



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MD 21203-1715

MAR 16 2010

Operations Division

Mr. Reid J. Nelson, Director
Office of Federal Agency Programs
Advisory Council on Historic Preservation
Old Post Office Building, Suite 803
1100 Pennsylvania Avenue, N.W.
Washington, DC 20004

Dear Mr. Nelson:

I am writing to conclude the review by the U.S. Army Corps of Engineers, Baltimore District (Corps) in consultation with the Maryland State Historic Preservation Officer (MD SHPO), regarding the Department of the Army (DA) application CENAB-OP-RMS (Calvert Cliffs 3 Nuclear Project, LLC/Unistar Nuclear Operating Services, LLC)2007-08123, pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended.

In a letter dated July 15, 2009, (Enclosure 1) and in consultation with the MD SHPO, we notified you that the proposed undertaking would have an adverse effect on historic properties in accordance with 36 CFR 800.6(a) (1). We also provided documentation referenced in 36 CFR 800.11(e): *Finding of no adverse effect or adverse effect.*

There have been no substantive revisions or additions to previous documentation provided to your office regarding this project. However, the Corps, the MD SHPO and the permit applicant have entered into a Memorandum of Agreement (MOA) to resolve the adverse effects associated with this undertaking. As described in the subject MOA, the applicant, in consultation with the Corps and MD SHPO, has agreed to implement cultural resource studies for ancillary environmental stewardship opportunities, reforestation activities, or other modifications to the previously reviewed Project for which cultural resource studies have not been completed, even though such treatment may exceed the Corps' scope of authority as published in Appendix C, and has participated in the consultation, has responsibilities for implementing stipulations under the Memorandum of Agreement ("MOA"), and is a concurring party to this MOA. The Corps, and the MD SHPO agree that the requirement for appropriate public notice and involvement stated in 36 CFR 800.14 (b) (2) (ii) is satisfied by a combination of past public notice and public and agency hearings and reviews, which includes consideration of the Project's effects on historic properties. All of the parties to the MOA are satisfied that the stipulations in the MOA successfully take into account the effect of the project on historic properties. As further described in the MOA, the public was provided the opportunity to comment on the DA application CENAB-OP-RMS (Calvert Cliffs 3

Nuclear Project, LLC/Unistar Nuclear Operating Services, LLC) 2007-08123 by public notice dated September 3, 2008. No comments were received from the public on this project. Finally, by letter dated July 24, 2009, the Advisory Council on Historic Preservation declined to participate in the Section 106 consultation regarding this project, by advising the Corps that further participation and consultation, to resolve adverse effects, was not needed, (Enclosure 2).

The MEMORANDUM OF AGREEMENT AMONG THE U.S. ARMY CORPS OF ENGINEERS AND THE MARYLAND STATE HISTORIC PRESERVATION OFFICER AND CALVERT CLIFFS 3 NUCLEAR PROJECT, LLC (AS CONCURRING PARTY) PURSUANT TO 36 CFR 800 AND 33 CFR PART 325 APPENDIX C REGARDING THE CALVERT CLIFFS NUCLEAR POWER PLANT CALVERT COUNTY, MARYLAND

was developed to mitigate adverse effects to historic properties. In accordance with 36 CFR 800.6(b)(1)(iv), we are filing a copy of this MOA (Enclosure 3) with your office to conclude the Corps' requirements under Section 106 of the National Historic Preservation Act for this project. Further, any Department of the Army Section 10/404 permit that may be issued will include special conditions for implementation of this executed MOA.

Copies of the signed MOA are being provided to all of the signatories as well as Ms. Laura Quinn, Nuclear Regulatory Commission, and Ms. Cheryl Kerr, Maryland Department of the Environment. Please file the material enclosed and contact Mr. Woody Francis, of this office, at 410-962-5689 if you have any questions.

Sincerely,



Kathy B. Anderson
Chief, Maryland Section Southern

Enclosures

**MEMORANDUM OF AGREEMENT
AMONG
THE U.S. ARMY CORPS OF ENGINEERS AND
THE MARYLAND STATE HISTORIC PRESERVATION OFFICER
AND CALVERT CLIFFS 3 NUCLEAR PROJECT, LLC (AS CONCURRING PARTY)
PURSUANT TO 36 CFR 800 AND 33 CFR PART 325 APPENDIX C
REGARDING THE CALVERT CLIFFS NUCLEAR POWER PLANT
CALVERT COUNTY, MARYLAND**

Whereas, Calvert Cliffs 3 Nuclear Project, LLC (“CC3” or “Concurring Party”) proposes to expand the existing Calvert Cliffs Nuclear Power Plant facility by constructing the new Calvert Cliffs Nuclear Power Plant Unit 3 (the “Project”) as described in the Concept Site Plan dated July 2008 (Exhibit A); and

Whereas, the Project will entail the construction of a power block, laydown areas, a cooling tower, a switchyard, a desalination plant, access and haul roads, intake structures, and a discharge pipe and fish return pipe, and will also require dredging activities and the restoration of a barge unloading facility; and

Whereas, aspects of the Project will involve impacts to jurisdictional waters of the United States and will, therefore, require a Section 10 permit and a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers (“Corps”), Baltimore District, as well as a Nontidal Wetlands and Waterways permit from the Maryland Department of the Environment (“MDE”); and

Whereas, CC3 has filed the appropriate permit application with the Corps in order to authorize this work. The said permit application has been assigned the number 2007-08123-M05; and

Whereas, the Corps has determined that the issuance of a Section 10/Section 404 permit for the Project constitutes an “Undertaking” pursuant to the provisions of Section 106 of the National Historic Preservation Act of 1966 (“NHPA”), as amended (16 U.S.C. 470f); and

Whereas, in consultation with the Maryland State Historic Preservation Officer (“MD SHPO”), the Corps determined that the Project’s Area of Potential Effect/Permit Area includes the Baltimore & Drum Point Railroad (CT-1259) and Camp Conoy (CT-1312), both eligible for listing in the National Register of Historic Places (“National Register”); as well as archeological site 18CV474 which has been identified as a mid-nineteenth to early-twentieth century domestic site associated with the Somervell plantation and is eligible for listing in the National Register; and

Whereas, the Corps has consulted with the MD SHPO pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f) and 33 CFR Part 325, Appendix C; and has determined that elements of the Project would have adverse effects on the Drum Point Railroad Bed, Camp Conoy, and archeological site 18CV474, since the Project will require the alteration and demolition of portions of these resources; and

Whereas, the Corps has determined that the Project may affect unidentified archeological resources that may be located in areas that are associated with Project-related ancillary activities, including, but not limited to, wetland mitigation sites, reforestation areas, or other ancillary actions connected to the Project, that have not yet been subject to prior cultural resources investigations; and

Whereas, CC3 has agreed to implement cultural resource studies for ancillary environmental stewardship opportunities, reforestation activities, or other modifications to the previously reviewed Project for which cultural

resource studies have not been completed, even though such treatment may exceed the Corps scope of authority as published in Appendix C; and

Whereas, CC3 participated in the consultation, has responsibilities for implementing stipulations under this Memorandum of Agreement ("MOA"), and has been invited to be a concurring party to this MOA; and

Whereas, the Corps, and the MD SHPO agree that the requirement for appropriate public notice and involvement stated in 36 CFR 800.14 (b)(2)(ii) is satisfied by a combination of past public notice and public and agency hearings and reviews, which includes consideration of the Project's effects on historic properties;

Whereas, the Corps notified the Advisory Council on Historic Preservation ("Council") of the Project's adverse effect on historic properties and the Council declined to participate in consultation;

Now therefore, the Corps, the MD SHPO, and CC3 (hereinafter referred to as "Parties") agree that the Project shall be implemented in accordance with the following stipulations in order to take into account the effect of the permitted project upon historic properties.

STIPULATIONS

Work related to the Project, including work subject to authorization pursuant to the Section 10/404 permit, will be carried out in accordance with the following stipulations and such work may be performed in advance of the issuance of the Section 10/404 permit, unless (1) otherwise stated below, or (2) the work would have impacts to wetlands requiring a Section 10/404 permit. The Corps will condition its Section 10/404 permit to further ensure that the following measures are carried out as part of the Project:

I. TREATMENT OF ARCHEOLOGICAL RESOURCES

The Corps will ensure that CC3 implements the following measures in order to mitigate the Project's adverse effects on archeological site 18CV474 in accordance with the time frames and stipulations established in this MOA.

A. ARCHEOLOGICAL SITE 18CV474 - DATA RECOVERY

1. CC3 shall ensure that the treatment program at archeological site 18CV474 is conducted in accordance with the data recovery plan produced on behalf of CC3 by GAI Consultants, Inc. (Data Recovery Plan: Site 18Cv474, Calvert Cliffs Nuclear Power Plant, Calvert County, Maryland [Frye, July 2009]), filed with the Corps on July 27, 2009, accepted by the MD SHPO on August 3, 2009 and attached as Exhibit B.
2. CC3 shall implement the program prior to and in coordination with those Project activities that could disturb the site. It is CC3's intention that the removal of the Camp Conoy improvements will not disturb Site 18CV474.
3. The Corps, CC3 and the MD SHPO will meet on-site to evaluate the success of the data recovery program, near the end of the fieldwork efforts. CC3 shall submit a management summary to the Corps and the MD SHPO documenting the completion of fieldwork for a 15 day review. Upon receipt of the written concurrence from the Corps, CC3 may proceed with construction activities in the site areas concurrently with completion of the remaining laboratory processing and analysis, and reporting phases of the data recovery work.

II. TREATMENT OF HISTORIC BUILDINGS AND LANDSCAPES

The Corps will ensure that CC3 implements the following measures in order to mitigate the Project's adverse effects on the Drum Point Railroad Bed and Camp Conoy in accordance with the time frames and stipulations established in this MOA.

A. DOCUMENTATION OF CAMP CONOY AND THE DRUM POINT RAILROAD BED

1. CC3 shall ensure that Camp Conoy and the Drum Point Railroad Bed are documented in accordance with Revised Mitigation Plan for Camp Conoy (CT-1312) and Revised Mitigation Plan for Baltimore & Drum Point Railroad (CT-1295) each dated June 25, 2009 and attached as Exhibit C.
2. No physical alteration of Camp Conoy or the Drum Point Railroad Bed shall begin until the Field Recordation described in Exhibit C, Task 3 for such historic property is provided to the MD SHPO for review and comment and accepted by the Corps.
3. Plans, photographs, and written property descriptions shall be prepared and packaged in accordance with The Standards and Guidelines for Architectural and Historical Investigations in Maryland and in a format allowing for them to be added to the Maryland Inventory of Historic Properties binders in the MD SHPO library.
4. Plans and site plans shall meet the standards described on pages 38-9 of The Standards and Guidelines for Architectural and Historical Investigations in Maryland.
5. 35mm film photography shall meet the standards described on pages 36-8 of The Standards and Guidelines for Architectural and Historical Investigations in Maryland.
6. Digital photography shall meet the standards described in Guidelines and Resources for Compliance-Generated Determinations of Eligibility (DOEs); Appendix E - Guidelines for Digital Images.
7. The Technical Reports shall be prepared in a bound-report format.
8. Draft copies of the Technical Reports (including historic context) for each historic property shall be submitted to the MD SHPO and other interested parties for comment within five (5) years after the execution of this MOA.
9. The final Technical Reports shall take the comments of the MD SHPO and other interested parties into account.
10. A minimum of eight (8) copies of each final Technical Report shall be distributed to the MD SHPO (one copy), the Calvert County Historical Society, the Calvert County Department of Planning and Zoning, and other publically-accessible research locations.

III. PROJECT MODIFICATIONS AND ANCILLARY ACTIVITIES

Related activities including, but not limited to, ancillary environmental stewardship opportunities, wetland mitigation sites, or reforestation areas, or other modifications to the previously reviewed Project may be added to the Project in the future. Should such activities be added for which cultural resources studies have not been completed, the Corps and CC3 shall ensure that consultation ensues with the MD SHPO and other relevant consulting parties and that all required cultural resources studies are implemented in accordance with the applicable performance standards in Stipulation VI and with the following coordination procedures:

A. IDENTIFICATION

1. The Corps, the MD SHPO and CC3 shall review any additions or changes to the Project, and CC3 shall ensure that identification investigations are implemented as necessary to identify any historic properties that may be impacted by the proposed ancillary activity or modification. CC3 shall provide all completed information to the MD SHPO and the Corps for review and comment.

2. CC3 shall complete and report survey efforts to identify resources potentially eligible for inclusion in the National Register that may be impacted by the Project in cultural resource-sensitive areas not subject to prior cultural resource identification investigations.
3. CC3 shall ensure that the work is accomplished in accordance with the relevant performance standards in Stipulation VI and in consultation with the MD SHPO and the Corps. CC3 will conduct the work as soon as possible after it has obtained access to these areas and prior to construction in these areas.
4. CC3 will document the results of the survey in report form, and provide copies to the Corps and the MD SHPO for review and comment.
5. If the MD SHPO does not provide comments within thirty (30) calendar days of receipt, the Corps and CC3 may assume MD SHPO acceptance of the results.

B. EVALUATION

1. If the Corps determines that it is infeasible to avoid impacting cultural resources identified by completion of the survey efforts in Stipulation III.A, the Corps, in consultation with the MD SHPO and in accordance with the Performance Standards in Stipulation VI of this MOA, will evaluate each of the identified cultural resources for their eligibility for listing in the National Register by applying the National Register criteria for evaluation (36 CFR 60.4 [a-d]), and in accordance with 36 CFR 800.4 (c). The Corps will ensure that CC3 completes National Register eligibility evaluations, which will include documentary research, field investigation, analyses, and reporting.
2. CC3 shall provide the results of any such evaluation studies to the Corps and the MD SHPO for review, comment, and formal determinations of eligibility.
3. If the MD SHPO does not provide comments within thirty (30) calendar days of receipt, the Corps and CC3 may assume MD SHPO acceptance of the results.

C. TREATMENT

1. Should any property eligible for inclusion in the National Register be identified under Stipulations III.A and III.B, CC3 shall make a reasonable and good-faith effort to avoid adversely affecting the resources by relocating or modifying the proposed action. If adverse effects are unavoidable, CC3, the Corps and the MD SHPO shall consult in accordance with 36 CFR § 800.6 to develop and implement appropriate treatment options.
2. CC3 shall ensure that any resulting cultural resources work is accomplished in accordance with the relevant performance standards in Stipulation VI.

IV. PUBLIC INTERPRETATION

1. CC3 will prepare and implement a public education and outreach program as part of the Project in accordance with the Revised Mitigation Plan (Exhibit C), regardless of whether CC3 conducts Project activities that disturb Camp Conoy and/or the Drum Point Railroad Bed. Such public education and outreach program shall also incorporate such information and materials as have heretofore been gathered during the Phase I&II archeological investigations conducted by CC3 in connection with the Project, regardless of whether CC3 conducts Project activities that disturb Site 18CV474. In addition, if CC3 conducts Project activities that disturb Site 18CV474, CC3 will prepare and implement a public education and outreach program that covers the full scope of the Data Recovery Plan (Exhibit B). The public education and outreach program shall be provided to the MD SHPO for review and comment prior to implementation.
2. CC3 shall provide the MD SHPO with a schedule for implementing the public education and outreach program. CC3 shall submit the schedule to the MD SHPO within two (2) years after the execution of this

- MOA. The schedule shall include a timeline detailing the proposed development and submittal of plans for the long-term public exhibit on the cultural resources investigations that have been conducted for the Project.
3. CC3 shall provide the MD SHPO with copies of any completed public interpretation materials, such as conference papers, brochures, poster, articles, and other items.
 4. CC3 will provide the MD SHPO with electronic copies of report photographs, a copy of the final archeological report in PDF format, and a non-technical summary of the Project and its cultural resources investigations using a template provided by the MD SHPO for use on the MD SHPO website.

V. UNEXPECTED DISCOVERY OF HISTORIC PROPERTIES

In the event that a previously unidentified archeological resource is discovered during construction, CC3 will ensure that the MD SHPO and the Corps are notified within five (5) working days of the discovery, and all construction involving subsurface disturbance will be immediately halted in the area of the discovered resource and in the area immediately surrounding the resource where further subsurface deposits may reasonably be expected to occur. CC3 and the MD SHPO, or an archeologist approved by the MD SHPO, will inspect the work site without unreasonable delay and determine the parameters of the affected archeological site. Construction work may then continue in the project area outside of those parameters. Within fifteen (15) working days of first notifying the MD SHPO, CC3, in consultation with the MD SHPO and the Corps, will assess the National Register eligibility of the resource. If the resource is assessed as possessing those qualities of significance identified in the National Register criteria, CC3 will ensure that the appropriate avoidance, protection, and/or treatment measures are implemented in accordance with Stipulation III of this MOA.

Nothing in this provision shall be interpreted to require CC3 to maintain an archeologist on-site during any portion of construction.

VI. PERFORMANCE STANDARDS

A. PROFESSIONAL QUALIFICATIONS

CC3 will ensure that all historic property investigations will be conducted under the supervision of a qualified individual or individuals who meet, at a minimum, the appropriate qualifications set out in "Professional Qualifications" (36 CFR Part 61, Appendix A) for the activity that they have been contracted to perform.

B. STANDARDS AND GUIDELINES

CC3 will ensure that all historic property investigations and work performed pursuant to this MOA will be conducted in a manner consistent with the principles and standards contained in the documents (and any subsequent revisions thereof) listed below:

1. *Standards and Guidelines for Archeological Investigations in Maryland* (Shaffer and Cole 1994); and
2. *The Standards and Guidelines for Architectural and Historical Investigations in Maryland* (Maryland Historical Trust 2000).

C. CURATION

CC3 shall ensure that all materials and records resulting from historic properties investigations conducted within the project area will be curated in accordance with 36 CFR Part 79 at the Maryland Archeological Laboratory.

D. REPORTS

All historic property investigations performed pursuant to this MOA shall conclude with written reports. CC3 will submit a draft of each final report to the Corps and the MD SHPO for review and comment and shall ensure that the comments of the Corps and the MD SHPO are addressed in each final report. CC3 shall provide two copies of each final report to the Corps, the MD SHPO, the Calvert County Historical Society, and the Calvert County Department of Planning and Zoning. In addition, CC3 will provide an electronic copy of the final report in the form of a PDF file generated directly from the original Word document to the MD SHPO.

VII. MD SHPO REVIEW AND COMMENT

The MD SHPO will review and provide written comments within thirty (30) calendar days after receipt of all plans and reports for a historic property that CC3 submits for review pursuant to the terms of this MOA. If the MD SHPO fails to provide written comments on any item within thirty (30) calendar days of receipt, CC3 may assume that the MD SHPO agrees with the specific plan or report submitted for review.

VIII. COORDINATION WITH THE MARYLAND HISTORICAL TRUST ACT OF 1985

The MD SHPO agrees that the fulfillment of the terms of this MOA will satisfy the responsibilities of any Maryland state agency under the requirements of the Maryland Historical Trust Act of 1985, as amended, Sections 5A-325 and 5A-326 of the State Finance and Procurement Article of the Annotated Code of Maryland, for those components of the Project which require licensing, permitting and/or funding actions from Maryland agencies.

