Dogwood Solar, LLC

PERMIT BY RULE

Small Renewable Energy Project (Solar) Permit By Rule

Photo credit: Dutton + Associates, LLC (2021). Phase I cultural resource survey of the ± 144.7-hectare (±357.7 -acre) Dogwood Solar Project area. Figure 8-11, page 98.

APPLICATION DOCUMENTS

Date: August 2021

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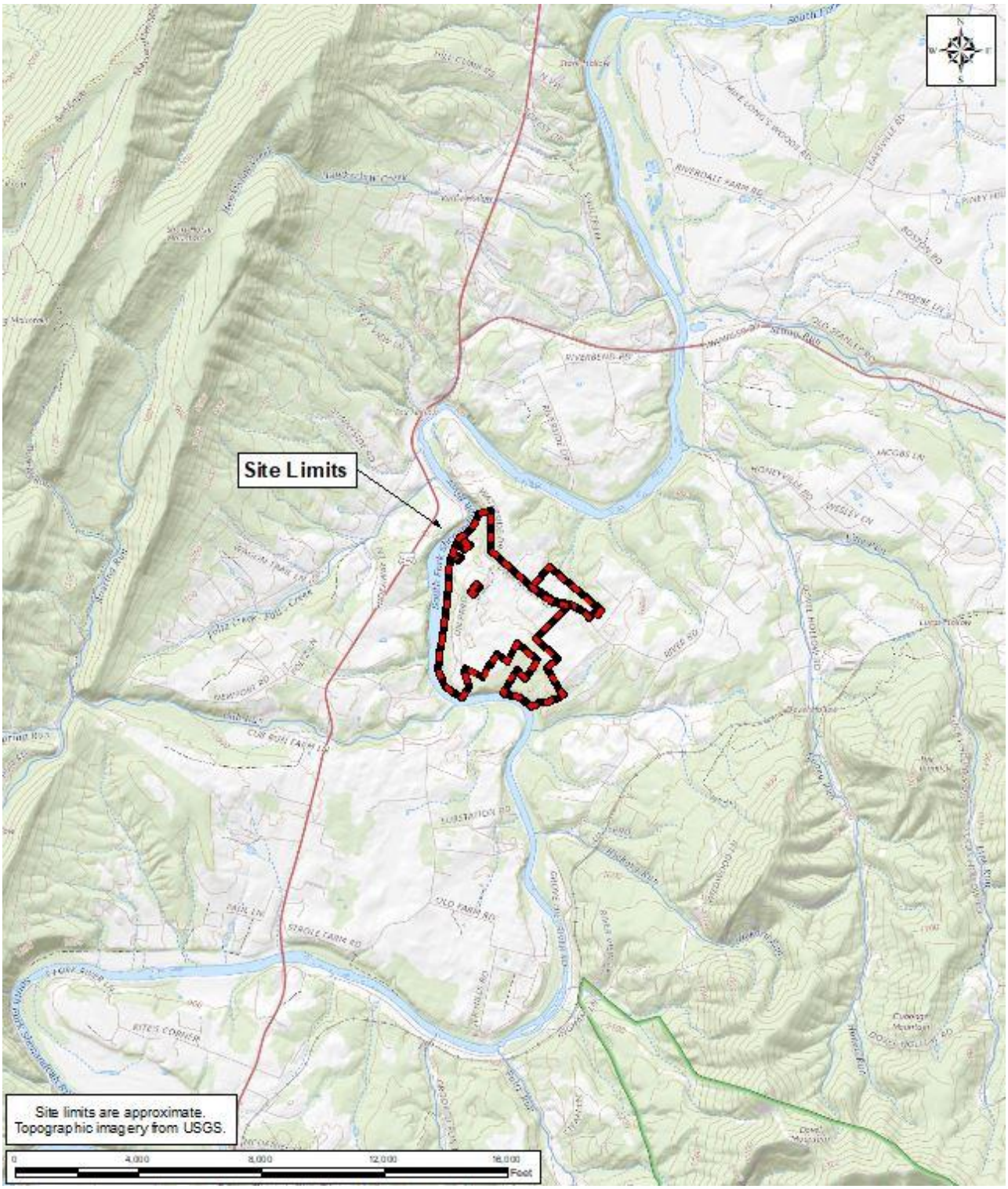
I. INTRODUCTION AND OVERVIEW

The Dogwood Solar project ("Project") is a 20 MW solar facility proposed by Dogwood Solar, LLC. The Project is located along Dam Acres Road approximately 4 miles west of Stanley, in Page County. It is located on approximately 350 acres of multiple parcels.

The land has historically been utilized for agricultural purposes and is proposed for development as a solar farm. The Project will utilize traditional photovoltaic solar modules to produce electricity which will interconnect through the utility infrastructure of Virginia Electric and Power Company. The proposed solar facility is comprised of solar panels that are attached to a single-axis tracking system. The solar facility has been designed to minimize land disturbance to the extent possible.

This application narrative and associated attachments included within comprise the Permit by Rule ("PBR") application materials. This information is being submitted pursuant to 9 VAC15-60 in order to obtain authorization from the Virginia Department of Environmental Quality (VDEQ) for the construction of the proposed solar facility in accordance with the Solar PBR processing guidelines. Through the subsequent studies/surveys submitted and an analysis of these requirements, we believe the Project will be found to meet the standards and requirements of the PBR regulations.

- Local Jurisdiction: Page County, VA
- Total generating capacity of project: 20 MW AC
- Timeframe of project: Construction start Fall 2022 through Spring 2023
- Public comment period: 30 days



U.S. Geological Survey, 2019. 7.5 Minute Series, Stanley, Virginia, Topographic Quadrangle Map, 1:24,000 scale.

Figure 1 – Vicinity Map

II. PERMIT BY RULE COMPLIANCE ANALYSIS

Pursuant to 9 VAC15-60-30, in order to obtain authorization from VDEQ for the construction of the proposed solar facility, the Applicant has completed requirements to demonstrate compliance with the Solar PBR processing guidelines. Each of the fifteen (15) Solar PBR requirements, as well as a description of the associated compliance measures, are described in detail below.

1. NOTICE OF INTENT

Requirement: *In accordance with § 10.1-1197.6 B 1 of the Code of Virginia, and as early in the project development process as practicable, furnishes to the department a notice of intent, to be published in the Virginia Register, that he intends to submit the necessary documentation for a permit by rule for a small renewable energy project;*

A notice of intent for Dogwood Solar, LLC was submitted to VDEQ on July 20, 2021and is included in Attachment A.

2. COMPLIANCE WITH LOCAL LAND USE ORDINANCES

Requirement: *In accordance with § 10.1-1197.6 B 2 of the Code of Virginia, furnishes to the department a certification by the governing body of the locality or localities wherein the small renewable energy project will be located that the project complies with all applicable land use ordinances;*

The Page County Board of Supervisors approved a special use permit for Dogwood Solar, LLC on April 2, 2019. That approval, along with the Local Governing Body Certification Form, is included as Attachment B.

3. INTERCONNECTION STUDIES

Requirement: *In accordance with § 10.1-1197.6 B 3 of the Code of Virginia, furnishes to the department copies of all interconnection studies undertaken by the regional transmission organization or transmission owner, or both, on behalf of the small renewable energy project;*

The Project has been reviewed through PJM's standardized interconnection study process. The following studies have been completed:

- Generation Interconnection System Impact Study Report, Queue Position AD1-085
- Generation Interconnection Feasibility Study Report, Queue Position AD1-085

The interconnection studies are included as Attachment C.

4. INTERCONNECTION AGREEMENTS

Requirement: *In accordance with § 10.1-1197.6 B 4 of the Code of Virginia, furnishes to the department a copy of the final interconnection agreement between the small renewable energy project and the regional transmission organization or transmission owner indicating that the connection of the small renewable energy project will not cause a reliability problem for the system. If the final agreement is not available, the most recent interconnection study shall be sufficient for the purposes of this section. When a final interconnection agreement is complete, it shall be provided to the department. The department shall forward a copy of the agreement or study to the State Corporation Commission;*

A final interconnection agreement has not yet been signed. When the final interconnection agreement for the Project is obtained, it will be included as Attachment D.

5. MAXIMUM GENERATION CAPACITY CERTIFICATION

Requirement: *In accordance with § 10.1-1197.6 B 5 of the Code of Virginia, furnishes to the department a certification signed by a professional engineer licensed in Virginia that the maximum generation capacity of the small solar energy project, as designed, does not exceed 150 megawatts;*

The maximum generation capacity of this proposed facility does not exceed 150 MW. A copy of the Maximum Generation Capacity Certification is included as Attachment E.

6. ANALYSIS OF POTENTIAL IMPACT ON AIR QUALITY STANDARDS

Requirement: *In accordance with § 10.1-1197.6 B 6 of the Code of Virginia, furnishes to the department an analysis of potential environmental impacts of the small renewable energy project's operations on attainment of national ambient air quality standards;*

The proposed project will not cause significant negative impacts on the attainment of National Ambient Air Quality Standards (NAAQS), and its operation is expected to have a beneficial impact on the attainment of NAAQS, compared with fossil fuel-based energy generation. A comparison of energy production via the proposed solar project compared with fossil-fuel based generation results in the following reductions to the atmosphere:

- 28,580 tons of carbon dioxide
- 43,070 lbs of sulfur dioxide
- 28,410 lbs of nitrogen oxide
- 4,870 lbs of particulate matter 2.5 µm

The above calculations are estimates generated by the EPA Avoided Emissions and Generation Tool: https://www.epa.gov/statelocalenergy/avoided-emissions-and-generation-tool-avert. Mid-Atlantic regional data was utilized for the calculations based on the facility location, and improvements are based on assumed generation of 20 MW of utility-scale solar.

7. ANALYSIS OF POTENTIAL BENEFICIAL/ADVERSE IMPACTS ON NATURAL RESOURCES

Requirement: *In accordance with § 10.1-1197.6 B 7 of the Code of Virginia, furnishes to the department an analysis of the beneficial and adverse impacts of the proposed project on natural resources. The owner or operator shall perform the analyses prescribed in 9VAC15-60-40. For wildlife, that analysis shall be based on information on the presence, activity, and migratory behavior of wildlife to be collected at the site for a period of time dictated by the site conditions and biology of the wildlife being studied, not exceeding 12 months;*

As prescribed in 9VAC15-60-40, the Applicant performed a benefits and adverse impacts analysis for the proposed project on natural resources. The analysis includes both desktop and field surveys for natural and cultural resources.

A. Wildlife Analysis

Threatened and Endangered Species

A state threatened and endangered species review was completed (Attachment F). The following agencies and associated databases were contacted and reviewed:

- Virginia Department of Conservation and Recreation (VDCR)
- Virginia Department of Wildlife Resources (VDWR) – Wildlife Environmental Review Map Services (WERMS)
- Virginia Department of Wildlife Resources (VDWR) – Northern Long-eared Bat Winter Habitat & Roost Trees Application
- Virginia Department of Wildlife Resources (VDWR) – Little Brown Bat and Tri-colored Bat Winter Habitat and Roosts Application

Information obtained from VDWR and included on the WERMS map (Attachment F) indicates the presence of a federally and state-threatened species, northern long-eared bat (*Myotis septentrionalis*), and two state endangered species, little brown bat (*Myotis lucifugus*) and tri-colored bat (*Perimyotis subflavus*). All other species identified within the WERMS map within a two-mile buffer of the project are described as non-threatened and non-endangered.

According to VDWR Winter Habitat and Roost Trees information for the northern long-eared bat, little brown bat, and tri-colored bat, the Project does not intersect any known hibernaculum. Exhibits are included within Attachment F.

Information provided by VDCR indicates that the Madison Cave isopod (*Antrolana lira*) may be present. Additionally, sinkholes have been documented within the project site.

Expected beneficial and adverse impacts

According to the reviewed desktop resources, there is a potential for threatened or endangered species on the project area. The Applicant intends to implement a tree clearing time of year restriction between June 1 – July 31 to avoid adverse impact to bat species. Additionally, the Project is situated primarily upon agricultural fields, and minimal tree clearing is anticipated.

In addition, the letter from VDCR states that the current activity will not affect any State listed plants or insects.

