva NP, Inc. and UniStar Nuclear Development, LLC.

2007

- Phase I Cultural Resources Survey, Dominion East Ohio Storage Expansion Project, Wayne and Summit Counties, Ohio, for Dominion Resources Services, Inc.
- Phase Ib Archaeological Survey, Falling Water Development Project, Monongalia County, West Virginia, for Backwater Properties, LLC.
- Phase I Cultural Resources Survey, Limestone Compressor Station and Pipeline Project, Clarion County, Pennsylvania, for Equitable Gas Company.
- Phase I Cultural Resources Survey, Keystone Station Water Pipeline Project, Armstrong County, Pennsylvania, for Reliant Energy Northeast Management.
- Phase Ia Cultural Resources Reconnaissance, Carrie Furnaces Redevelopment Project, Allegheny County, Pennsylvania, for Redevelopment Authority of Allegheny County.
- Phase I Cultural Resources Survey, Glade Run Loop 138kV Line, Armstrong County, Pennsylvania, for Allegheny Power.
- Phase Ia Cultural Resources Investigation, Majestic Star Casino, Pittsburgh, Allegheny County, Pennsylvania, for Chester Engineers.
- Phase I Cultural Resources Investigation, Calvert Cliffs Nuclear Power Plant, Calvert County, Maryland, for Tetra Tech NUS and UniStar Nuclear Development, LLC.

2006

- Phase I Survey of the Cove Point LNG Terminal Expansion, Calvert County, MD, for Dominion Cove Point LNG LP.
- Phase I Cultural Resources Survey, Bald Eagle II Wetlands Mitigation Project, Cove Point Expansion PL-1 EXT-2, Centre County, Pennsylvania, for Dominion Transmission, Inc.
- Phase I Cultural Resources Survey, Swann Wetland Development Project, Cove Point Expansion TL-532 Pipeline Project, Calvert County, Maryland, for Dominion Cove Point LNG, LP.
- Phase I Archaeological Survey, Wal-Mart Supercenter #4501-00, West Brownsville Borough, Washington County, Pennsylvania, for Wal-mart Stores, Inc.
- Phase I Cultural Resources Survey, State Line Pipeyard Project, Cove Point Expansion TL-453 and TL-536 Pipeline, Allegany County, New York, for Dominion Transmission, Inc., Clarksburg, West Virginia.
- Phase I/II Archaeological Investigations, MEMCO/AEP Riverbank Restoration Project, Mason County, West Virginia, for Madison Coal and Supply Company

2005

- Phase Ib Survey of the Graysville-Wind Ridge Area water system extension, Greene County, PA for Southwestern Pennsylvania Water Authority.
- Phase Ia Cultural Resources Survey of Oakbrooke Estates, Cecil Township, Washington County, Pennsylvania, for Oakbrooke Muse Partners, LP.

2004

- Phase Ia Archaeological Reconnaissance and Geomorphology Assessment of the Kirwan Heights Interchange and Collier Crossing Development, Collier Township, Allegheny County, Pennsylvania, for the Goldenberg Group, Inc.

- Archaeological Monitoring of PPL Gas Utilities First Quality Pipe Installation along SR 1002 on Great Island, Lock Haven, Clinton County, Pennsylvania, for PPL Gas Utilities.
- Phase I Cultural Resources Survey of the Cove Point LNG Terminal Expansion, Calvert County, Maryland, for Dominion Cove Point LNG, LP.
- Phase I Archaeological Survey of Access Roads 10B, 10C, 10D and 68, TL-263 12" Natural Gas Pipeline Repair Project, Wyoming and Boone Counties, West Virginia, for Dominion Transmission, Inc. (DTI).
- Phase Ia Archaeological Reconnaissance of the Mockingbird Compressor Station Access Road Widening, Wetzel County, West Virginia, for Dominion Transmission, Inc. (DTI).
- Phase I Archaeological Survey of the Sophia Storage Yard, TL-263 12" Natural Gas Pipeline Repair Project, Raleigh County, West Virginia, for Dominion Transmission, Inc. (DTI).
- Phase Ib Archaeological Survey of the Graysville-Wind Ridge Area Water System Extension, Greene County, Pennsylvania, for Bankson Engineers and the Southwestern Pennsylvania Water Authority.
- Phase II National Register Evaluation of Site 46Hm63, Romney Bridge Replacement, Hampshire County, West Virginia, for the West Virginia Department of Transportation, Division of Highways.

2003

- Phase Ib Archaeological Survey of the Romney Bridge Replacement, Hampshire County, West Virginia, for the West Virginia Department of Transportation, Division of Highways.
- Phase I, II, and III Investigations of Appalachian Corridor L (U.S. 19) and EIS for a 24-mile, Four-lane Highway, for the WVDOH.
- Phase I Survey of Two Project Areas (Wetlands Mitigation Area and Soil Borrow Area) for the Brunner Island Steam Electric Station, York County, PA, for the Pennsylvania Power and Light Company.
- Phase Ib Archaeological and Geomorphological Survey, Romney Bridge Replacement, Preferred Alternative 6, Hampshire County, WV for WVDOH.
- Phase Ib Survey of the U.S. Route 19/Lochgelly Interchange and WV 16 Reconnection, Fayette County, WV for Kimley-Horn and WVDOH.
- Phase I Cultural Resources Survey of U.S. Route 35 Wetland Mitigation Sites 3, 5A and 8, Mason County, West Virginia, for Kimley-Horn and Associates, Inc. and the West Virginia Department of Transportation, Division of Highways.

2002

- Phase Ia and Ib Surveys of the Federal #2 Mine, Monongalia County, WV, for Eastern Associated Coal Company.
- Phase Ia Survey (Archaeological and Historical Services) for the Tolsia Wetlands Mitigation Site MII-3, Wayne County, West Virginia, for Kimley-Horn and Associates, Inc. and WVDOH.
- Phase I Survey of the Burrell Township Sewer Authority, Strangford Area Project, Indiana County, PA, for the U.S. COE-Pittsburgh District.
- Phase III Data Recovery Investigation of Site 46Ni252, an Early Archaic through Middle/Late Woodland occupation, Nicholas County, WV, for the WVDOH.

1990-2001

- Phase III Data Recovery Investigations of Site 46Ni267, a Woodland Occupation, Nicholas County, WV. WVDOH.
- Phase I Survey of the York Haven Bypass Road, York County, Pennsylvania, for the Pennsylvania Power and Light Company.
- Archaeological Testing and Data Recovery Investigations of the Altoona Railroaders Memorial Museum, Blair County, PA for the National Park Service.

- Archaeological Testing and Data Recovery Investigations of the Fort Necessity National Battlefield, Fayette County, PA for the National Park Service.
- Phase II/III testing of the Legion Ville site (36BV33), historic component, Harmony Township, Beaver County, PA for B.P. Mouradian.
- Phase I Survey of the East Towanda to East Sayre Transmission Line, Bradford County, PA for the Pennsylvania Electric Company.
- Phase I Survey of the York Haven Bypass Road, York County, Pennsylvania, for the Pennsylvania Power and Light Company
- Phase I Deep Testing of the Gas Pipeline between State Route 66 and the Latrobe Steel Plant, Westmoreland County, for Clinton Gas Marketing Inc.
- Field Director: Phase I survey of the Leidy Loop, Centre County, Pennsylvania, for Texas Eastern Gas Pipeline Company.
- Phase I survey of the Coal Preparation Plant and Refuse Facilities Area, Permit #0-5010-90. Mingo County, West Virginia, for Laurel Creek Company, Inc. and Esmer and Associates, Inc.
- Phase I Survey of U.S. Route 35 Wetland Mitigation sites 3, 5A and 8, Mason County, WV for Kimley-Horn and WVDOT.
- Co-P.I. Phase II Archaeological Evaluation of the Ruolo Horse Farm Site (36Mc70) and the Taylor-Pinney Site (36Po34) in McKean and Potter counties, PA for Dominion Transmission, Inc.

Lori A. Frye, M.A., RPA

Lead Archaeologist

Education

1976 B.A. University of Pittsburgh, Anthropology Department, emphasis Archaeology
1982 M.A. Western Kentucky University, Folk Studies Department, emphasis Historic Preservation
1992 M.A. Arizona State University, Anthropology Department, emphasis Archaeology

Certification

Registered Professional Archaeologist (RPA)

Relevant Training/Courses

Advanced Project Management Training, GAI Consultants, Inc., 2009
ASFE Fundamentals of Professional Practice, 2008

Areas of Specialization

Ms. Frye exceeds the minimum Secretary of Interior's Standards for a prehistoric archaeologist. She has dual masters' degrees, and more than 25 years' extensive experience in Southwest Pennsylvania and the Upper Ohio River Valley region, along with projects in Maryland, Virginia, West Virginia, and Ohio. Ms. Frye served as the Government Principal Investigator for the Leetsdale project and, as a result, has experience: (1) working with multiple contractors working on a stratified site along the Ohio River; (2) reviewing regional lithic and ceramic analysis, as well as faunal, paleoethnobotanical, geomorphological, and spatial analyses associated with this project. Ms. Frye also reviewed draft reports for three separate contractors for the Leetsdale site excavations (Area 1, Area 2, and Area 3), which were submitted by the contractors to the Pittsburgh District. Ms. Frye's current duties also entail managing fieldwork with multiple contractors; i.e., ongoing PI/PM duties at Fort Campbell with field crews from multiple firms, coordinating efforts with Fort Campbell, USCOE Louisville, and Aerostar and report preparation.

Historical Archaeology Teaching Experience

Adjunct Faculty, Mt. St. Mary's College, History Department, Emmittsburg, Maryland
Fall 1999 Industrial Archaeology
Winter 2000 Industrial Archaeology Lab
Fall 2001 Historical Archaeology

Project Manager/Principal Investigator (Sample of Projects)

2010

- Report: Historic Analysis. Phase II National Register Site Evaluations, Nine Mile Point Nuclear Station, Proposed Unit 3 (NMP Unit 3), Oswego County, New York, for UniStar Nuclear Energy, LLC.

2009

- Principal Investigator. Data Recovery Plan: Site 18Cv474, Calvert Cliffs Nuclear Power Plant, Calvert County, Maryland, for UniStar Nuclear Development, LLC.
- Principal Investigator. Phase I Cultural Resources Assessment, Upper Ohio Navigation Study, Emsworth, Dashields, and Montgomery Locks and Dams, Allegheny & Beaver Counties, Pennsylvania, for Aerostar (USACE Pittsburgh District).
- Co-Principal Investigator. Phase I Cultural Resources Investigations and Phase II National Register Site Evaluations, Calvert Cliffs Nuclear Power Plant, Calvert County, Maryland, for UniStar Nuclear Development, LLC.
- Project Manager/Principal Investigator. Phase II Investigations of the Dun Glen Hotel Site for the Fire Suppression System, Fayette County, West Virginia, for National Park Service-NERI.

2008

- Principal Investigator. Phase I Cultural Resources, Pursley Transmission Line, Center Township, Greene County, Pennsylvania, for Allegheny Power.
- Principal Investigator, Phase Ib/II Archaeological Investigations, Fairmont to I-79 Gateway Corridor and Interchange, Alternatives A and A1, City of Fairmont, Marion County, West Virginia, for HNTB and WVDOH.
- Principal Investigator. Cultural Resource Investigations, Naval Recreation Center, Calvert County, Solomons, Maryland. Client: TetraTech NUS, Inc.
- Principal Investigator, Phase I/II Archaeological Investigations, North Shore Connector Project, City of Pittsburgh, Allegheny County, Pennsylvania. Client: North Shore Constructors (Obabyashi/Trumbull JV) and Port Authority of Allegheny County.
- Principal Investigator, Phase I Archaeology and Geomorphology Survey, Proposed 502 Junction Substation, Trans-Allegheny Interstate Line, Dunkard Township, Greene County, Pennsylvania. Client: Power Engineers, Inc., Hailey, Idaho.