IX. AMENDMENT

Should any Party to this MOA request an amendment, the requesting Party shall notify all other Parties in writing. The written notification shall include a statement of the purpose of the required amendment and the proposed wording to amend this MOA. All Parties shall review the proposed amendment and, if necessary, shall consult among themselves to discuss the amendment. If after consultation it is agreed that the amendment is necessary or desirable, all Parties to this original MOA shall sign the amended MOA. If necessary, dispute resolution shall follow Stipulation X.

X. DISPUTE RESOLUTION

Should any Party to this MOA object in writing to the Corps regarding any actions carried out or proposed with respect to the Project or the implementation of this MOA, the Corps shall consult with the objecting Party to resolve the objection. If, after initiating such consultation, the Corps determines that the objection cannot be resolved through consultation, the Corps shall forward all documentation relevant to the objection to the Council, including the Corps' proposed response to the objection.

Within thirty (30) days after receipt of all pertinent documentation, the Council may exercise any one of the following options:

- Advise the Corps that the Council concurs in the Corps proposed response to the objection, whereupon the Corps shall respond to the objection accordingly;
- Provide the Corps with recommendations, which the Corps shall take into account in reaching a final decision regarding its response to the objection; or

- Notify the Corps that the objection will be referred for comment pursuant to 36 CFR § 800.7 and proceed to refer the objection and the resulting comment. The resulting comment shall be taken into account by the Corps in accordance with 36 CFR § 800.7(c)(4), and Part 110(1) of NHPA.

Should the Council not exercise any of the above options within thirty (30) days after receipt of all pertinent documentation, the Corps may assume the Council's concurrence in its proposed response to the objection.

The Corps shall take into account any Council recommendation or comment provided in accordance with this stipulation with reference only to the subject of the dispute; the Corps's responsibility to carry out all actions under this MOA that are not the subject of the dispute shall remain unchanged.

XI. RESOLUTION OF OBJECTIONS BY THE PUBLIC

At any time during implementation of the measures stipulated in this MOA, should any objections pertaining to any such measure or its manner of implementation be raised by a member of the public, the Corps shall notify the Parties to this MOA and take the objection into account, consulting with the objector and, should the objector so request, with any of the other Parties to this MOA, to resolve the objection.

XII. MODIFICATIONS TO THE PERMIT

If CC3 requests any modification to the referenced permit, after said permit has been issued by the Corps, the Corps, in consultation with the MD SHPO, will determine if the requested modification can be accomplished in accordance with the terms of this MOA. If the terms of this MOA cannot continue to be met, the Corps will notify CC3 in writing of said fact within thirty (30) days of the modification request. In the event that the requested modification cannot be undertaken without modifying the terms of this MOA, then CC3 may request an amendment to this MOA.

XIII. TERMINATION

If the Corps determines that it cannot implement the terms of this MOA, or if the MD SHPO determines that this MOA is not being properly implemented, the Corps or the MD SHPO may propose to the other Parties to this MOA that it is to be terminated. The Party so proposing to terminate this MOA shall so notify all Parties to this MOA, explaining the reasons for termination and affording them at least thirty (30) days to consult and seek alternatives to termination. The Parties shall then consult. Should consultation fail, the Corps or the MD SHPO may terminate this MOA by so notifying all Parties.

Should this MOA be terminated, the Corps shall either:

- Consult in accordance with 36 CFR Part 800.6(a)(1) to develop a new MOA; or
- Request the comments of the Council pursuant to 36 CFR Part 800.7(a)(2).

The Corps and the Council may conclude the Section 106 process with a Memorandum of Agreement between them if the MD SHPO terminates consultation in accordance with 36 CFR Part 800.7(a)(2).

XIV. NOTICES

Any notices required to be sent in accordance with this MOA shall be mailed to the Parties by first class mail, postage prepaid. Notice shall be sent to the Parties as follows:

U.S. Army Corps of Engineers
Baltimore District
10 S. Howard Street
Baltimore, MD 21201
Attn: William P. Seib, Chief, Regulatory Branch

Maryland State Historic Preservation Officer
100 Community Place
Crownsville, MD 21032
Attn: J. Rodney Little, Director/SHPO

Calvert Cliffs 3 Nuclear Project, LLC
100 Constellation Way
Suite 1400P
Baltimore, MD 21202
Attn: Edward P. Jarmas, General Manager

XV. APPLICABILITY

The covenants and agreements set forth in this MOA are to run with the land; are not deemed to be personal to CC3; and shall be binding upon CC3 and its successors, successors in interest, and assigns for development purposes only.

XVI. DURATION

This Agreement shall be null and void if its terms are not carried out within ten (10) years from the date of execution, unless the signatories agree in writing to an extension for carrying out its terms.

Execution of this MOA by the Corps and the MD SHPO, implementation of its terms by the Corps, and submittal of this MOA to the Council provide evidence that the Corps has afforded the Council an opportunity to comment on the undertaking and its potential effects on historic properties and that the Corps has taken into account the effects of the undertaking on historic properties.

U.S. ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT

By: William P. Seib Date: 3/15/10

William P. Seib
Chief, Regulatory Branch

MARYLAND STATE HISTORIC PRESERVATION OFFICER

By: J. Rodney Little Date: 3-4-10

J. Rodney Little
Director / State Historic Preservation Officer
Maryland Historical Trust

CONCURRING PARTY:

CALVERT CLIFFS 3 NUCLEAR PROJECT, LLC

By: Edward P. Jarmas Date: 2-25-2010

Edward P. Jarmas
General Manager

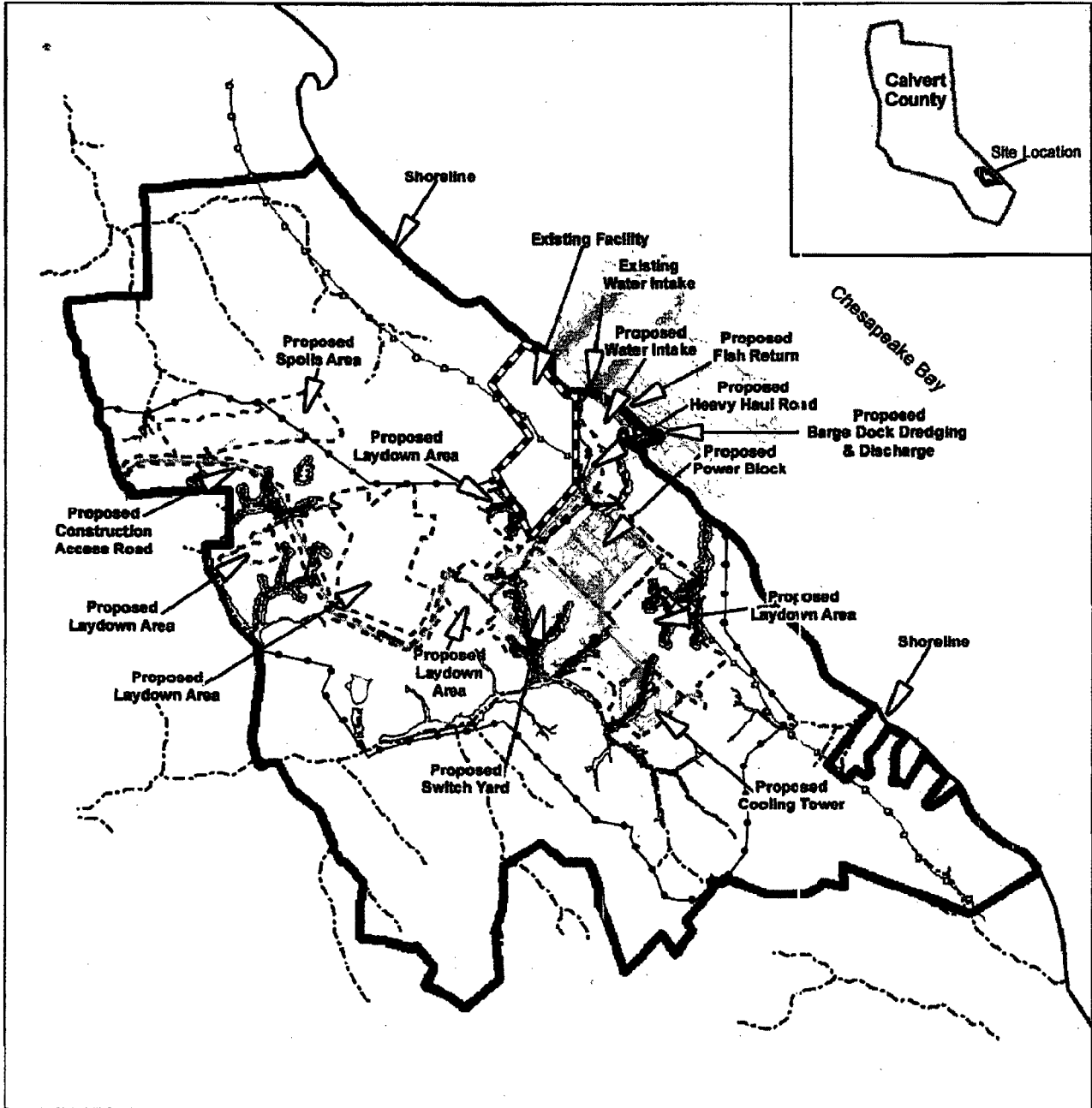
EXHIBIT A
CALVERT CLIFFS NUCLEAR POWER PLANT UNIT 3 CONCEPT SITE PLAN

EXHIBIT B
DATA RECOVERY PLAN FOR ARCHEOLOGICAL SITE 18CV474

EXHIBIT C
REVISED MITIGATION PLANS FOR CAMP CONOY AND THE DRUM POINT RAILROAD BED

EXHIBIT A

CALVERT CLIFFS NUCLEAR POWER PLANT UNIT 3 CONCEPT SITE PLAN



PURPOSE: PLANT EXPANSION

DATUM: (NGVD 29)

PROJECT LATITUDE/LONGITUDE:
 38.424133
 -76.441598



CONCEPT SITE PLAN

SCALE IN FEET



CALVERT CLIFFS NUCLEAR POWER PLANT

IN:
 PATUXENT / WEST CHESAPEAKE BAY
 COUNTY OF: CALVERT STATE: MD
 APPLICATION BY:
 CALVERT CLIFFS 3 NUCLEAR PROJECT, LLC
 AND UNISTAR NUCLEAR OPERATING SERVICES, LLC

DATE: 5/09/08 REV1 7/14/08

Map Document: G:\Calvert Cliffs\Station_5_1_08\Map\Final Figures\Figure3_SITE_PLAN.mxd
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EXHIBIT B

DATA RECOVERY PLAN FOR ARCHEOLOGICAL SITE 18CV474

Data Recovery Plan: Site 18Cv474

Calvert Cliffs Nuclear Power Plant

Calvert County, Maryland

Lead Agency: NRC

Prepared for:

UniStar Nuclear Development, LLC

Prepared by:

GAI Consultants
Pittsburgh Office

385 East Waterfront Drive
Homestead, PA 15120-5005

GAI Project No. C081163.00

July 8, 2009



Data Recovery Plan: Site 18Cv474

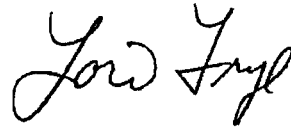
Calvert Cliffs Nuclear Power Plant

Calvert County, Maryland

Lead Agency: NRC

Prepared for:
UniStar Nuclear Development, LLC

Prepared by:



Lori A. Frye
GAI Consultants
Pittsburgh Office
385 East Waterfront Drive
Homestead, PA 15120-5005

GAI Project No. C081163.00

July 8, 2009



gai consultants

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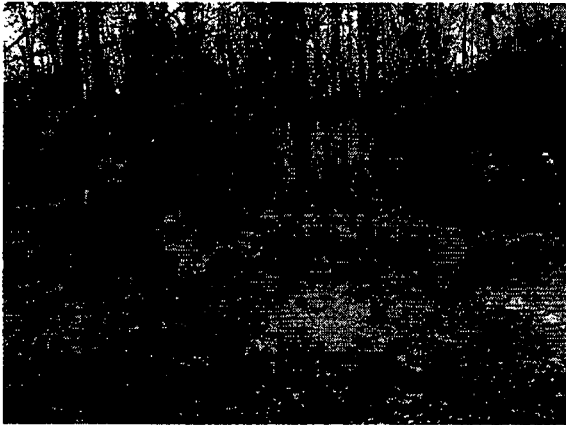
Introduction and Project Background

Between October 2006 and May 2008, GAI Consultants, Inc., (GAI) conducted Phase I Cultural Resources Survey and Phase II National Register Site Evaluations, including Site 18Cv474, at the Calvert Cliffs Nuclear Power Plant (CCNPP), Calvert County, Maryland, on behalf of UniStar Nuclear Development, LLC (UniStar Nuclear), a subsidiary of Constellation Energy, under contracts to TetraTech NUS (Phase I) and MACTEC (Phase II) (Munford et. al. 2008) (Figure 1). UniStar Nuclear proposes construction of a new nuclear power generating unit adjacent to the existing CCNPP facility. The proposed project also includes construction of ancillary facilities (e.g. cooling water intake, discharge structures and access roads), temporary lay-down areas, and wetland and stream mitigation localities covering 683 acres in 2006 (Figure 2).

UniStar Nuclear performed this study in partial fulfillment of a Nuclear Regulatory Commission (NRC), Combined Operating License Application (COLA), and a Maryland Public Service Commission (PSC) Certificate of Public Convenience and Necessity (CPCN), under the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended. The Phase I and Phase II studies met the requirements of 36CFR771, as amended; the guidelines developed by the Advisory Council of Historic Preservation published November 26, 1980; and the procedures for the Protection of Historic Properties as set forth in 36CFR800, as amended. This study also followed Maryland Historical Trust's (MHT) *Standards and Guidelines for Archeological Investigations in Maryland* (Shaffer and Cole 1994).

Site 18Cv474 is located in Maryland Archeological Research Unit 9 (Estuarine Patuxent Drainage) and represents the remains of a mid-nineteenth through early-twentieth-century domestic site containing a structure foundation with partially intact chimneystack associated with a possible tenant or slave occupation. This site was located on a small narrow ridge in a forested area approximately 700 feet west of Road C in the Camp Conoy section of the project area (Photograph 1).

GAI's survey and testing identified a large developed spring located approximately 210 feet (64 meters) west (and downslope) of the southwest corner of the chimney foundation that is likely associated with the site. GAI's Phase I and II investigation at the site produced 3,644 artifacts and identified four cultural features during.



Photograph 1. Overview of Site 18Cv474, View to Southeast.

Statement of Significance

Site 18Cv474 was evaluated according to the criteria for listing in the National Register of Historic Places. This requires that a site possess integrity and meet at least one of four National Register Criteria for Evaluation (36 CFR 60.4 [a-d]) for a specific time period and context. Site 18Cv474 has *in situ* archaeological features and archaeological deposits and therefore possesses integrity. Site 18Cv474 represents a small family farmstead site dating from ca. 1850-1910 that has the potential to provide information on the agricultural and architectural research themes in Calvert County during this period. On the basis of the Phase I/II archaeological investigations, GAI recommends that Site 18Cv474 is eligible for listing in the

National Register of Historic Places under Criterion D. Based on this recommendation, any impacts to Site 18Cv474 will constitute an Adverse Effect. Therefore, GAI recommended that this site be avoided by proposed project impacts. If avoidance is not feasible, then GAI recommended Phase III data recovery excavations at this site to mitigate adverse effects resulting from proposed project construction.

Proposed Project Impacts

The proposed power generating facilities expansion project area currently covers 704 acres (285 hectares) and completely encompasses Site 18Cv474. The project area constitutes the Project's Area of Potential Effect (APE) for archaeological resources. GAI recommended that UniStar Nuclear either avoid impacts to Site 18Cv474 during project construction or mitigate impacts to the site by conducting Phase III data recovery investigations if avoidance is not feasible. Avoidance would necessitate a redesign of the proposed nuclear expansion project. UniStar Nuclear has considered site avoidance versus data recovery, and because of feasibility problems with avoidance, determined that they will pursue Phase III data recovery investigations to mitigate the adverse effects from project development.

Summary of Previous Investigations

GAI's Phase I Archeological Survey

Site 18Cv474 was located during GAI's Phase I survey in 2007 (Photograph 2) (Munford and Hyland 2007). Phase I investigations consisted of systematic 15-meter-interval shovel testing, followed by radial and close-interval shovel testing at 5-meter intervals to define preliminary site boundaries, for a total of 50 STPs within the site boundary (165x165 feet or 50x50 meters) (Figure 2). One feature (stone foundation and chimney base) was identified in during fieldwork.



boundaries, for a total of 50 STPs within the site boundary (165x165 feet or 50x50 meters) (Figure 2). One feature (stone foundation and chimney base) was identified in during fieldwork.

Photograph 2. Overview of Chimney Base, View to West.

Soils within the site consist of an Ao/A-B soil horizon sequence with no evidence of plowing. Artifacts were generally recovered from the A horizon.

In addition to Feature 1, the stone foundation remnant, Phase I investigations identified two possible activity areas: South Activity Area and Southeast Activity Area (Figure 3). The South Activity Area lies immediately south of the foundation. Two attempts made to excavate STP A7 down to subsoil in this locality both encountered flat stones (and some brick pieces) at approximately 15 cm bgs. The Southeast Activity Area is represented by two large rocks and a light scatter of brick lying on the surface approximately 10 meters (30 feet) south of the foundation (and falling between STP B5 and radial STP R16).

Surface collecting activities and 31 positive shovel test pits produced 179 artifacts. The artifacts consist mainly of kitchen (ceramics and container glass), architectural (nails, brick, mortar, and

window glass), and faunal (oyster shell) remains (Table 1). Temporally diagnostic ceramic artifacts include pearlware (1780-1830), yellowware (1830-1900), ironstone (1840-present), and whiteware (1830-present). The whiteware ceramic assemblage also includes one sherd with a transfer print decoration (ca. 1828-1850) and two sherds with hand-painted (ca. 1840-1860) decorations. Diagnostic bottle glass includes sun-colored amethyst glass (1880-1915), white opaque glass (ca. 1890-1960), and a blob top bottle finish from a three-part mold (1879-1915). Thirteen cut nails (ca. 1790-1890) and one wire nail (ca. 1890-present) provide information on the date of the site. Based on the diagnostic artifacts the site appears to date from the mid- to late-nineteenth century.