Coastal Avian Protection Zone

Project limits were compared to Coastal Avian Protection Zone (CAPZ) data from the Virginia Coastal Zone Management Program, provided by VDEQ's Coastal GEMS geospatial data system. A map showing the project boundary relative to CAPZ is included within Attachment F. The Project limits do not fall in part or in whole within one or more CAPZ.

Expected beneficial and adverse impacts

Impact analysis does not apply as the Project does not fall in part or in whole within one or more CAPZ; therefore, the Project will not negatively impact coastal avian wildlife.

B. Historical/Cultural Resource Analysis

All research, fieldwork, and recording conducted as part of the historical/cultural resource analysis conforms to the guidance specified in the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (Federal Register 48:44716-44742, September 29, 1983), the Virginia Department of Historic Resources' (VHDR) *Guidelines for Conducting Historic Resources Survey in Virginia* (rev. 2017) and VDEQ's *Solar Permit by Rule Guidance* (2012) for complying with the provisions of §10.1-1197.6 B 7 of the Code of Virginia. The assessment was conducted through desktop and field review by a professional meeting the qualification standards of the Secretary of the Interior's Standards for Archeology and Historic Preservation (9VAC15-60-120 B 2) in the appropriate discipline.

A Phase I Cultural Resource Survey was completed in January and May 2021 (Attachment G) which consisted of both archaeological and architectural investigations to confirm the presence or absence of cultural resources within the Project or directly adjacent to the Project.

Architectural Survey

The architectural resources survey identified 25 resources greater than 50 years of ages within the survey area, which was designated as the Project area and a two-mile buffer. Of the surveyed resources, two are located within the Project. Eight resources were previously recorded, and sixteen were newly recorded. Two resources (VDHR# 069-0103 and VDHR# 069-5015) that were previously recorded were noted to have been demolished since last survey. Of the remaining 23 resources, one is considered potentially eligible for listing in the National Register of Historic Places (NRHP), called Cub Acres (VDHR# 069-0102).

Archaeology Survey

The pattern of subsurface testing was approved by VDEQ/VDHR through submission of a cultural resources assessment of the Project. No archaeological sites were identified within the Project's area of disturbance (based upon preliminary construction plans) during the archaeological survey. One cemetery is located within the Project but outside of the planned limits of disturbance. This cemetery, the Kite Family Cemetery (VDHR# 069-5324) is an above-ground resource that is planned to be fully avoided for the duration of the Project and therefore was considered within the architectural survey. No additional archaeological resources were identified during the survey.

Expected beneficial and adverse impacts

The architectural survey identified one resource potentially-eligible for listing on the NRHP. Using preliminary Project construction plans to determine potential impacts, as well as considering the natural terrain and existing vegetation patterns, the Project is not expected to pose more than a minimal impact on Cub Acres (VDHR# 069-0102). No other impacts to architectural resources are anticipated. In a letter dated April 26, 2021, VDHR recommends that the Kite Family Cemetery (VDHR# 069-5324) be avoided with 100' buffers.

The archaeological survey did not identify any sites or features within the limits of disturbance, and no further work was recommended.

No adverse impacts to cultural or historic resources are anticipated as a result of the Project.

C. Additional Natural Resource Analysis

Natural Heritage Resources

VDCR recommends the development of an invasive species management plan, and the planting of native pollinator plants along facility buffer areas that will bloom throughout the spring and summer.

Expected beneficial and adverse impacts

Consideration will be given for the planting of native pollinator plants along the buffer areas of the facility.

Wetland Assessment

A wetland assessment has been conducted for the entire Project, using the methodology outlined in the 1987 U.S. Army Corps of Engineers (USACE) Wetland Delineation Manual, the Regional Supplement to the USACE Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0).

No areas were identified that could be classified as a jurisdictional wetland that could be regulated under Section 404 of the Federal Clean Water Act. A memo within the findings are included as Attachment H.

Expected beneficial and adverse impacts

As no wetland or jurisdictional areas are identified within the Project, no adverse impacts are anticipated as a result of the Project.

8. MITIGATION PLAN

Requirement (Summarized by Applicant): *In accordance with § 10.1-1197.6 B 8 of the Code of Virginia, if the Department determines that…significant adverse impacts to wildlife or historic resources are likely, the submission of a mitigation plan detailing reasonable actions to be taken by the owner or operator to avoid, minimize, or otherwise mitigate such impacts, and to measure the efficacy of those actions;*

The Applicant has conducted studies to make a determination regarding impacts to wildlife and historic resources, and from those studies, created a mitigation plan. The mitigation plan is included as Attachment I.

9. CERTIFICATION OF DESIGN INCORPORATING MITIGATION PLAN

Requirement: *In accordance with § 10.1-1197.6 B 9 of the Code of Virginia, furnishes to the department a certification signed by a professional engineer licensed in Virginia that the project is designed in accordance with 9VAC15-60-80;*

The Applicant has certified that the Project is designed in accordance with 9VAC15-60-80, and the Certification of Design form is attached as Attachment J.

10. OPERATION PLAN INCORPORATING MITIGATION PLAN

Requirement: *In accordance with § 10.1-1197.6 B 10 of the Code of Virginia, furnishes to the department an operating plan that includes a description of how the project will be operated in compliance with its mitigation plan, if such a mitigation plan is required pursuant to 9VAC15-60-50;*

An operating plan, including a description of how the project will be operated in conjunction with its mitigation plan, is included in Attachment K.

11. SITE PLAN & CONTEXT MAP

Requirement: *In accordance with § 10.1-1197.6 B 11 of the Code of Virginia, furnishes to the department a detailed site plan meeting the requirements of 9VAC15-60-70;*

A site plan and context map have been provided in accordance with 9VAC15-60-70 as **Figures 2** and **3** below, and are included as Attachment L.

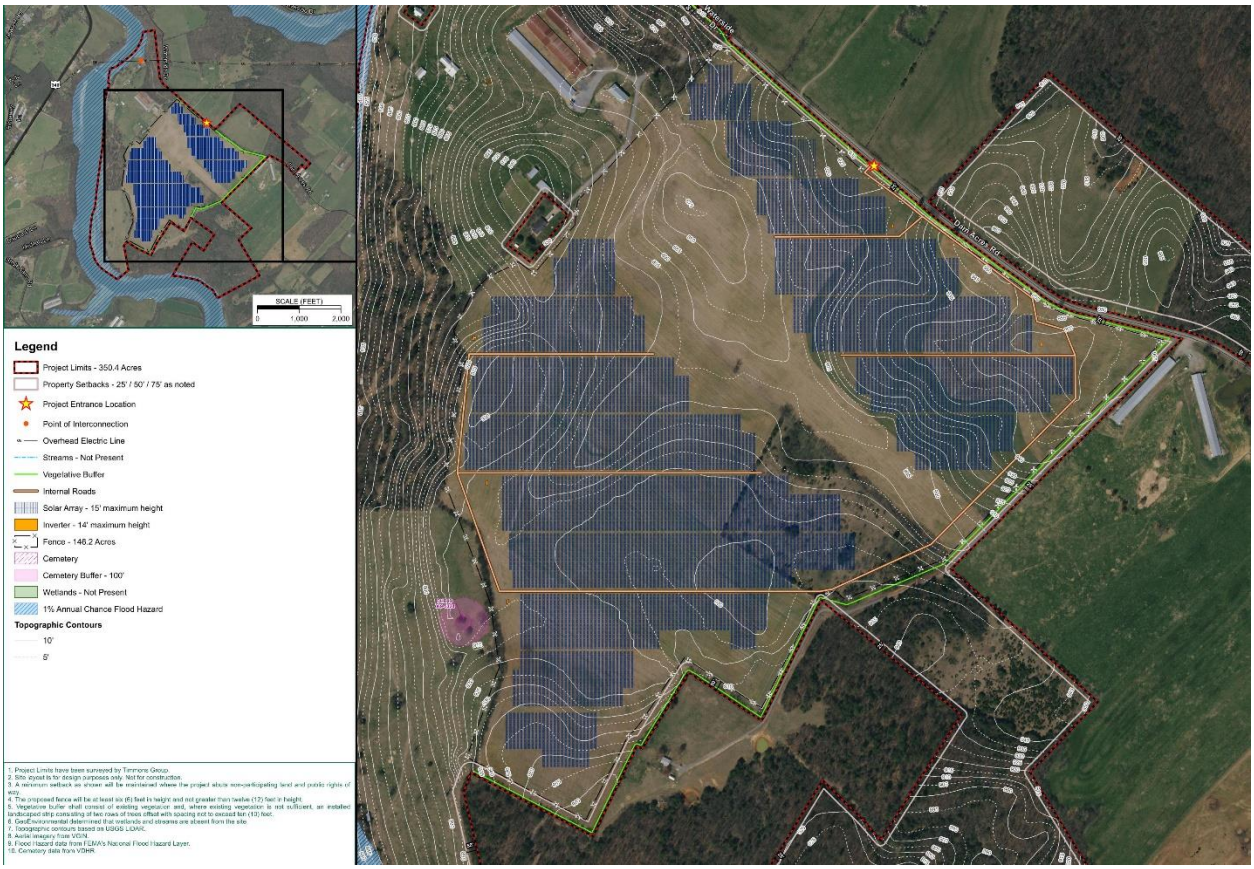


Figure 2 – Site Plan

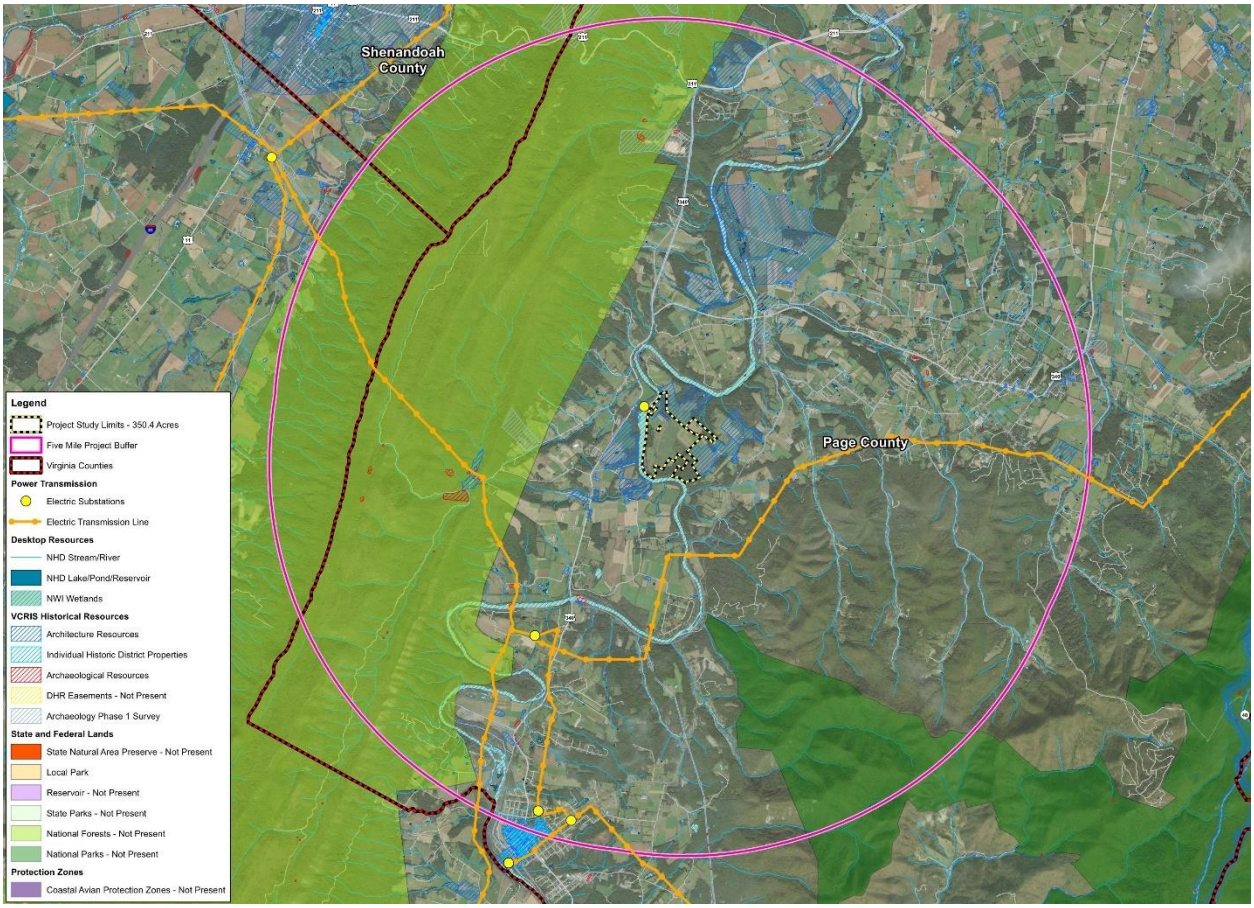


Figure 3 – Context Map

12. CERTIFICATION OF APPLICATION FOR ENVIRONMENTAL PERMITS

Requirement: *In accordance with § 10.1-1197.6 B 12 of the Code of Virginia, furnishes to the department a certification signed by the applicant that the small solar energy project has applied for or obtained all necessary environmental permits;*

The Applicant has identified and has or will obtain all necessary environmental permits, as certified in the Environmental Permit Certification Form (Attachment M).