2007

- Lead Archaeologist, Phase IA Archaeological and Architectural Reconnaissance, M.P. 149.5-155.5, Preliminary Design, Bedford County, Pennsylvania, for Pennsylvania Turnpike Commission.
- Phase III Data Recovery Excavations at Site 18Cv151 Calvert County, Maryland, Cove Point Expansion Project. Report prepared for Dominion Transmission, Inc., Clarksburg, West Virginia.
- Fort Ethan Allen Cultural Landscape Documentation Report, Arlington, Virginia. Client: Arlington Heritage Alliance, Arlington, Virginia.
- Archaeological Data Recovery at Nuttallburg Mine Conveyor, New River Gorge National River, Fayette County, West Virginia. Client: National Park Service, Denver Service Center, Denver, Colorado.
- Phase I Cultural Resource Survey and Geomorphology Investigation for Proposed O-1821 New Pipeline Project, Cambridge, Guernsey County, Ohio. Client: Columbia Gas Transmission, Charleston, West Virginia.

2006

- Phase IB Archaeological Survey for the Proposed Westmoreland Distribution Park II, Parcel B, East Huntingdon and Hempfield Townships, Westmoreland County, Pennsylvania. Client: Westmoreland County Industrial Development Corporation, Greensburg, Pennsylvania.
- Phase I Cultural Resource Survey, Proposed SL 2057/SL 2492 Pipeline Replacement Project, Lagrange and Lagrange Township, Lorain County, Ohio. Client: Columbia Gas Transmission.
- Phase I Archaeological Survey for the Proposed D-36 Pipeline Replacement Project, New Riegel, Seneca County, Ohio. Report prepared for Columbia Gas Transmission, Charleston, West Virginia.

2005

- Phase Ib Archaeological Survey, 189-acre Parcel within Proposed Westmoreland Distribution Park, East Huntingdon Township, Westmoreland County, Pennsylvania. Client: Westmoreland County Industrial Development Corporation, Greensburg, Pennsylvania.
- Phase I Archaeological Survey, Westmoreland Technology Park, Phase 2, Lot 19, Hempfield Township, Westmoreland County, Pennsylvania. Client: Westmoreland County Industrial Development Corporation, Greensburg, Pennsylvania.
- Phase I Archaeological Survey, Cove Point Expansion Project, PL-1 Natural Gas Pipeline Replacement Section, Hamilton Township, Franklin County, Pennsylvania. Client: Dominion Transmission, Inc., Clarksburg, West Virginia.
- Phase I Archaeological Survey for Proposed SR-513 Pipeline, Salt Creek Township, Hocking County, Ohio. Client: Columbia Gas Transmission, Charleston, West Virginia.
- Phase IA Cultural Resources Investigation, AEP IGCC Plant Siting Studies, Ohio, West Virginia, and Kentucky. Client: American Electric Power.

- Phase II Cultural Resource Assessment, Site 36Ju117, Petersheim Site, Cove Point Expansion Project, Perulack Compressor Station, Juniata County, Pennsylvania. Client: Dominion Transmission, Inc., Clarksburg, West Virginia.
- Phase I Cultural Resource Survey, Proposed SL 2057/SL 2492 Pipeline Replacement Project, Lagrange and Lagrange Township, Lorain County, Ohio. Client: Columbia Gas Transmission in 2006.
- Phase I Cultural Resource Survey, Proposed E-460 Pipeline Replacement Project, Starr Township, Hocking County, Ohio. Client: Columbia Gas Transmission in 2005.
- Phase IA Cultural Resources Investigation, AEP IGCC Plant Siting Studies, Ohio, West Virginia, and Kentucky. Client: American Electric Power in 2005
- Phase IB Archaeological Investigation, Proposed IGCC Mountaineer Plant Site, Mason County, West Virginia. Client: American Electric Power in 2005
- Phase I Survey E-2 Pipeline Replacement, Starr Township, Hocking County, Ohio. Client: Columbia Gas Transmission in 2005.
- Phase I Survey for SR 513 Pipeline Replacement, Salt Creek Township, Hocking County, Ohio. Client: Columbia Gas Transmission in 2005.
- Phase I Survey, Westmoreland Technology Park, Phase 2, Lot 19, Hempfield Township, Westmoreland County, PA. Client: Westmoreland County Industrial Development Corporation, Greensburg, Pennsylvania in 2005.
- Phase I and Phase II Investigations at Site 36Ju117, Cove Point Expansion Project, Perulack Compressor Station, Juniata County, Pennsylvania. Client: Dominion Transmission, Inc., Clarksburg, West Virginia in 2005.

Principal Investigator (Report Author)

- Phase III Archaeological Investigations for the Proposed Norfolk Southern Railway Company's Saltsburg to Clarksburg Rail Line, Armstrong Township, Indiana County, Pennsylvania: The Reed Site. Client: Norfolk Southern Railway Company in 2005.

2004

- Phase I Survey, Grading Area and Haul Road Project. Client: Westmoreland County Industrial Development Corporation, Westmoreland County, PA.
- Phase I Survey, BBH Site Location. Client: Kanawha Eagle Coal, Cabin Creek District, Kanawha County, West Virginia
- Phase IA Survey, Westmoreland Distribution Park Phase 2. Client: Westmoreland County Industrial Development Corporation, Westmoreland County, PA
- Phase I Survey, Cove Point Expansion Project, 40 Mile Transmission Line. Client: Dominion Transmission, Inc., St. Mary's, Charles, and Prince George Counties, Maryland.
- Phase I Survey, Pipeline Corridor Project. Client: Great Lakes Energy Partners Pipeline Project, Oakland and Plum Townships, Venango Country, Pennsylvania.
- Phase I Survey, Pipeline Corridor Project. Client: Great Lakes Energy Partners Pipeline Project Cornplanter Township, Venango Country, Pennsylvania.
- Phase I Survey, Sewerline Survey Project. Client: Senate Engineering, Mahoning Township, Armstrong County, Pennsylvania.
- Phase I Survey, Sewerline Survey Project. Client: Dana R. Boob Surveying and Engineering, Brockway Area Sewer Authority Project Horton Township, Snyder Township, and Brockway Borough, Elk and Jefferson County, Pennsylvania
- Phase I Survey, Sewer Facilities Project. Client: Hill Engineering, Inc., Borough of Ellwood City, Wayne Township, Lawrence County, Pennsylvania.
- Phase I Survey, Sewerline Survey Project. Client: Stiffler, McGraw and Associates, Inc., Frankstown Township Blair County, Pennsylvania.
- Phase I Survey, Trails End Re-Entry Project. Client: USDA, Allegheny National Forest, Wetmore and Hamlin Townships, McKean County, Pennsylvania.

- Phase I Archaeological Investigations and Historical Structure Investigations. Client: Bentworth School District, Somerset Township, Washington County, Pennsylvania.
- Phase I Survey, Allegheny Portage Trace Trail Corridor (6-10). Client: National Park Service, Allegheny Portage National Historic Site, Gallitzin, Pennsylvania.

Project Manager/Principal Investigator, 1994-2003 Examples

- Report on Archaeological Excavations, Wager Farmstead Site 36Mg307, Pennsylvania Act 70 Project, Pennsylvania Bureau for Historic Preservation, Montgomery County, PA.
- Effects Report and Recommended Data Recovery Plan, Site 36AL480, Locks and Dams 2, 3, and 4, Monongahela River Project, Leetsdale, Allegheny County, Pennsylvania, US Army Corps of Engineers, Pittsburgh District (co-author).
- Reassessment of Archaeological Sites, Falls Lake Reservoir Cultural Resources Planning Project, US Army Corps of Engineers, Wilmington District, Durham, Granville, and Wake Counties, NC. .
- Archaeological Survey and Excavation at Site 46Jf245, a Civil War encampment, Cranes Meadow Housing Development Project, Cranes Meadow Limited Partnership, Jefferson County, WV.
- Phase I Survey, Furnace Town Historic Site Visitor's Center Project, Furnace Town Foundation, Inc., Worcester County, MD. Determination of Eligibility Assessments, Bluestone Dam and County Route 23, Horizon Research Consultants, Summers County, WV
- Phase I/II Archaeological Investigations at Fenby Farm Quarry and Lime Kiln Site (18Cr163/CARR 260), Westminster, Carroll County, MD.
- Phase I Intensive Survey, Proposed Western Elementary School #3, Howard County Public School System, Howard County, MD.
- Phase I Survey, New Design Bridge and Road Modification Project, Frederick County Department of Public Works, Bureau of Highways and Transportation, Frederick County, Maryland.
- Phase I Survey Juniata Woolen Mill, Bedford County. An archaeological Reconnaissance Survey north of the Juniata Woolen Mill, Snake Spring Township for Juniata Woolen Mill, Inc.
- Phase I Survey, Lower Georges Creek, Grays Landing Lock and Dam Project, Woolpert Consultants, Springhill and Nicholson Townships, Fayette County, PA.
- Phase II/III Excavations of Gallatin Sawmill site (36Fa428), Grays Landing Lock and Dam Project, Woolpert Consultants, Fayette County, PA.
- Phase II Assessment Eight Historical Sites, Eastern Portion of Segment II of the Proposed U.S. 30 Relocation Project, Dansard, Grohnke, and Long, Ltd., Hancock and Wyandot Counties, Ohio.
- Phase II Assessment of the Tile House Site, Eastern Portion of Segment I of the Proposed U.S. 30 Relocation Project, Dansard, Grohnke, and Long, Ltd., Hancock County, Ohio.
- Phase III Excavations of Young Site 33At668, Proposed Bridge Crossing of Hamley Run on S.R. 691 Project, Ohio Department of Transportation, Athens County, OH.
- Phase I Survey, Juniata Woolen Mill parking lot Project, Juniata Woolen Mill, Inc., Snake Spring Township, Bedford County, PA.
- Phase I Survey, Proposed Riverview Terrace Property Development Project, Cuyahoga Metropolitan Housing Authority, Cleveland, Cuyahoga County, Ohio
- Phase I Survey, Proposed Relocation of U.S. Route 30 Project, McCoy and Associates, Inc., Crawford and Richland Counties, Ohio.
- Phase I Survey, Mill Creek Mall Expansion Project, The Cafaro Company, Erie County, Pennsylvania.
- Phase I Inventory Survey, Naval Submarine Base Cultural Resources Planning Project, Naval Facilities Engineering Command, San Diego, California.

Publications:

- 2003 The Leetsdale Project. PAC Newsletter 24:3-7. Co-authored with Conrad Weiser.
- 1995 A Cultural Resource Survey and Geomorphological Investigation of Loci 3, 4, 5, and 6 along Lower Georges Creek in Springhill and Nicholson Townships, Fayette County, Pennsylvania. Co-

- authored with Ronald C. Carlisle and J. Steven Kite. US Army Corps of Engineers, Pittsburgh District.
- 1995 Archaeological Assessment and Data Recovery of the Gallatin Sawmill at 36 Fa 428: The Eberhart Grist Mill, Dam, and Gallatin Sawmill. Co-authored with Ronald C. Carlisle, J. Steven Kite, Paula Zitzler, and Eric Davis. US Army Corps of Engineers, Pittsburgh District.
- 1992 Phase I Historic Properties Investigations, Youghiogheny River Lake Project, Fayette and Somerset Counties, Pennsylvania and Garrett County, Maryland. Co-authored with John P. Nass, Jr., John Roger Wright, and Rory Krupp. U S Army Corps of Engineers, Pittsburgh District.
- 1991 Coding System Manual for the East Liverpool, Ohio Urban Archaeology Project. ODOT Archaeological Series, No. 1.
- 1990 1990 Volume: Investigations into southeastern Utah Archaic, Phase III Archaeological Investigations of Two Small Sites Located Along U.S. 191, Holy Oak Lane to Blue Hill, San Juan County, Utah. John W. Hohman and John A. Hotop (eds.). Contributor. Studies in Western Archaeology No. 2. Louis Berger, East Orange. Pt. i-xiii, 1-289.
- 1986 Radiocarbon Dating of Archaeological Samples from Maryland. Co-authored with Hettie L. Boyce. Department of Natural Resources, Maryland Geological Survey, Archeological Studies No. 4.