Table 1
Site 18Cv474, Phase Ib Pattern Analysis

Class	Sub-Class	Total
Kitchen	Bottles/Jars	30
	Ceramics	48
	Kitchen Total	78
Architecture	Brick	15
	Mortar	6
	Nails	20
	Window Glass	2
Architecture Total		43
Activities	Recreation	1
Faunal	Shell	46
Furnishings	Furniture Related-Other	6
Tobacco Pipes	White Ball Clay	3
Unidentifiable	Indeterminate	2
Total		179

GAI concluded that Site 18Cv474 had the potential to yield additional diagnostic artifacts and subsurface features, providing additional information on the nature of this occupation. Because Site 18Cv474 is potentially eligible to the National Register of Historic Places and is located within the proposed project APE, GAI recommended that UniStar Nuclear consider avoiding the site through project redesign. If avoidance was not feasible, GAI recommended Phase II testing to evaluate the site's significance and National Register eligibility (Munford and Hyland 2007). GAI's Phase Ib Draft Interim Report (Munford and Hyland 2007) recommended Phase II testing to include systematic STP excavation at 15-ft intervals to further refine site boundaries, followed by excavation of eight units distributed within the site boundaries. These recommendations were approved by MHT in a June 7, 2007 letter. Phase II investigations were conducted in accordance with a Phase II Scope of Work submitted to MACTEC on October 20, 2007.

GAI's 2008 Phase II Testing

GAI conducted Phase II archaeological testing at Site 18Cv474 in May 2008.

Phase II Background Research

Map, deed, and Chancery Court records were examined to develop a context and establish a chain-of-title for the property. Determining parcel transfers in the nineteenth century is uncertain, at best, due to destruction of records in fires at the Calvert County courthouse. Changes in the names of land tracts further complicate the sequence. The deed, will, and Chancery Court records established a likely chain-of-title (Table 2).

Table 2
Site 18Cv474, Chain-of-Title

Date of Instrument	Grantee/Defendant	Grantor/Complainant	Conveyance Reference	Comments
July 1, 2000	Calvert Cliffs Nuclear Power Plant, Inc.	Baltimore Gas and Electric Company	Liber KPS 1282, folio 246	
May 26, 1967	Baltimore Gas and Electric Company	Belle Goldstein, Herbert Goldstein, et. ux., et al.	Liber JLB 90, folio 532	
November 12, 1964	Belle Goldstein	Allen S. Handen and David A. Harkness, Trustees	Liber JLB 69, folio 467	
January 31, 1957	Belle Goldstein	Irving M. Kolker	Liber 9, folio 576	Adjoins YMCA lands
July 1, 1940	Irving M. Kolker, et ux.	Sarah Catherine Glascock and William Bedford Glascock	Liber AAH 44, folio 166	
May 17, 1915	Joseph C. Webster	Benjamin N. Gray, et al.	Liber GWD 15, folio 537	Adjoins lands owned by Thomas Parran
February 12, 1915	Benjamin N. Gray and Clinton B. Gray	Bell Sewell Dowell	Liber GWD 15, folio 536	
October 3, 1889	Bell Sewell Dowell	John B. Gray	Liber JS 2, folio 227	
1883	Charles T. Somervell, Margaret E. Somervell, Llewelly Somervell, Mary P. Turner, and Margaret E. Turner	Alexander Somervell, Jr., and William C. Somervell	Calvert County Circuit Court, Equity Case #39, Somervell v. Somervell	Maryland State Archives, CR 41,591
1883	Charles T. Somervell, Margaret E. Somervell, and William C. Somervell	Alexander Somervell, Jr.	Calvert County Circuit Court, Equity Case #8, Somervell v. Somervell	Maryland State Archives, CR 41,591

The present landowner, Calvert Cliffs Nuclear Power Plant, Inc., acquired the parcel of land that contains this site from the Baltimore Gas and Electric Company on July 1, 2000 (Calvert County Deeds, Liber KPS 1282, Folio 246). Baltimore Gas and Electric Company purchased this land on May 26, 1967, from Belle Goldstein, Herbert Goldstein, et ux., et al. (Calvert County Deeds, Liber JLB 90, folio 532).

Belle Goldstein, widow of Goodman Goldstein, acquired part of this parcel on November 12, 1964, from Allen S. Handen and David A. Harkness (Calvert County Deeds, Liber JLB 69, folio 467) and another part of the parcel from Irving M. Kolker, et ux., on January 31, 1957 (Calvert County Deeds, Liber 9, folio 576). An inventory of Goodman Goldstein's estate taken in 1957 (Calvert County Estate Docket #1045) described the condition of the buildings on the various parcels he owned in his lifetime, including Bay Farm. Bay Farm consisted of the Wilson, Kolker, J.W. Pardoe, and Ray Green Tracts at the time of Goldstein's death. The Kolker Tract, which likely includes Site 18Cv474, contained a "largely depreciated" shed, barn, and house.

Sarah Catherine Glascock and William Bedford Glascock transferred the parcel to Irving M. Kolker, et ux., on July 1, 1940 (Calvert County Deeds, Liber AAH 44, folio 166). She had inherited it from her father, Joseph C. Webster, who acquired the parcel from Benjamin N. Gray, et al., on May 17, 1915 (Calvert County Deeds Liber GWD 15, folio 537). On February 12, 1915, Bell Sewell Dowell transferred the parcel to Benjamin N. Gray and Clinton B. Gray (Calvert County Deeds, Liber GWD 15, folio 536).

Calvert County court records contain two equity cases (No. 8 and No. 39), which helped construct the chain-of-title. These two equity cases detail disbursement of portions of the estates of Charles T. Somervell and Margaret E. Somervell to Willis G. Dowell and John B. Dowell, father of Bell Sewell Dowell. Mr. Bell Sewell Dowell acquired the property in the late nineteenth century, in the settlement of Margaret E. Somervell's estate. John B. Gray, acting as a trustee, deeded the parcel to Bell Sewell Dowell, son of John B. Dowell, on October 3, 1889 (Calvert County Deeds, Liber JS2, folio 227). The USGS 15' Quadrangle Map of Drum Point,

Maryland (1905) depicts a house in the location of Site 18Cv474 in 1905 (during Bell Sewell Dowell's ownership of the tract) (Figure 4).

Prior to the Dowells, the Somervells owned this tract, as well as considerable acreage in the vicinity of Saint Leonard's Town, in the eighteenth and nineteenth centuries. Charles T. Somervell died in 1873 intestate and in possession of farmland in the First Election District of Calvert County, near the village of Saint Leonard's. Court-appointed commissioners of his estate partitioned it into three parcels for the widow's dower. Alexander Somervell, Jr., purchased lot 2, and Margaret E. Somervell purchased lots 1 and 3. However, Margaret E. Somervell died before the sale was ratified and before she made the first payment.

Margaret E. Somervell's death in 1883 and the attendant equity case (Calvert County Circuit Court, Equity Case #39, Alexander Somervell, Jr., and William C. Somervell v. Charles T. Somervell, Margaret E. Somervell, Llewelly Somervell, Mary P. Turner, and Margaret E. Turner, Maryland State Archives, CR 41,591) provides only a short link in the ownership chain of Charles T. Somervell's estate. Following a public auction of her estate, which drew no bidders at the Calvert County Court House, commissioners of Margaret E. Somervell's estate conducted a private sale and transferred the "Locust Grove" tract to Willis G. Dowell in 1883 and the remaining two tracts to John B. Dowell in 1884, according to papers filed in the above-reference Equity Case #39. Margaret E. Somervell had acquired the property from the estate of her husband, Charles T. Somervell, in a separate chancery case (Calvert County Circuit Court, Equity Case #8, Alexander Somervell, Jr., v. Charles T. Somervell, Margaret E. Somervell, William C. Somervell, Maryland State Archives, CR 41,591).

Historic maps from 1862 depicted a structure in the vicinity of Site 18Cv474 during the Somervell period of ownership (Figures 5). Based on this map, the house located at Site 18Cv474 was located on the east side of a woodlot along the edge of a field. A northwest-southeast trending road is located a short distance east of the structure.

The Somervell's tenure as Maryland planters (and slave owners) on Bay Farm may have begun in the eighteenth century. The Proprietary Debt Book places John Somervell farming part of Preston's Cliff in 1754 (Maryland State Archives 17,669-1-6). Additionally, Ailene W. Hutchins (1982) identified two deeds involving William Somervell, perhaps an ancestor of Alexander Somervell, and the tract of land known as Charles's Gift, also Preston's Cliff. In October 1795, William Somervell was a grantee in a transaction with Richard Ireland for two-thirds of a part of three tracts called separately Charles's Gift, Angle, and Mill Marsh. Then, in April 1802, Mary D. Ireland and Sarah Ireland deeded another part of the same three tracts to William Somervell (Hutchins 1982: 23, 34). Somervell's residence may have been located at the larger farm complex at Site 18Cv480. Site 18Cv474 may have been the residence of tenant farmers, slaves, or emancipated slaves.

To conclude, archival research indicates the occupation of Site 18Cv474 by tenants and/or slaves/emancipated African-Americans. The site, with its associations with tobacco farming, points to further avenues in understanding Maryland's economy and culture in the nineteenth century, and transformations following emancipation.

Phase II Field Investigations

GAI conducted the Phase II fieldwork at Site 18Cv474 to determine the age, nature, and integrity of the archeological deposits, and to conclusively determine its eligibility for listing in the National Register of Historic Places (Munford et. al. 2008). Field investigations included detailed site mapping, and shovel test pit, unit, and feature excavations.

Shovel Test Pits

Phase II field investigations began with the systematic excavation of 142 shovel test pits (STPs) at 15-ft (4.6-m) intervals (Figure 6). The goals of this close interval testing were to identify site limits, provide information on soil stratigraphy and artifact distribution and identify potential features and activity areas.

Forty-eight positive STPs produced 228 artifacts. Distributions of artifacts from all STPs provide information on site limits and show general patterns of site usage. Shovel test artifact distributions were plotted on site maps and the distribution of artifacts were, in part, used to guide the placement of subsequent test units. The distribution of artifacts from Phase II STP excavations revealed three low-density artifact clusters (Figure 7). Cluster 1 included the stone foundation and part of the north yard. Cluster 2 fell in the west side of the south yard area. Cluster 3 included the west yard to the edge of the ridgetop.

Two possible activity areas (South Activity Area and Southeast Activity Area) were identified during Phase I testing (see Figure 3). The South Activity Area fell within Phase II Cluster 1. The Southeast Activity Area was not represented by any of the artifact clusters.

Test Units

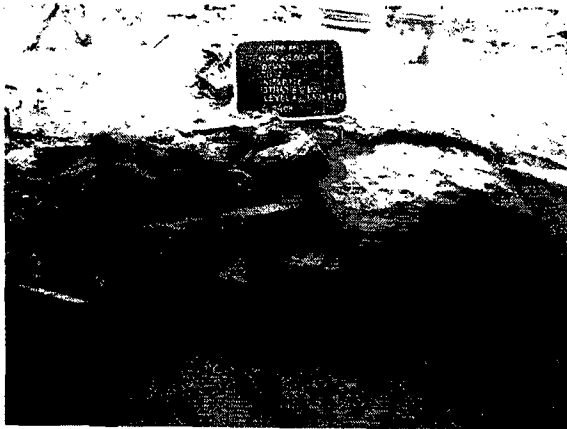
GAI excavated 12 test units of varying sizes, totaling 164 square feet (15 square meters), to further investigate structural remains, possible activity areas, yard areas, and localities of higher artifact density (see Figure 6). Test unit excavations produced 3,465 artifacts. The units were placed along the foundation interior and exterior, and the east, southeast, south, and west yard areas.

Test Units 1, 2, 4, 7, 8, and 10 were excavated to test the foundation remains (Feature 1) first observed during the Phase I survey (Figure 8). TU 4 exposed a broad builder's trench on the interior and exterior of the west foundation addition (Figure 9). TU 1 exposed Feature 2a (a builder's trench) on the western half of the unit and produced 479 artifacts, including 373 mortar pieces. A small quantity of brick, nails, bottle glass, bone, shell, buttons, and unidentified artifacts were also represented in the test unit artifact assemblage.

TU 2 revealed a broad (3.2 ft wide), shallow (maximum of 0.6 ft deep) builder's trench (Feature 2b) beneath the A horizon. The dry laid stone foundation wall was built on this shell and mortar filled trench (Photograph 3). Forty-one percent or 302 of the 731 artifacts from TU 2 were mortar. Other common artifacts include cut nails, shells, bottle glass, and whiteware.

TU 3 and TU 5, located south of the foundation, Test Units 3 and 5 produced limited quantities of artifacts (eight artifacts from TU 3 and 39 artifacts from TU 5). If the entrance was located on the south side of the house, then the paucity of artifacts in this area might indicate that this was a swept yard.

Test Unit 6 was placed in the east yard area to test across the edge of what appeared to be a cut in the hillslope. The soil profile indicated a modern Ao Horizon overlying a BE horizon. This may indicate removal or erosion of the historic A horizon. The majority of artifacts recovered from this 3x8-ft unit were ceramics ($n=35$), bottle glass ($n=14$), and nails ($n=10$).



Photograph 3. West Profile of Test Unit 2, View to East. Note mortar beneath rock wall.

Test Unit 12 was excavated adjacent to Test Unit 7 in the South Activity Area to explore for possible features. TU 12 exposed more of the tabular rock paving (Feature 3) uncovered in TU 7 (see Figure 8). Ninety-eight artifacts were found in the soil matrix around the tabular stones, most commonly nails and whiteware.

Test Unit 9 was located in Cluster 3 within the west yard area. Soil stratigraphy documented a 0.3-0.4 ft thick Ao/A horizon overlying a BE horizon. No features or activity areas were identified. Excavation of TU 9 produced 36 artifacts, nearly half of which were ceramics ($n=19$).

Phase II Soils and Geomorphology

GAI's Senior Soil Scientist examined Test Units 3 and 5 in the south yard area and Test Units 1, 2, and 4 along the stone foundation. The stratigraphy indicates that the shallow A horizon varied in depth across the site. There was no evidence of a plowzone within the site limits. The foundation walls appear to be constructed in the upper Bt horizon.

TU 3 and TU 5 had nearly identical soil profiles, consisting of an A-Bt1-2Bt2-2BC horizon sequence that was formed in two parent materials: loess and Coastal Plain Sediments (CPS). In TU 3 and TU 5, the shallow A horizon was generally 0.1-0.3 ft (3-9 cm) thick, but reached depths of 0.5 ft and lacked evidence of plow disturbance, indicating that soil formation associated with reforestation may have overprinted evidence of cultivation. The lack of an upper BE or E horizon in TU 3 and TU 5 may indicate that either (pre-occupation) erosion has been extensive at this site, but not extensive enough to remove all of the loess, or the landform was altered during historic occupation.

The argillic Bt horizon is an indication of long-term landscape stability in forested conditions. The site has a 1.5-foot thick mantle of loess (wind-blown silt) overlying sandier CPS. This same sequence of parent materials is found on ridgetops throughout southern Maryland. Extensive erosion has removed the surface mantle in places where the loess is missing.

Phase II Features and Activity Areas

Phase II investigations documented features associated with a former house, identified as Feature 1, and represented by the visible stone foundation and chimney base. Phase II testing identified four features (Features 1-4) and two possible activity areas (South Activity Area and Southeast Activity Area). The South Activity Area fell within artifact Cluster 1 from the STP excavations. The southeast Activity Area was identified on the ground surface by a cluster of rocks and brick, along with some flowers. TU 11 sampled this activity area. Additional rocks

and bricks were encountered during excavation. No features were identified. Sixty-two percent ($n=63$) of the 101 artifacts recovered were bottle glass suggesting that this was some type of specialized activity area.

Feature 1 is a dry-laid stone foundation measuring approximately 16x18 feet (4.9x5.5 meters) and a mortared chimney base (Photograph 4). Portions of the north and south foundation walls and the entire east foundation wall were obscured either by stones from chimney collapse, or soil. The partially intact portion of the chimneystack along the structure's eastern wall stands 4.35 feet (1.33 meters) high. The west stone foundation is approximately 1.5-2.5 ft thick and 1.0-1.8 ft high, and comprised of a linear pile of moderate and large tabular rocks with smaller rock, brick, and mortar filler and was built within a wide, shallow, builder's trench. By contrast, the south foundation remnant was constructed with stacked, moderate sized tabular rock, 0.4-0.7 ft high (two rocks high) by about 1.0-1.3 ft wide (one to two rocks wide) and lacked evidence of a builder's trench.



Photograph 4. Overview of Test Unit 4, View to South. Note continuation of stone wall to the south with Test Unit 1 in middle and Test Unit 2 in background.

The 10x18-foot (3.0x5.5-meter) addition on the north side of the house was separated into two sub-features: Feature 1a (stone foundation) and Feature 1b (raised mound of soil). Feature 1a (west foundation wall only) was constructed of dry-laid stone in a similar fashion as the west foundation wall of the original house. Feature 1b was used to designate the linear raised mound of soil about 1 ft wide observed in the general location expected for the north and east foundations areas (see Figure 8).

A builder's trench (**Features 2a, 2b, and 2c**) was only observed in association with the west foundation remnant (original house and house addition) (see Figure 8). The builder's trench included some large pieces of mortar that may have originally served as chinking for a log structure before it was placed in the builder's trench. It seems reasonable to assume that there were problems with the west (down slope) house foundation, such as rotting wood sills and/or sagging floors. The soil beneath the west wall (and addition) was scraped out beneath the structure, creating a broad and shallow builder's trench. Shell and mortar had been dumped into the base of this trench, and then stones were piled beneath the structure to add support. It seems unlikely that chunks of chinking would be hauled from a previously demolished or abandoned log structure to use in the bottom of this builder's trench; the mortar may have come from an earlier house on this site and was therefore readily available.

Attempts to excavate an STP in the vicinity of N150 E195 (Phase II grid coordinates) during both the Phase I and Phase II investigations were repeatedly stopped by rocks encountered beneath the ground surface. This vicinity was designated as the South Activity Area during the Phase I investigations. Test Unit 7, placed along the outside center of the south foundation wall (Feature 1), exposed tabular rocks (designated **Feature 3**) along the south half of the unit (see

Figure 8). Test Unit 12, excavated on the south side of TU7, exposed more of Feature 3, which extended south and east of the unit. Based on the excavation, Feature 3, which measures at least 4 ft x4 ft., was interpreted as tabular stone "paving."

Feature 4 is a linear arrangement of three bricks identified in the northeast quadrant of Test Unit 8, Level 2 (see Figure 8). Although the specific function of the bricks is unknown, their location suggests they may have formed a support base for the north addition. No pit or other artifacts were identified in association with these bricks.

Phase I/II Artifact Analysis

Phase I investigations produced 179 historic artifacts and Phase II excavations yielded 3,465 artifacts for a total of 3,644 (Table 3). One prehistoric lithic was recovered. Eighty-eight pieces of metal and plastic were unidentifiable and placed in an unidentified category. The remaining artifacts fell within 10 historic artifact functional groups.