13. NON-UTILITY CERTIFICATION

Requirement: *In accordance with § 10.1-1197.6 H and I of the Code of Virginia, furnishes to the department a certification signed by the applicant that the small solar energy project is being proposed, developed, constructed, or purchased by a person that is not a utility regulated pursuant to Title 56 of the Code of Virginia or provides certification that (i) the project's costs are not recovered from Virginia jurisdictional customers under base rates, a fuel factor charge, or a rate adjustment clause, or (ii) the applicant is a utility aggregation cooperative formed under Article 2 (§ 56-231.38 et seq.) of Chapter 9.1 of Title 56 of the Code of Virginia;*

The applicant has certified that the project is proposed, developed, constructed or purchased by a person that is not a utility regulated pursuant to Title 56 of the Code of Virginia. The Non-Utility Certification Form is included as Attachment N.

14. PUBLIC REVIEW

Requirement: Prior to authorization of the project and i*n accordance with § 10.1-1197.6 B 13 and B 14 of the Code of Virginia, conducts a 30-day public review and comment period and holds a public meeting pursuant to 9VAC15-60-90. The public meeting shall be held in the locality or, if the project is located in more than one locality, in a place proximate to the location of the proposed project. Following the public meeting and public comment period, the applicant shall prepare a report summarizing the issues raised by the public and include any written comments received and the applicant's response to those comments. The report shall be provided to the department as part of this application;*

A public review and comment period will occur in September-October 2021. In accordance with § 10.1-1197.6 B 13 and 14 of the Code of Virginia, there will be a 30-day public review and comment period from September 3, 2021 to October 3, 2021. The public review and comment period will be announced by publication in the Page News and Courier once a week for two consecutive weeks on August 12 and August 19, 2021.

Application materials will available for viewing during the review period electronically on the following website: (http://www.urbangridsolar.com/news).

A public meeting will be held in accordance with 9VAC15-60-90 C on September 22, 2021 at 6:00 PM until 7:30 PM at The Mimslyn Inn, located at 401 W. Main Street, Luray, Virginia 22835.

All materials in support of the public review process, including a summary of the public comment process, will be included in Attachment O.

15. PERMIT FEE

Requirement: *In accordance with 9VAC15-60-110, furnishes to the department the appropriate fee.*

In accordance with 9VAC15-60-110, a payment of $8,000 will be provided with this application as stipulated by the PBR.

Attachments

Attachment A – Notice of Intent

Attachment B – Compliance with Local Land Use Ordinances

Attachment C – Interconnection Studies

Attachment D – Interconnection Agreement

Attachment E – Maximum Generation Capacity Certification

Attachment F – State Threatened and Endangered Species Review

Attachment G – Cultural Resource Analysis

Attachment H – Wetland Assessment

Attachment I – Mitigation

Attachment J – Certification of Design

Attachment K – Operating Plan

Attachment L – Site Plan, Context Map

Attachment M – Environmental Permit Certification Form

Attachment N – Non-Utility Certification Form

Attachment O – Public Review Documents

Attachment A – Notice of Intent

URBAN GRID

Solar Development
Project Finance

July 9, 2021

Ms. Mary E. Major
Department of Environmental Quality
P.O. Box 1105
Richmond, VA 23218
mary.major@deq.virginia.gov

Dear Ms. Major:

On behalf of Dogwood Solar, LLC, I am providing a notice to the Department of Environmental Quality of our intention to submit the necessary documentation for a permit by rule for a small renewable energy project (solar) in Page County, Virginia, pursuant to Virginia Regulation 9VAC15-60.

The proposed project will be located along Dam Acres Road approximately 4 miles west of Stanley, Virginia. The project will have a maximum generating capacity of 20 megawatts alternating current (AC) across approximately 350.4 acres. The project will consist of approximately 55,900 photovoltaic panels and connect to the grid through transmission lines that bisect the property. The project is generally located at latitude: 38.564453, longitude: -78.586879.

If the Department has questions regarding this project, please contact James Crawford at james.crawford@urbangirdco.com or 434-953-8810.

Sincerely,

James A Crawford Jr

James Crawford
Vice President - Development

Attachment B – Compliance with Local Land Use Ordinances

Virginia Department of Department of Environmental Quality
Small Renewable Energy Projects (Solar)

Local Governing Body Certification Form

Facility Name and Location: Dogwood Solar
Page County, Virginia

Applicant's Name: Dogwood Solar, LLC

Applicant's Mailing Address:	Telephone Number and Email Address:
307 Log Canoe Circle Stevensville, MD 21666	(434)953-8810 james.crawford@urbangridco.com

The applicant or his representative is submitting an application for a small renewable energy permit by rule from the Virginia Department of Environmental Quality. In accordance with §10.1-1197.6 B 2 of the Code of Virginia, before such permit application can be considered complete, the applicant must obtain a certification from the governing body of the locality or localities in which the small renewable energy project will be located that the project complies with all applicable use ordinances.

The undersigned requests that an authorized representative of the local governing body sign the certification statement below. In addition, by signing below, the applicant affirms that the he has also submitted this form to other localities, if any, in which the proposed project be located.

Applicant's signature	Date:
James A Crawford Jr	07/19/2021

The undersigned local government representative certifies that the proposed small renewable energy project complies with all applicable land use ordinances, as follows:
(Check one block)

Special Use Permit conditions attached. TLL

☒ The proposed facility **compiles with** all applicable land use ordinances.

☐ The proposed facility **does not comply** with all applicable land use ordinances.

Signature of authorized local government representative:	Date:
Tracy Clatterbuck	7/19/21
Type or print name: Tracy Clatterbuck	Title: Zoning Administrator
County, City or Town: Page County	

County of Page, Virginia
Planning & Community Development
103 South Court St., Suite B
Luray, VA 22835

SPECIAL USE PERMIT

Applicant: Dogwood Solar, LLC
Tax Map #: 78-(A)-73; 78-(A)-59; 78-(A)-60; 78-(A)-62; & 78-(A)-56
Purpose: Solar Electricity Generating Facility (Up to 20 Megawatts)

APPROVED ✓ **DENIED** _____
By the Page County Board of Supervisors on 4/2/2019.

1. THIS SPECIAL USE PERMIT SHALL RUN WITH THE LAND. THIS SPECIAL USE PERMIT IS TRANSFERABLE. IT WILL MEET THE REQUIREMENTS IN AND HAVE PRIVILEGES PROVIDED FOR IN THE PAGE COUNTY ZONING ORDINANCE AND ANY ORDINANCE AMENDMENTS AS OF THE DATE OF APPROVAL OR AMENDMENT AND CONTINUING FOR THE PERIOD SET FORTH WITHIN THE PARAMETERS IN THIS SPECIAL USE PERMIT. THE SPECIAL USE PERMIT SHALL REMAIN WITH THE PROPERTY FOR A PERIOD OF FIFTY (50) YEARS.

2. THE SOLAR ELECTRICITY GENERATING FACILITY MAY CONSIST OF RACKING AND FOUNDATIONS; INVERTERS AND TRANSFORMERS; NECESSARY ELECTRICAL INTERCONNECTIONS AND ALL IMPROVEMENTS AND CONNECTIONS REQUIRED TO STORE, TRANSFER AND DELIVER ELECTRICAL GENERATION AND ANCILLARY SERVICES, INCLUDING BUT NOT LIMITED TO: THREE (3) PHASE EXTENSIONS AND POWER BOX(ES); STRUCTURES TO HOUSE ELECTRICAL AND MAINTENANCE EQUIPMENT; SECURITY FENCING AND GATING ENCLOSING THE PREMISES; SAFETY SIGNAGE AND SOLAR PHOTOVOLTAIC ("PV") PANELS; AND PRIVATE VEHICULAR MAINTENANCE AND ACCESS ROADS (THE "SOLAR ELECTRICITY GENERATING FACILITY"), WHICH SHALL BE IN COMPLIANCE WITH ALL APPLICABLE COUNTY, STATE, AND FEDERAL AGENCY REGULATIONS.

3. THIS SPECIAL USE PERMIT MAY BE REVOKED UPON MATERIAL NONCOMPLIANCE WITH THE TERMS OF THE PERMIT, OR UPON VIOLATION OF ANY OTHER RELEVANT TERMS OF THE ZONING ORDINANCE OR ANY OTHER ORDINANCES OF THE COUNTY OF PAGE, VIRGINIA.

4. THE UTILIZATION OF LAND FOR SOLAR PANELS AND OTHER EQUIPMENT SHALL BE IN SUBSTANTIAL COMFORMITY WITH AND NOT EXTEND BEYOND THE PROPERTY LIMITS SHOWN ON THE PRELIMINARY SITE PLAN MAP, BY TIMMONS GROUP, LAST REVISED APRIL 6, 2018, INCLUDED IN SITE PLAN/APPLICATION. ANY EXPANSION OF THE SOLAR ELECTRICITY GENERATING FACILITY BEYOND THE ABOVE-DESCRIBED PROPERTY

LIMITS WILL REQUIRE AN ADDITIONAL, NEW, OR MODIFIED SPECIAL USE PERMIT AS REQUIRED BY THE PAGE COUNTY ZONING ORDINANCE AT THAT TIME. IN THE EVENT OF A CONFLICT BETWEEN THE PRELIMINARY SITE PLAN MAP AND THESE CONDITIONS, THESE CONDITIONS SHALL CONTROL.

5. INSTALLATION OF SOLAR PANELS IS PERMITTED TO PROVIDE A SOLAR ELECTRICITY GENERATING FACILITY CAPABLE OF GENERATING UP TO 20 MEGAWATTS AC OF POWER GENERATION ON THE 340 ACRE SITE.

6. BEFORE BEGINNING ANY CLEARING, GRADING, OR OTHER LAND DISTURBING ACTIVITY, THE APPLICANT SHALL OBTAIN APPROVAL OF CONSTRUCTION/ELECTRICAL PLANS AND/OR PERMITS FROM THE PAGE COUNTY BUILDING OFFICIAL, INCLUDING EROSION AND SEDIMENTATION PLANS AND/OR PERMITS AS REQUIRED BY THE PLANNING AND COMMUNITY DEVELOPMENT OFFICE AND/OR DEPARTMENT OF ENVIRONMENTAL QUALITY.

7. THE APPLICANT SHALL ADHERE TO THE LIGHTING AND LANDSCAPING PLAN SUBMITTED BY THE APPLICANT WITH ITS CONSTRUCTION PERMITTING APPLICATIONS APPROVED BY THE COUNTY OF PAGE, VIRGINIA. IF AMENDMENTS NEED TO BE MADE RELATED TO LIGHTING AND LANDSCAPING, PROPOSED AMENDMENTS MUST BE AT LEAST EQUIVALENT TO WHAT WAS ORIGINALLY APPROVED BY THE COUNTY OF PAGE, VIRGINIA. APPROVED LIGHTING AND LANDSCAPING SHALL BE INSTALLED PRIOR TO CLOSEOUT OF CONSTRUCTION PERMITTING FOR THE SOLAR ELECTRICITY GENERATING FACILITY. ALL LIGHTING SHALL BE MAINTAINED IN AN OPERATING CONDITION AT ALL TIMES. ALL LANDSCAPING SHALL BE MAINTAINED IN A HEALTHY CONDITION AT ALL TIMES. DEAD OR DYING PLANT MATERIALS SHALL BE REMOVED AND REPLACED WITHIN 90 DAYS OF NOTIFICATION TO THE APPLICANT, SUBJECT TO THE NORMAL PLANTING SEASONS. NOTWITHSTANDING THE FOREGOING, ALL PLANTS AND TREES THAT ARE DEAD, OR THAT ARE SHOWING SIGNS OF SUBSTANTIAL DECAY OR IMMINENT DEATH, SHALL BE REMOVED AND REPLACED NOT LATER THAN BY THE END OF MAY OF EACH CALENDAR YEAR, REGARDLESS OF NOTICE TO THE APPLICANT.