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Jared N. Tuk

Assistant Cultural Resources Manager

Education

1998 M.A. Public History/Modern U.S. History, West Virginia University

1997 B.A. History, West Virginia University

Relevant Training/Courses

Leadership and Management Skills, 2010

Advanced Project Management Training, GAI Consultants, Inc., 2009

Leaders to Watch Program, GAI Consultants, Inc., May 2008

ASFE Fundamentals of Professional Practice, 2007

Areas of Specialization

Conducting architectural resource surveys, Section 106 compliance-related surveys, National Register nominations, and historic structures reports.

Professional Experience

Florida

- Historic Resource Survey of the Murray Hill Neighborhood—Phase II, Jacksonville, Florida, for the City of Jacksonville Planning and Development Department.
- Architectural Survey of West Palm Beach Local Historic Districts of Prospect Park/Southland Park for the City of West Palm Beach Historic Preservation Division (2010).
- Historic Structure Survey, City of Bunnell, Flagler County, Florida for the City of Bunnell.
- Resurvey of Marina Historic District, City of Delray Beach, Palm Beach County, Florida, for City of Delray Beach Planning and Zoning Department.
- Architectural Survey, local and National Register evaluations, and boundary updates for 250 resources in Old School Square Historic District, Delray Beach, Florida, for the City of Delray Beach.
- Architectural Survey and local and National Register evaluations for 768 architectural resources in the City of Sarasota, Florida, for the City of Sarasota Planning and Redevelopment Department.
- Architectural Survey, local and National Register evaluation, and National Register district nomination for 248 architectural resources in the vicinity of the City of Sarasota, Florida, for Sarasota County.
- Architectural Survey, local and National Register evaluation, and local and National Register district nominations for 760 architectural resources in the City of Sarasota, Florida, for the City of Sarasota Planning and Redevelopment Department.
- Architectural Survey and National Register and local historic register evaluations for 300+ buildings in the unincorporated areas of the Florida Keys, Monroe County, Florida, for the Historic Florida Keys Foundation.
- Architectural Survey and National Register and local historic register evaluations for 321 resources in the Brownsville Section of Pensacola, Escambia County, Florida, for the Escambia County Redevelopment Authority.
- Historic structures survey and local historic register nominations for 1200+ buildings in four historic districts in Lake Worth, Palm Beach County, Florida, for the City of Lake Worth.
- National Register nomination for the 1949 Osborne Elementary School in Lake Worth Florida--the city's only historically African-American school building.

Maryland / Washington D.C.

- Development of Historic Resource Guide for the Chesapeake and Ohio Canal, for the National Park Service. The guide was used by the National Park Service to assist future researchers in location of

information pertaining to the Chesapeake and Ohio Canal, especially pertaining to its western terminus at Cumberland, Maryland.

Pennsylvania

- Architectural Survey. Supplemental Phase I Cultural Resources Survey (Addendum IV), USA Storage Project, Sabinsville Wells and Lines, Tioga County, Pennsylvania, for Dominion Transmission, Inc.
- Architectural Survey. Phase Ib Cultural Resources Investigation, Bell Bend Nuclear Power Plant, Luzerne County, Pennsylvania, for UniStar Nuclear Development, LLC.
- Architectural Survey. Phase IA Cultural Resources Reconnaissance, Berwick PA NPP-1, Areas 6, 7, and 8, and Confers Lane Parcel, Luzerne County, Pennsylvania, for Areva NP, Inc. and UniStar Nuclear Development, LLC.
- Pennsylvania Historic Bridge Recordation for Mosside Boulevard Bridge, located within the SR 0048 highway project in Monroeville, Allegheny County, Pennsylvania for the Pennsylvania Department of Transportation. The recordation included black-and-white photography and presentation of findings in a narrative report format for a 1930 highway bridge.
- Historic structures survey and National Register evaluation for 12 historic resources located within the viewshed of a proposed generating facility near Dawson, Fayette County, Pennsylvania, for Allegheny Energy Supply Co., LLC.
- Historic structures survey and National Register evaluation of historic resources located within the proposed SR 0208-Grove City Interchange highway project near Grove City, Mercer County, Pennsylvania for the Pennsylvania Department of Transportation.
- Historic structures survey and National Register evaluation of historic resources located within the proposed I-70-Smithton Interchange highway project near Smithton, Westmoreland County, Pennsylvania for the Pennsylvania Department of Transportation.
- Historic structures survey and National Register evaluation of historic resources located within the proposed Chalk Hill-Ohiopyle Road/National Road highway project in Chalk Hill, Fayette County, Pennsylvania for the Pennsylvania Department of Transportation.
- Historic structures survey and National Register evaluation of historic resources located within the proposed Erie East Side Access highway project in Erie, Erie County, Pennsylvania for the Pennsylvania Department of Transportation.
- Historic structures survey and National Register evaluation of historic resources located within the proposed Preserve Planned Residential Development in Cranberry Township, Butler County, Pennsylvania for Brodmerkel-LBHB.
- Historic structures survey and National Register evaluation of historic resources located within the proposed SR 0980 Realignment project area in Venice, Washington County, Pennsylvania for the Pennsylvania Department of Transportation.
- Historic structures survey and National Register evaluation of historic resources located within the proposed SR 0981 improvement project area near Latrobe, Westmoreland County, Pennsylvania for the Pennsylvania Department of Transportation.
- Historic structures survey and National Register evaluation of historic resources located within the proposed Gas-Fired Combustion Turbine project area in Penn Township, Westmoreland County, Pennsylvania for Allegheny Energy Unit 6 and Unit 7, L.L.C. The survey included an examination of historic maps and records of Penn Township and a survey of six historic resources.
- Architectural Survey and National Register evaluation of resources located within proposed Royal Tartan Golf Course, Washington County, Pennsylvania for a private client. Survey determined effects of construction of a golf course facility on several nineteenth and early twentieth-century farmhouses and associated buildings.

New York

- Historic Structures Report for the Plum Island Light Station, Plum Island NY for the US Department of Agriculture. The report included a history of the Plum Island Light Station and comparisons with other historic light stations of Long Island Sound, a conditions assessment, and code compliance study.

- Historic Preservation Plan for the Fort Terry complex, Plum Island NY for the US Department of Agriculture. The plan included a study of the complex of buildings on the site of Fort Terry, a historic military complex.

Virginia

- Phase I Cultural Resources Survey, Lockhart 138kV Transmission Project, Dickenson County, Virginia, for American Electric Power Company.
- Architectural Survey. Phase I Cultural Resources Survey, VA State Line--Meadowbrook Substation and Meadowbrook Substation--Appalachian Trail Segments of the Trans-Allegheny Interstate Line (TRAIL) Project, Frederick and Warren Counties, Virginia for Power Engineers, Inc.
- Phase I/II Cultural Resources Investigation, Clinch River-Possum Hollow Landfill, Russell County, Virginia, for American Electric Power Company (Lead Agency: USACOE-Norfolk).
- Architectural and Historic Resources Survey of 75+ resources within *American Electric Power Wyoming-Jacksons Ferry 765 kV Transmission Line* project area, Priority Sections 1-3, 5, Tazewell, Bland, and Wythe Counties, Virginia for American Electric Power.
- Architectural Resource Survey, *Hardy Transmission and Virginia Looping Project*, Shenandoah County, Rockingham County, Page County, Greene County, Louisa County, Virginia, for Columbia Gas Company, Inc.
- Architectural Survey, *Mid-Atlantic Project, Quantico Compressor Station/Pipeline and Leesburg Compressor Station*, Loudoun and Fairfax Counties, Virginia for Dominion Transmission, Inc.

Ohio

- Architectural Survey. Phase I Cultural Resources Survey and Geomorphology Investigation, Proposed V-382 Pipeline Project, Belmont County, Ohio. Client: Columbia Gas Transmission.
- Architectural Survey. Phase I Cultural Resources Survey, Franklin 20-inch Storage Pipeline Project, Wayne and Summit Counties, Ohio, for Dominion East Ohio Gas.

Indiana

- Historic structures survey and National Register evaluation of historic resources located within the viewshed of a proposed generating facility near New Carlisle, St. Joseph County, Indiana, for Allegheny Energy Supply Co., LLC and Duke Engineering Co. The project included identification of the APE, a survey and NRHP evaluation of architectural resources, and an evaluation of potential visual effects from a proposed generating facility.
- National Register nomination for the Geneva Downtown Historic District, Geneva, Adams County, Indiana, for the Town of Geneva and Geneva Proud.

West Virginia

- Architectural Survey. Phase Ib Cultural Resources Investigation, Lightburn Extraction Plant, (TL-593, TL-594, TL-595), Lewis County, West Virginia, for Dominion Resources Services, Inc.
- Architectural Survey and National Register Evaluation of 21 resources within the *Romney Bridge Replacement* project area, Hampshire County, West Virginia for the West Virginia Department of Transportation.
- Architectural Survey and National Register Evaluation of 10 resources and a Rural Historic District within the *Headsville Bridge Replacement* project area, Mineral County, West Virginia for the West Virginia Department of Transportation.
- Architectural Survey and National Register Evaluation of three resources within the APE of the *Fink Capacity Maintenance Project*, Lewis County, West Virginia for Dominion Transmission, Inc.
- Architectural and Historic Resources Survey of 19 resources within *American Electric Power Wyoming-Jacksons Ferry 765 kV Transmission Line* project area, Priority Section 4, Wyoming and McDowell Counties, West Virginia for American Electric Power.
- Architectural Survey and National Register Evaluation of Four Resources within the APE of the *Hastings Pipeyard and Storage Area Project*, Wetzel County, West Virginia for Dominion Transmission, Inc.

- Architectural Survey and National Register evaluation of 19 resources within the proposed *Gauley Bridge Main Street Historic District*, Gauley Bridge, West Virginia, for the Town of Gauley Bridge.
- Architectural Survey and National Register evaluation of resources within *Route 35 Wetland Mitigation* project area, Mason County, West Virginia, for Kimley-Horn and the West Virginia Department of Transportation.
- Historic Structures Report and state-level recordation of the *Marion County Children's Shelter*, Fairmont, West Virginia for HNTB and the West Virginia Department of Transportation
- Historic Structures Report for the former *West Virginia State Penitentiary* in Moundsville, Marshall County, West Virginia for the Moundsville Historic Landmark Commission and the Moundsville Economic Development Council.
- National Register nominations for eight historic properties located throughout, Berkeley County, West Virginia, for the Berkeley County Historic Landmarks Commission.
- National Register nominations for Camp Mad Anthony Wayne and Huntington Rotary Parks, located in and near Huntington, Cabell County, West Virginia, for the Greater Huntington Parks and Recreation District.
- National Register nomination for the Ranson City Hall, Ranson, West Virginia. The nomination included research, writing, presentation, and defense of the nomination to the West Virginia Archives and History Commission.
- Comprehensive Architectural Survey of 72 historic resources in the *Gypsy Historic District*, Harrison County, West Virginia for the Harrison County Historic Landmark Commission and the Harrison County Planning Commission.
- Historic Architectural Survey for the *Raleigh Street Extension*, located within the *Martinsburg Bypass Corridor*, Martinsburg, Berkeley County, West Virginia for the West Virginia Division of Highways.
- Historic Architectural Survey for *9-mile Martinsburg Bypass Corridor*, Martinsburg, Berkeley County, West Virginia for the West Virginia Division of Highways.
- Historic structures survey and National Register nominations for 440 buildings in two historic districts in downtown Martinsburg, Berkeley County, West Virginia, for the Berkeley County Historic Landmarks Commission.
- Survey Update and National Register evaluation of resources located within the proposed *Thurmond Bridge Replacement* project area in Thurmond, Fayette County, West Virginia for the West Virginia Department of Transportation.
- Historic structures survey and National Register evaluation of an area west of Alderson, Greenbrier County, West Virginia for the proposed *Muddy Creek Bridge Replacement* project for the West Virginia Department of Transportation.
- Survey and National Register evaluation for historic cemeteries located within the *Tolsia Highway* study area in Wayne and Mingo Counties, West Virginia, for Kimley-Horn and Associates and the West Virginia Department of Transportation.
- Historic structures survey and National Register evaluation of resources located within the proposed *Twelvepole Creek Bridge* project area near Kenova, Wayne County, West Virginia for the West Virginia Department of Transportation.
- Comprehensive Architectural Survey of 90 historic resources in the Spring Mills and North Mountain areas, Berkeley County, West Virginia for the Berkeley County Historic Landmarks Commission.
- Historic structures survey and National Register evaluation of resources located within the proposed *West Run Expressway* project area in Morgantown, Monongalia County, West Virginia for Kimley-Horn and Associates and the West Virginia Department of Transportation.
- Historic structures survey and National Register evaluation of resources located within the proposed *Melissa-Huntington Road* project area near Huntington, Cabell County, West Virginia for the West Virginia Department of Transportation.
- *Sabraton, West Virginia*. Developed preservation plan for adaptive reuse of *Sabraton School*, Monongalia County, West Virginia for West Virginia University. The project required presentation of research findings and proposed uses to a community action group.