Table 3
Site 18Cv474, Phase I/II Pattern Analysis

Class	Sub-Class	Total	%
Activities	Activities-Other	4	0.4%
	Cans/Tins	1	0.0%
	Farming	5	0.4%
	Machine Parts/Hardware	22	0.6%
	Misc.Small Hardware	8	0.2%
	Recreation	1	0.0%
	Wood	2	0.1%
	Activities Total	63	1.7%
Architecture	Brick	160	4.4%
	Mortar	1208	33.2%
	Nails and Spikes	466	12.8%
	Window Glass	117	2.4%
Architecture Total	1921	52.7%	
Arms	Ammunition	1	0.0%
	Gunflints	1	0.0%
Arms Total	2	0.1%	
Clothing	Clothing Fasteners	11	0.3%
	Clothing Related-Other	1	0.0%
	Shoe Parts	1	0.0%
Clothing Total	13	0.4%	
Faunal	Bone	19	0.5%
	Shell	465	12.2%
	Coral	1	0.0%
Faunal Total	465	12.8%	
Furnishings	Furniture Related-Other	16	0.4%
	Lighting	9	0.2%
Furnishings Total	25	0.7%	
Kitchen	Bottles/Jars	695	19.1%
	Ceramics	337	9.2%
	Decorative Table Glass	5	0.1%
	Glassware-Other	4	0.1%
	Kitchenware (Utensils, Pots, Etc.)	2	0.1%

Class	Sub-Class	Total	%
	Tumblers, Stemware	1	0.0%
	Kitchen Total	1044	28.6%
Personal Total	Pharmaceutical	4	0.1%
Prehistoric	Lithic	1	0.0%
Tobacco Pipes	White Ball Clay	13	0.4%
Unidentifiable		93	2.6%
	Total	3644	100.0%
	%	100.0%	

Kitchen group artifacts ($n=1,044/29$ percent of the total artifacts) represent the remains of food preparation, service, and consumption. Divided into six subclasses, the kitchen group includes 695 bottles and jars, 337 ceramics, 5 decorative table glassware, 1 stemware, 4 other glassware, and 2 "other." The bottle glass assemblage includes 64 beer bottle, 9 case bottle, 1 strap flask, 4 bottle closures, and 617 bottle/jar pieces. Most ($n=199$) of the ceramic assemblage is plain (undecorated) whiteware, which is generally less expensive than decorated wares. Decorated whiteware types include black and blue transfer-prints ($n=6$), hand-painted ($n=8$), edge decorated ($n=3$), and annular ($n=4$) varieties. There were a limited number of the more expensive transfer printed ceramics.

The architecture group includes construction materials, such as brick, nails, plaster, mortar, and window glass. A total of 1,921 architecture-related items included nails ($n=466$), window glass ($n=87$), mortar ($n=1208$), and brick ($n=160$) were recovered. Architecture-related artifacts comprise nearly 53 percent of all artifacts recovered during fieldwork. Nails included cut ($n=213$) and wire ($n=14$) varieties, as well as nails that were too corroded to provide evidence of manufacturing method. The high ratio of cut-wire nails indicates that most of the construction activities occurred prior to ca. 1880, when the cost of wire nails became competitive with cut-nail prices.

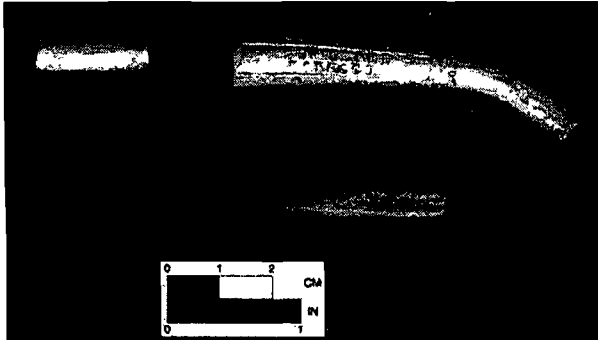
Faunal group remains included animal bones, teeth, and shell--typically be used to construct information about foodways; however, most of the shell pieces were associated with the builder's trench, where a base of mortar and shell in the builder's trench formed a support for wall construction. There were 445 oyster shell pieces recovered; 19 bone fragments and 1 piece of coral also fell in the faunal group.

Tobacco group remains included pipe and bowl fragments, ashtrays, and lighters. White ball clay pipe pieces ($n=13$) were common; some of the pipe bowls/stems were decorated.

Small quantities of artifacts represented the remaining groups. The activities group (63 artifacts) included a variety of materials (toys, tools, writing items, musical instruments, hardware, machine parts and stable items (horse tack). The clothing group is comprised of artifacts that are related to clothing, accessories, and items used in the construction and/or repair of apparel. Eleven buttons (glass, metal, and plastic), one blue bead and one shoe part were placed within the clothing group. Furnishings group consists of furniture hardware, lighting, and figurines. Nine lamp chimney glass and 16 other furnishings were recovered. Personal group artifacts represent items that are individually owned or relate to personal hygiene, adornments, and medicine. Four medicine bottles fell within this category.

The functional group percentages of artifacts at Site 18Cv474 are typical for a domestic site, which characteristically produces moderate to high quantities of both architecture and kitchen remains (range of 33-64% architecture artifacts and 34-61% kitchen artifacts) (cf. Ball 1984).

Among the more interesting artifacts were a blue glass bead, an embossed tobacco pipe stem, tooth fragment, and part of a metal knife found in a unit along the south foundation (Photograph 5). The tobacco stem was embossed "Chillard's/Tobacco/16.18.20/New York." The blue bead color is frequently associated with African American sites, but the findings at Site 18Cv474 were inconclusive as to ethnic identity. Other artifacts found in association with these items include miscellaneous metal pieces, nine brick, nine mortar, fourteen nails, one shotgun shell, three buttons, one tooth, one shell, two lamp chimney glass, 11 bottle glass, one yellowware, and additional pipe fragments. The nails included 11 cut nails and 3 nails that were indeterminate.



buttons, one tooth, one shell, two lamp chimney glass, 11 bottle glass, one yellowware, and additional pipe fragments. The nails included 11 cut nails and 3 nails that were indeterminate.

Photograph 5. Two pipe stems, blue bead, and tooth fragment (FS: 136)

A total of 626 diagnostic artifacts yielded a mean date of 1877 for the site occupation (Table 4). Some of the bottle glass and ceramic artifacts were produced in the mid-nineteenth century and correspond well with this date. The mean date is also compatible with the 1862 map (see Figure 5) depicting a structure at this location. The artifacts have a TPQ date of 1903, which is also consistent with the Drum Point (1905) USGS 15' map, which illustrates a structure at this location (see Figure 4). Therefore, the site dates to the last half of the nineteenth century and extends into the early-twentieth century.

Table 4
Site 18Cv481, Phase I/II Dating Analysis

Ware Type/Object	Decoration/Manufacturing Tech	Count	Begin Date	End Date	Reference
ironstone	plain	15	1840	1970	Wetherbee 1980
pearlware	plain	3	1780	1830	South 1977
whiteware	plain	226	1830	1970	Price 1979; Noël Hume 1980
whiteware	annular	4	1830	1860	Majewski & O'Brien 1984
whiteware	hand painted	8	1840	1860	Lofstrum et al. 1987; Majewski & O'Brien 1984
whiteware	shell edge	3	1830	1891	Lofstrum et al. 1982; Miller & Hunter 1990
whiteware	Sponge decorated	1	1830	1871	Robacker & Robacker 1978
whiteware	transfer print, blue	5	1828	1860	Majewski & O'Brien 1984; Mullins 1988
whiteware	transfer print, black	2	1828	1850	Majewski & O'Brien 1984; Mullins 1988
yellowware	plain	22	1830	1900	Ketchum 1987
yellowware	annular	8	1827	1922	Brown 1987
yellowware	Rockingham	1	1845	1900	Ketchum 1987
bottle glass	blown in mold	2	1800	1870	Deiss 1981
bottle glass	crown finish	2	1892	1970	Price 1979; Noël Hume 1980
bottle glass	Improved blob top tooled finish; 3part mold	1	1879	1915	Lief 1965:14; Deiss 1981
bottle glass	machine made	23	1903	1970	Deiss 1981
bottle glass	patent finish	4	1860	1935	Jones and Sullivan 1989
bottle/decorative glass	sun colored amethyst	66	1880	1915	Miller and Pacey 1935

Ware Type/Object	Decoration/Manufacturing Tech	Count	Begin Date	End Date	Reference
canning jar lid liner	white opaque	2	1869	1950	Toulouse 1971;3;15
case bottle	applied lip: patent finish; push-up	1	1820	1870	IMAC 1984; Deiss 1981
nail, cut		213	1790	1890	Nelson 1968
nail, wire		14	1880	1970	Nelson 1968; IMAC 1984
Total		626			
Mean Date:		1877			
TPQ:		1903			

Summary and Evaluation

Summary

Site 18Cv474 is a mid-nineteenth to early-twentieth century domestic farmstead site situated on a narrow ridge in a wooded area west of Road C in the Camp Conoy section of the project area. This domestic habitation site is located approximately 6,000 feet to the southeast of the landowner's residence at Parran's Park Site (18Cv480). This domestic site (18Cv474) may have been built on marginal land since it was never cultivated. The 165x165 foot (50x50 meter) site reflects the size of the habitation area (house and yard area). Ancillary areas, such as the spring (located about 210 feet to the west of the former house), are located outside of the current site boundary.

Phase II excavations identified four *in situ* cultural features, three artifact clusters, and two possible activity areas associated with the historic-period occupation of the site. The features are associated with the dwelling foundation and associated walkway. Additional investigations are necessary to identify the function of land usage for the artifact clusters and activity areas.

Phase I/II investigations produced 3,644 artifacts including a variety of artifacts and limited quantities of ecofacts. Temporally diagnostic artifacts and cartographic sources suggest that this site was occupied from the mid-nineteenth to early twentieth century. The limited quantity and variety of decorated ceramics suggests that the residents were of a lower socioeconomic status. Based on the results of the archaeological investigations and archival research, this site may have been the residence of poor tenants or African-Americans.

There does not appear to be any post-occupation plowing or logging disturbances within the site area. The soil stratigraphy lacks evidence of plow disturbance (or twentieth-century refuse) and possesses good integrity. Therefore, GAI concludes that Site 18Cv474 has the potential to add information to the historical record that can provide a more thorough understanding and interpretation of the former residents, changes in land usage, and development of the property.

Evaluation

Site 18Cv474 was evaluated according to the criteria for listing to the National Register of Historic Places. This requires that a site possess integrity and meet at least one of four National Register Criteria for Evaluation (36 CFR 60.4 [a-d]). Site 18Cv474 has *in situ* archaeological features and archaeological deposits and therefore possesses integrity. The quantity, quality, and types of features, activity areas, artifact clusters, and artifacts indicate that Site 18Cv474 has the potential to add information to the historical record regarding a more thorough understanding and interpretation of the former residents, changes in land usage, and development of this domestic site. This information will contribute to our understanding of the lower socio-economic farmers in Calvert County during the mid-nineteenth to early twentieth

century. GAI recommends that historic component of Site 18Cv474 is eligible for the National Register of Historic Places under Criterion D. Phase I and II investigations also yielded one (1) prehistoric lithic artifact; this prehistoric isolated find does not contribute to the National Register eligibility of the site. Based on this recommendation, any impacts to Site 18Cv474 will constitute an Adverse Effect. Therefore, GAI recommended that this site be avoided by proposed project impacts. If avoidance is not feasible, then GAI recommended Phase III data recovery excavations at this site to mitigate adverse effects resulting from proposed project construction.

Research Design

Problem Orientation

The MHT's (1986) *Comprehensive Historic Preservation Plan* includes a number of themes and time periods to guide the study of Historic Period cultural resources in Maryland. Information uncovered during Phase I and Phase II investigations helps determine which themes and periods may be appropriate for Phase III data recovery investigations at Site 18Cv474. Time periods that may apply to Site 18Cv474 include the agricultural-industrial transition (1815-1870) and the industrial/urban dominance (1870-1930) periods.

Research questions focus on both the Agriculture and Architecture/Landscape Architecture themes (see MHT's (1986) *Comprehensive Historic Preservation Plan*). The agriculture theme focuses on interpreting the site as part of a larger agricultural complex and research may include investigating household economics, ethnicity, foodways, and consumer preference through archival research and interpretation of artifacts and ecofacts, soil chemical signatures, features, and architectural remains in the archaeological record. The architecture/landscape architecture theme focuses on spatial patterning on the landscape (site layout and design, fencelines and activity areas, and refuse disposal patterns) and construction methods and types of architectural remains.

Wealthy tobacco plantation owners were the social leaders in southern Maryland – controlling much of the land, labor, and political offices. These wealthy families encouraged tobacco farming in Calvert during the depressed international tobacco markets, which began in the latter half of the eighteenth century and continued into the mid-nineteenth century. With their large land holdings and slave labor, these wealthy planters continued to profit despite poor market conditions. As a result, southern Maryland produced most of Maryland's tobacco into the mid-nineteenth century. Smaller landholder and tenant farmers were not as fortunate. Slaves and livestock often suffered from lack of adequate food and shelter, and many tenant farmers and small landholders were forced to move outside the region, abandoning their farms and homes (King 1994). Site 18Cv474 appears to have its origins during this depressed economic period in the county.

Site 18Cv474 has the potential to provide information on how the shift from a tobacco agricultural economy to a more diversified crop was manifest in this small, lower socio-economic farmstead in Calvert County. Phase I and Phase II investigations indicate that this site has the potential to address research questions regarding socio-economic status, ethnicity, foodways, and consumer preferences for the Agriculture Theme during this critical time period.

The degree to which the site can contribute information depends upon the success of the archival research and the quantity and quality of the acquired archaeological data from the data recovery excavations. Archival research and the archaeological record provide independent lines of evidence for research objectives. Temporally diagnostic artifacts (especially for feature remains) and archival research will be used to place the site in its temporal framework and examine changes in the development at this farmstead over time. Using this information

gleaned from Site 18Cv474 excavations, this farmstead will be discussed in terms of Agriculture trends during this time period.

Site 18Cv474 also has the potential to provide information on the development of the farmstead during the mid-nineteenth century to the early-twentieth century by examining the spatial organization of artifacts and features (i.e., type and location of activity areas and structures, size of the habitation area, refuse disposal patterns) and architecture (building construction types, locations and construction techniques). Temporally diagnostic artifacts (especially for feature remains) and background research will be used to examine changes in Architecture/Landscape Architecture at this farmstead complex over time and comparing this information with regional trends.

Agriculture Theme

Farmsteads are generally regarded as a complex of buildings, yards, fields, enclosures, activity areas, well, privy, trash dump, sheet refuse, and other features associated with farming that are chronologically and geographically related but conceptually centered on the dwelling (McBride and McBride 1990: 683; Hill et. al. 1987). Site 18Cv474 includes the dwelling and immediate habitation area of this farmstead.

Household Economics

Site 18Cv474 appears to be a domestic site located within a large parcel of land but over a mile away from the landowner's house (Site 18Cv480). Site 18Cv474 was inferred to be a domestic farmstead site associated with either an African American or tenant farmer site based on the location of this domestic site within the large land parcel, the types of artifacts recovered, and the identification of the landowner's residence. Household economics consider a variety of issues including improvements made to the property (buildings, orchards, gardens, creating more improved land, etc.), amount and types of crops and farm animals, and consumer purchases of the residents.

Both archival research and archaeological investigations are used to convey a more comprehensive account of the household economics of Site 18Cv474. Documentary records, when available, provide a great deal of information on household assets and how household income is made and spent. Tax assessments, agricultural census schedules, will and probate records, can provide data on specific households, which can be compared to neighbors to determine where the household fits into the local socioeconomic context.

Archaeologists prefer to use multiple lines of evidence from the archaeological record to gain insights into the economic status of a household including house size, foundation construction methods, costs of ceramic artifacts, and the types and costs of meat cuts. House size and house foundation can indicate the amount of time and money expended on house construction. Faunal remains may provide insights on the types of meats consumed and whether these were purchased or butchered at the farm.

Ceramic analysis can contribute information by examining the relative cost of the types of tableware in the assemblage and by calculating the relative ratio of refined ceramics to coarse earthenwares and stonewares. Ceramic analysis can contribute information by using minimum number of tableware vessel information with Consumer Price Indices developed by Miller (1980, 1991) or by using tableware ceramic sherd counts with similar indices developed by McBride and McBride (1987). The use of these standard indices facilitates intersite comparisons with other farmsteads.

Research questions relating to household economics that may be addressed through additional documentary research and archeological excavations include:

- What is the economic status of the house inhabitants based on the documentary research?
- Does the artifact and faunal indicators of socio-economic status compare favorably to the architectural evidence and documentary sources?
- Did tenants occupy the house?
- Based on house construction data obtained from the archaeological investigation, did the owners spend much time and effort in the construction of the home?
- Do the ceramics indicate that the former residents were likely poor tenants from a lower economic class?
- Is there evidence of changes in the household economics over time?
- How does the material culture, especially the ceramics, compare to that identified at similar sites in the Western Shore, including those assemblages associated with slaves/emancipated African Americans and tenant farmers?

Consumer Preferences

Many tenant farmers during the nineteenth century built or rented their own house, provided their household furnishings, grew a great deal of their own food, and cut their own firewood. However, they were not self-sufficient. Typically, tenant farmers had little surplus money after purchasing seeds, livestock, and equipment and paying the rent. Many farm families of this time period had to decide how to make the most of their income. Evidence from the types and quantities of goods that were purchased can reflect the taste or preferences of the household consumers.

Consumer preference research will look at the archaeological evidence from ceramics, faunal remains, bottle glass, and tobacco pipes to determine what choices were made in the selection of the material goods and foods. Consumer preferences are particularly evident in selection of the household dishes since these artifacts are plentiful at historic domestic sites.

Research questions identified for consumer preferences include:

- What types of ceramics are represented in the assemblage? Was there a preference for a particular type or style of dinnerware and/or utilitarian ware? Is there a preference for American-made or imported ceramics?
- What types of foods, beverages, and medicines were purchased?
- Were the tobacco pipes produced in America or imported?
- What types of meat cuts were purchased?
- Is there evidence that non-essential or luxury items were present?
- Is there evidence for changes in consumer preferences over time?
- How do the consumer preferences identified at Site 18Cv474 compare with similar sites in the region?

Foodways

Faunal remains recovered from data recovery investigations at Site 18Cv474 may provide insights into meat consumption and butchering practices, given sufficient faunal remains. Other material cultural, such as milk pans, beverage bottles, food jars, teacups, condiment jars, and butter churn, can also shed light into dietary preferences.

Many farmsteads show a heavy reliance on pork (Grantz 1984). Faunal remains at many farmsteads also include cattle, sheep, chickens and wild game (deer, turkey, duck, fish, etc.).

The occupants of the farmstead at Site 18Cv474 would have easy access to geese and ducks and aquatic resources. These factors may have influenced the diet of these occupants.

There were few faunal remains recovered from the Phase I/II investigations. To increase the sample size, several test units will be excavated within the house and house addition to collect faunal and botanical remains that fell through floorboards or were carried there by animals. Flotation samples will be collected and processed from each level of these units. Flotation samples will also be collected from features, such as builder's trenches.

Specific research questions relating to foodways include:

- What types of animal remains were recovered from the site?
- Is there evidence of on-site butchering and market purchased foods?
- What evidence is there for preparation of food for future use (smoke house, root cellar, canning jars, milk pans, etc.)?
- What types of wild game were used as a food source?
- Is there evidence that wild plant foods (nuts, berries) were used?
- Is there evidence for changes in dietary patterns over time?
- How does the dietary patterns identified at this site compare to farmstead sites of a similar time period in the region?