8. ALL EXTERIOR LIGHTING SHALL BE SHIELDED TO DIRECT LIGHT DOWNWARD AND AWAY FROM ADJACENT PROPERTIES AND ROAD. LIGHT FIXTURES FOR THE SOLAR ELECTRICITY GENERATING FACILITY SHALL NOT EXCEED 20 FEET IN HEIGHT.

9. HOURS OF CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO MONDAY THROUGH SATURDAY, AND SHALL COMMENCE NO EARLIER THAN 7:00 A.M. AND WILL CEASE NO LATER THAN 7:00 P.M. NO CONSTRUCTION ACTIVITIES SHALL TAKE PLACE ON SUNDAYS OR NATIONAL HOLIDAYS. THIS LIMITATION TO HOURS OF CONSTRUCTION WILL NOT APPLY TO MAINTAINENCE OF AN EXISTING FACILITY ONCE COMPLETED UNLESS SUCH MAINTAINENCE WILL INVOLVE EXTENSIVE CONSTRUCTION REPAIRS TO THE FACILITY SUCH AS PANEL REPLACEMENT. "CONSTRUCTION ACTIVITIES" AS USED HEREIN SHALL MEAN ANY ACT OF CONSTRUCTION, INCLUDING SUCH ACTS AS INSTALLING POSTS, LAND GRADING OR SOIL DISTURBING ACTIVITIES, INSTALLATION OF PANELS, AND ANY OTHER ACTIVITY THAT PRODUCES NOISE OR OTHER DISTURBANCES BEYOND THE PROJECT

BOUNDARIES. CONTRACTORS FOR THE APPLICANT MAY ENTER ONTO AND BE PRESENT ON THE SITE FOR ONE HOUR BEFORE, AND ONE HOUR AFTER, THE PROSCRIBED TIME PERIODS SET FORTH HEREIN, EXCEPT FOR IN EMERGENCY SITUATIONS WHEREIN THIS RESTRICTION SHALL NOT APPLY. NO EMPLOYEE, CONTRACTOR, OR SUBCONTRACTOR SHALL BE PERMITTED TO STAY OVERNIGHT ON THE PROPERTY SITE.

10. THE TOTAL HEIGHT OF THE SOLAR ELECTRICITY GENERATING FACILITY TO INCLUDE THE PANELS AND MOUNTS ONLY, SHALL NOT EXCEED 20 FEET ABOVE THE GROUND WHEN ORIENTATED AT MAXIMUM TILT. THIS HEIGHT LIMITATION SHALL NOT APPLY TO THE EQUIPMENT AT THE INTERCONNECTION POINT, WITHIN THE SUBSTATIONS OR THAT IS A PART OF THE TRANSMISSION LINES THAT ARE PART OF THE LOCAL UTILITY POWER GRID.

11. ELECTRICAL WIRING USED IN THE SOLAR ELECTRICITY GENERATING FACILITY SHALL BE UNDERGROUND (TRENCHED) WHERE PRACTICABLE EXCEPT a) WIRING DIRECTLY CONNECTING INDIVIDUAL PANELS AND ARRAYS OF PANELS, b) WHERE NECESSARY TO AVOID NATURAL OBSTACLES, WETLANDS OR ELECTRICAL INTERFERENCE, OR c) WHERE WIRING IS BROUGHT TOGETHER FOR INTERCONNECTION TO SYSTEM COMPONENTS, SUBSTATIONS, AND/OR THE LOCAL UTILITY POWER GRID.

12. THE APPLICANT SHALL BE SOLELY RESPONSIBLE FOR DECOMMISSIONING THE SOLAR ELECTRICITY GENERATING FACILITY ACCORDING TO THE DECOMMISSIONING PLAN PROVIDED BY THE APPLICANT THAT WAS APPROVED BY THE COUNTY OF PAGE, VIRGINIA. DECOMMISSIONING SHALL INCLUDE REMOVAL OF SOLAR COLLECTORS, CABLING, ELECTRICAL COMPONENTS, ANY BASES OR FOOTERS, AND ALL OTHER ASSCOCIATED ITEMS. THE APPLICANT SHALL BE SOLELY FINANCIALLY RESPONSIBLE FOR DECOMMISSIONING THE SOLAR ELECTRICITY GENERATING FACILITY. DECOMMISSIONING OF THE SOLAR ELECTRICITY GENERATING FACILITY DOES NOT INCLUDE THE TRANSMISSION LINE EQUIPMENT AND SUBSTATION THAT REMAINS A PART OF THE LOCAL UTILITY POWER GRID AFTER THE SOLAR ELECTRICITY GENERATING FACILITY IS DECOMMISSIONED AND REMOVED.

13. BEFORE THE SOLAR ELECTRICITY GENERATING FACILITY IS ENERGIZED, IT SHALL BE SECURED WITH A FENCE AT LEAST SIX FEET IN HEIGHT. THE FENCE SHALL BE PROPERLY MAINTAINED AT ALL TIMES TO INCLUDE REPAIRS AND LANDSCAPING MAINTENANCE.

14. THE ZONING ADMINISTRATOR OR THEIR DESIGNATED REPRESENTATIVE MAY VISIT THE SITE AT ANY TIME TO ENSURE COMPLIANCE WITH ANY COUNTY ORDINANCES AND SPECIAL USE PERMIT CONDITIONS, SUCH VISITS TO BE IN COMPLIANCE WITH THE SAFETY AND SECURITY PROCEDURES OF THE SOLAR ELECTRICITY GENERATING FACILITY.

15. PRIOR TO COMMERICAL OPERATION AND PERIODICALLY DURING OPERATION NO MORE FREQUENTLY THAN ONCE EVERY THREE YEARS, THE APPLICANT, AT THEIR EXPENSE,

SHALL PROVIDE FIRE AND SAFETY TRAINING TO PAGE COUNTY FIRE AND EMERGENCY RESPONSE TEAMS REGARDING THE SOLAR ELECTRICITY GENERATING FACILITY.

16. THE ZONING ADMINISTRATOR MAY REFER THE SITE PLANS FOR THE PERMITTED SOLAR PROJECT TO A QUALIFIED CONSULTANT FOR REVIEW AND COMMENT, AT THE APPLICANT'S EXPENSE. THE ZONING ADMINISTRATOR OR DESIGNEE MAY REFER ANY ZONING INSPECTIONS FOR COMPLIANCE TO A QUALIFIED CONSULTANT. THE TERMS AND CONDITIONS OF WHICH SHALL BE DETERMINED IN ADVANCE OF THE REFERRAL BETWEEN THE APPLICANT, THE COUNTY AND THE CONSULTANT.

17. THE APPLICANT SHALL PROVIDE FOR CONSTRUCTION PHASE THIRD PARTY INSPECTIONS AND SUBMITTAL OF INSPECTION REPORTS TO THE PAGE COUNTY BUILDING OFFICIAL, AT THE APPLICANT'S EXPENSE.

18. A MINIMUM SETBACK OF TWENTY-FIVE (25) FEET SHALL BE MAINTAINED FROM THE EDGE OF ANY V-DOT MAINTAINED PUBLIC ROADWAY.

19. A MINIMUM SETBACK OF FIFTY (50) FEET SHALL BE MAINTAINED BETWEEN THE SECURITY FENCING AND ANY RESIDENTIAL PROPERTY LINE. BARRIER SCREENING AND LANDSCAPING SHALL BE INSTALLED PURSUANT TO THE LANDSCAPING PLAN SUBMITTED BY THE APPLICANT WITH ITS CONSTRUCTION PERMITTING APPLICATIONS BETWEEN THE FENCE AND ANY AFFECTED RESIDENTIAL PROPERTY. THE SETBACK REQUIREMENTS AND THE BARRIER SCREENING AND LANDSCAPING REQUIREMENT MAY REDUCED AND/OR WAIVED IF AGREED TO IN WRITING BY THE OWNER OF SUCH PROPERTY OR RESIDENCE BY DELIVERY OF A COPY OF THE SIGNED AGREEMENT TO THE COUNTY ATTORNEY AND THE COUNTY ADMINISTRATOR OR HER DESIGNEE.

20. ANY LESSEE, SUB-LESSEE, FUTURE PROJECT OWNER, SOLAR FACILITY OPERATOR, OR ASSIGNEE OF THE APPLICANT SHALL EXECUTE A WRITTEN ACKNOWLEDGEMENT AND AGREEMENT TO THE TERMS AND OBLIGATIONS OF THIS SPECIAL USE PERMIT, WHICH SHALL INCLUDE AN ASSUMPTION OF THE RESPONSIBILITIES AND OBLIGATIONS OF THE APPLICANT. A COPY OF THE ACKNOWLEDGMENT AND AGREEMENT SHALL BE DELIVERED TO THE COUNTY ATTORNEY AND THE COUNTY ADMINISTRATOR, OR HER DESIGNEE.

21. THE APPLICANT SHALL HOLD AT LEAST TWO (2) CONTRACTOR AND JOBS FAIRS, ONE (1) ON A WEEKDAY EVENING AND ONE (1) ON A SATURDAY, IN PAGE COUNTY TO ATTRACT QUALIFIED CONSTRUCTION SUB-CONTRACTORS BASED IN PAGE COUNTY AND INDIVIDUAL JOB APPLICANTS WHO RESIDE IN PAGE COUNTY FOR THE CONSTRUCTION OR OPERATION OF THE FACILITY.

22. THE APPLICANT SHALL REPAIR EXPEDITIOUSLY ANY DAMAGE TO PUBLIC ROADS OR RELATED INFRASTRUCTURE CAUSED BY CONSTRUCTION TRAFFIC FOR THE FACILITY AS REQUIRED BY THE VIRGINIA DEPARTMENT OF TRANSPORTATION.

23. THE APPLICANT SHALL SUBMIT SOILS TESTING REPORTS SIMILAR TO THE SAMPLING SUMMATION EXAMPLE ATTACHED HERETO PRIOR TO SITE PLAN APPROVAL, EVERY FIVE YEARS ONCE THE FACILITY IS ENGERIZED, AND AGAIN DURING DECOMMISSIONING.

24. PLACEMENT OF ANY PANELS OR EQUIPMENT IS PROHIBITED IN THE FLOODPLAIN.

25. PANELS MAY NOT BE LOCATED ON A SLOPE OF 15% OR MORE IN GRADE.

26. APPLICANT SHALL OBTAIN AND MAINTAIN LIABILITY INSURANCE OF AT LEAST TWO MILLION DOLLARS FOR THE SOLAR FACILITY DURING DEVELOPMENT, OPERATIONS AND UNTIL THE FACILITY HAS BEEN DECOMMISSIONED AND REMOVED.

I (we) the undersigned owner(s)/occupant(s) understand and agree to the foregoing conditions of this special use permit. I further understand that this special use permit may be reviewed on a yearly basis or at any time, the county determines necessary to ensure the compliance with and enforcement of all applicable conditions, codes, and regulations.

Operator(s)/Applicant(s) — *Date* 4/25/19

Board of Supervisors Chairman — *Date* 5/1/19

County Administrator — *Date* 4/25/19

County of Page, Virginia
Planning & Community Development
103 South Court St., Suite B
Luray, VA 22835

SPECIAL USE PERMIT

Applicant: Dogwood Solar, LLC
Tax Map #: 78-(A)-73; 78-(A)-59; 78-(A)-60; 78-(A)-62; & 78-(A)-56
Purpose: Solar Electricity Generating Facility (Up to 20 Megawatts)

APPROVED ✓ **DENIED** _____
By the Page County Board of Supervisors on 4/2/2019.

1. THIS SPECIAL USE PERMIT SHALL RUN WITH THE LAND. THIS SPECIAL USE PERMIT IS TRANSFERABLE. IT WILL MEET THE REQUIREMENTS IN AND HAVE PRIVILEGES PROVIDED FOR IN THE PAGE COUNTY ZONING ORDINANCE AND ANY ORDINANCE AMENDMENTS AS OF THE DATE OF APPROVAL OR AMENDMENT AND CONTINUING FOR THE PERIOD SET FORTH WITHIN THE PARAMETERS IN THIS SPECIAL USE PERMIT. THE SPECIAL USE PERMIT SHALL REMAIN WITH THE PROPERTY FOR A PERIOD OF FIFTY (50) YEARS.