Terry J. Newell

Archaeologist

Education

Section 106 Essentials (Oct. 2006)

Waste Site Worker Protection (OSHA) Training – Skelly and Loy, Inc. (Aug. 1996)

24 Hour Lithic Workshop, University of Pittsburgh (Nov. 1988)

Connellsville Area High School (1982)

Previous Employment

Field Director, GAI Consultants, Inc., 2006-Present

Field Director and Laboratory Technician, Skelly and Loy, Inc., 1992-2006

Crew Chief, Field and Laboratory Technician, Christine Davis Consultants, 1992

Crew Chief, Field and Laboratory Technician, Mercyhurst University, 1991-1992

Crew Chief and Field Technician, Louis Berger, 1991

Field Technician, Goodwin and Associates, 1990

Field Technician, W.A.P.O.R.A., 1990

Crew Chief, Field and Laboratory Technician, University of Pittsburgh (Cultural Resource Management Program) 1986-1990

Professional Experience 2009

- Field Director. Phase III Analysis and Report of the McDaniel Site (44Gn115), Hardy Transmission Project, Greene County, Virginia for Columbia Gas Transmission.
- Field Director. Phase II Cultural Resources investigations of six (6) historic sites plus one (1) prehistoric site for PPL and Unistar at Bell Bend Nuclear Power Plant in Luzerne County, Pennsylvania. Directed a crew consisting of two (2) crew chiefs and fourteen (14) field technicians.
- Field Director. Phase III Cultural Resources Investigation for REX-Rockies Express Gas Pipeline in Ohio for Caprock.
- Field Director. Phase Ib Archaeological Survey, NIJUS001 (MD-146) Pipeline Project, Amwell Township, Washington County, Pennsylvania, for EQT Production Company.
- Field Director. Phase II Investigations of the Dun Glen Hotel Site for the Fire Suppression System, Fayette County, West Virginia, for National Park Service-NERI.

Field Director 2006 – 2008

- Field Director. Phase III Cultural Resources investigation for REX-Rockies Express gas pipeline in Monroe County, Ohio (33MO077). Supervised a crew consisting of fourteen (14) field technicians and one (1) crew chief. Duties included photography, quality control, mapping with transit, and daily briefings with principal investigator.
- Phase I Cultural Resources Investigation and Phase II excavations of 7 prehistoric sites and 2 historic sites, Great Bend, Meigs County, Ohio for AEP. Supervised 20 + field technicians and 2 crew chiefs for survey of more than 630 acres. Supervised multiple crews, maintained quality control, presented daily briefings to Principal Investigators.
- Phase III Cultural Resources Investigation, Nuttallburg Mine Conveyor, Fayette County, West Virginia for New River Gorge National River (NPS/NERI). Limited excavation at National Register Eligible historic site.
- Phase III Cultural Resources Investigation, Hardy Transmission, Greene County, Virginia for Columbia Gas Transmission. Supervised 18 Field Technicians and 1 Crew Chief. Block excavations (213 m²) of multi-component prehistoric site (Woodland - Paleo Indian). Duties included photography, maintaining digital FS log, preliminary projectile point identification, quality control, mapping with transit, and daily briefings with Principal Investigator.

Terry Newell

Archaeologist

- Phase I Cultural Resources Investigation, Calvert Cliff's Nuclear Power Plant, Calvert County, Maryland for Tetra Tech, NUS, and Unistar Nuclear Development, LLC. Eight (8) features and more than 43,000 lithics. Supervised 20+ field Technicians and 1 Crew Chief for archaeological survey of 600 + acres, and maintained field mapping of testing, quality control of field records.
- Phase I Cultural Resources Investigation, Crawford Storage Line, Fairfield and Hocking Counties, Ohio for Columbia Gas Transmission. Supervised 12 + Field Technicians and 1 Crew Chief on proposed natural gas storage line. Maintained quality control, met with project personnel from other firms, briefed project archaeologist daily.
- Phase I Cultural Resources Investigation, Weaver Storage Line, Ashland and Holmes Counties, Ohio for Columbia Gas Transmission. Supervised 12 + Field Technicians and 1 Crew Chief for proposed natural gas storage line. Maintained quality control of field records, met with project personnel from other firms, briefed project archaeologist daily.
- Phase I Cultural Resources Investigation, Hardy Transmission, Elkton Storage Yard, Rockingham County, Virginia for Columbia Gas Transmission.
- Phase I Cultural Resources Investigation, 2" Plastic Replacement Line, Washington County, Pennsylvania for Columbia Gas Transmission.
- Phase I Cultural Resources Investigation, H-156 line, valve replacement, Allegheny County, Pennsylvania for Equi Trans.
- Phase I Cultural Resources Investigation, H-156 line replacement, Allegheny County, Pennsylvania for Equi Trans.
- Phase I Cultural Resources Investigation, 15 mile proposed pipeline alignment, Armstrong County, Pennsylvania for Keystone Power Station.
- Phase I Cultural Resources Investigation, proposed Avella sewage line, Washington County, Pennsylvania for Bankson Engineers.
- Phase I Cultural Resources Investigation, U.S. Route 15 relocation project, Steuben County, New York for Dominion Transmission, Inc.
- Phase I Cultural Resources Investigation, Mares Run Road pipe evaluation assessment, Lewis County, West Virginia for Dominion Transmission, Inc.
- Phase I Cultural Resources Investigation, Greensboro Sewage Collection and Treatment Facility, Greene County, Pennsylvania for Fayette Engineering.
- Cultural Resources Phase I/II Excavation and Monitoring, North Shore Connector, Allegheny County, Pennsylvania for Port Authority Transit of Allegheny County.

Field Director 1992-2005

- Phase I/II/III Cultural Resources Investigation, State Route 15 preferred alignment, Tioga County, Pennsylvania for Pennsylvania Dept. of Transportation. Supervised 20 + Field Technicians and 2 Crew Chiefs within multi-phase investigations of a Late Woodland village site. Duties included field documentation, quality control, and mapping with transit.
- Phase III Cultural Resources Investigation, Ronald McDonald House, Wilmington Delaware for Blue Ball Transportation. Supervised block excavations at prehistoric camp site.
- Phase III Cultural Resources Investigation, 99 Corridor, Centre County, Pennsylvania for Pennsylvania Dept. of Transportation. Transitional Archaic camp site (Wiser Site). Supervised 15 Field Technicians and 1 Crew Chief in block and feature excavations.

Crew Chief Experience 1992-2006

- Phase III Cultural Resources Investigation, I-80 Bridge Replacement, Northumberland County, Pennsylvania for Pennsylvania Dept. of Transportation. Helped supervise fieldwork of deep, block excavations and cultural features on floodplain of Susquehanna River.

Terry Newell

Archaeologist

- Phase II/III Cultural Resources Investigation, Tunkhannock Bypass, Wyoming County, Pennsylvania for Pennsylvania Dept. of Transportation. Helped supervise excavations of two prehistoric camp sites identified within right-of-way corridor.
- Phase III Cultural Resources Investigation, natural gas line replacement, Lancaster, Pennsylvania for Texas Eastern Transmission. Helped supervise prehistoric open camp site, (Persal Site)
- Phase I Cultural Resources Investigation, Corridor O, Clearfield County, Pennsylvania for Pennsylvania Dept. of Transportation.
- Phase I Cultural Resources Investigation, Mon-Fayette Expressway, Fayette and Washington Counties, Pennsylvania for Pennsylvania Dept. of Transportation.
- Phase I/II Cultural Resources Investigation, 218 mile gas pipeline survey, Fulton, Adams and Franklin Counties, Pennsylvania for Texas Eastern Transmission.
- Phase I/II Cultural Resources Investigation, I-80 / Bellefonte Interchange, Centre County, Pennsylvania for Pennsylvania Dept. of Transportation.
- Phase I/II Cultural Resources Investigation, Greensburg Bypass, Westmoreland County, Pennsylvania for Pennsylvania Turnpike Commission.
- Phase III Cultural Resources Investigation, 11.5 acre Monongahela village site, Westmoreland County, Pennsylvania for Sony Corp.

Field Technician Experience 1986-1992 (representative samples)

- Phase I Cultural Resources Investigation, Super Collider Project for the State of Texas (1991-1992)
- Phase I Cultural Resources Investigation, Fort Drum military base expansion, Fort Drum, New York for US Dept. of Defense (1991)
- Phase I Cultural Resources Investigation, Lock Haven Landfill Expansion, Clinton County, Pennsylvania (1990)
- Phase I/II Cultural Resources Investigation, natural gas pipeline replacement, Cameron County, Pennsylvania for People's Gas Corp. (1990)
- Phase III Cultural Resources Investigation of Monongahela village site (36FA40) for natural gas pipeline valve replacement, Fayette County, Pennsylvania for Texas Eastern Transmission.
- Phase I Cultural Resources Investigation, State Route 322 upgrade, Delaware County, Pennsylvania for Pennsylvania Dept. of Transportation

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Hannah Leigh Cole, M.A.

Senior Architectural Historian

Education

M.A. Public History 2007, West Virginia University

B.A. Political Science, Minor in History 2005, West Virginia University

2007, Cultural Resource Management, Graduate Certification, West Virginia University

Affiliations

Preservation Alliance of West Virginia (PAWV)

National Council on Public History (NCPH)

National Trust for Historic Preservation (NTHP)

Southern Historical Association

Previous Employment

Contract Consultant, Pittsburgh History & Landmarks Foundation, 2007-2008

Doctoral Teaching Assistant, Department of History, West Virginia University, 2007-2008

Research Associate, Dr. Barbara Rasmussen, Historic Preservation & Research Consultant, 2007

Graduate Assistantship, Cultural Resource Management Program, West Virginia University, 2006-2007

Architectural Historian / Cultural Resource Survey Intern, Gray and Pape, Inc., 2006

Summary

Ms. Cole specializes in acting as a historian and architectural historian under the United States Secretary of the Interior's Professional Qualification Standards (as defined in 36 CFR Part 61). She brings practical experience with Section 106/NEPA compliance and completion of architectural/history surveys, proven success completing architectural descriptions and significance evaluations by applying the National Register of Historic Places criteria, and experience evaluating project effects on significant properties.

Ms. Cole also has conducted work according to the Federal historic preservation review process and under Sections 106 & 110 of the National Historic Preservation Act of 1966 and Section 4(f) of the U.S. Department of Transportation Code. She has completed Historic Structure Reports, and performed deed and title searches.

Ms. Cole developed on-line coursework and a website for the Cultural Resource Management certification program at West Virginia University. Her experience includes the application of Geographic Information Systems (GIS), and she uses ArcGIS software.