Ethnicity

Excavations in Calvert County and the Western Shore have successfully identified mid- to late-nineteenth century African-American sites based on types and locations of ethno-specific artifacts, archival research, and informant interviews. Kirsti Uunila, Calvert County Historic Preservation Planner, visited Site 18Cv474 and indicated that the visible structural remains were similar to those found at Sukeek's Cabin site, a late-nineteenth-century African-American domestic site in Calvert County. Phase II testing at Site 18Cv474 failed to provide conclusive evidence of African American ethnicity although a cluster of artifacts, including a blue bead, knife blade, and white ball clay pipe stems were found along the foundation near the possible doorway area. The location and types of these artifacts may be associated with African-American sites (cf. Fennell 2003; Ferguson 1992). Additional archival research and data recovery excavations are necessary to provide further information.

The specific research question relating to ethnicity research is:

- Is there conclusive evidence that the residents of Site 18Cv474 were African-American?

Architecture/Landscape Architecture Theme

Buildings on a farm were laid out in such a way as to produce greater efficiency for the farm. Many chores, such as laundry, soap making, and butter churning occurred in the yard area surrounding the house and falls within the habitation area. Farmsteads generally had a root cellar or basement to store food and a springhouse. Most root cellars were built into a hillside, dug underground, often within the structure. Well, cistern, privy, springhouse shrub plantings, walkways, and family garden plots can also be found near the farmhouse. Barns, animal pens and coops, other support structures, and fences are typically positioned farther away from the house.

Spatial Organization of the Landscape

Patterns of spatial organization are important characteristics that can be used to interpret the cultural landscape (Miller et al. 1990:143). The spatial arrangement of site features can be affected by the landscape, vegetation, location of water resources, structures, roads, property boundaries, local attitudes, soil conditions, labor management, and changing agricultural practices and technology. Spatial patterns provide insights into the operation and function of the farm complex.

The yard areas around farmhouse location provide archaeologists with the best opportunity to examine a variety of research questions about the domestic life of farm families. Moir (1984: 229-230) used the term "farmstead proxemics" for the analysis and interpretation of the yard around a farmhouse. The spatial arrangement of a farmstead is affected by the landscape, location of water resources and roads, property boundaries, local attitudes, soil conditions, and changing agricultural practices and technology.

Refuse can be found in sheet middens, pit features, dumps, and bum piles. Sheet middens and primary depositions in yards areas have 'high analytical potential' (Versaggi 2000: 45). The distribution and types of artifacts in sheet middens and yard deposition areas can reveal land usage patterns including activity areas and refuse disposal patterns.

Phase II investigations at Site 18Cv474 revealed a low-density artifact scatter surrounding the house foundation. This may indicate that the yard area was used as a workspace and was frequently swept or raked clean. This pattern was observed by Cabak and Inkrot (1997) in the Aiken Plateau of South Carolina. Site 18Cv426 (Sukeek's Creek), a late nineteenth century African American domestic site, also exhibited evidence of a swept yard.

Phase III excavations will use various lines of evidence to examine spatial organization. The distribution of artifacts and geochemical signatures, combined with the type and location of features and structures can provide information on activity areas. The metal detector survey may identify refuse pits, refuse dumps, and activity areas. The location and function of features are also used to identify land usage. Documentary research (census records, historic maps, tax assessments, insurance records, probate inventories, wills, etc.) may provide information on the types of structures, locations of fields, amount of unimproved land, fences, and other features on the landscape. These spatial patterns can be compared with similar sites in the region.

Specific research questions relating to spatial organization of the landscape include:

- Did the archival research provide insights into the farmstead layout?
- Can activity areas be discerned in the archaeological records? What types of activities were identified? How do the activity areas identified during the Phase III excavations compare to the artifact distributions identified during Phase II testing?
- What does the horizontal distribution of artifacts reveal about the refuse disposal behavior? Did the refuse disposal pattern change over time?
- Can the refuse disposal behavior at Site 18Cv474 be connected to historical trends in the region?

Architecture

Farmstead buildings and construction methods may reflect local or regional building traditions. However, building construction methods, evidence of maintenance and repair, construction of new buildings, and the quantity, type and location of structures reflect choices made by the farmer. Data recovery excavations may reveal architectural data, shedding light on the number, date, size, type, and distribution of structures at the site.

Foundation constructions for structures leave different archaeological signatures depending upon the type of foundation and amount and nature of post-occupation disturbances. Ground-laid sills leave almost no archeological evidence. Post and/or pier foundations may leave a series of postholes or piers in the soil. In some instances logs, blocks of wood, brick, or stones were placed directly on the ground surface to serve as a sill support for structures and would be difficult to detect in the archaeological record.

Research questions concerning architecture may be addressed through primarily archeological excavations and include:

- How was the dwelling constructed? Is there evidence of rebuilding or structural repairs (e.g. replacement of structural posts or rebuilding in the same general location)? What are the dimensions of the structure?
- Is there a separate summer kitchen?
- Are outbuildings present? What is the function of each outbuilding and how was each outbuilding constructed? How close are outbuildings to the dwelling?
- Is the dwelling(s) located near marginal agricultural lands?
- How does the size and method of construction compare to other similar sites in the Chesapeake and Tidewater regions?

Summary of Research Goals

Data recovery investigations will focus on providing information relevant to the Agriculture and Architecture/Landscape Architecture research themes for Maryland's Western Shore. The ability to address some of the above questions will be dependent upon the quality of information uncovered during archival research, data recovery excavations, and analysis. The methods used in the data recovery investigation were chosen to maximize the information obtained for the site to address these specific research goals. In summary, the ultimate goal of the data recovery investigations will be to contribute towards our understanding of the agriculture and architecture/landscape architecture research themes for small farmsteads within the context of the appropriate socio-economic group (African American or tenant farmer) during the mid-19th to early-20th centuries by conducting data recovery investigations at Site 18Cv474.

Methodology

Archival Research

Archival research conducted for the data recovery work will build on information collected during previous investigations to assist in placing Site 18Cv474 within its appropriate historical context. The research goals are twofold: (1) collect additional information on the inhabitants and landowners during the time period of interest (ca. 1850-1910) and (2) provide a context on agriculture in this area (during the period of interest) from available agricultural and population census data, tax assessments, probate inventories, newspapers, maps and other pertinent records.

Research will also be undertaken to compare and contrast the results of excavations at Site 18Cv474 with other similar sites. Archeological literature sources may include regional journals, Maryland and Virginia archeological journals, and additional site reports on file at MHT. In addition, archeologists familiar with the nineteenth- and twentieth-century archaeology of Maryland's Western Shore will be contacted, including Kirsti Uunila, Calvert County Historic Preservation Planner.

Data Recovery Excavations

Phase III investigations will include excavation of Sample Pits (SPs), metal detector survey, preparation of a site contour map, detailed recordation of the house foundation, unit excavations, and mechanically and/or hand stripped excavation blocks. To better examine, map, and excavate a sample of the house interior, the collapsed foundation and chimney stones may be removed either by hand or with the assistance of mechanical equipment prior to excavations.

A site grid and datum will be re-established with a total station prior to any excavations, and grid control points referenced by GPS. At this time, surveyors will collect points for a site contour map. Grid coordinates will be used to record the location of units, metal detector hits, soil samples, and features.

Prior to excavations a metal detector survey will be conducted on the site area and adjacent areas including the hill slopes in order to examine refuse disposal patterns and activity areas. An attempt will be made to eliminate nails from the readings. Each metal 'hit' will be marked with a pin flag. The metal detector survey results will be mapped and a sample of the hits excavated (and the soil screened) with small SPs. The Sample Pits will be excavated with posthole diggers and measure approximately 6 inches (15 cm) in diameter. The purpose of the SPs is to collect soil samples for geochemical testing or to sample metal detector "hits." Approximately 30 metal detector hits will be examined by the excavations of SPs.

A series of SPs will then be excavated at 10-foot intervals across the site area (not to exceed 275 SPs) specifically to obtain soil samples for geochemical tests. The soils from these SPs will be screened and artifact counts added to the Phase II artifact distribution information, which can contribute to identification of land use patterns.

Based on the results of the Phase II investigations and Sample Pits, a minimum of 18 and a maximum of 22 5x5-foot units (or units of varying sizes) totaling 450 – 550 square feet will be hand-excavated across the site. These units may be excavated individually or together to form larger block excavations. At a minimum, test units will be located inside the structure and the structure addition, along the exterior of the structure foundation, at the location of previously identified features, and within the three artifact clusters and two activity areas identified during Phase II fieldwork. In addition, 10 3x3 foot units will be judgmentally placed to sample foundation areas and any potential refuse deposits or structures identified during the metal detector survey. Units are anticipated to average one foot deep due to the shallow A horizon found at the site. These units will help assess the soil stratigraphy, obtain a larger sample of artifacts, and further test the locations of previously identified artifact clusters and activity areas.

Units will be hand-excavated in arbitrary 0.3-ft (9-cm) levels within natural strata. Up to 20 soil samples for geochemical analysis will be taken from units and features when feasible. All soil will be screened through 6-mm (0.25-inch) inch mesh screen. Excavations will be documented on standardized forms and supplemented with photographs and plan view and profile drawings (as appropriate). GAI's Soil Scientist will describe the soil profiles as part of GAI's efforts to reconstruct site formation processes.

After the units are excavated, mechanical equipment and/or hand excavations will be employed to strip off the upper plowzone soils and expose the underlying subsoil across 3,000 - 4,200 sq ft (279-390 sq m) (0.07-1.04 acres) or 11-15.4% of the site area. Stripping will include the entire house foundation and addition footprint area except in those locations where trees prevent this activity. Using the units as guides, mechanical and/or hand stripping will stop at the A horizon-B horizon interface. The exposed subsoil will be cleaned with hand tools and examined for cultural features. Mechanical stripping of the site within the project corridor will be divided into 10-14 blocks measuring approximately 10x30 ft in size. Blocks may vary in size and quantity due to the logistical problems associated with stripping soils in a woodlot and the need to cover different portions of the site area. The Principal Investigator or Field Supervisor will closely monitor the depth of soil removal. Grab-samples of artifacts will be collected during this process.

Features will be assigned a unique number, recorded in a feature log, and the locations mapped with the Total Station. Features will be drawn in planview and then cross-sectioned using hand tools. Larger features may be excavated in quadrants. Soil information (Munsell color and texture) will be recorded, and feature profiles will be documented (drawn and photographed). Depending on their number, type, and distribution, postholes may be cross-sectioned.

A flotation sample will be collected for cultural features and from units located in the structure interior. More than one flotation sample will be collected for large features, if appropriate, and those features that are stratified or where large quantities of faunal or floral remains are recovered. Up to 25 samples will be processed in the lab, with a priority given to those that appear to contain wood or charcoal remains. The remaining flotation samples will be screened through 6-mm (0.25-in) inch hardware cloth. Each artifact and flotation sample will be assigned a unique field specimen number according to provenience and recorded in an FS logbook.

Unanticipated Discoveries and Treatment of Human Remains

Based on prior research, excavations at Site 18Cv474 are not expected to encounter prehistoric human remains. In the unlikely event that a human burial is encountered, in accordance with Maryland burial law (Article 27, § 10-401 to 10-404 of the Annotated Code of Maryland) work will be halted in the area of the discovery, the site will be protected, and GAI will notify the MHT and UniStar Nuclear immediately to determine how to proceed. Given that this discovery would be made in the context of a data recovery excavation at an archeological site, consideration would likely be given as to whether the burial can contribute to the National Register-eligibility of the archeological site (i.e., potential to yield important information). If a positive determination on this matter were made, then archeological excavation as part of the data recovery would likely be undertaken. Alternatively, if an assessment concludes that the burial is not eligible, or cannot contribute to the National Register-eligibility of the site, then UniStar Nuclear and GAI would comply with Maryland burial law in further treatment of the resource.

Laboratory Processing and Analysis

Concurrent with excavations, GAI will initiate laboratory processing and analysis of artifacts. Following processing, artifact analysis will be geared to identifying cultural materials according to artifact class and type and recording attributes relevant to interpreting the nature and chronology of the historic occupation at Site 18Cv474. General laboratory treatment of cultural materials from the Phase III investigation includes:

- Cleaning and stabilization of recovered cultural materials, and floral and faunal remains to insure their stability for curation, and processing and study of analytical samples, as appropriate.
- Complete provenience and labeling of artifacts and samples.

- Data entry to establish a database for analysis and to provide a master catalog of cultural materials recovered from the proposed investigation (as required by MHT curation guidelines).

Artifacts will be subjected to identification and analysis using the GAI Historic Coding Scheme. This multivariate classification system codes for significant attributes of various artifact classes. Artifact analysis will focus on the creation of an inventory of artifact classes and types for features and strata at the site, in order to initially examine issues of chronology and function. All coded data will be entered into a computerized relational database.

Various analytical techniques will be used to synthesize artifact data including standard typologies developed by South (1977). (South's functional typologies are useful in interpretation of activity areas and present a means of discussing the general site artifact collection and comparing the collection to similar sites in the region. Site interpretations are based on the context of the recovered materials and will be formulated based, in part, on the research questions posed above.) Once washed, artifacts will be sorted into six major artifact classes including ceramics, glass, architectural, small finds, clothing, and pipes. Following the sorting of artifacts into the above categories, they will be subjected to a preliminary analysis, which will include a basic description of artifacts by material class, functional group, and relevant attributes. Included among the attributes noted, as applicable, will be type, beginning and end dates of production, form, motif/decoration, color, manufacturing technique, functional group, base, finish, embossment, maker's mark/manufacturer, material, bore diameter, and pattern class and subclass (South 1977:95-96).

Historic ceramic analysis will focus on the identification of ware and type categories, decorative attributes, and maker's marks, in order to interpret site chronology. Attributes coded for the ceramic analysis include count, ware, type, form, motif, colors, percent complete, and functional group for each artifact or group of artifacts. Maker's marks are described in detail and dated, when possible. Minimum Number of Vessels (MNV) are defined once the sherds have been coded and cross-mended. If the artifacts are recovered from a tightly dated feature context, then analysis will include use of the Consumer Price Indices developed by Miller (1980, 1991) or a similar index developed by McBride and McBride (1987).

Diagnostic artifacts will be utilized to date features and activity areas. This may include measurements of window glass thickness in addition to more traditional artifact dates (cf. Brown 1982; Mullins 1988; South 1977; Miller 2000). Whenever possible, proveniences will be assigned a date based on Terminus Post Quem (TPQ), or the earliest possible date for each specific context. For each artifact or group of artifacts an alphanumeric code will be used to describe the ceramic artifact.

Glass artifacts will be tabulated according to major groups (e.g., bottle glass, window glass, lamp glass) and will be separated into functional categories when possible. Dating information will be based on the identification of diagnostic technological attributes, such as mold seams and evidence of snap-case manufacture, in addition to bottle embossments. The alphanumeric code for glass consists of two parts. The alphanumeric glass codes include bottle, lamp glass, tableware, tumblers, and laboratory equipment. Other coded glass attributes are manufacturing technique, decoration, finish type, base type, color, and functional group. The beginning and end dates for datable attribute, such as maker's mark and embossments, are determined.

Other artifact classes include architecture (bricks, nails, window glass, etc.), clothing (type and materials are identified), miscellaneous small finds, and smoking pipes. These artifacts are analyzed using the two-part alphanumeric code as described above. When necessary other attributes such as character, wear, decoration and material are coded.

For the purposes of gauging the laboratory effort on this project, based on Phase I/II investigations, GAI projects recovery of up to 10,000 historic artifacts requiring processing, analysis, and preparation for long-term curation at the Maryland Archeological Conservation Laboratory. The curation will follow MHT's (2005) Collections and Conservation Standards.

Faunal Analysis

Faunal material collected from the excavation will be submitted for analysis and identification by Marie-Lorraine Pipes or other qualified analyst. This task is anticipated to include up to 100 (non-shell) faunal remains. To the extent possible, specimens will be identified according to element and genus or species level, and modifications (burning, butchering, gnawing) will be noted. Faunal remains will be quantified and Minimum Number of Individuals (MNI) will be provided.

Floral Analysis

Botanical remains will be submitted to Justine McKnight or other qualified analyst for analysis and identification. Botanical classification will provide information on plant species and possibly seasonality. GAI assumes that 25 flotation samples will be processed and analysis, including botanical and potentially small-scale faunal study. Flotation samples will be processed and sorted by GAI archeology technicians. Any floral and faunal remains and artifacts will be separated at this time. Paleobotanical remains, faunal remains, and soil samples will be sent to specialists for analysis.

Geochemical Analysis

Chemical analysis studies at archeological sites have shown that concentrations of certain trace elements can be useful in the interpretation of site usage (Catts and Custer 1990; Frye 2007). Geochemical analysis will include phosphates, free carbon, calcium, potassium, and magnesium. GAI estimates that 300 soil samples will be processed for geochemical analysis. These samples will be sent to Pennsylvania State University's Agricultural lab for processing.

Report Preparation

Report activities for the proposed data recovery investigation will result in two deliverables: (1) an End of Fieldwork Summary, and (2) a Phase III data recovery technical report. The first deliverable will consist of an End of Fieldwork Summary that briefly reports on the results of the data recovery field investigations and preliminary interpretations for site 18Cv474. This brief summary (circa 5 pages) will present sufficient data for UniStar Nuclear to confirm completion of the data recovery investigation and the adequacy of the fieldwork. Although not required for agency review, following approval by UniStar Nuclear, a copy of this End-of-Fieldwork Summary will be forwarded to MHT for information purposes.

After analysis, GAI will prepare a technical report describing the methods and results of the Phase III data recovery excavation. The report will be undertaken in accordance with the Secretary of Interior's *Standards and Guidelines for Archeology and Historic Preservation* and conform to the *Standards and Guidelines for Archeological Investigations in Maryland* (Shaffer and Cole 1994). The report will include the following sections:

- Abstract
- Introduction
- Research Design
- Historic Context
- Field Strategy and Methods
- Results of Fieldwork

- Site Interpretations
- Conclusions and Recommendations

The results section will include site maps showing feature locations, a discussion of the results of site land-use patterns, description of features, artifact analysis, and results of specialized analyses (fauna, flora, geochemical signatures). The site interpretation section will discuss the research question by topic and compare information gathered from this site with other sites in the region. The report will be well illustrated with photographs of diagnostic artifact types and features, in addition to site plan and feature drawings.

This document will include appendices, minimally consisting of a master artifact inventory and relevant ancillary studies (e.g., botanical analysis, faunal analysis, geochemical analysis). In organization and content, the report will follow guidelines provided in *Standards in Guidelines for Archeological Investigations in Maryland* (Shaffer and Cole 1994), and will provide appropriate documentation necessary for MHT to confirm the adequacy of the Phase III investigation.

Upon review of the draft report by the UniStar Nuclear, the MHT, and Calvert County, copies of the final report will be furnished to the MHT (one with original photographs and one copy), UniStar Nuclear (two copies), the NRC, the USACE, Calvert County Department of Planning and Zoning, the Jefferson Patterson Park and Museum, and the Maryland State Highway Archaeology Program.