2. THE SOLAR ELECTRICITY GENERATING FACILITY MAY CONSIST OF RACKING AND FOUNDATIONS; INVERTERS AND TRANSFORMERS; NECESSARY ELECTRICAL INTERCONNECTIONS AND ALL IMPROVEMENTS AND CONNECTIONS REQUIRED TO STORE, TRANSFER AND DELIVER ELECTRICAL GENERATION AND ANCILLARY SERVICES, INCLUDING BUT NOT LIMITED TO: THREE (3) PHASE EXTENSIONS AND POWER BOX(ES); STRUCTURES TO HOUSE ELECTRICAL AND MAINTENANCE EQUIPMENT; SECURITY FENCING AND GATING ENCLOSING THE PREMISES; SAFETY SIGNAGE AND SOLAR PHOTOVOLTAIC ("PV") PANELS; AND PRIVATE VEHICULAR MAINTENANCE AND ACCESS ROADS (THE "SOLAR ELECTRICITY GENERATING FACILITY"), WHICH SHALL BE IN COMPLIANCE WITH ALL APPLICABLE COUNTY, STATE, AND FEDERAL AGENCY REGULATIONS.

3. THIS SPECIAL USE PERMIT MAY BE REVOKED UPON MATERIAL NONCOMPLIANCE WITH THE TERMS OF THE PERMIT, OR UPON VIOLATION OF ANY OTHER RELEVANT TERMS OF THE ZONING ORDINANCE OR ANY OTHER ORDINANCES OF THE COUNTY OF PAGE, VIRGINIA.

4. THE UTILIZATION OF LAND FOR SOLAR PANELS AND OTHER EQUIPMENT SHALL BE IN SUBSTANTIAL COMFORMITY WITH AND NOT EXTEND BEYOND THE PROPERTY LIMITS SHOWN ON THE PRELIMINARY SITE PLAN MAP, BY TIMMONS GROUP, LAST REVISED APRIL 6, 2018, INCLUDED IN SITE PLAN/APPLICATION. ANY EXPANSION OF THE SOLAR ELECTRICITY GENERATING FACILITY BEYOND THE ABOVE-DESCRIBED PROPERTY

LIMITS WILL REQUIRE AN ADDITIONAL, NEW, OR MODIFIED SPECIAL USE PERMIT AS REQUIRED BY THE PAGE COUNTY ZONING ORDINANCE AT THAT TIME. IN THE EVENT OF A CONFLICT BETWEEN THE PRELIMINARY SITE PLAN MAP AND THESE CONDITIONS, THESE CONDITIONS SHALL CONTROL.

5. INSTALLATION OF SOLAR PANELS IS PERMITTED TO PROVIDE A SOLAR ELECTRICITY GENERATING FACILITY CAPABLE OF GENERATING UP TO 20 MEGAWATTS AC OF POWER GENERATION ON THE 340 ACRE SITE.

6. BEFORE BEGINNING ANY CLEARING, GRADING, OR OTHER LAND DISTURBING ACTIVITY, THE APPLICANT SHALL OBTAIN APPROVAL OF CONSTRUCTION/ELECTRICAL PLANS AND/OR PERMITS FROM THE PAGE COUNTY BUILDING OFFICIAL, INCLUDING EROSION AND SEDIMENTATION PLANS AND/OR PERMITS AS REQUIRED BY THE PLANNING AND COMMUNITY DEVELOPMENT OFFICE AND/OR DEPARTMENT OF ENVIRONMENTAL QUALITY.

7. THE APPLICANT SHALL ADHERE TO THE LIGHTING AND LANDSCAPING PLAN SUBMITTED BY THE APPLICANT WITH ITS CONSTRUCTION PERMITTING APPLICATIONS APPROVED BY THE COUNTY OF PAGE, VIRGINIA. IF AMENDMENTS NEED TO BE MADE RELATED TO LIGHTING AND LANDSCAPING, PROPOSED AMENDMENTS MUST BE AT LEAST EQUIVALENT TO WHAT WAS ORIGINALLY APPROVED BY THE COUNTY OF PAGE, VIRGINIA. APPROVED LIGHTING AND LANDSCAPING SHALL BE INSTALLED PRIOR TO CLOSEOUT OF CONSTRUCTION PERMITTING FOR THE SOLAR ELECTRICITY GENERATING FACILITY. ALL LIGHTING SHALL BE MAINTAINED IN AN OPERATING CONDITION AT ALL TIMES. ALL LANDSCAPING SHALL BE MAINTAINED IN A HEALTHY CONDITION AT ALL TIMES. DEAD OR DYING PLANT MATERIALS SHALL BE REMOVED AND REPLACED WITHIN 90 DAYS OF NOTIFICATION TO THE APPLICANT, SUBJECT TO THE NORMAL PLANTING SEASONS. NOTWITHSTANDING THE FOREGOING, ALL PLANTS AND TREES THAT ARE DEAD, OR THAT ARE SHOWING SIGNS OF SUBSTANTIAL DECAY OR IMMINENT DEATH, SHALL BE REMOVED AND REPLACED NOT LATER THAN BY THE END OF MAY OF EACH CALENDAR YEAR, REGARDLESS OF NOTICE TO THE APPLICANT.

8. ALL EXTERIOR LIGHTING SHALL BE SHIELDED TO DIRECT LIGHT DOWNWARD AND AWAY FROM ADJACENT PROPERTIES AND ROAD. LIGHT FIXTURES FOR THE SOLAR ELECTRICITY GENERATING FACILITY SHALL NOT EXCEED 20 FEET IN HEIGHT.

9. HOURS OF CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO MONDAY THROUGH SATURDAY, AND SHALL COMMENCE NO EARLIER THAN 7:00 A.M. AND WILL CEASE NO LATER THAN 7:00 P.M. NO CONSTRUCTION ACTIVITIES SHALL TAKE PLACE ON SUNDAYS OR NATIONAL HOLIDAYS. THIS LIMITATION TO HOURS OF CONSTRUCTION WILL NOT APPLY TO MAINTAINENCE OF AN EXISTING FACILITY ONCE COMPLETED UNLESS SUCH MAINTAINENCE WILL INVOLVE EXTENSIVE CONSTRUCTION REPAIRS TO THE FACILITY SUCH AS PANEL REPLACEMENT. "CONSTRUCTION ACTIVITIES" AS USED HEREIN SHALL MEAN ANY ACT OF CONSTRUCTION, INCLUDING SUCH ACTS AS INSTALLING POSTS, LAND GRADING OR SOIL DISTURBING ACTIVITIES, INSTALLATION OF PANELS, AND ANY OTHER ACTIVITY THAT PRODUCES NOISE OR OTHER DISTURBANCES BEYOND THE PROJECT

BOUNDARIES. CONTRACTORS FOR THE APPLICANT MAY ENTER ONTO AND BE PRESENT ON THE SITE FOR ONE HOUR BEFORE, AND ONE HOUR AFTER, THE PROSCRIBED TIME PERIODS SET FORTH HEREIN, EXCEPT FOR IN EMERGENCY SITUATIONS WHEREIN THIS RESTRICTION SHALL NOT APPLY. NO EMPLOYEE, CONTRACTOR, OR SUBCONTRACTOR SHALL BE PERMITTED TO STAY OVERNIGHT ON THE PROPERTY SITE.

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15. PRIOR TO COMMERICAL OPERATION AND PERIODICALLY DURING OPERATION NO MORE FREQUENTLY THAN ONCE EVERY THREE YEARS, THE APPLICANT, AT THEIR EXPENSE,

SHALL PROVIDE FIRE AND SAFETY TRAINING TO PAGE COUNTY FIRE AND EMERGENCY RESPONSE TEAMS REGARDING THE SOLAR ELECTRICITY GENERATING FACILITY.

16. THE ZONING ADMINISTRATOR MAY REFER THE SITE PLANS FOR THE PERMITTED SOLAR PROJECT TO A QUALIFIED CONSULTANT FOR REVIEW AND COMMENT, AT THE APPLICANT'S EXPENSE. THE ZONING ADMINISTRATOR OR DESIGNEE MAY REFER ANY ZONING INSPECTIONS FOR COMPLIANCE TO A QUALIFIED CONSULTANT. THE TERMS AND CONDITIONS OF WHICH SHALL BE DETERMINED IN ADVANCE OF THE REFERRAL BETWEEN THE APPLICANT, THE COUNTY AND THE CONSULTANT.

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19. A MINIMUM SETBACK OF FIFTY (50) FEET SHALL BE MAINTAINED BETWEEN THE SECURITY FENCING AND ANY RESIDENTIAL PROPERTY LINE. BARRIER SCREENING AND LANDSCAPING SHALL BE INSTALLED PURSUANT TO THE LANDSCAPING PLAN SUBMITTED BY THE APPLICANT WITH ITS CONSTRUCTION PERMITTING APPLICATIONS BETWEEN THE FENCE AND ANY AFFECTED RESIDENTIAL PROPERTY. THE SETBACK REQUIREMENTS AND THE BARRIER SCREENING AND LANDSCAPING REQUIREMENT MAY REDUCED AND/OR WAIVED IF AGREED TO IN WRITING BY THE OWNER OF SUCH PROPERTY OR RESIDENCE BY DELIVERY OF A COPY OF THE SIGNED AGREEMENT TO THE COUNTY ATTORNEY AND THE COUNTY ADMINISTRATOR OR HER DESIGNEE.

20. ANY LESSEE, SUB-LESSEE, FUTURE PROJECT OWNER, SOLAR FACILITY OPERATOR, OR ASSIGNEE OF THE APPLICANT SHALL EXECUTE A WRITTEN ACKNOWLEDGEMENT AND AGREEMENT TO THE TERMS AND OBLIGATIONS OF THIS SPECIAL USE PERMIT, WHICH SHALL INCLUDE AN ASSUMPTION OF THE RESPONSIBILITIES AND OBLIGATIONS OF THE APPLICANT. A COPY OF THE ACKNOWLEDGMENT AND AGREEMENT SHALL BE DELIVERED TO THE COUNTY ATTORNEY AND THE COUNTY ADMINISTRATOR, OR HER DESIGNEE.

21. THE APPLICANT SHALL HOLD AT LEAST TWO (2) CONTRACTOR AND JOBS FAIRS, ONE (1) ON A WEEKDAY EVENING AND ONE (1) ON A SATURDAY, IN PAGE COUNTY TO ATTRACT QUALIFIED CONSTRUCTION SUB-CONTRACTORS BASED IN PAGE COUNTY AND INDIVIDUAL JOB APPLICANTS WHO RESIDE IN PAGE COUNTY FOR THE CONSTRUCTION OR OPERATION OF THE FACILITY.

22. THE APPLICANT SHALL REPAIR EXPEDITIOUSLY ANY DAMAGE TO PUBLIC ROADS OR RELATED INFRASTRUCTURE CAUSED BY CONSTRUCTION TRAFFIC FOR THE FACILITY AS REQUIRED BY THE VIRGINIA DEPARTMENT OF TRANSPORTATION.

23. THE APPLICANT SHALL SUBMIT SOILS TESTING REPORTS SIMILAR TO THE SAMPLING SUMMATION EXAMPLE ATTACHED HERETO PRIOR TO SITE PLAN APPROVAL, EVERY FIVE YEARS ONCE THE FACILITY IS ENGERIZED, AND AGAIN DURING DECOMMISSIONING.

24. PLACEMENT OF ANY PANELS OR EQUIPMENT IS PROHIBITED IN THE FLOODPLAIN.

25. PANELS MAY NOT BE LOCATED ON A SLOPE OF 15% OR MORE IN GRADE.

26. APPLICANT SHALL OBTAIN AND MAINTAIN LIABILITY INSURANCE OF AT LEAST TWO MILLION DOLLARS FOR THE SOLAR FACILITY DURING DEVELOPMENT, OPERATIONS AND UNTIL THE FACILITY HAS BEEN DECOMMISSIONED AND REMOVED.