Professional Experience

2010

- Senior Architectural Historian. Mitigation of NRHP-Eligible Architectural Resources, Documentation of Baltimore and Drum Point Railroad Mitigation Report, Calvert Cliffs 3 Nuclear Project, Calvert County, Maryland, for UniStar Nuclear Development, LLC.
- Senior Architectural Historian. Historic Resource Survey of the Murray Hill Neighborhood—Phase II, Duval County, Florida, for the City of Jacksonville Planning and Development Department.

2009

- Senior Architectural Historian. Phase Ib Management Summary, Archival Research, Bell Bend Nuclear Power Plant, Luzerne County, Pennsylvania, for Areva NP, Inc and UniStar Nuclear Development, LLC.
- Senior Architectural Historian. Mitigation of NRHP-Eligible Architectural Resources, Documentation of Baltimore and Drum Point Railroad Mitigation Report, Calvert Cliffs 3 Nuclear Project, Calvert County, Maryland, conducted for UniStar Nuclear Development, LLC.

- Senior Architectural Historian. Phase I Cultural Resources Survey, PA-WV State-Line to 502 Junction (Segment 16) of the Trans-Allegheny Interstate Line (TrAIL) Project, Dunkard and Perry Townships, Greene County Pennsylvania for Power Engineers, Inc.
- Senior Architectural Historian. Phase I Cultural Resources Survey, Appalachian Gateway TL-591 Project, Greene, Washington, Allegheny, and Westmoreland Counties, Pennsylvania, for Dominion Transmission, Inc.
- Senior Architectural Historian. Phase I Cultural Resources Survey, Appalachian Gateway Burch Ridge Compressor Station Project, Marshall County, West Virginia, for Dominion Transmission, Inc.
- Senior Architectural Historian. Phase I Cultural Resources Survey, Appalachian Gateway TL-590 Pipeline Project, Marshall County, West Virginia and Greene County, Pennsylvania for Dominion Transmission, Inc.
- Senior Architectural Historian. Phase I Cultural Resources Survey, Appalachian Gateway TL-492 Extension 5 Pipeline Project, Franklin, Jefferson, and Morgan Townships, Greene County, Pennsylvania for Dominion Transmission, Inc.
- Senior Architectural Historian. Cultural Resources Constraints Identification and Mapping, Punxy Narrows Project, Jefferson County, for the Pennsylvania Department of Transportation, District 10.
- Senior Architectural Historian. Phase I Cultural Resources Survey, Ghent Generating Station Proposed Ash Pond and Landfill Project, Carroll and Gallatin Counties, Kentucky for E.ON-U.S., LLC/Kentucky Utilities.
- Senior Architectural Historian. Phase I Cultural Resources Survey, Columbia Gas - Line1570 Upgrades Project, Washington and Greene Counties, Pennsylvania for NiSource - Columbia Gas Transmission Corp.

2008

- Senior Architectural Historian. Phase I Cultural Resources Survey, West Virginia Segment 2, Mt. Storm Substation /502 Junction, Appalachian Trail Segments of the Trans-Allegheny Interstate Line (TrAIL) Project, Grant, Tucker, Preston, Marion, and Monongalia Counties, West Virginia for Power Engineers, Inc.
- Background Research. Land Use History, Erie and Montezuma Wildlife Refuges, New York and Pennsylvania for the U.S. Fish and Wildlife Service.
- Senior Architectural Historian. Letter Report, NHRP Evaluation and Criteria of Effects Assessment, Shippingport Atomic Power Station, Beaver County, Pennsylvania for FirstEnergy Nuclear Operating Company, Beaver Valley Power Station.
- Principal Investigator. Historic Architectural/Agricultural Survey as Contract Consultant for Pittsburgh History & Landmarks Foundation (PHLF), Reconnaissance level cultural resource survey of 1,150 historical agricultural sites in Greene and Washington Counties, Pennsylvania.

2007

- Research Associate. Conducted an intensive cultural resource survey Second Creek Watershed, Monroe County, West Virginia, for Dr. Barbara Rasmussen, Historic Preservation & Research Consultant in Morgantown, West Virginia.

2006

- Conducted an intensive-level historic architectural survey of all above-ground cultural resources in a Section 106 Review regarding a proposed wind energy facility in Greenbrier County, West Virginia (Architectural Historian and Cultural Resource Survey Intern with Gray and Pape).
- Archaeological excavation, Fort Donnally, Greenbrier County, West Virginia (May-June).
- Structural/architectural historian for Point Marion community design team, Pennsylvania (April).
- Prepared and presented a successful National Register Nomination for Lynch Chapel United Methodist Church, Monongalia County, West Virginia for the West Virginia History & Archives Commission.
- Prepared inventory, historic structure report, and research for the inclusion of the Knee Building, a restored property, in the Downtown Morgantown National Register Historic District.

Publications

2008 "Oglebay Hall: A History", Office of the Provost: West Virginia University, 2008.

2007 Master's Thesis: Mining History: Extracting Qualitative and Quantitative Resources for the Discovery of Appalachian Cultural Landscapes.

-
- 2005 "Cultural Heritage" portion of Monongalia County's Comprehensive Land Use Plan.
- 2005 "The Chinking of Monongalia's Past: An Interpretation of Camp Muffly's Grant and Little Log Cabins" published in the Proceedings and Papers of the Monongalia Historical Society, December 2005.

Presentations

- 2008 Appalachian Studies Conference, March 28-30, 2008, Presented: "Recuperating from Rebeldom at 'Ole Vaganny's Resort:' West Virginia's White Sulphur Springs and the Healing of Reconstruction".

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Michael Kenneally, M.A.

Architectural Historian

Education

M.A., History/Historic Preservation, 2004, Youngstown State University

B.A., Anthropology/Anthropology, 1988, Youngstown State University

Previous Employment

Dewberry & Davis. Raleigh, North Carolina, 2007-2008:

Janus Research, Inc. Tampa, Florida, 2004-2007

Graduate Research Assistant, Youngstown State University, 2002-2004

Summary

Mr. Kenneally meets the Secretary of the Interior's Professional Qualification Standards for History and Architectural History (as defined in 36 CFR Part 61). While specializing in architectural history, Mr. Kenneally brings experience and proficiency to all phases of archaeological surveys.

Professional Experience

2010

- Architectural Historian. Phase II National Register Site Evaluations, Nine Mile Point Nuclear Station, Proposed Unit 3 (NMP Unit 3), Oswego County, New York, for UniStar Nuclear Energy, LLC.

2009

- Architectural Historian. Criteria of Effects Assessment, Archival Research, Authored Site History, Bell Bend Nuclear Power Plant, Luzerne County, Pennsylvania, conducted for UniStar Nuclear Development, LLC.
- Architectural Historian. Archival Research, Phase II Nine Mile Nuclear Power Plant, Oswego County, New York, conducted for UniStar Nuclear Development, LLC
- Architectural Historian. Archival Research, Authored Site History, Phase III Archaeological Data Recovery at Site 33M077, Rockies Express Pipeline-East, Monroe County, Ohio, for Caprock Environmental Services, LLC.
- Archaeological Field Technician. Phase II Archaeological Assessment, Bell Bend Nuclear Power Plant, Luzerne County, Pennsylvania, conducted for UniStar Nuclear Development, LLC.
- Archaeological Field Technician. Phase I Archaeological Survey, TL-591: Appalachian Gateway Transmission Pipeline Project, Marshall County, West Virginia and Greene County, Pennsylvania, conducted for Dominion Transmission Incorporated.
- Archaeological Field Technician. Phase II Archaeological Assessment, H-162 Pipeline Replacement Project, Kanawha County, West Virginia, conducted for Dominion Transmission Incorporated.
- Archaeological Field Technician. Phase I Archaeological Survey, TL-590: Appalachian Gateway Transmission Pipeline Project, Greene and Washington Counties, Pennsylvania, conducted for Dominion Transmission Incorporated.
- Archaeological Field Technician. Phase I Archaeological Survey, Nijus 006 Pipeline, Greene County, Pennsylvania, conducted for EQT.

2008

- Archaeological Field Technician. Phase III Archaeological Data Recovery at Site 33Mo77, Rockies Express Pipeline-East, Monroe County, Ohio, for Caprock Environmental Services, LLC.
- Archaeological Field Technician. Phase I Archaeological Survey, H-162 Pipeline Replacement Project, Kanawha and Clay Counties, West Virginia, conducted for Dominion Transmission Incorporated.

- Archaeological Field Technician. Phase I Archaeological Survey, Bell Bend Nuclear Power Plant, Luzerne County, Pennsylvania, for UniStar Nuclear Development, LLC.

Large Format Photography and Historic Data:

- **HAER CA-175:** First Street Bridge, Los Angeles, Los Angeles County, California. Supplemental HAER documentation for CalTrans.
- **HABS CA-2792:** James K. Hill & Sons Pickle Works (Building), Los Angeles, Los Angeles County, California, conducted for CalTrans.
- **HABS FL-489:** 2210 Thirty-first Street, Tampa, Hillsborough County, Florida, conducted for FDOT as part of the Tampa Interstate Study.
- **HABS FL-531:** 1719 North Shore Terrace (House), Orlando, Orange County, Florida, conducted for FDOT.
- **HABS FL-532:** 1721 North Shore Terrace (House), Orlando, Orange County, Florida, conducted for FDOT.
- **HABS FL-333:** 1727 North Shore Terrace (House), Orlando, Orange County, Florida, conducted for FDOT.
- **HABS FL-534:** 1741 North Shore Terrace (House), Orlando, Orange County, Florida, conducted for FDOT.
- **HABS FL-535:** 1747 North Shore Terrace (House), Orlando, Orange County, Florida, conducted for FDOT.
- **HABS FL-536:** 117 East Vanderbilt Street (House), Orlando, Orange County, Florida, conducted for FDOT.
- **HABS FL-537:** 114 East Yale Street (House), Orlando, Orange County, Florida, conducted for FDOT.
- **HABS FL-538:** 117 East Yale Street (House), Orlando, Orange County, Florida, conducted for FDOT.
- **HABS FL-539:** 2506 Fifteenth Street (House), Tampa, Hillsborough County, Florida, conducted for FDOT as part of the Tampa Interstate Study.
- **HABS FL-540:** 1017 E. Fourteenth Street (House), Tampa, Hillsborough County, Florida, conducted for FDOT as part of the Tampa Interstate Study.
- **HABS FL-541:** 1009 ½ East Fourteenth Street (House), Tampa, Hillsborough County, Florida, conducted for FDOT as part of the Tampa Interstate Study.
- **HABS FL-542:** Faith Temple Missionary Baptist Church (Building), Tampa, Hillsborough County, Florida, conducted for FDOT as part of the Tampa Interstate Study.
- **HABS FL-543:** 2005 North Lamar Avenue (House) Tampa, Hillsborough County, Florida, conducted for FDOT as part of the Tampa Interstate Study.

2007-2008 (GPS Field Inventory Specialist)

- Conducted field inventory of municipal stormwater systems
- Responsible for GPS mapping and GIS data entry

2004-2007 (Architectural Historian-Florida)

- Cultural Resource Assessment Survey of the Downtown Ft. Lauderdale Transit Circulator Project, Ft. Lauderdale, Broward County, Florida.
- Cultural Resource Assessment Survey of the Florida Turnpike from Lake Worth to Jupiter, West Palm Beach, Broward County, Florida
- Cultural Resources Assessment Survey of the Ft. Lauderdale/Hollywood International Airport, Ft. Lauderdale, Broward County, Florida.
- Cultural Resource Assessment Survey of I-395/SR 836 from NW 17th Ave to I-95, Miami, Miami-Dade County, Florida.
- Cultural Resource Assessment Survey of the I-595/I-95 Interchange, Broward County, Florida.
- Cultural Resource Assessment Survey of the Kendall-Tamiami: Opa-Locka Airport Expansions, Opa-Locka, Miami-Dade County, Florida.
- City of Miami Determination of Eligibility for the Masjid Al-Ansar Mosque, Miami, Miami-Dade County, conducted for the City of Miami.
- Cultural Resource Assessment Survey of the MLK/NW 7th Avenue Transit Station, Miami, Miami-Dade County, Florida.