Monthly progress reports will be submitted to UniStar Nuclear via email. During fieldwork, after the site study area is stripped and features exposed, personnel from UniStar Nuclear, MHT, and NRC, USACE, and Calvert County agencies will be invited to visit the site.

Public Outreach

The data recovery investigation of Site 18Cv474 should include a public outreach component, as required under Section 106. Several activities are planned to disseminate the results of this investigation. Because of the project's location at a nuclear power plant facility, it is not possible to have site tours. However, GAI will work with a local library to provide at least two opportunities for a presentation, as well as, a temporary artifact and/or poster exhibit during the course of the project (pending UniStar Nuclear's permission). GAI will provide MHT with .jpg of report photographs and a .pdf of the final report for use on MHT's website. A longer-term public exhibit of the data recovery excavation will be prepared, if a suitable local site for this display (such as a library or museum) is found during the project. Finally, to reach a larger audience a brief summary of the excavation will also be submitted to the Current Research Section of the *Society for Historical Archeology Newsletter*. A poster session or a paper on the results of this data recovery will be presented at the Mid-Atlantic Archeological Conference or similar meeting upon completion of the report. GAI will submit copies of all articles and papers on this investigation to MHT for their files.

Curation

Artifacts will be processed and boxed for storage according to *Technical Update No. 1 of the Standards and Guidelines for Archeological Investigations in Maryland, Collections and Conservation Standards* (MHT 1999). UniStar Nuclear and GAI agree that all notes, photographs, artifacts, and other records from the data recovery investigations shall be submitted, along with the Deed of Gift form, to the Maryland Archeological Conservation Laboratory. Two copies of associated records (field forms, maps and other documents) and all original slides and negatives will be prepared according to state guidelines and submitted to this

repository with the artifact collection. UniStar Nuclear has not signed the Deed of Gift form at this time.

Schedule

GAI anticipates commencing this data recovery investigation work within 15 working days of the Notice to Proceed. It is estimated that fieldwork will require up to two months. Mechanical stripping of the plowzone cannot be undertaken in extremely wet conditions or when the ground is frozen. Processing and analysis of artifacts will take up to 12 weeks. Preparation of the draft report will take up to 3 months following completion of laboratory analysis. After comments are received, the draft can be revised and resubmitted within 30 days. Some of the processing and analysis can be undertaken concurrently with the fieldwork to expedite completion of the work.

Staff

GAI's archeology staff of field technicians is comprised of professional archeologists, all with at least one year of field and/or laboratory experience. The work will be conducted under the direction of Ben Resnick, M.A., RPA, Cultural Resources Group Manager, Lori Frye, M.A., RPA, Principal Investigator, and Barbara Munford, M.A., Co-Principal Investigator. Soil studies and reconstruction of the site formation processes will be conducted by David Cremeens, PhD, CPSSc, GAI's Senior Soil Staff Scientist. Resumes of these four individuals are provided (Appendix A).

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Figures in the Data Recovery Plans are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

**APPENDIX A
QUALIFICATIONS OF KEY STAFF**

Benjamin Resnick, M.A., RPA

Manager, Cultural Resources Group

Education

1984 M.A., Anthropology/Public Service Archaeology, University of South Carolina

1980 B.A., Anthropology, University of Maryland

Registration

Register of Professional Archaeologists (RPA)

Affiliations

Society for Historical Archaeology (SHA)
Council for Northeast Historical Archaeology
Middle Atlantic Archaeology Conference

Areas of Specialization

Historical archaeology; specialized experience in GIS archaeological predictive modeling, and the study of 19th century rural and domestic sites, industrial sites, and farmsteads. Extensive experience in the management of many state and federal open-end contracts including various Departments of Transportation, the National Park Service and U.S. Army Corps of Engineers.

Professional Experience

Group Manager/Principal Investigator

2009

- Phase Ib Archaeological Survey, Rural Valley Pipeline Project, Armstrong, Westmoreland, Elk, and McKean Counties, Pennsylvania, for Dominion Transmission, Inc.
- Phase II Investigations of the Dun Glen Hotel Site for the Fire Suppression System, Fayette County, West Virginia, for National Park Service-NERI.
- Supplemental Phase Ib Archaeological Survey, NIJUS-0002 MD-101 Pipeline Project, Morris Township, Greene County, Pennsylvania, for Equitable Gathering, LLC.
- Phase I Cultural Resources Survey, Record of Disturbance (ROD) Form, D-503 Phase II Pipeline Relocation Project, North Sewickley Twp., Beaver County, Pennsylvania, for Columbia Gas of Pennsylvania.
- Supplemental Phase I Cultural Resources Survey (Addendum 11), Keystone Station Water Pipeline Project, Armstrong County, Pennsylvania, for Reliant Energy Northeast Management Company.

2008

- Archaeological Data Recovery at the Overby Site (46Wa112), US Route 52, Tolsia Highway Project, Wayne County, West Virginia, for Kimley-Horn and West Virginia Department of Transportation, Division of Highways.
- Phase Ia Archaeological Reconnaissance, I-295 (SR-9A), Northwest Quadrant, Wetland Detention Pond Project, Duval County, Florida, for Florida Department of Transportation.
- Phase Ib Archaeological Survey, MD-101 Pipeline Project, Morris Township, Greene County, Pennsylvania, for Equitable Gathering, LLC.
- Supplemental Phase Ib Archaeological Investigation, Greensboro Sewage Collection and Treatment Facilities, Greene County, Pennsylvania, for Fayette Engineering Company, Inc.

- Phase III Archaeological Data Recovery at Site 33Wa797, Rockies Express Pipeline-East Project, Warren County, Ohio, for Caprock Environmental Services, LLC.
- Phase III Archaeological Data Recovery at Site 33Wa823, Rockies Express Pipeline-East, Warren County, Ohio, for Caprock Environmental Services, LLC.
- Phase III Archaeological Data Recovery at Site 33PE174, Rockies Express Pipeline-East, Perry County, Ohio, for Caprock Environmental Services, LLC.
- Phase I Cultural Resources Survey, Franklin 20-inch Storage Pipeline Project, Wayne and Summit Counties, Ohio, for Dominion East Ohio Gas.
- Phase III Archaeological Data Recovery at Site 33Mo77, Rockies Express Pipeline-East, Monroe County, Ohio, for Caprock Environmental Services, LLC.
- Phase III Archaeological Data Recovery at Site 33Pe362, Rockies Express Pipeline-East, Perry County, Ohio, for Caprock Environmental Services, LLC.
- Phase Ib Archaeological and Geomorphological Survey, State Route 0119, Section 550, Punxsutawney Bridge Reevaluation, Borough of Punxsutawney, Jefferson County, Pennsylvania, for Pennsylvania Department of Transportation, Engineering District 10-0.
- Phase Ia Archaeological Reconnaissance, Pipeline #8123 Reroute Project, Stark County, Ohio, for Dominion East Ohio Gas.
- Phase I Cultural Resources, Pursley Transmission Line, Center Township, Greene County, Pennsylvania, for Allegheny Power.
- 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.
- Cultural Resource Efforts for the Kemptown Substation, Potomac-Appalachian Transmission Highline (PATH) Project, Frederick County, Maryland, for Power Engineers.
- Phase Ia Archaeological Reconnaissance, I-295 (SR-9A), Northwest Quadrant, Wetland Detention Pond Project, Duval County, Florida, for the Florida Department of Transportation.
- Phase I Archaeological and Geomorphological Survey, McKee Pump Station Abandonment and Sewer Line Project, Freedom Township, Blair County, Pennsylvania, for Stiffler, McGraw & Associates, Inc.
- Supplemental Phase I Archaeological Survey (Addendum III), USA Storage Project, Greenlick Wells and Lines, Potter County, Pennsylvania, for Dominion Transmission, Inc.
- Phase I Cultural Resources Survey, Cheat Lake 138kV Transmission Line and Substation Development Project, Monongalia County, West Virginia, for Allegheny Power.
- Phase I Archaeological Survey, SR 0954, Section 453, Smicksburg Bridge #1 Replacement, West Mahoning Township, Indiana County, Pennsylvania, for Pennsylvania Department of Transportation, Engineering District 10-0.
- Phase I Archaeological Survey, Proposed Barto-Kensinger Pipeline, Lycoming County, Pennsylvania, for Chief Oil and Gas, LLC.
- Phase Ib Cultural Resources Investigation, Bell Bend Nuclear Power Plant, Luzerne County, Pennsylvania for UniStar Nuclear Development, LLC.
- Phase I/II Cultural Resources Investigation, Clinch River-Possum Hollow Landfill, Russell County, Virginia, for American Electric Power Company (Lead Agency: USACOE-Norfolk).
- 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 Archaeological Survey, S.R. 7401, Section WAT, Watson Street Bridge Replacement Project, Bedford County, Pennsylvania for Pennsylvania Department of Transportation District 9-0 as subconsultant to Greenhome & O'Mara.
- Architectural Survey of West Palm Beach Local Historic Districts of Prospect Park/Southland Park for the City of West Palm Beach Historic Preservation Division.
- Historic Structure Survey, City of Bunnell, Flagler County, Florida for the City of Bunnell.

- Phase I Cultural Resources Survey, PPL Option 1 for an 8-inch Diameter Gas Pipeline, Granville Township, Mifflin County, Pennsylvania for PPL Gas Utilities.
- Cultural Resources Investigation, Proposed Expansion of Meadowbrook Substation, Frederick County, Virginia, for Power Engineers, Inc.
- Resurvey of Marina Historic District, City of Delray Beach, Palm Beach County, Florida, for City of Delray Beach Planning and Zoning Department.
- Architectural and Historic Resources Survey Report and Effects Evaluation, Matt Funk 138kV Bus Tie #1 Project, Montgomery and Roanoke Counties, Virginia, for Appalachian Power, a Unit of American Electric Power.
- 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.
- Tavernier Historic District Intensive Level Survey and Publication, for Monroe County Board of County Commissioners and Historic Florida Keys Foundation, Key West, Florida.
- Phase Ia Cultural Resources Reconnaissance, Carrie Furnace Development Project, Allegheny County, Pennsylvania, for the Redevelopment Authority of Allegheny County.
- Phase I Cultural Resources Survey, Limestone Compressor Station and Pipeline Project, Clarion County, Pennsylvania, for Equitable Gas.
- Phase I Cultural Resources Survey and Geomorphology Investigation, Proposed V-382 Pipeline Project, Belmont County, Ohio. Client: Columbia Gas Transmission.
- Cultural Resource Investigations, Naval Recreation Center, Calvert County, Solomons, Maryland. Client: TetraTech NUS, Inc.
- 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.
- Archaeological Data Recovery, Philip's Meadow Site 18Ch654, Charles County, Maryland. Cove Point Expansion TL-532 Pipeline Project. Client: Dominion Cove Point, LNG, LP.
- Phase IA Cultural Resources Reconnaissance, Susquehanna Steam Electric Station, Luzerne County, Pennsylvania. Client: Constellation Power Generation.
- Phase I Archaeological Survey, S.R. 2018, Section 001, Mench Bridge Replacement Project, East and West Providence Townships, Bedford County, Pennsylvania. Client: PennDOT / Greenhome & O'Mara.

2007

- Phase I Archaeology and Geomorphology Survey, Proposed 502 Junction Substation, Trans-Allegheny Interstate Line, Dunkard Township, Greene County, Pennsylvania for Power Engineers, Inc., Hailey, Idaho.
- Phase Ia and Architectural Reconnaissance, M.P. 149.5 to 155.5, Preliminary Design, West Providence and Snake Spring Townships, Bedford County, Pennsylvania (2007) for Pennsylvania Turnpike Commission
- Phase I Archaeological Survey, SR 0049, 051 Bridge Replacement Project, Tioga County, Pennsylvania (2007) for PennDOT / Gannett Fleming.
- Phase Ia Archaeological & Geomorphological Investigation, SR 3034, 001, South Branch of Blacklick Creek (Beula) Bridge Replacement, Cambria Township, Cambria County, Pennsylvania (2006) for PennDOT / Greenhome & O'Mara.
- Phase I Archaeological Survey, SR 0026, 11B, Eichelbergertown Bridge Replacement Project, Hopewell Township, Bedford County, Pennsylvania (2006) for PennDOT / Greenhome & O'Mara.

- Phase Ia Archaeological & Geomorphological Investigation, Proposed Wetland Mitigation Site (Jerry Fetter Site), SR 9900, FET, West Saint Clair Township, Bedford County, Pennsylvania (2006) for PennDOT / Greenhome & O'Mara.
- Phase I Archaeological Survey, SR 0204 Bridge Replacement Project, Snyder and Union Counties, Pennsylvania (2006) for PennDOT / Gannett Fleming.
- Phase I-II Survey and Testing, Hardy Storage Project, Hampshire and Hardy Counties, West Virginia, Columbia Gas Transmission, Inc.
- 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.
- Phase I Survey, Cove Point Expansion Project, 80 Mile Transmission Line, Dominion Transmission, Inc., Huntingdon, Centre, Juniata, and Clinton Counties, Pennsylvania
- Phase I Survey, Cove Point Expansion Project, 40 Mile Transmission Line, Dominion Transmission, Inc., Calvert, Charles, and Prince George Counties, Maryland.
- Phase II Testing and Evaluation, Sites 36PO34 and 36MC70, Northeast Storage Project, Dominion Transmission, Inc. Potter and McKean Counties, Pennsylvania.
- Phase I Cultural Resources Survey, Fink Capacity Maintenance Project, Lewis County, West Virginia for Dominion Transmission, Inc.
- Soil Geomorphology/Phase I Archaeological Survey, SR 44, Spring Creek Bridge, Gregg Township, Union County, Pennsylvania (2005) for PennDOT / Gannett Fleming.
- Phase I Archaeological Survey, SR 0042, 004 Bridge Replacement Project, Muncy Creek Township, Lycoming County, Pennsylvania (2005) for PennDOT / Gannett Fleming.
- Phase I Archaeological Survey, SR 4015, 001 Bridge Replacement Project, Springfield Township, Bradford County, Pennsylvania (2005) for PennDOT / Gannett Fleming.
- Phase I Archaeological Survey, SR 0044, 038 Bridge Replacement Project, Gregg Township, Union County, Pennsylvania (2005) for PennDOT / Gannett Fleming.
- Phase I/II/III Archaeological Investigations, River Avenue Redevelopment Project, Pittsburgh, Allegheny County, Pennsylvania for the City of Pittsburgh
- Phase I Survey, Well 12367 Project, Kanawha County, West Virginia, Columbia Gas Transmission Corporation, Charleston, West Virginia.
- Archaeological Site Testing/Excavation-Roads Rehabilitation Phase II, Gettysburg National Military Park, Adams County, Pennsylvania for the NPS
- Preparation of GIS Archaeological Protection Plan for the City of Pittsburgh, Pennsylvania for the Pittsburgh Department of City Planning
- Phase I-III archaeological data recovery, nineteenth-century urban occupations, Pittsburgh, Pennsylvania for the Pittsburgh Urban Redevelopment Authority
- Archaeological testing and data recovery at the Altoona Railroaders Memorial Museum, Altoona, Pennsylvania for the NPS
- Phase I archaeological survey for the US Air/R&P Coal Company Study, Blackick, Indiana County, Pennsylvania for Kriebel Resources
- Archaeological overview and assessment investigations, Fort Necessity National Battlefield, Fayette County, Pennsylvania for the NPS
- Archaeological testing and mitigation, Phases I, II, and III, at the Saltsburg Canal Park, America's Industrial Heritage Project, Indiana County, Pennsylvania for the NPS
- Phase I Archaeological Survey, Charleston Ball Park, Charleston, West Virginia for the City of Charleston.
- Phase I Survey, Loudoun-Leesburg Pipeline, Dominion Transmission, Inc., Loudoun County, Virginia
- Phase I Survey, Wolf Run Compressor Station and Pipeline, Northeast Storage Project, Dominion Transmission, Inc., Lewis County, West Virginia

- Phase I Survey, TL-263 Replacement Project, Kanawha, Boone, and Wyoming Counties, West Virginia, Dominion Transmission, Inc.
- 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.
- Phase I Survey, Northeast Storage Project, 21 Mile Pipeline, Quinlan Compressor Station and associated facilities, Dominion Transmission, Inc., Potter and McKean Counties, Pennsylvania, and Cattaraugus County, New York
- Phase I Archaeological Survey and Architectural and Historic Resources Survey, American Electric Power Wyoming-Jacksons Ferry 765 kV Transmission Line, Priority Section 4, Wyoming and McDowell Counties, West Virginia for American Electric Power
- Phase I Survey, Cove Point East Project, Loudoun and Fauquier Counties, Virginia for Dominion Transmission, Inc.
- Phase I Survey, Mid-Atlantic Project, Quantico Compressor Station/Pipeline and Leesburg Compressor Station, Loudoun and Fauquier Counties, Virginia for Dominion Transmission, Inc.
- Categorical Exclusion Evaluation, Thurmond Bridge Replacement/Rehabilitation Project, Fayette County, West Virginia for the WVDOT
- Phase I and II Archaeological Survey of the Fayetteville Interchange, Fayette County, West Virginia as subconsultant to Kimley-Horn & Associates, Inc. (KHA) for WVDOT
- Phase II Archaeological Investigations (Historic Sites), Determination of Eligibility, Route 52 (Tolsia Highway) Construction Alternatives, Wayne and Mingo counties, West Virginia for WVDOT
- Historic structures reconnaissance survey and preparation of Criteria of Effects Report, Route 19/Corridor L, Braxton and Nicholas counties, West Virginia for WVDOT
- Phase I archaeological survey of the access roads to the proposed Federal Bureau of Investigation sites, Simpson and Clay districts, Harrison County, West Virginia for Johnson, Johnson & Roy
- North Carolina Statewide GIS Historic and Prehistoric Predictive Models (with ESI) for NC DOT
- Phase I/II Archaeological Investigations, Bridge Replacement Project T-319, Beaver County Bridge No. 36 (Links Bridge), Independence Township, Beaver County, Pennsylvania for PennDOT
- Phase II-III Data Recovery, the Coverts Bridge Site 36Lr228, Lawrence County, Pennsylvania for Frank B. Taylor Engineering and PennDOT
- Archaeological assessment of Quarters 124, United States Military Academy West Point, Orange County, N.Y. as subconsultant to Fanning, Phillips, and Molnar (FPM) for USCOE New York District
- Cultural Resources Survey, Route Six Timber Harvest, U.S. Military Academy, West Point, Orange County, N.Y. as subconsultant to FPM for USCOE New York District
- Archaeological data recovery, Revolutionary War resources, Stony Lonesome II Housing Facility Project, United States Military Academy, West Point, Orange County, N.Y. as subconsultant to FPM for the USCOE New York District
- 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 PennDOT
- Phase I Archaeological Testing, Proposed Mummasburg Road Underground Utility, Gettysburg College and Gettysburg National Military Park, Adams County, Pennsylvania for Friends of the National Parks at Gettysburg, Inc.