I (we) the undersigned owner(s)/occupant(s) understand and agree to the foregoing conditions of this special use permit. I further understand that this special use permit may be reviewed on a yearly basis or at any time, the county determines necessary to ensure the compliance with and enforcement of all applicable conditions, codes, and regulations.

Operator(s)/Applicant(s)	*Date* 4/25/19
Board of Supervisors Chairman	*Date* 5/1/19
County Administrator	*Date* 4/25/19

Attachment C – Interconnection Studies

Generation Interconnection
System Impact Study Report

For

PJM Generation Interconnection Request
Queue Position AD1-085

North Shenandoah – Stanley 34.5 kV

August 2018

Preface

The intent of the System Impact Study is to determine a plan, with approximate cost and construction time estimates, to connect the subject generation interconnection project to the PJM network at a location specified by the Interconnection Customer. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system. All facilities required for interconnection of a generation interconnection project must be designed to meet the technical specifications (on PJM web site) for the appropriate transmission owner.

In some instances an Interconnection Customer may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection or merchant transmission upgrade, may also contribute to the need for the same network reinforcement. The possibility of sharing the reinforcement costs with other projects may be identified in the Feasibility Study, but the actual allocation will be deferred until the System Impact Study is performed.

The System Impact Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

General

Urban Grid Solar Projects, LLC ("Interconnection Customer") has proposed a new solar generation facility located on Dam Acres Road in Stanley, Page County, Virginia. The requested Maximum Facility Output is 20 MWs with 12.3 MW being recognized by PJM as Capacity Interconnection Rights (CIR). The proposed in-service date for this project is December 31, 2020. **This study does not imply a Potomac Edison ("Transmission Owner") commitment to this in-service date.**

Point of Interconnection ("POI")

This project will interconnect with the Potomac Edison transmission system through the Shenandoah Valley Electric Company (or "SVEC") distribution system at the North Shenandoah substation. This substation is owned by SVEC however, the 138 kV side is owned by Potomac Edison. The Point of Interconnection (POI) will be located at the 138 kV side of the substation.

Interconnection Customer's facilities will interconnect with the SVEC 34.5 kV distribution system at a point located approximately 3.82 miles from North Shenandoah substation and 3.65 miles from Stanley substation. This interconnection point is the physical "Service Point" or point of common coupling. Please refer to the one-line diagram in Appendix 2 for more details.

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Transmission Owner Scope of Work and Costs Summary

The following upgrades are required to support AD1-085 Interconnection:

(a) Attachment Facilities: None.

(b) Direct Connection Network Upgrades: None.

(c) Non-Direct Network Upgrades:

(c1) Adjust remote relay and metering settings at North Shenandoah 138 kV Substation. Estimated construction time: six (6) months. Estimated cost: **$12,400**

(d) Direct Local Network Upgrades: None.

(e) Non-Direct Local Network Upgrades: None.

(f) Option to Build Upgrades: None.

Estimated Total Costs (a) to (f): ***$12,400***

NOTE: The above shown estimated costs do not include Contribution in Aid of Construction (CIAC) Federal Income Tax Gross Up charge. The tax Dollars may or may not be charged to this project depending upon whether this project meets the eligibility requirements of the latest IRS Safe Harbor provisions for non-taxable status.

Interconnection Customer Requirements

The proposed Customer Facilities must be designed in accordance with FirstEnergy's "Requirements for Transmission Connected Facilities" document located at: http://www.pjm.com/planning/design-engineering/to-tech-standards/private-firstenergy.aspx. In particular, the Interconnection Customer is responsible for the following:

1. The purchase and installation of fully rated 34.5 kV circuit breaker to protect the AD1-085 generator lead line; A single circuit breaker must be used to protect this line; if the project has several GSU transformers, the individual GSU transformer breakers cannot be used to protect this line.
2. The purchase and installation of the minimum required FirstEnergy generation interconnection relaying and control facilities. This includes over/under voltage protection, over/under frequency protection, and zero sequence voltage protection relays.
3. The purchase and installation of supervisory control and data acquisition (SCADA) equipment to provide information in a compatible format to the FirstEnergy Transmission System Control Center.
4. A compliance with the FirstEnergy and PJM generator power factor and voltage control requirements.

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5. The execution of a back-up service agreement to serve the customer load supplied from the AD1-085 generation project metering point when the units are out-of-service. This assumes the intent of Interconnection Customer is to net the generation with the load.
6. Power Factor Requirements: Interconnection Customer shall design its non-synchronous Customer Facility with the ability to maintain a power factor of at least 0.95 leading (absorbing VARs) to 0.95 lagging (supplying VARs) measured at the high-side of the facility substation transformer(s) connected to the FirstEnergy transmission system.
7. System Protection Requirements: Interconnection Customer must design it's Customer Facilities in accordance with all applicable standards, including the standards in FirstEnergy's "Requirements for Transmission Connected Facilities" document located at above shown link. Preliminary Protection requirements will be provided as part of the Facilities Study. Detailed Protection Requirements will be provided once the project enters the construction phase.
8. Revenue Metering and SCADA Requirements: PJM requires that Interconnection Customer must install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for Interconnection Customer's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Sections 24.1 and 24.2. FirstEnergy requires that Interconnection Customer and SVEC must comply with all FirstEnergy Revenue Metering Requirements for Generation Interconnection Customers. The Revenue Metering Requirements may be found within the "FirstEnergy Requirements for Transmission Connected Facilities" document located at the following links: http://www.firstenergycorp.com/feconnect and http://www.pjm.com/planning/design-engineering/to-tech-standards.aspx
9. Interconnection Customer must meet all PJM, ReliabilityFirst and NERC reliability criteria and operating procedures required for standards compliance. For example, Interconnection Customer will need to properly locate and report the over and under-voltage and over and under-frequency system protection elements for its units as well as the submission of the generator model and protection data required to satisfy the PJM and ReliabilityFirst audits. Failure to comply with these requirements may result in a disconnection of service if the violation is found to compromise the reliability of the FirstEnergy system.
10. Interconnection Customer will be responsible for constructing all of the facilities on its side of the POI including all facilities associated with the attachment line and the AD1-085 point of common coupling to SVEC system. Interconnection Customer will be responsible for acquiring all easements, properties and permits that may be required to construct their line and the associated attachment facilities. Interconnection Customer may not install above ground equipment within any Transmission Owner's right-of-way unless permission to do so is expressly granted by the Transmission Owner.
11. If Interconnection Customer's intention is to participate at the PJM wholesale electricity market, then they must enter into a separate two-party interconnection agreement with the Shenandoah Valley Electric Cooperative prior to the execution of a Wholesale Market Participation Agreement with PJM and FirstEnergy.

The above requirements are in addition to any metering or other requirements imposed by PJM and/or SVEC.

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Network Impacts

The Queue Project AD1-085 was evaluated as a 20.0 MW (Capacity 12.3 MW) injection into the North Shenandoah 138 kV substation in the APS area. Project AD1-085 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AD1-085 was studied with a commercial probability of 100%. Potential network impacts were as follows:

Summer Peak Analysis - 2021

Generator Deliverability
(Single or N-1 contingencies for the Capacity portion only of the interconnection)

None

Multiple Facility Contingency
(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None

Contribution to Previously Identified Overloads
(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

None

Steady-State Voltage Requirements

None

Short Circuit

None

Delivery of Energy Portion of Interconnection Request
PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.
Only the most severely overloaded conditions are listed. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed, which will study all overload conditions associated with the overloaded element(s) identified.

None

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Light Load Analysis - 2021

Not required.

System Reinforcements

Short Circuit

None

Stability and Reactive Power Requirement

None

Summer Peak Load Flow Analysis Reinforcements

New System Reinforcements

(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)

None

Light Load Load Flow Analysis Reinforcements

New System Reinforcements

(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)

None

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Winter Peak Analysis - 2021

Generator Deliverability
(Single or N-1 contingencies for the Capacity portion only of the interconnection)

None

Multiple Facility Contingency
(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None

Contribution to Previously Identified Overloads
(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

None

Steady-State Voltage Requirements

None

Winter Peak Load Flow Analysis Reinforcements

New System Reinforcements
(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None

Contribution to Previously Identified System Reinforcements
(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)

None

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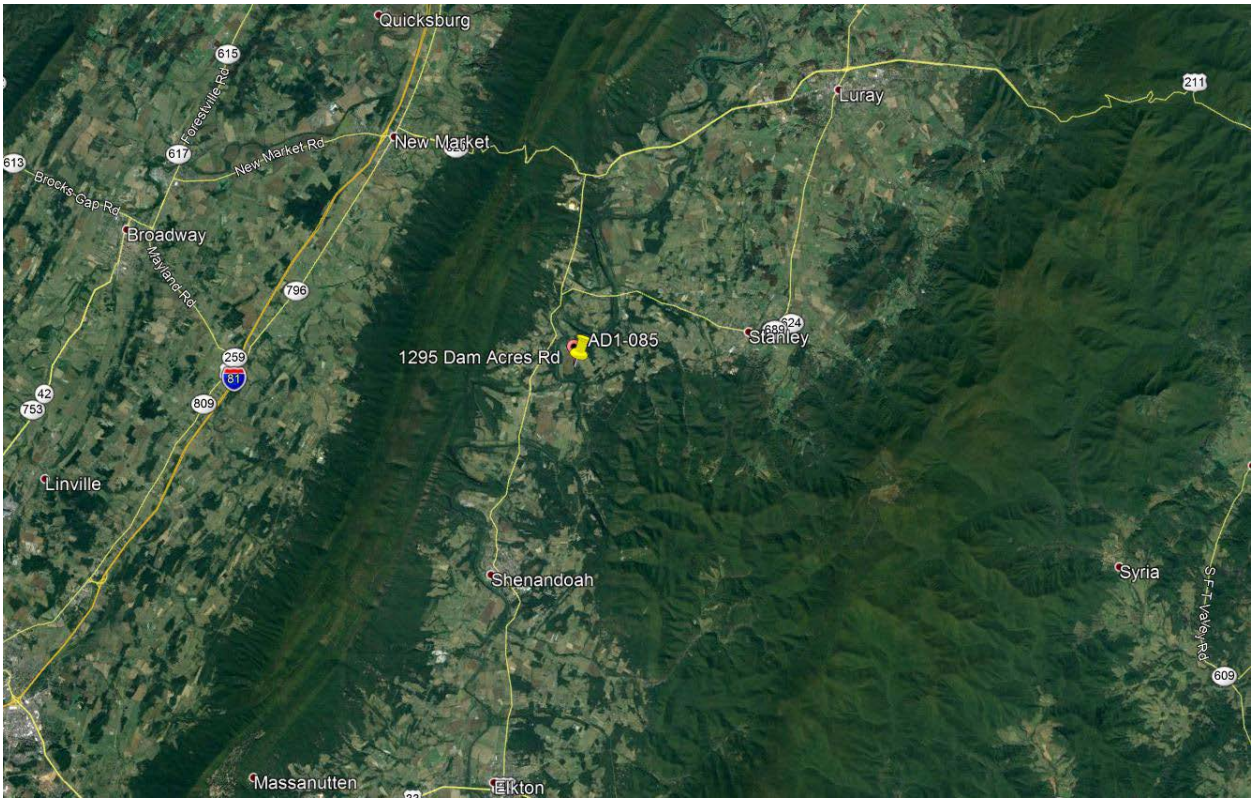
Appendix 1