- Cultural Resource Assessment Survey of the NE 36th Street Road Transfer, Miami, Miami-Dade County, Florida
- Cultural Resource Assessment Survey of SR5/Brickell Avenue, Miami, Miami-Dade County, Florida
- PD&E Study of SR 820 (Pines Boulevard) at SR 823 (Flamingo Drive), Pembroke Pines, Broward County, Florida.
- Cultural Resource Assessment Survey of SR 826 @ SR 836, Miami, Miami-Dade County, Florida, conducted for the FDOT

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APPENDIX G
Soil Profile Descriptions – Area 6 Deep Testing

TEST NUMBER <u> AUGER 1 </u>						
Project <u> C080204.10 Task 004 </u>						
SOIL DESCRIPTION BY: <u> D.L. Cremeens </u>				DATE: <u> May 29, 2008 </u> LOCATION: <u> Bell Bend Area 6, Section 2 </u>		
HORIZON DEPTH (cm)	SOIL COLOR MATRIX AND MOTTLING	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
A 0-15	Black (10YR 2/1)	Silt loam, 10-20% gravel	Moderate, medium granular	Very Friable	Clear	
E 15-32	Weak red (2.5YR 5/2)	Fine sandy loam, 20-30% gravel	Weak, medium subangular blocky	Friable	Clear	
Bw 32-42	Reddish brown (2.5YR 5/4) Reddish brown (2.5YR 4/4)	Silt loam, 30-50% gravel	Moderate, medium subangular blocky	Friable	Abrupt	
R 42+	Auger refusal on rock at 42 cm					
PARENT MATERIAL/REGOLITH: Alluvium over bed rock LANDFORM: Terrace strath ADDITIONAL NOTES:			GAI CONSULTANTS, INC. ENGINEERS, GEOLOGISTS, PLANNERS AND ENVIRONMENTAL SPECIALISTS 385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005			

TEST NUMBER <u> AUGER 2 </u> Project <u> C080204.10.Task 004 </u>						
SOIL DESCRIPTION BY: <u> D.L. Cremeens </u>				DATE: <u> May 29, 2008 </u> LOCATION: <u> Bell Bend Area 6, Section 2 </u>		
HORIZON DEPTH (cm)	SOIL COLOR MATRIX AND MOTTLING	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
A 0-18	Very dark brown (10YR 2/2)	Silt loam, 10-20% gravel	Moderate, granular	Friable	Abrupt	
E 18-35	Gray (2.5YR 5/1)	Silt loam, 10-20% gravel	Weak, medium subangular blocky	Friable	Clear	
Bw 35-56	Yellowish brown (10YR 5/6)	Fine sandy loam, Trace of gravel	Moderate, medium subangular blocky	Friable	Abrupt	
R 56+	Auger refusal on rock at 56 cm					
PARENT MATERIAL/REGOLITH: Alluvium over bed rock LANDFORM: Terrace strath ADDITIONAL NOTES:			GAI CONSULTANTS, INC. ENGINEERS, GEOLOGISTS, PLANNERS AND ENVIRONMENTAL SPECIALISTS 385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005			

TEST NUMBER AUGER 3Project C080204.10 Task 004SOIL DESCRIPTION BY: D.L. CremeensDATE: May 29, 2008LOCATION: Bell Bend Area 6, Section 2

<u>HORIZON</u> DEPTH (cm)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
A 0-12	Very dark brown (10YR 2/2)	Silt loam, Trace of gravel	Moderate, medium granular	Friable	Abrupt	
E 12-30	Weak red (10YR 5/2)	Silt loam, Trace of gravel	Weak, medium subangular blocky	Friable	Clear	
Bw1 30-45	Yellowish brown (10YR 5/4)	Fine sandy loam, Trace of gravel	Moderate, medium subangular blocky	Friable	Gradual	
Bw2 45-72	Light olive brown (2.5YR 5/4), cf light olive brown (2.5YR 5/6) grayish brown (2.5YR 5/2) mottles	Fine sandy loam, Trace of gravel;	Moderate, medium subangular blocky	Friable	Gradual	
BC 72-78	Light olive brown (2.5YR 5/3)	Fine sandy loam	Structureless, massive	Friable	Abrupt	
R 78+	Auger refusal on rock at 78 cm					

PARENT MATERIAL/REGOLITH: Alluvium over bed rock

LANDFORM: Terrace strath

ADDITIONAL NOTES:

GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
PLANNERS AND ENVIRONMENTAL SPECIALISTS
385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005

TEST NUMBER BHT-1 WEST WALL

Project C080204.10 Task 004SOIL DESCRIPTION BY: D.L. Cremeens

DATE: May 28, 2008

LOCATION: Bell Bend Area 6, Section 1__

HORIZON DEPTH (m)	SOIL COLOR MATRIX AND MOTTLING	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
A 0-0.18	Very dark grayish brown (10YR 3/2)	Sandy loam, 10-20% gravel	Weak, medium granular	Very friable	Clear, wavy	Modern sod in fill
CA1 0.19-0.70	Variegated- gray (10YR 5/1), Dark grayish brown (10YR 4/2), Yellowish brown (10YR 5/4)	Sandy loam, 20-30% cobbles and gravel	Structureless, massive	Friable	Clear, irregular	Fill
CA2 0.70-1.15	Olive (5YR 4/3), cd dark yellowish brown (10YR 4/4) fragments	Fine loamy sand, 10-20% gravel	Structureless, medium, weak , fine platy	Friable	Abrupt, wavy	Fill
CA3 1.15-2.10	Very dark gray (5YR 3/1)	Silt loam, 20-30% gravel and cobbles	Structureless, massive	Friable	Diffuse	Fill, wood fragment
CA4 2.10-2.20	Variegated- very dark gray (5YR 3/1), dark gray (10YR 4/1), light olive brown (2.5YR 5/3)	Silt loam, 10-20% gravel and wood fragments	Structureless, massive	Friable	Gradual, wavy	Fill
Ab 2.20-2.56	Very dark gray (5YR 3/1)	Silt loam, 20-30% gravel and wood fragments	Structureless, massive	Friable	Abrupt, wavy	Buried top soil discontinuous in trench
Btxb1 2.56-3.20	Brown (7.5YR 4/4), cp light brownish gray (10YR 6/2) streaks	Silt loam, Trace of gravel	Moderate, medium, subangular blocky	Very firm	Gradual, wavy	Cf brown (7.5YR 4/4) clay films
Btxb2 3.20-3.66	Brown (7.5YR 4/4), mp gray (10YR 6/1) streaks		Weak, course subangular blocky	Extremely firm	Gradual wavy	Cf brown (7.5YR 4/4) clay films, common fine Fe-Mn nodules
BC 3.66-3.96+	Yellowish brown (10YR 5/6) mp gray (5YR 5/1) mottles		Structureless, massive	friable		Water at 366 cm

PARENT MATERIAL/REGOLITH: Fill over alluvium, buried terrace,

LANDFORM: Buried terrace

ADDITIONAL NOTES: 2.2m fill over terrace soil

**GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
PLANNERS AND ENVIRONMENTAL SPECIALISTS
385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005**

TEST NUMBER BHT-2 WEST WALLProject C080204.10 Task 004SOIL DESCRIPTION BY: D.L CremeensDATE: May 28, 2008LOCATION: Bell Bend, Area 6, Section 1

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
A 0-0.17	Very dark grayish brown (10YR 3/2)	Silt loam, 10-20% gravel	Moderate, coarse granular	Friable	Clear, wavy	Modern sod in fill
CA1 0.17-0.60	Variegated	Silt loam, loam 30-40% cobbles	Structureless, massive	Very Firm	Gradual, wavy	Fill
CA2 0.60-1.10	Variegated	Silt loam, 30-40% gravel, cobbles, brick fragments	Structureless, massive	Extremely Firm	Gradual, wavy	Fill
CA3 1.10-2.20	Variegated	Silt loam, 20-30% cobbles and wood fragments	Structureless, massive	Firm	Diffuse	Fill
CA4 2.20-4.00+	Dark reddish brown (5YR 3/2), Cd light olive brown (2.5YR 5/4) fragments	Silt loam, 10-20% cobbles and wood fragments	Structureless, massive	Firm	—	Fill

PARENT MATERIAL/REGOLITH: Fill

LANDFORM: Hilltop

ADDITIONAL NOTES:

GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
PLANNERS AND ENVIRONMENTAL SPECIALISTS
385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005

TEST NUMBER BHT-3 WEST WALL

Project C080204.10 Task 004

SOIL DESCRIPTION BY: D.L. Cremeens

DATE: May 28, 2008

LOCATION: Bell Bend, Area 6, Section 1

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
CA1 0-0.4	Variegated	Silt loam, 20-30% cobbles and gravel	Structureless, massive	Friable	Clear, wavy	Modern sod in upper 20 cm, fill
CA2 0.4-0.93	Variegated	Silt loam, loam, 30-40% cobbles and boulders	Structureless, massive	Firm	Gradual, irregular	Some boulders 130 cm, fill
CA3 0.93-1.50	Brown (7.5YR 4/4), w/ cd very dark gray (5YR 3/1) fragments	Sandy loam, 30-40% cobbles and boulders	Structureless, massive	Very firm	Clear, wavy	Water trickling out of boulder pile, fill
CA4 1.50-2.50	Very dark gray (5YR 3/1)	Sandy loam, 20-30% gravel and cobbles, brick and glass fragments	Structureless, massive	Very firm	Clear, wavy	Fill, Ab in lower portion?
Btxb1 2.50-3.10	Brown (7.5YR 5/3), mp light brownish gray (10YR 6/2) streaks	Silt loam, Trace of gravel and cobbles	Moderate, medium prismatic	Extremely firm	Clear, smooth	
Btxb2 3.10-3.60	Brown (7.5YR 5/3), mp light brownish gray (10YR 6/2) streaks, dark brown (7.5YR 3/3) Fe-Mn nodules	Silt loam, Trace of gravel and cobbles	Moderate, medium subangular blocky	Extremely firm	Gradual, smooth	
BC 3.60-4.00+	Dark reddish brown (5YR 3/3), dark reddish brown (5YR 3/2), mp light brownish gray (10YR 6/2) mottles		Structureless, massive	firm	—	

PARENT MATERIAL/REGOLITH: Fill over alluvium

LANDFORM: Buried Terrace

ADDITIONAL NOTES: 2.5m fill over terrace soil

**GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
PLANNERS AND ENVIRONMENTAL SPECIALISTS
385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005**

TEST NUMBER BHT-5 WEST WALLProject C080204.10 Task 004SOIL DESCRIPTION BY: D.L. CremeensDATE: May 29, 2008LOCATION: Bell Bend Area 6, Section 1__

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
A 0-0.18	Very dark brown (10YR 2/2)	Silt loam, 10-20% gravel	Strong, medium granular	Very friable	Abrupt, wavy	
CA1 0.18-1.10	Variegated	Loam, 20-30% cobbles and boulders	Structureless, massive	Very firm	Clear, wavy	
CA2 1.10-2.80	Variegated- black (5YR 2.5/1), very dark grayish brown (10YR 3/2)	Sandy loam, 30-40% cobbles and boulders	Structureless, massive	Very firm	Diffuse	
Ab 2.80-2.87	Very dark gray (N 3/)	Sandy loam, 10-20% gravel	Structureless, massive	Very firm	Abrupt, smooth	Not continuous in trench
Btxb 2.87-4.11+	Brown (7.5YR 4/4), Mp gray (10YR 6/1) streaks	Silt loam, 10-20% gravel	Moderate, medium prismatic	Extremely firm		

PARENT MATERIAL/REGOLITH: Fill over alluviumLANDFORM: Buried TerraceADDITIONAL NOTES: 2.8m fill over terrace soil

GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
PLANNERS AND ENVIRONMENTAL SPECIALISTS
385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005