- Phase I Archaeological Testing (Storage Facility, Delaware Memorial, Mississippi Marker and Monument), Gettysburg National Military Park, Adams County, Pennsylvania for the National Park Service (NPS)
- Phase I Archaeological Survey, Berkshire Business Park, Manchester Township, York County, Pennsylvania for LSC Design, Inc.
- Historical resources inventory and preparation of historic archaeological predictive model for the Southern Beltway Transportation Project, Allegheny and Washington counties, Pennsylvania for TriLine Assoc. Inc. and the Pennsylvania Turnpike Commission
- Historic cultural resources investigation for the Erie East Side Access Study, Erie, Pennsylvania for PennDOT
- Phase I cultural resources survey of alignment C-Prime, Kittanning By-Pass, State Route 6028, Section 015, Armstrong County, Pennsylvania for PennDOT
- Phase I Cultural Resources Study, Proposed Stonewall Jackson 69kV Substation Project, Lewis County, West Virginia for Allegheny Power
- Codori/Trostle Thicket Feasibility Study, Pollen and Soil Analysis, Gettysburg National Park, Adams County, Pennsylvania for the National Park Service and Eastern National Park and Monument Assn.
- Revision to Environmental Assessment, Historical Resources, Phase I Martin Luther King, Jr. East Busway Extension, Wilkinsburg, Edgewood, Swissvale, and Rankin Boroughs, Allegheny County, Pennsylvania for the Port Authority of Allegheny County
- Archaeological testing and data recovery of proposed 16-inch waterline, Eisenhower National Historic Site and Gettysburg National Military Park, Adams County, Pennsylvania for the Eastern National Park and Monument Association/ NPS
- Phase I and II Archaeological Investigations, proposed Gettysburg Museum and Visitor Center, Gettysburg National Military Park, Adams County, Pennsylvania for the Gettysburg National Battlefield Museum Foundation
- Archaeological testing and data recovery, Fire Suppression Project, Eisenhower National Historic Site at Gettysburg National Military Park, Adams County, Pennsylvania for the NPS
- Phase I-III Archaeological Data Recovery, 18th-20th Century, Cabbage Pond Mill Site (7S-C-61), Sussex County, Delaware for DelDOT
- Archaeological data recovery, proposed sewer utility, Gettysburg National Military Park and Eisenhower National Historic Site, Adams County, Pennsylvania for the NPS
- Phase I Archaeological Survey, State Road 82 Slope Stabilization Project, New Castle County, Delaware for DelDOT
- Phase I Archaeological Investigations, Bridge 305 on 6th Street, Sussex County, Delaware for DelDOT
- Archaeological data recovery and monitoring, Lemon House, Allegheny Portage Railroad National Historic Site, Blair and Cambria counties, Pennsylvania for the NPS
- Archaeological testing and data recovery at the Altoona Railroaders Memorial Museum, Altoona, Pennsylvania for the NPS
- Phase I archaeological survey for the US Air/R&P Coal Company Study, Blacklick, Indiana County, Pennsylvania for Kriebel Resources
- Archaeological overview and assessment investigations, Fort Necessity National Battlefield, Fayette County, Pennsylvania for the NPS
- Archaeological testing and mitigation, Phases I, II, and III, at the Saltsburg Canal Park, America's Industrial Heritage Project, Indiana County, Pennsylvania for the NPS
- Phase I Cultural Resources Survey, Dry Run Road Access Study, Martinsburg, Berkeley County, West Virginia for WV DOH
- Phase IB intensive archaeological investigation of East-West Boulevard, Anne Arundel County, Maryland for MD DOT
- Phase I cultural resources investigation of the North Branch of Newton Creek, Boroughs of Woodlynne and Collingswood, Camden County, New Jersey for US COE Philadelphia District

- Phase IB intensive archaeological investigations of the MD 100 wetland mitigation Buckingham Tree Nursery and Deep Run areas, Anne Arundel and Howard counties, Maryland for MD DOT
- Phase I and II archaeological investigations of MD 228 wetland mitigation area, Charles County, Maryland for MD DOT
- Literature search and Phase I archaeological survey of the proposed North Huntingdon Square, North Huntingdon Township, Westmoreland County, Pennsylvania for J. J. Gumberg Company
- Phase II archaeological investigations at the Legionville site (36Bv33), Harmony Township, Beaver County, Pennsylvania for GenCorp
- Environmental assessment - Resource Report 5, proposed GPU/DQE 250-mile transmission line, Beaver Falls-Three-Mile Island, Pennsylvania for GPU
- Phase I cultural resources investigations of Tract 1037, Blue Marsh Lake project area, Jefferson Township, Berks County, Pennsylvania for US COE Philadelphia District
- Archaeological survey of the Colver Reservoir expansion, Barr and Cambria townships, Cambria County, Pennsylvania for Inter-Power of Pennsylvania, Inc.
- Phase IA archaeological assessment of proposed Ahoskie Combustion Turbines, Ahoskie, North Carolina for Virginia Electric Power Company
- Stage IA cultural resource investigation, Gateway Cathedral, Staten Island, New York for John W. Whitehead AIA and Associates
- Stage IA and Stage IB cultural resources study of proposed sewage improvements, Wayne Township, Passaic County, New Jersey for Township of Wayne, New Jersey
- Phase I cultural resource survey, GSA Distribution Center, Burlington Township, Burlington County, New Jersey for Burlington GSA Partnership
- Phase I archaeological assessment of the proposed Submarine Electromagnetic Systems Laboratory, Naval Underwater Systems Center, New London, Connecticut for Naval Facilities Engineering Command
- Phase IA archaeological assessment of the Flexivan site, Jersey City, New Jersey for U.S. Postal Service
- Phase IA archaeological assessment of proposed prison facility, Talladega, Ala. and Atlanta, Georgia for the Department of Justice
- Phase I testing, Lipari Landfill Superfund Offsite Remediation Area, New Jersey for the US COE Philadelphia District
- Phase I and II testing, Logan Lane Site, Beaver County, Pennsylvania for Beaver County Corporation for Economic Development
- Cultural resources investigation of the Delaware Bay Coastline, New Jersey-Delaware for USCOE Philadelphia District
- Phase I survey of a proposed boat landing facility, Millville Hydroelectric Station, Jefferson County, West Virginia for Allegheny Power Service Corporation
- Cultural resources investigation of the West Branch of Shabakunk Creek, Ewing Township, Mercer County, New Jersey for US COE Philadelphia District
- Phase I survey and testing, proposed Ford City Pipeline, Armstrong County, Pennsylvania for T. W. Phillips Gas and Oil Company
- Phase I survey and testing, proposed pipeyard in Latimore Township, Adams County, Pennsylvania for Texas Eastern Gas Pipeline Company
- Phase II testing, Heritage Heights Site, Howard County, Maryland for MD DOT
- Phase II testing, Northampton Plantation slave quarters, Largo, Maryland for Porteen Sullivan Corporation/Maryland National Capital Park and Planning Commission
- Phase I survey and testing, proposed federal correctional institution, Estill, South Carolina for the Department of Justice
- Phases I and II testing at 10 farmsteads, Fort Drum Military Reservation, Watertown, New York for National Park Service, Mid-Atlantic Region and U S Army
- Phase I survey, proposed DMV Inspection Station, Winston, New Jersey for the NJ DMV

Bioarchaeology Experience

- Excavation of Civil War Soldier, Gettysburg National Military Park, Pennsylvania for the National Park Service
- *▪ Excavation of missionized Native American burials, Santa Catalina de Guale Research Project, St. Catherine's Island, Georgia for American Museum of Natural History
- Field School in Mortuary Archaeology, Caesarea Maritima, Israel, American School of Oriental Research, University of Maryland
- Excavation of Native American burials, Ruckers Bottom Site, Elbert County, Georgia, Gilbert Commonwealth Associates
- Coursework in human osteology and human growth and constitution.

Publications

Madry, S., M. Cole, S. Gould, B. Resnick, S. Seibel, and M. Wilkerson. A GIS-Based Archaeological Predictive Model and Decision Support System for the North Carolina Department of Transportation. In *GIS and Archaeological Site Location Modeling*, edited by Mark W. Mehrer and Konnie L. Wescott. CRC/Taylor & Francis, London. 2006.

Madry, S., S. Gould, B. Resnick, and M. Wilkerson. A GIS-Based Archaeological Predictive Model for the North Carolina Department of Transportation. In *The Archeology of Landscape and Geographic Information Systems: Predictive Maps, Settlement Dynamics and Space and Territory in Prehistory*, edited by Jurgen Kunow and Johannes Muller. Brandenburgisches Landesamt für Denkmalpflege und Archäologisches Landesmuseum, Wunsdorf. 2003.

Resnick, B. Archeological Testing, Mitigation, and Monitoring of the Proposed Comfort Station, Stewart Warehouse, Altman Mill and Saltsburg Glass Factory, Phase I Development - Saltsburg Canal Park, Saltsburg, Indiana County, Pennsylvania. *Southwestern Pennsylvania Heritage Preservation Commission, Archeological Report No. 7*. 1996.

Resnick, B. Archeological Testing and Mitigation for Phase I Development at Saltsburg Canal Park, Saltsburg, Indiana County, Pennsylvania. *Southwestern Pennsylvania Heritage Preservation Commission, Archeological Report No. 6*. 1996.

LeeDecker, C.L. and B. Resnick. Archaeological Investigations at the Federal Correctional Institution, Estill, Hampton County, South Carolina. *South Carolina Antiquities* 23 (1 & 2): 1-18. 1991.

Hasenstab, R.J. and B. Resnick. GIS in Historical Predictive Modeling: The Fort Drum Project. In *Interpreting Space: GIS in Archaeology*, edited by Stanton W. Green, Ezra B.W. Zubrow, and Kathleen M. Allen. Taylor & Francis, Ltd., London. 1990.

Resnick, B. The Williams Place: A Scotch-Irish Farmstead in the South Carolina Piedmont. In *Volumes in Historical Archaeology III*, edited by Stanley South. The South Carolina Institute of Archaeology and Anthropology, The University of South Carolina, Columbia, South Carolina. 1988.

Resnick, B. San Jacinto Makes Aviation History. *San Jacinto Community Information Directory*, Creative Network. Newport Beach, California. 1986.

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

2009

- 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.

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 WVDOT.
- 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 WVDOT.
- Phase Ib Survey of the U.S. Route 19/Lochgelly Interchange and WV 16 Reconnection, Fayette County, WV for Kimley-Horn and WVDOT.
- 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 WVDOT.
- 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 WVDOT.

1990-2001

- Phase III Data Recovery Investigations of Site 46Ni267, a Woodland Occupation, Nicholas County, WV. WVDOT.
- 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.

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

Areas of Specialization

Historic archaeology, oral history interviews, prehistoric and historic ceramic analysis, cultural resource management, Eastern Woodlands archaeology

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

2009

- 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 WVDOT.
- Co-Principal Investigator/Lead Archaeologist. 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.
- 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 (Obayashi/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., Clarkstown, 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 County, Pennsylvania.
- Phase I Survey, Pipeline Corridor Project. Client: Great Lakes Energy Partners Pipeline Project Complanter Township, Venango County, 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 36AI480, Locks and Dams 2, 3, and 4; Monongahela River Project, Leetsdale, Allegheny County, Pennsylvania, US Army Corps of Engineers, Pittsburgh District.
- 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:

- 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. US 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.

David L. Cremeens, Ph.D., CPSS

Senior Staff Soil Scientist

Education

- Ph.D. Pedology, University of Illinois, 1989
- M.S. Pedology, Michigan State University, 1983
- B.S. Agriculture, University of Missouri, 1979

Professional Certification

Certified Professional Soil Scientist

Affiliations

Soil Science Society of America
Geological Society of America
Pennsylvania Association of Professional Soil Scientists
West Virginia Association of Professional Soil Scientists

Professional Experience

- Geomorphological Reconnaissance. Archaeological Data Recovery at the Overby Site (46Wa112), US Route 52, Tolsia Highway Project, Wayne County, West Virginia, for Kimley-Horn and West Virginia Department of Transportation, Division of Highways.
- Geomorphological Reconnaissance. Phase I Archaeological and Geomorphological Survey, McKee Pump Station Abandonment and Sewer Line Project, Freedom Township, Blair County, Pennsylvania, for Stiffler, McGraw & Associates, Inc.
- Geomorphological Reconnaissance. Phase I Archaeological Survey, SR 0954, Section 453, Smicksburg Bridge #1 Replacement, West Mahoning Township, Indiana County, Pennsylvania, for Pennsylvania Department of Transportation, Engineering District 10-0.
- Geomorphological Reconnaissance. Phase I/II Cultural Resources Investigation, Clinch River-Possum Hollow Landfill, Russell County, Virginia, for American Electric Power Company (Lead Agency: USACOE-Norfolk).
- Geomorphological Survey. 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.
- Geomorphological Reconnaissance. Phase I Archaeological Survey, S.R. 7401, Section WAT, Watson Street Bridge Replacement Project, Bedford County, Pennsylvania for Pennsylvania Department of Transportation District 9-0 as subconsultant to Greenhome & O'Mara.
- Geomorphological Assessment. Phase I Cultural Resources Survey, Franklin 20-inch Storage Pipeline Project, Wayne and Summit Counties, Ohio, for Dominion East Ohio Gas.
- Geomorphology Assessment. Phase I Cultural Resources Survey and Geomorphology Investigation, Proposed V-382 Pipeline Project, Belmont County, Ohio. Client: Columbia Gas Transmission.
- Geomorphological Survey. 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.
- Geomorphological Survey. Archaeological Data Recovery, Philip's Meadow Site 18Ch654, Charles County, Maryland. Cove Point Expansion TL-532 Pipeline Project. Client: Dominion Cove Point, LNG, LP.
- Geoarchaeological Reconnaissance. Phase I Archaeological Survey, S.R. 2018, Section 001, Mench Bridge Replacement Project, East and West Providence Townships, Bedford County, Pennsylvania. Client: PennDOT / Greenhome & O'Mara.
- Geoarchaeological Reconnaissance, Abbeyville and Zane Compressor Stations, Columbia Gas Transmission Corporation, Medina and Muskingum Counties, Ohio

- Geomorphological Reconnaissance, Cove Point Expansion Project, 40 Mile Transmission Line, Dominion Transmission, Inc., St. Mary's, Charles, and Prince George Counties, Maryland.
- Geomorphological Survey and Deep Testing, Wolfsburg Sewer and Water Expansion Project, Bedford Township Municipal Authority, Bedford County, Pennsylvania
- Geomorphological Survey, Hardy Storage Project, Hampshire and Hardy Counties, West Virginia, Columbia Gas Transmission, Inc.
- Geomorphological Reconnaissance, Cove Point Expansion Project, 80 Mile Transmission Line, Dominion Transmission, Inc., Huntingdon, Centre, Juniata, and Clinton Counties, Pennsylvania
- Detailed soil studies for Phase III data recovery excavations at Skink Rockshelter (Site 46NI445), Robinson North Surface Mine, Nicholas County, West Virginia, for Alex Energy, Inc.
- Geomorphological Reconnaissance for Phase I/II archaeological survey and evaluation of Muddy Creek Bridge Replacement, Greenbrier County, WV. WV DOH
- Geomorphological Reconnaissance, Northeast Storage Project, 21 Mile Pipeline, Quinlan Compressor Station and associated facilities, Dominion Transmission, Inc., Potter and McKean Counties, Pennsylvania, and Cattaraugus County, New York
- Geomorphology reconnaissance and detailed pedology studies for Phase I archaeological survey (deep testing), Romney Bridge Replacement, Hampshire County, West Virginia, for WV DOH
- Detailed geomorphology and pedology field studies (soils description and mapping) and laboratory analyses for characterizing landforms, stratigraphy and archaeological context at prehistoric sites 46Br31 and 46Br60, Phase III Data Recovery investigations, WV Route 2 Follansbee-Weirton Road Upgrade Project, Brooke County, West Virginia, as subconsultant to Whitney, Bailey, Cox, Magnani for WV DOH
- Phase I/II Geoarchaeological Investigations, Bridge Replacement Project T-319, Beaver County Bridge No. 36 (Links Bridge), Independence Township, Beaver County, Pennsylvania for PennDOT
- Geoarchaeological Survey and Deep Testing, Phase II-III Data Recovery, the Coverts Bridge Site 36Lr228, Lawrence County, Pennsylvania for Frank B. Taylor Engineering and PennDOT
- Detailed coring program, soils description, and laboratory characterization for locating deeply buried archaeological sites in the Tolsia Highway Transportation Corridor, Wayne and Mingo counties, WV. West Virginia Department of Highways
- Detailed soils description and laboratory characterization for the Phase III mitigation of Site 46 Ni 275, a multicomponent prehistoric site in Nicholas County, WV. West Virginia Department of Highways
- Detailed soils description and analysis, Codori/Trostle Thicket Feasibility Study, Cultural Landscape Reconstruction, Gettysburg National Park, Adams County, PA. NPS and Eastern National Park and Monument Assn.
- Detailed soils description and laboratory characterization for the Phase III mitigation of Site 46 WA112 in Wayne County, WV. West Virginia Department of Highways
- Detailed soils description and laboratory characterization for the Phase III mitigation of Site 46NI 267, a Middle Woodland prehistoric site in Nicholas County, WV.
- Geoarchaeological Reconnaissance, Elderly Housing Complex, Montoursville Borough, Lycoming County, Pennsylvania for SEDA-COG Housing Development Corporation
- Guest lecturer for the graduate-level geoarchaeology class, Department of Earth and Planetary Sciences, University of Pittsburgh, PA.
- Detailed soils descriptions and laboratory characterization for the Phase III mitigation of the Memorial Park site, Clinton County, PA. Delineation of site stratigraphy, natural and disturbed soil horizons, and evaluation of the association of archaeological zones with inferred paleolandscapes. U.S. Army Corp of Engineers, Baltimore District
- Detailed soils descriptions and laboratory characterization for the Phase III mitigation of the Cotiga Mound Site, Mingo County, WV. Evaluation of the geomorphic setting of the mound, delineation of the structure of the mound and evaluation of the post-construction alteration of the mound. West Virginia Department of Highways