Facility Location
PJM Queue Position: AD1-085



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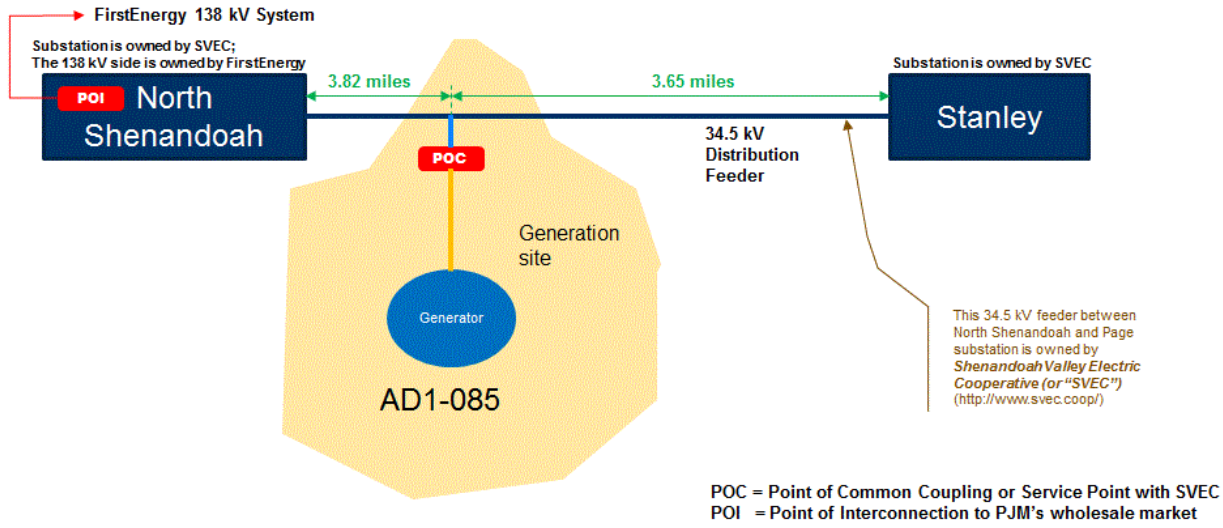
Appendix 2

Interconnection One-Line Diagram
PJM Queue Position: AD1-085

North Shenandoah 138 kV Substation via SVEC North Shenandoah – Stanley 34.5 kV Line



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Generation Interconnection Feasibility Study Report

For

PJM Generation Interconnection Request Queue Position AD1-085

North Shenandoah – Stanley 34.5 kV

January 2018

Preface

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. The possibility of sharing the reinforcement costs with other projects may be identified in the feasibility study, but the actual allocation will be deferred until the impact study is performed.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

General

Urban Grid Solar Projects, ("Interconnection Customer") has proposed a new solar generation facility located on Dam Acres Road in Stanley, Frederick County, Virginia. The requested Maximum Facility Output is 20 MWs with 12.3 MW being recognized by PJM as Capacity Interconnection Rights (CIR). The proposed in-service date for this project is December 31, 2020. **This study does not imply a Potomac Edison ("Transmission Owner") commitment to this in-service date.**

Point of Interconnection ("POI")

This project will interconnect with the Potomac Edison distribution system by either one of the following interconnection options:

Option #1 POI or Primary Point of Interconnection: ***North Shenandoah 138 kV Substation via North Shenandoah – Stanley 34.5 kV Line***

AD1-085 will tap the North Shenandoah – Stanley 34.5 distribution feeder at a point located approximately 3.82 miles from North Shenandoah substation and 3.65 miles from Stanley substation. North Shenandoah and Stanley substations are owned by Shenandoah Valley Electric Cooperative ("SVEC") and FirstEnergy owns the 138 kV high side of North Shenandoah substation. Therefore, AD1-085 Point of Interconnection (POI) will be located at the 138 kV high side of North Shenandoah substation. SVEC intends to utilize a single recloser tap connection, as the connection is to a 34.5 kV distribution line. Please refer to Appendix 2 for one-line diagram of system configuration. The cost associated with the primary POI interconnection is detailed in the costs summary section of this report.

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<u>Option #2 POI or Secondary Point of Interconnection</u>: New substation on North Shenandoah – Page 138 kV System

AD1-085 will tap the North Shenandoah – Page 138 kV transmission line at a point located approximately 4.6 miles from North Shenandoah substation and 18.4 miles from Page substation. A new three breaker ring bus station will be built adjacent to the transmission line (within one span) at Interconnection Customer's premises and the Point of Interconnection will be located at this substation's exist side to solar plant. Please refer to Appendix 4 for one-line diagram of system configuration. The cost associated with the secondary POI interconnection is not shown in this report.

Costs Summary and Transmission Owner Scope of Work

The following upgrades are required to support AD1-085 Interconnection:

(a) <u>Attachment Facilities</u>: None.

(b) <u>Direct Connection Network Upgrades</u>: None.

(c) <u>Non-Direct Network Upgrades:</u>

(c1) Adjust remote relay and metering settings at North Shenandoah 138 kV SS. PJM Network Upgrade Number to be determined during system impact study phase. Estimated cost: **$10,000**

Note: the cost of the new substation for the Secondary POI may be included in the system impact study report if Interconnection Customer chose to select the secondary POI to be the Point of Interconnection for this project.

(d) <u>Direct Local Network Upgrades</u>: None.

(e) <u>Non-Direct Local Network Upgrades</u>: None.

(f) <u>Option to Build Upgrades</u>: None.

Estimated Total Costs (a) to (f): .....<u>$10,000</u>

NOTE: The above shown estimated costs do not include Contribution in Aid of Construction (CIAC) Federal Income Tax Gross Up charge. The tax Dollars may or may not be charged to this project depending upon whether this project meets the eligibility requirements of the latest IRS Safe Harbor provisions for non-taxable status.

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Interconnection Customer Requirements

In addition to Potomac Edison facilities, Interconnection Customer is responsible for meeting all criteria as specified in the applicable sections of the "FirstEnergy Requirements for Transmission Connected Facilities" document, effective October 3, 2016, which can be found at this link: http://www.pjm.com/planning/design-engineering/to-tech-standards/private-firstenergy.aspx, including:

1. The purchase and installation of fully rated circuit breaker on the high side of the AD1-085 step-up transformer. A single breaker must be used to protect this line; individual GSU transformer breakers cannot be used to protect this line.
2. The purchase and installation of the minimum required FirstEnergy generation interconnection relaying and control facilities. This includes over/under voltage protection, over/under frequency protection, and zero sequence voltage protection relays.
3. The purchase and installation of a revenue class meter to measure the power delivered in compliance with the FirstEnergy standards.
4. The purchase and installation of supervisory control and data acquisition (SCADA) equipment to provide information in a compatible format to the FirstEnergy Transmission System Control Center.
5. The establishment of dedicated communication circuits for SCADA to the FirstEnergy Transmission System Control Center.
6. A compliance with the FirstEnergy and PJM generator power factor and voltage control requirements. Interconnection Customer shall design its non-synchronous Customer Facility with the ability to maintain a range of dynamic reactive capability that supports its operation from 0.95 leading (absorbing VARs) to 0.95 lagging (supplying VARs) measured at the high-side of the facility substation transformers. Should Interconnection Customer fail to provide dynamic reactive capability from the AD1-085 generation project for any reason once interconnected, the FirstEnergy and/or PJM Dispatchers may need to take action to curtail its output to prevent non-compliance with voltage criteria.
7. The execution of a back-up service agreement to serve the customer load supplied from the AD1-085 generation project metering point when the units are out-of-service. This assumes the intent of Interconnection Customer is to net the generation with the load.
8. The proposed interconnection facilities must be designed in accordance with the FirstEnergy requirements which can be found in the document posted at above mentioned link.
9. Interconnection Customer must meet all PJM, ReliabilityFirst and NERC reliability criteria and operating procedures required for standards compliance. For example, Interconnection Customer will need to properly locate and report the over and under-voltage and over and under-frequency system protection elements for its units as well as the submission of the generator model and protection data required to satisfy the PJM and ReliabilityFirst audits. Failure to comply with these requirements may result in a disconnection of service if the violation is found to compromise the reliability of the FirstEnergy system.
10. Interconnection Customer will be responsible for constructing all of the facilities on its side of the POI including all facilities associated with the attachment line and the AD1-085 point

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of common coupling to SVEC system. Interconnection Customer will be responsible for acquiring all easements, properties and permits that may be required to construct their line and the associated attachment facilities. Interconnection Customer may not install above ground equipment within any Transmission Owner's right-of-way unless permission to do so is expressly granted by the Transmission Owner.

11. Interconnection Customer and SVEC will be responsible to work together to finalize their studies and requirements and to supply FirstEnergy with SVEC's final study information.

The above requirements are in addition to any metering or other requirements imposed by PJM and/or SVEC.

Revenue Metering and SCADA Requirements

PJM Requirements

The Interconnection Customer will be required to install equipment necessary to provide Revenue Metering (KWH, KVARH) and real time data (KW, KVAR) for Interconnection Customer's generating Resource. See PJM Manuals M-01 and M-14D, and PJM Tariff Sections 24.1 and 24.2.

Interconnected Transmission Owner Requirements

Interconnection Customer and SVEC will be required to comply with all FirstEnergy Revenue Metering Requirements for Generation Interconnection Customers. The Revenue Metering Requirements may be found within the "FirstEnergy Requirements for Transmission Connected Facilities" document located at the following links:

http://www.firstenergycorp.com/feconnect
http://www.pjm.com/planning/design-engineering/to-tech-standards.aspx

Schedule

Based on the extent of Potomac Edison attachment facilities and network upgrades required to support the AD1-085 generation project, it is expected to take a minimum of twelve (12) months from the date of a fully executed Interconnection Construction Service Agreement to complete the installation. This includes the requirement for Interconnection Customer to make a preliminary payment to FirstEnergy (via PJM) which funds the first three months of engineering design that is related to the construction of the Direct Network Upgrades facilities. It is assumed that Interconnection Customer will provide all rights-of-way, permits, easements, etc. that will be needed. A further assumption is that there will be no environmental issues with any of the new properties associated with this project, that there will be no delays in acquiring the necessary permits for implementing the defined network upgrades, and that all system outages will be allowed when requested.

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Network Impacts

Option 1 POI or Primary Point of Interconnection:

The Queue Project AD1-085 was evaluated as a 20.0 MW (Capacity 12.3 MW) injection at the North Shenandoah 138kV substation in the APS area. Project AD1-085 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AD1-085 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Analysis - 2021

Generator Deliverability
(Single or N-1 contingencies for the Capacity portion only of the interconnection)

None

Multiple Facility Contingency
(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None

Contribution to Previously Identified Overloads
(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

None

Steady-State Voltage Requirements

To be determined during system impact study phase

Short Circuit

No short circuit impacts

Delivery of Energy Portion of Interconnection Request
PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.
Only the most severely overloaded conditions are listed. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed, which will study all overload conditions associated with the overloaded element(s) identified.

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None

Light Load Analysis - 2021

Light Load Studies to be conducted during later study phases (as required by PJM Manual 14B).

System Reinforcements

Short Circuit

None

Stability and Reactive Power Requirement

To be determined during system impact study phase

Summer Peak Load Flow Analysis Reinforcements

New System Reinforcements

(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)

None

Light Load Load Flow Analysis Reinforcements

New System Reinforcements

(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)

None

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Option 2 POI or Secondary Point of Interconnection:

The Queue Project AD1-085 was evaluated as a 20.0 MW (Capacity 12.3 MW) injection tapping North Shenandoah to Page 138kV line in the APS area. Project AD1-085 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AD1-085 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Analysis - 2021

Generator Deliverability
(Single or N-1 contingencies for the Capacity portion only of the interconnection)

None

Multiple Facility Contingency
(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None

Contribution to Previously Identified Overloads
(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

None

Steady-State Voltage Requirements

To be determined during system impact study phase

Short Circuit

No short circuit impacts

Delivery of Energy Portion of Interconnection Request
PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.
Only the most severely overloaded conditions are listed. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed, which will study all overload conditions associated with the overloaded element(s) identified.

None

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Light Load Analysis - 2021

Light Load Studies to be conducted during later study phases (as required by PJM Manual 14B).