TEST NUMBER <u> BHT6 </u>							Project <u> C080204.10.004 </u>	
SOIL DESCRIPTION BY: <u> D. L. Cremeens </u>					DATE: <u> June 16, 2008 </u> LOCATION: <u> Bell Bend Area 6 Section 1 </u>			
HORIZON DEPTH (m)	SOIL COLOR MATRIX AND MOTTLING	TEXTURE Fine Earth / Rock Fragments	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS		
CA1 0-2.7	Varigated	Silt loam-sandy loam / 10-40% gravel and cobbles	Structureless, massive	Firm	Gradual			
CA2 2.7-3.9	Dark gray (N4/)	Silt loam / 10-20% gravel	Structureless, massive	Firm	Clear			
Ab 3.9-4.0	Very dark gray (5YR 3/1)	Silt loam / trace of gravel	Weak, medium granular	Friable	Abrupt			
BEb 4.0-4.2	Gray (10YR 5/1), few distinct light olive brown (2.5YR 5/4) mottles	Silt loam / trace of gravel	Weak, medium subangular blocky	Friable	Clear			
Bxb 4.2-4.7	Yellowish brown (10YR 5/6, 5/4), many prominent gray (10YR 6/1) streaks	Loam	Moderate, medium subangular blocky	Very Firm	Clear	Weak Bx horizon		
BCb 4.7-5.5	Dark grayish brown (10YR 4/2), common distinct dark yellowish brown (10YR 4/6) mottles	Loam	Weak, medium subangular blocky to structureless, massive	Firm	Diffuse			
C1 5.5-6.9	Gray (7.5YR 5/1), many prominent brown (7.5YR 4/4) mottles	Loam-sandy loam	Structureless, massive	Firm	Clear	2-5 cm sand lenses		
C2 6.9-7.5	Very dark gray (N3/)	Fine sandy loam	Structureless, massive	Firm	Clear			
C3 7.5-8.3	Very dark gray (N3/)	Fine sandy loam / trace of charcoal and wood fragments	Structureless, massive	Friable	Abrupt			
R 8.3+	Dark gray	Shale		Hard				
PARENT MATERIAL/REGOLITH: Fill Over Alluvium LANDFORM: Filled Terrace ADDITIONAL NOTES: Drilled & Sampled 2.3-8.3m					GAI CONSULTANTS, INC. ENGINEERS, GEOLOGISTS, PLANNERS AND ENVIRONMENTAL SPECIALISTS 385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005			

TEST NUMBER BHT-7

Project C080204.00, Task 004

SOIL DESCRIPTION BY: D. L. Cremeens

DATE: June 16, 2008

LOCATION: Bell Bend Area 6, Section 1

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	<u>TEXTURE</u> FINE EARTH/ROCK FRAGMENTS	<u>STRUCTURE</u>	<u>CONSISTENCE</u>	<u>BOUNDARY</u>	<u>COMMENTS</u>
A 0-0.2	Dark grayish brown (10YR 4/2)	Silt loam 10-20% gravel and cobbles	Strong, medium granular	Very friable	Clear, wavy	
CA 0.2-1.0	Variegated	Silt loam, loam 10-30% cobbles, gravel, wood, and glass	Structureless, massive	Very firm	Clear, irregular	
Ab 1.0-1.15	N3/, common prominent brown (7.5YR 4/4) mottles	Silt loam	Structureless, massive	Firm	Clear, wavy	Cg?
BCb 1.15-1.2	N5/ common prominent strong brown (7.5YR 4/6) mottles	Silt loam	Structureless, massive	Firm	Abrupt, wavy	
R 1.2+	Dark gray	Shale		Hard		

PARENT MATERIAL/REGOLITH: Fill Over Residuum

LANDFORM:

ADDITIONAL NOTES:

**GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
PLANNERS AND ENVIRONMENTAL SPECIALISTS
385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005**

TEST NUMBER BHT-8Project C080204.10, Task 004SOIL DESCRIPTION BY: D. L. CremeensDATE: June 17, 2008LOCATION: Bell Bend Area 6, Section 1

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	<u>TEXTURE</u> FINE EARTH/ROCK FRAGMENTS	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
A 0-0.1	Very dark grayish brown (10YR 3/2)	Silt loam 10-20% gravel and cobbles	Moderate, coarse granular	Very friable	Abrupt, wavy	Modern sod A
CA1 0.1-0.7	Variegated	Silt loam 20-40% cobbles and gravel	Weak, coarse subangular blocky	Friable	Clear, wavy	Fill
CA2 0.7-3.2	Very dark gray (2.5Y 3/1), variegated	Silt loam 10-20% gravel and cobbles	Structureless, massive	Firm	Clear, wavy	Fill
Ab/CA2 3.2-3.3	Very dark gray (2.5Y 3/1)	Silt loam 10-20% gravel and cobbles	Structureless, massive	Firm	Abrupt	A horizon mixed with fill
BEb 3.3-3.5	Grayish brown (10YR 5/2), few distinct light olive brown (2.5Y 5/4) mottles	Silt loam	Weak, medium subangular blocky	Friable	Clear	
Bxb 3.5-4.0	Brown (7.5YR 5/4), common prominent gray (10YR 6/1) streaks	Silt loam	Moderate, medium subangular blocky	Firm	Clear	Weak Bx, fm Fe-Mn nodules
BCg 4.0-4.9	Grayish brown (10YR 5/2), common distinct yellowish brown (10YR 5/4) mottles	Silt loam, fine sandy loam	Weak, coarse subangular blocky	Friable	Diffuse	
Cg1 4.9-5.7	Gray (2.5Y 5/1), common distinct light olive brown (2.5Y 5/4) mottles	Fine sandy loam	Structureless, massive	Friable	Clear	3.5cm sand lens @ 5.6m

<div style="display: flex; justify-content: space-between;"> TEST NUMBER <u>BHT-8</u> Project <u>C080204.10, Task 004</u> </div>						
SOIL DESCRIPTION BY: <u>D. L. Cremeens</u>				DATE: <u>June 17, 2008</u> LOCATION: <u>Bell Bend Area 6, Section 1</u>		
HORIZON DEPTH (m)	SOIL COLOR MATRIX AND MOTTLING	TEXTURE FINE EARTH/ROCK FRAGMENTS	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
Cg2 5.7-7.2	Grayish brown (2.5Y 5/2), many prominent brown (7.5YR 5/4) mottles	Fine sandy loam	Structureless, medium	Friable	Diffuse	
Cg3 7.2-7.9	N4/	Loamy fine sand Plant and wood fragments	Structureless, medium	Friable	Abrupt	O or A horizon?
R 7.9+	N2/	Shale				
PARENT MATERIAL/REGOLITH: Fill Over Alluvium LANDFORM: Filled Terrace ADDITIONAL NOTES: Drilled 1.8-7.9m			<div style="text-align: center;"> GAI CONSULTANTS, INC. ENGINEERS, GEOLOGISTS, PLANNERS AND ENVIRONMENTAL SPECIALISTS 385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005 </div>			

TEST NUMBER BHT-9

Project C080204.10, Task 004

SOIL DESCRIPTION BY: <u>D. L. Cremeens</u>				DATE: <u>June 17, 2008</u> LOCATION: <u>Bell Bend Area 6, Section 1</u>		
HORIZON DEPTH (m)	SOIL COLOR MATRIX AND MOTTLING	TEXTURE FINE EARTH/ROCK FRAGMENTS	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
CA1 0-2.1	Variegated	Silt loam, loam 20-30% cobbles, gravel, wood fragments	Structureless, massive	Firm	Gradual	Board fragments
CA2 2.1-2.6	Variegated	Silt loam, loam 20-30% gravel, and cobbles	Structureless, massive	Firm	Clear	
BEb 2.6-2.8	Grayish brown (10YR 5/2)	Silt loam	Weak, medium subangular blocky	Friable	Clear	
Bxb 2.8-3.5	Dark brown (10YR 4/3), few prominent light brownish gray (10YR 6/2) streaks, few prominent dark yellowish brown (10YR 4/6) mottles	Silt loam	Moderate, medium subangular blocky	Firm	Gradual	Weak Bx
BCg 3.5-4.1	Grayish brown (10YR 5/2), many distinct dark yellowish brown (10YR 4/4) mottles	Silt loam, fine sandy loam	Weak, medium subangular blocky	Friable	Clear	Cm Fe-Mn nodules
Cg1 4.1-4.3	Grayish brown (2.5Y 5/2), common distinct light olive brown (2.5Y 5/4), few prominent strong brown (7.5YR 5/6) mottles	Fine loamy sand	Structureless, massive	Friable	Diffuse	
Cg2 4.3-6.0	Gray (2.5Y 5/1), common distinct light olive brown (2.5 Y 5/4), few prominent brown (7.5YR 5/4) mottles	Fine sandy loam	Structureless, massive	Friable	Clear	2-3 cm sand lens @ 4.36m
Cg3 6.0-8.5	N3/, N2.5/	Fine sandy loam, silty clay loam, wood fragments	Structureless, massive	Firm		O or A horizon?
2C 6.8-8.5	N3/	Sandy loam 20-40% mixed gravels	Structureless, simple grain	Loose		Pleistocene gravels?
R 8.5+	Black to dark gray	Shale				
PARENT MATERIAL/REGOLITH: Fill Over Alluvium LANDFORM: Filled Terrace ADDITIONAL NOTES: Drilled 2.1-8.5m			GAI CONSULTANTS, INC. ENGINEERS, GEOLOGISTS, PLANNERS AND ENVIRONMENTAL SPECIALISTS 385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005			

TEST NUMBER BHT-10

Project C080204.10, Task 004

SOIL DESCRIPTION BY: D. L. Cremeens

DATE: June 17, 2008

LOCATION: Bell Bend Area 6, Section 1

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	<u>TEXTURE</u> FINE EARTH/ROCK FRAGMENTS	<u>STRUCTURE</u>	<u>CONSISTENCE</u>	<u>BOUNDARY</u>	<u>COMMENTS</u>
CA1 0-1.0	Variegated, olive gray (5Y 4/2), dark olive gray (5Y 3/2)	Silt loam 10-20% gravel and wood fragments	Structureless, massive	Very firm		Modern sod in upper 0.1m
CA2 1.0-1.5	Olive gray (5Y 4/2)	Silt loam 10-20% gravel and wood fragments	Structureless, massive	Very firm		
Ab 1.5-1.6	Very dark gray (10YR 3/1)	Silt loam	Moderate, medium granular	Friable	Abrupt	
BEb 1.6-1.8	Brown (10YR 5/3), common faint yellowish brown (10YR 5/4), grayish brown (10YR 5/2) mottles	Silt loam	Weak, medium subangular blocky	Friable	Clear	
Bxb1 1.8-2.2	Yellowish brown (10YR 5/4), many prominent gray (10YR 6/1) streaks	Silt loam	Moderate, medium subangular blocky	Firm	Gradual	Weak Bx
Bxb2 2.2-3.0	Brown (7.5YR 4/4), common prominent gray (7.5YR 6/1) streaks	Silt loam	Weak, medium prismatic	Firm	Gradual	
BCg 3.0-3.3	Brown (7.5YR 5/2), common prominent strong brown (7.5YR 4/6) mottles	Fine sandy loam	Weak , medium subangular blocky	Friable	Diffuse	
Cg1 3.3-5.7	Gray (10YR 5/1), many distinct yellowish brown (10YR 5/4) mottles	Silt loam , loam	Stuctureless, massive	Friable	Clear	3.5cm sand lens @ 5.5m
Cg2 5.7-6.0	Very dark grayN3/, black N2.5/	Fine sandy loam, sandy loam with 10-20% wood fragments	Structureless, massive	Friable	Abrupt	O or A horizon?
R 6.0+	Black	Shale				

PARENT MATERIAL/REGOLITH: Fill Over Alluvium

LANDFORM: Filled Terrace

ADDITIONAL NOTES: Drilled 1.0-6.0m

**GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
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385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005**