- Detailed soils descriptions and laboratory characterization for the Phase III mitigation of the Parsons Ford site, Hardy County, WV. Evaluation of geomorphic setting and natural and disturbed soil horizons. West Virginia Department of Highways
- Detailed soils description and geomorphological analysis for the Phase III mitigation of the Stowers site, Gallia County, OH. Archaeological Services Consultants, Inc.
- Detailed soils description and geomorphological analysis for the Phase III mitigation of the Kauffman II site, Chester County, PA. Archaeological Services Consultants, Inc.
- Phase II investigation of sites along the Corridor L (U.S. 19) project area, Nicholas and Braxton Counties, WV. Detailed soils description and geomorphological analyses. West Virginia Department of Highways
- Phase II investigation of the Tolsia Highway (U.S. 52) realignment project, Wayne and Mingo Counties, WV. Detailed soils description and geomorphological analysis at select sites on Tolsia Highway from Kenova, WV to Kermit, WV. Kimley Horn and Associates and WVDOH
- Phase II investigation of the Fort Necessity National Battlefield, Fayette County, PA. Detailed soils description and geomorphological analyses. National Park Services
- Detailed soils description and geomorphological analysis for the Phase III mitigation of the Hunter archaeological site, Muskingum County, OH. Archaeological Services Consultants, Inc.
- Detailed soils descriptions and characterization for the Phase III mitigation of the Piersol II archaeological site, Chester County, PA. Delineation of site formation processes, delineation of geomorphological history, and determination of disturbed versus nondisturbed soil profiles. Texas Eastern Oil and Gas Company
- Detailed soils description and geomorphological analysis for the Phase II investigation of the Legionville historical site, Beaver County, PA. Geocorp, Inc.
- Detailed soils description and geomorphological analysis for the Phase II investigation of the Buzzard Rock site, Roanoke County, VA. Evaluation of deep cores across the site. U.S. Army Corps of Engineers, Wilmington District
- Geoarchaeological studies of Cattaraugus and Erie counties, NY. New York State Museum
- Phase I investigation of the Latrobe Steel pipeline, Westmoreland County, PA. Soils and geomorphological characterization, and backhoe deep testing. Clinton Gas Marketing, Inc.
- Phase I investigation of the East Towanda to East Sayre 115 kV Transmission Line, Bradford County, PA. Soils and geomorphological characterization, and backhoe deep testing. Pennsylvania Electric Company
- Phase I investigation of MD Route 202 Prince Georges County, MD. Soils and geomorphological characterization. MD State Highway Administration
- Soil and geomorphology characterization associated with the Phase I investigation of Texas Eastern's CNG-VNG Pipeline, Fayette County, PA. Archaeological Services Consultants, Inc.
- Soil and geomorphology characterization based on core examination of a tidal marsh, associated with the runway extension, Kent Island airport, Queen Annes County, MD. Greiner, Inc.
- Detailed soils description and geomorphological analysis for the Phase I investigation of the South Bend Crooked Creek area. South Bend Limestone Company
- Soil and geomorphology investigation for the Phase I investigation of the Lapari Landfill area, Gloucester County, NJ. U.S. Army Corp of Engineers, Philadelphia District
- Soil and geomorphology investigation for the Phase I investigation of the Shabakunk Creek area, Mercer County, NJ. U.S. Army Corp of Engineers, Philadelphia District
- Attended seminar "Geoarchaeology and Site Excavation: An Introduction; Concepts and Applications," in Houston, TX. Z Environmental Services

EXHIBIT C

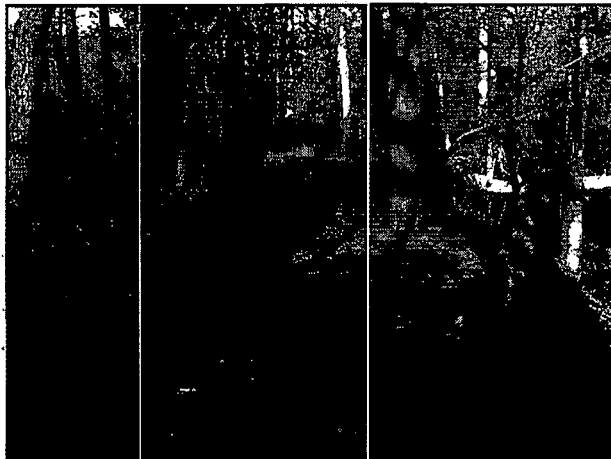
**REVISED MITIGATION PLANS FOR
CAMP CONOY AND
THE DRUM POINT RAILROAD BED**

**Revised Mitigation Plan for Baltimore & Drum Point Railroad(CT-1295)
Adverse Effect on NRHP-Eligible Historic Property
Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland
June 25, 2009**

GAI Consultants, Inc., (GAI) has conducted Phase I and Phase II cultural resources investigations of the Calvert Cliffs Nuclear Power Plant (CCNPP) expansion project on behalf of UniStar Nuclear Development, LLC (UniStar). This work resulted in the identification of historic properties within the Area of Potential Effect (APE) of the proposed project. Consultation with the Maryland Historical Trust (MHT) (letter dated February 13, 2009) has determined that the undertaking will have an adverse effect on two of the identified historic properties: the Baltimore & Drum Point Railroad (CT-1259) and Camp Conoy (CT-1312). Construction will directly impact both historic properties. Consultation has been initiated in order to produce a Memorandum of Agreement (MOA), which will include agreed-upon measures designed to mitigate the adverse effect on each resource. The treatment plan detailed below is dedicated to the Baltimore & Drum Point Railroad (CT-1295). As one of the terms of the MOA, this mitigation plan will allow the undertaking to proceed within the Section 106 process.

**Historic Properties Adversely Affected
Baltimore & Drum Point Railroad (CT-1259)**

The Baltimore & Drum Point Railroad has been determined NRHP-eligible under Criteria A and C. Within the project APE, this historic property consists of several non-contiguous segments of a nineteenth-century railroad construction project that was never completed (Figure 1). Based on current project design, construction of a roadway and additional nuclear power block at CCNPP will demolish segments of the rail bed that maintain integrity and contribute to the significance of the resource, thereby diminishing the qualifying characteristics of the Baltimore & Drum Point Railroad. By removing rail bed segments from the landscape, the historic property will be adversely affected.



Mitigation Documentation Overview

To mitigate adverse effects, GAI recommends that UniStar pursue mitigation for the Baltimore & Drum Point Railroad based on the documentation and recordation of this adversely affected historic property prior to its demolition, for the benefit of future public education and outreach. The proposed mitigation shall include historical and architectural investigations relevant to the

significant characteristics of the historic property. The proposed mitigation is described in the five tasks below.

Task 1—Project Management, Section 106 Consultation, and Meetings

Project management will entail clear and effective delineation of work assignments and staff allocation, to promote an efficient project delivery. This task includes logistical coordination of fieldwork and archival research and, if necessary, attendance at one project meeting in Crownsville, Maryland, with the MHT. GAI will update project status monthly via email.

As a first step, GAI has assisted UniStar in identifying, contacting, and consulting with interested parties with a stake in the historic properties at CCNPP. On June 9, 2009, GAI supported UniStar in a meeting at CCNPP to consult with these parties. Attendees included representatives from the Calvert County Department of Planning and Zoning, the Calvert County Historical Society, the Jefferson Patterson Park and Museum, the Maryland Power Plant Research Group, and the Southern Maryland Heritage Area. Representatives from the U.S. Army Corps of Engineers and MHT, also consulting parties, were not in attendance. Comments were solicited from the consulting parties regarding the Draft Mitigation Plan for both Camp Conoy and the Baltimore & Drum Point Railroad. With UniStar's concurrence, various comments provided at the meeting have been incorporated into this Revised Mitigation Plan.

Throughout the mitigation project, GAI will continue to consult with UniStar on proceeding within the Section 106 compliance process. GAI assumes that preparation of 36CFR§800.11(e) documentation and the MOA will be completed by MHT.

Task 2—Archival Research

GAI will conduct archival research to develop an historic context and to prepare a historic overview for the adversely affected historic property. Archival research will consist of a review of primary and secondary sources, such as survey reports, historic overviews, historic mapping, and local records relative to the Baltimore & Drum Point Railroad, available at local and state repositories, including the MHT. Although GAI expects that no first-hand accounts of the Baltimore & Drum Point Railroad can be obtained, oral tradition may have resulted in the passing of information from one generation to the next. If local residents who are descendants of individuals with first-hand knowledge of the railroad can provide oral histories that provide anecdotal evidence relative to the railroad, GAI will incorporate such information into the report, as appropriate. The results of this research will be used to establish verifiable dates of construction and a historical timeline for the railroad at CCNPP.

Task 3—Field Recordation

Field recordation of the Baltimore & Drum Point Railroad will be conducted by GAI's Senior Architectural Historian and a team of GAI surveyors. Fieldwork will include mapping, photography, and detailed written descriptions, as agreed upon in consultation with the consulting parties (June 9, 2009 meeting).

GAI surveyors will conduct a topographic survey of rail bed segments throughout the project APE. This survey will be performed using GPS and a total station. Points will be taken at intervals of approximately 100 feet, or at varying intervals (as needed, based on alignment or landform constraints), to capture data on the shape and orientation of this resource. Evidence of culverts or other features will be identified and mapped during this survey (none have been

identified to date). Based on the results of this survey, GAI will prepare measured drawings of the rail bed in both plan view and cross-section.

Detailed written descriptions will be recorded of the extant features of the rail bed. Representative segments of this historic property will also be documented with high-resolution digital and 35mm black and white photographs.

Task 4—Technical Report

Upon completion of archival research fieldwork, GAI will prepare a reader-friendly technical report for the Baltimore & Drum Point Railroad (CT-1295) describing the methods and results of the recordation. The report will incorporate maps, measured drawings, documentary materials, photographs, and a historic narrative. The narrative will document how the railroad reflects historic trends and events that contributed to the community's history. The report will place the Baltimore & Drum Point Railroad in its appropriate historic context and establish its associative and historic value.

GAI will submit the Draft Technical Report to UniStar for review. Subsequent to this review, the consulting parties may have a meeting at MHT offices in Crownsville (or alternatively, a conference call) to solicit and discuss comments on the draft report prior to finalization. If necessary, once a coordinated set of comments is received from the parties, GAI and UniStar will revise and submit a final report for distribution to consulting parties. GAI will produce eight copies of the final report.

Task 5—Public Outreach (Poster)

To maximize the potential benefit for public outreach as it relates to this resource, GAI will prepare a richly illustrated poster for display at local libraries, schools, and historical societies. This poster will provide a narrative text that describes the history of the Baltimore & Drum Point Railroad and its planned role in shaping the economic and infrastructure development in Calvert County in the late nineteenth century. Graphics depicting this railroad will be a primary focus of the poster, and will include: modern photographs resulting from this study; historic photographs depicting construction activities, if available; historic-period photographs of the study area highlighting important themes in the study area and Calvert County; and mapping (both modern and historic mapping, if available) depicting the planned railroad alignment and the locations of its extant segments. By preparing a display poster, the history of this resource can reach a wider audience for a greater period of time. Both the report and poster will be made available to the community at local historical societies, libraries, schools, and other public institutions.

Figures in the Data Recovery Plans are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)

**Revised Mitigation Plan for Camp Conoy (CT-1312)
Adverse Effect on NRHP-Eligible Historic Property
Calvert Cliffs Nuclear Power Plant
Calvert County, Maryland
June 25, 2009**

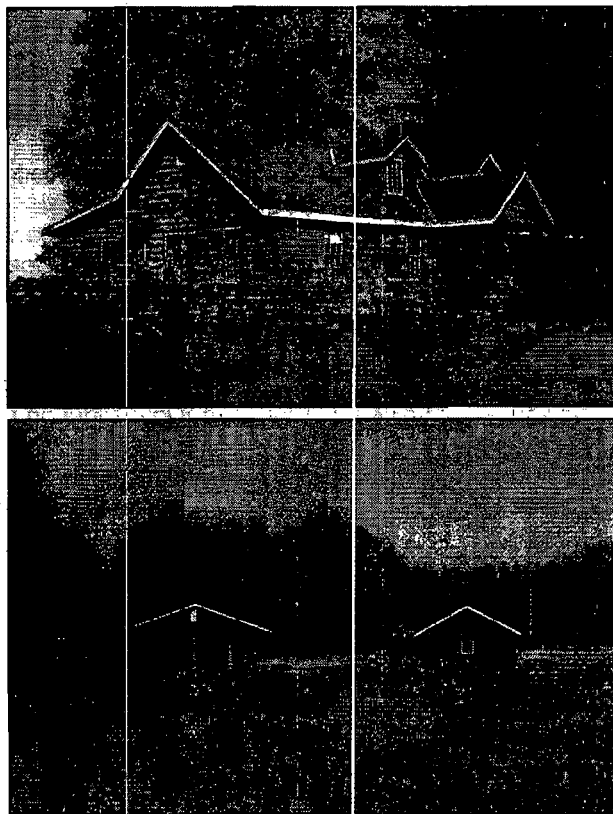
GAI Consultants, Inc., (GAI) has conducted Phase I and Phase II cultural resources investigations of the Calvert Cliffs Nuclear Power Plant (CCNPP) expansion project on behalf of UniStar Nuclear Development, LLC (UniStar). This work resulted in the identification of historic properties within the Area of Potential Effect (APE) of the proposed project. Consultation with the Maryland Historical Trust (MHT) (letter dated February 13, 2009) has determined that the undertaking will have an adverse effect on two of the identified historic properties: the Baltimore & Drum Point Railroad (CT-1259) and Camp Conoy (CT-1312). Construction will directly impact both historic properties. Consultation has been initiated in order to produce a Memorandum of Agreement (MOA), which will include agreed-upon measures designed to mitigate the adverse effect on each resource. The treatment plan detailed below is dedicated to Camp Conoy (CT-1312). As one of the terms of the MOA, this mitigation plan will allow the undertaking to proceed within the Section 106 process.

**Historic Property Adversely Affected
Camp Conoy (CT-1312)**

Camp Conoy, a recreational facility dating from the first half of the twentieth century, has been determined NRHP-eligible under Criteria A (Figure 1). The project will cause a change in the qualifying characteristics of the historic property. Proposed construction of power block facilities will result in the destruction of contributing buildings that constitute this historic property and convey its historic significance. By removing the contributing buildings from the landscape, the historic property will be adversely affected.

Mitigation Documentation Overview

To mitigate adverse effects to Camp Conoy, GAI recommends that UniStar pursue mitigation based on the documentation and recordation of this adversely affected historic property prior to its demolition, for the benefit of future public education, research, and outreach. The proposed mitigation shall include historical and architectural investigations



relevant to the significant characteristics of this historic property. This treatment is described in the six tasks below.

Task 1—Project Management, Section 106 Consultation, and Meetings

Project management will entail clear and effective delineation of work assignments and staff allocation, to promote an efficient project delivery. This task includes logistical coordination of fieldwork and archival research and, if necessary, attendance at one project meeting in Crownsville, Maryland, with the MHT. GAI will update project status monthly via email.

As a first step, GAI has assisted UniStar in identifying, contacting, and consulting with interested parties with a stake in the historic properties at CCNPP. On June 9, 2009, GAI supported UniStar in a meeting at CCNPP to consult with these parties. Attendees included representatives from the Calvert County Department of Planning and Zoning, the Calvert County Historical Society, the Jefferson Patterson Park and Museum, the Maryland Power Plant Research Group, and the Southern Maryland Heritage Area. (Representatives from the U.S. Army Corps of Engineers and MHT, also consulting parties, were not in attendance.) Comments were solicited from the consulting parties regarding the Draft Mitigation Plan for both Camp Conoy and the Baltimore & Drum Point Railroad. With UniStar's concurrence, various comments provided at the meeting have been incorporated into this Revised Mitigation Plan.

Throughout the mitigation project, GAI will continue to consult with UniStar on proceeding within the Section 106 compliance process. GAI assumes that preparation of 36CFR§800.11(e) documentation and the MOA will be completed by MHT.

Task 2—Archival Research

GAI will conduct archival research to develop a historic context and to prepare a historic overview for Camp Conoy. Archival research will consist of a review of primary and secondary sources such as survey reports, historic overviews, historic mapping, and local records relative to Camp Conoy (available at local and state repositories, including the MHT). The results of archival research will be used to establish the chain-of-title for ownership and verifiable dates of construction and period of significance. For comparative purposes, research will also include in its purview general information on other Calvert County camps that operated contemporaneously with Camp Conoy.

Task 3—Field Recordation

Field recordation of Camp Conoy will be conducted by GAI's Project Architectural Historian. Fieldwork will involve an architectural investigation that includes mapping, measured drawings, photography, and detailed written descriptions, as agreed upon in consultation with the consulting parties (June 9, 2009 meeting). This work will be focused on Camp Conoy's three contributing buildings: the Eagle's Den, the Camp Conoy Lodge, and a storage shed.

GAI will document the contributing buildings with detailed written descriptions. Measured drawings of elevations and floor plans will then be prepared for each of these three buildings. In addition, GAI will complete an overall site plan map of Camp Conoy illustrating the spatial relationship of contributing resources, non-contributing resources, driveways, roadways, and important natural features.

Field recordation also will include photographic documentation (in high-resolution digital format and black and white 35mm). GAI will take several interior and exterior photographs of the camp

buildings and existing conditions from various perspectives. The 35mm film will be developed to produce negatives and true black and white prints on archival quality paper, to be incorporated as a permanent record into MHT's collections.

Task 4—Oral History Interviews

Although it closed in 1967, Camp Conoy left a lasting impression on the community. To capture a sense of camp activities and the formative experiences provided by the YMCA at Camp Conoy, GAI will conduct oral history interviews. GAI and UniStar, with assistance from the consulting parties, will organize a public presentation at a local Calvert County venue in order to solicit and record the memories of former campers, employees, and local residents. Photographs of the camp will also be solicited. Oral histories will not be limited solely to Camp Conoy. The recollections of individuals who attended other Calvert County organized seasonal camps will be gathered to contextualize Camp Conoy. These oral histories will be transcribed and will be included as an appendix in the Technical Report (see below). The photographs collected at this meeting will also be incorporated into the report, as appropriate.

Task 5—Technical Report

Upon completion of archival research, field recordation, and oral interviews, GAI will prepare a reader-friendly technical report for Camp Conoy describing the methods and results of the investigation. The report will incorporate maps, measured drawings, documentary materials, photographs, a historic narrative, and a chain-of-title table. Oral histories will be presented in an appendix. The report will discuss and describe Camp Conoy during its period of significance and will provide a comparative analysis to other recreational facilities that developed in Calvert County during the twentieth century. The narrative will document how Camp Conoy reflects historic trends and events that contributed to the community's history. The report will place Camp Conoy in its historic context and establish its associative and historic value.

The Draft Technical Report will be submitted to UniStar for review. Subsequent to this review, the consulting parties may have a meeting at MHT offices in Crownsville (or alternatively, a conference call) to solicit and discuss comments on the draft report prior to finalization. If necessary, once a coordinated set of comments is received from the parties, GAI and UniStar will revise and submit a final report for distribution to consulting parties. GAI will produce eight copies of the final report.

Task 6—Public Outreach Publication

As part of the Camp Conoy mitigation plan, GAI will produce an illustrated brochure designed for public outreach that portrays the variety of resources, both natural and cultural, at CCNPP. This publication will incorporate historical highlights (including Camp Conoy and the Baltimore & Drum Point Railroad), archaeological findings, and descriptions of local flora and fauna. The publication will be oriented to the elementary and middle school grade level. It will include such themes as native populations, colonial development, the development of democracy and religious tolerance in Maryland, agricultural heritage, commerce and markets, transportation, local ecology and energy. Both the brochure and reader-friendly report will be made available to the community at local historical societies, libraries, schools, and other public institutions.

Figures in the Data Recovery Plans are withheld per section 34 of the National Historic Preservation Act and Title 36 of the Code of Federal Regulations Part 800.11(c)