TEST NUMBER BHT-11

Project C080204.10, Task 004

SOIL DESCRIPTION BY: D.L. Cremeens

DATE: June 17, 2008

LOCATION: Bell Bend Area 6, Section 1

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	<u>TEXTURE</u> FINE EARTH/ROCK FRAGMENTS	<u>STRUCTURE</u>	<u>CONSISTENCE</u>	<u>BOUNDARY</u>	<u>COMMENTS</u>
CA 0-1.1	Variegated	Silt loam 10-20% gravel	Structureless, massive	Friable	Clear	Fill
Ab 1.1-1.2	Dark grayish brown (10YR 4/2)	Silt loam	Weak, medium granular	Friable	Abrupt	
BEb 1.2-1.4	Grayish brown (10YR 5/2), common distinct yellowish brown (10YR 5/4) mottles	Silt loam	Weak, medium subangular blocky	Friable	Clear	
Bxb 1.4-2.6	Brown (10YR 5/3), many prominent light brownish gray (10YR 6/2) mottles	Silt loam	Moderate, medium subangular blocky	Firm	Gradual	Weak Bx, Bw?
BCg 2.6-3.3	Grayish brown (2.5Y 5/2), many prominent strong brown (7.5YR 5/6) mottles	Silt loam	Weak, medium subangular blocky	Firm	Diffuse	
Cg1 3.3-4-7	Gray (10YR 5/1), common prominent yellowish brown (10YR 5/4) mottles	Fine sandy loam	Structureless, massive	Friable	Diffuse	
Cg2 4.7-5.0	N5/, common distinct light olive brown (2.5Y 5/3) mottles	Loamy sand	Structureless, massive	Friable	Abrupt	
Cg3 5.0-5.9	N2.5/	Loamy sand trace of gravel and wood fragments	Structureless, massive	Friable	Abrupt	
R 5.9+	Black	Shale				
PARENT MATERIAL/REGOLITH: Fill Over Alluvium LANDFORM: Filled Terrace ADDITIONAL NOTES: Drilled 1.0-5.9m			GAI CONSULTANTS, INC. ENGINEERS, GEOLOGISTS, PLANNERS AND ENVIRONMENTAL SPECIALISTS 385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005			

TEST NUMBER TU1 – Northeast Wall

Project C080204.10, Task 004

SOIL DESCRIPTION BY: D.L. Cremeens

DATE: June 30, 2008

LOCATION: Bell Bend Area 6, Section 1

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
CA 0-0.95						
CA/Ab 0.95-1.15		Large Boulders				Mixed CA and Ab
Bx1 1.15-1.8						
Bx2 1.8-2.5						
BC 2.5-2.7+						

PARENT MATERIAL/REGOLITH: Fill Over Alluvium

LANDFORM: Filled Rerrace

ADDITIONAL NOTES:

GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
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385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005

TEST NUMBER <u>TU2 – East Wall</u>				Project <u>C080204.10, Task 004</u>		
SOIL DESCRIPTION BY: <u>D. L. Cremeens</u>			DATE: <u>July 1, 2008</u>			
			LOCATION: <u>Bell Bend Area 6, Section 1</u>			
<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
A 0-0.14	Very dark grayish brown (10YR 3/2)	Silt loam 10-15% gravel	Moderate , medium granular	Friable	Clear, wavy	
CA1 0.14-1.1	Variegated	Silt loam 5-20% cobbles and gravel	Structureless, massive	Firm	Gradual, wavy	
CA2 1.1-1.42	Variegated	Silt loam, silty clay loam 10-30% cobbles and gravel	Structureless, massive	Friable	Clear, Irregular	Mixed with Ab-Bwb
Ab 1.2-1.28	Very dark grayish brown (2.5YR 3/2)	Silt loam 10-20 % gravel	Structureless, massive	Friable	Clear, irregular	Mixed with CA2
Bwb 1.28-1.42	Yellowish brown (10YR 5/4), common distinct grayish brown (10YR 5/2) mottles	Silt loam, silty clay loam 20-30% gravel	Structureless, massive	Friable	Clear, irregular	Mixed with CA2
C 1.42-1.50	N2/	Loamy sand	Structureless, massive	Friable	Abrupt	
R 1.50+	Black	Shale	-	Very friable	-	
PARENT MATERIAL/REGOLITH: Fill Over Alluvium			GAI CONSULTANTS, INC. ENGINEERS, GEOLOGISTS, PLANNERS AND ENVIRONMENTAL SPECIALISTS 385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005			
LANDFORM: Filled Terrace						
ADDITIONAL NOTES: Ab-Bwb Sequence only visible in pockets.						

TEST NUMBER TU3 – East Wall

Project C080204.10, Task 004

SOIL DESCRIPTION BY: D. L. Cremeens

DATE: July 1, 2008

LOCATION: Bell Bend Area 6, Section 1

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	TEXTURE	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
CA 0-1.12	Variegated	Slit loam 10-20% gravel and cobbles	Structureless, massive	Firm	Clear, wavy	
CA/A 1.12-1.58	Variegated, Very dark gray N3/	Silt loam 10-20% gravel, cobbles, boards	Structureless, massive	Firm	Abrupt, wavy	
R +1.58	Black	Shale				

PARENT MATERIAL/REGOLITH: Fill Over Alluvium

LANDFORM: Filled Terrace

ADDITIONAL NOTES:

**GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
PLANNERS AND ENVIRONMENTAL SPECIALISTS
385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005**

TEST NUMBER TU4 – North Wall

Project C080204.10, Task 004

SOIL DESCRIPTION BY: D. L. Cremeens

DATE: June 30, 2008

LOCATION: Bell Bend Area 6, Section 1

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	<u>TEXTURE</u> FINE EARTH/ROCK FRAGMENTS	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
CA1 0-1.1						
CA2 1.1-2.5						
Ab/CA2 2.5-2.9						
Bx-BC 2.9-3.5						

PARENT MATERIAL/REGOLITH: Fill Over Alluvium

LANDFORM: Filled Terrace

ADDITIONAL NOTES:

GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
PLANNERS AND ENVIRONMENTAL SPECIALISTS
385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005

TEST NUMBER TU5 – North Wall

Project C080204.10, Task 004

SOIL DESCRIPTION BY: D. L. Cremeens

DATE: June 30, 2008

LOCATION: Bell Bend Area 6, Section 1

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	<u>TEXTURE</u> FINE EARTH/ROCK FRAGMENTS	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
CA1 0-0.9						
CA2 0.9-2.45						
Bx1 2.45-3.0						
Bx2 3.0-3.4						
BC 3.4-4.1						

PARENT MATERIAL/REGOLITH: Fill Over Alluvium

LANDFORM: Filled Terrace

ADDITIONAL NOTES:

GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
PLANNERS AND ENVIRONMENTAL SPECIALISTS
385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005

TEST NUMBER TU6 – South Wall

Project C080204.10, Task 004

SOIL DESCRIPTION BY: D. L. Cremeens

DATE: June 30, 2008

LOCATION: Bell Bend Area 1, Section 1

<u>HORIZON DEPTH (m)</u>	<u>SOIL COLOR MATRIX AND MOTTLING</u>	<u>TEXTURE FINE EARTH/ROCK FRAGMENTS</u>	<u>STRUCTURE</u>	<u>CONSISTENCE</u>	<u>BOUNDARY</u>	<u>COMMENTS</u>
CA1 0-0.9	Variegated	Silt loam 5-10% cobbles	Structureless, massive	Firm	Clear, smooth	
CA2 0.9-2.7	Variegated, N4/	Silt loam	Structureless, massive	Firm	Abrupt, wavy	
Ab 2.7-2.85	Black (5Y 2.5/1)	Silt loam	Weak, medium subangular blocky	Friable	Abrupt, smooth	Apb?
Bx1 2.85-3.3	Strong brown (7.5YR 5/6), common prominent gray (10YR 6/1) streaks	Silt loam	Moderate, medium subangular blocky	Firm	Gradual	
Bx2 3.3-4.0	Yellowish brown (10YR 5/4), common prominent gray (10YR 6/1) streaks	Silt loam	Weak, medium subangular blocky	Firm	Gradual	
BC 4.0-4.14	Gray (5Y 5/1), common distinct reddish brown (2.5Y 5/4) mottles	Silt loam, loam	Structureless, massive	Friable		

PARENT MATERIAL/REGOLITH: Fill Over Alluvium

LANDFORM: Filled Terrace

ADDITIONAL NOTES:

**GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
PLANNERS AND ENVIRONMENTAL SPECIALISTS
385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005**

TEST NUMBER TU7 – South Corner

Project C080204.10, Task 004**SOIL DESCRIPTION BY: D. L. Cremeens**

DATE: June 30, 2008

LOCATION: Bell Bend Area 6, Section 1

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	<u>TEXTURE</u> FINE EARTH/ROCK FRAGMENTS	<u>STRUCTURE</u>	<u>CONSISTENCE</u>	<u>BOUNDARY</u>	<u>COMMENTS</u>
CA1 0-0.9	Variegated		Structureless, massive	Firm	Gradual, smooth	
CA2 1.09-2.28	Variegated		Structureless, massive	Friable	Clear, smooth	
Ab 2.28-2.43	Very dark gray (2.5Y 3/1), black (2.5Y 2.5/1)	Silt loam	Weak , medium subangular blocky	Friable	Abrupt, wavy	
Bx1 2.43-2.89	Brown (7.5YR 5/4), common distinct brown (7.5YR 5/2) streaks	Silt loam	Moderate, medium suangular blocky	Very firm	Clear, wavy	
Bx2 2.89-3.0	Yellowish brown (10YR 5/4), common distinct gray (10YR 5/1) streaks	Silt loam	Weak, medium subangular blocky	Firm	Gradual, smooth	
BC 3.0-3.35	Weak red (2.5Y 5/2), common distinct 5YR 4/4 mottles, common prominent yellowish brown (10YR 5/4) mottles	Silt loam, fine sandy loam	Structureless, massive	Friable		

PARENT MATERIAL/REGOLITH: Fill Over Alluvium

LANDFORM: Filled Terrace

ADDITIONAL NOTES:

**GAI CONSULTANTS, INC.
ENGINEERS, GEOLOGISTS,
PLANNERS AND ENVIRONMENTAL SPECIALISTS
385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005**

TEST NUMBER TU8 – Southeast Corner

Project C080204.10, Task 004

SOIL DESCRIPTION BY: D. L. Cremeens

DATE: July 1, 2008

LOCATION: Bell Bend Area 6, Section 1

<u>HORIZON</u> DEPTH (m)	<u>SOIL COLOR</u> MATRIX AND MOTTLING	<u>TEXTURE</u> FINE EARTH/ROCK FRAGMENTS	STRUCTURE	CONSISTENCE	BOUNDARY	COMMENTS
A 0-0.22						
CA 0.22-1.01	Variegated					
Ab 1.01-1.33	Dark gray (2.5Y 4/1), Very dark gray (2.5Y 3/1)	Silt loam	Weak, medium subangular blocky	Friable	Abrupt, wavy	
BE 1.33-1.50	Light olive brown (2.5Y 5/3)	Silt loam Trace of gravel	Weak, medium subangular blocky	Friable	Clear, wavy	
Bx1 1.50-2.14	Brown (7.5YR 4/4) common distinct gray (7.5 YR 5/1) streaks	Silt loam	Moderate, medium prismatic to moderate, medium subangular blocky	Very firm	Gradual	
Bx2 2.14-2.50	Brown (7.5YR 5.3) common distinct gray (7.5YR 5/1) streaks	Silt loam, loam	Weak, medium subangular blocky	Firm	Diffuse	
BC 2.50-2.80	Grayish brown (10YR 5/2) many prominent brown (7.5YR 4/4) mottles	Fine sandy loam	Structureless, massive	Friable		
PARENT MATERIAL/REGOLITH: Fill Over Alluvium LANDFORM: Filled Terrace ADDITIONAL NOTES:			GAI CONSULTANTS, INC. ENGINEERS, GEOLOGISTS, PLANNERS AND ENVIRONMENTAL SPECIALISTS 385 EAST WATERFRONT DRIVE, HOMESTEAD, PA 15120-5005			

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