System Reinforcements

Short Circuit

None

Stability and Reactive Power Requirement

To be determined during system impact study phase

Summer Peak Load Flow Analysis Reinforcements

New System Reinforcements

(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)

None

Light Load Load Flow Analysis Reinforcements

New System Reinforcements

(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)

None

Contribution to Previously Identified System Reinforcements

(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)

None

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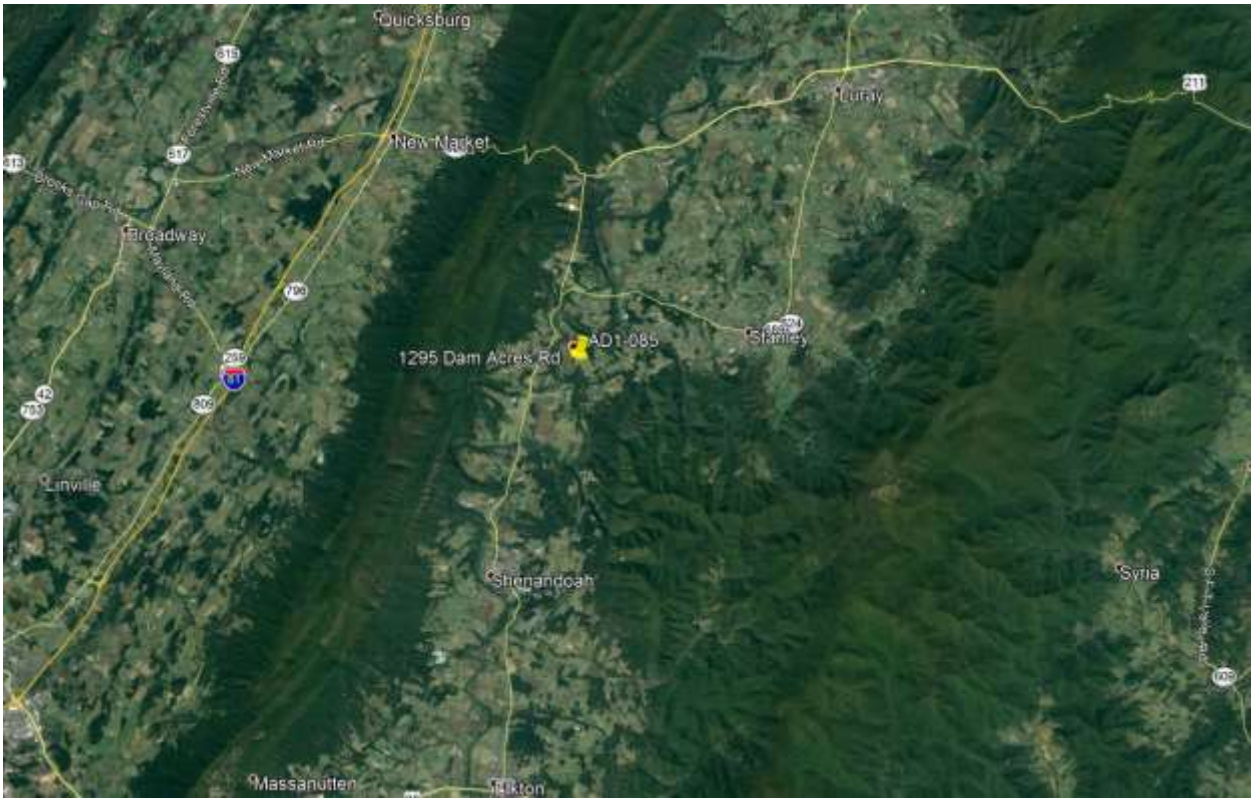
Appendix 1

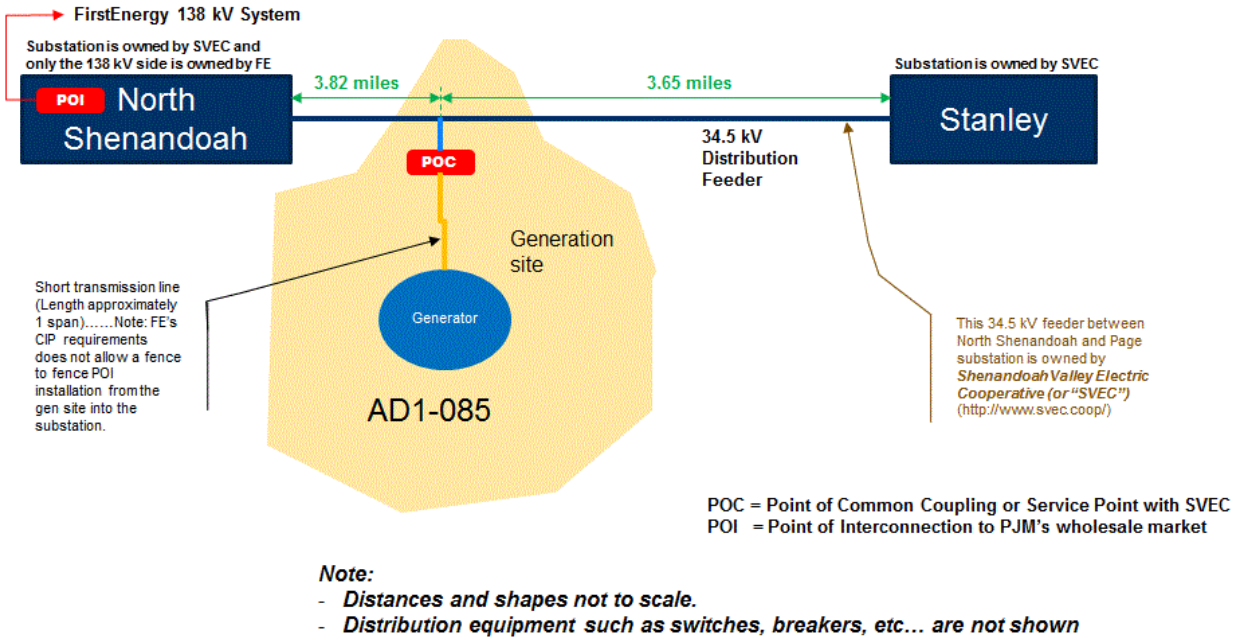
Facility Location
PJM Queue Position: AD1-085



Appendix 2

Interconnection One-Line Diagram
PJM Queue Position: AD1-085

Primary Point of Interconnection: North Shenandoah 138 kV Substation via SVEC North Shenandoah – Stanley 34.5 kV Line



Note:
- ***Distances and shapes not to scale.***
- ***Distribution equipment such as switches, breakers, etc… are not shown***

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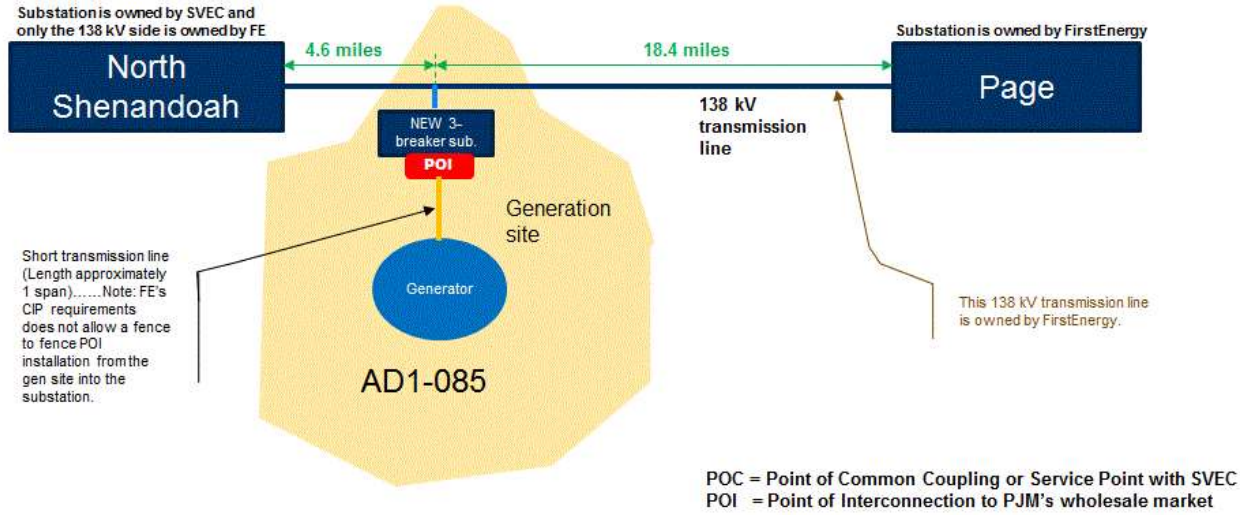
Appendix 3

Interconnection One-Line Diagram
PJM Queue Position: AD1-085

Secondary Point of Interconnection: New substation on North Shenandoah – Page 138 kV System



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Attachment D – Interconnection Agreement

Attachment D – *Final Interconnection Agreement Pending*

Attachment E – Maximum Generation Capacity Certification

Virginia Department of Environmental Quality
Small Renewable Energy Projects
Maximum Generation Capacity Certification

Facility Name and Location: Dogwood Solar
Page County, Virginia

Applicant's Name: Dogwood Solar, LLC

Applicant's Mailing Address:	Telephone Number and Email Address:
307 Log Canoe Circle Stevensville, MD 21666	(434)953-8810 James.crawford@urbangridco.com

The applicant or his authorized representative is submitting an application for a small renewable energy permit by rule from the Virginia Department of Environmental Quality. In accordance with § 10.1 -1197.6 of the Code of Virginia, before such permit application can be considered complete, a professional engineer licensed in Virginia must certify that the maximum generation capacity of the small renewable energy project by an electrical generation facility that generates electricity only from sunlight or wind, as designed, does not exceed 150 megawatts.

The undersigned is an professional engineer licensed in Virginia and certifies that the maximum generating capacity for the project is 150 megawatts.

Professional Engineer's signature:	Date:
	7/23/21

COMMONWEALTH OF VIRGINIA
DANIEL J. JAMISON
Lic. No. 38979
PROFESSIONAL ENGINEER

Attachment F – State Threatened and Endangered Species Review

Species Observed Within 2 Miles		
Common Name	**Federal Status**	**State Status**
Bat, northern long-eared	Federal Threatened	State Threatened
Bat, little brown	NT/NE	State Endangered
Bat, tri-colored	NT/NE	State Endangered
Bass, largemouth	NT/NE	NT/NE
Bass, rock	NT/NE	NT/NE
Bass, smallmouth	NT/NE	NT/NE
Bat, big brown	NT/NE	NT/NE
Bat, eastern red	NT/NE	NT/NE
Bluegill	NT/NE	NT/NE
Bullhead, brown	NT/NE	NT/NE
Bullhead, yellow	NT/NE	NT/NE
Carp, common	NT/NE	NT/NE
Chub, bluehead	NT/NE	NT/NE
Chub, creek	NT/NE	NT/NE
Chub, river	NT/NE	NT/NE
Crappie, black	NT/NE	NT/NE
Crappie, white	NT/NE	NT/NE
Crayfish, Orconectes	NT/NE	NT/NE
Dace, blacknose	NT/NE	NT/NE
Dace, longnose	NT/NE	NT/NE
Dace, mountain redbelly	NT/NE	NT/NE
Dace, rosyside	NT/NE	NT/NE
Darter, fantail	NT/NE	NT/NE
Eel, American	NT/NE	NT/NE
Madtom, margined	NT/NE	NT/NE
Madtom, spotted-margin	NT/NE	NT/NE
Minnow, bluntnose	NT/NE	NT/NE
Pumpkinseed	NT/NE	NT/NE
Redhorse, shorthead	NT/NE	NT/NE
Redhorse, silver	NT/NE	NT/NE
Salamander, eastern red-backed	NT/NE	NT/NE
Sculpin, mottled	NT/NE	NT/NE
Shiner, comely	NT/NE	NT/NE
Shiner, common	NT/NE	NT/NE
shiner, rosyface	NT/NE	NT/NE
Shiner, satinfin	NT/NE	NT/NE
Shiner, spotfin	NT/NE	NT/NE
Shiner, spottail	NT/NE	NT/NE
Spider, wolf	NT/NE	NT/NE
Stoneroller, central	NT/NE	NT/NE
Sucker, northern hog	NT/NE	NT/NE
Sucker, torrent	NT/NE	NT/NE
Sucker, white	NT/NE	NT/NE
Sunfish, green	NT/NE	NT/NE
Sunfish, longear	NT/NE	NT/NE
Sunfish, redbreast	NT/NE	NT/NE
Trout, brook	NT/NE	NT/NE
Turtle, eastern musk	NT/NE	NT/NE
Turtle, eastern painted	NT/NE	NT/NE
Turtle, snapping	NT/NE	NT/NE

NT = Non-Threatened, NE = Non-Endangered

Legend

- Project Limits - 350.4 Acres
- Two Mile Project Buffer
- NLEB Roost Trees - Not Present
- Trout Streams
- Threatened/Endangered Waters - Not Present
- Anadromous Fish Use - Not Present
- Bald Eagle Concentration Areas and Roosts - Not Present
- Colonial Water Birds - Not Present
- Bat Hibernacula (0.5 Mile Buffer) - Not Present
- Bat Hibernacula (5.5 Mile Buffer) - Not Present
- Federal or State Listed Observation Area

Federal Status, State Status

- Non-Threatened, Non-Endangered
- Non-Threatened, State Endangered
- Federal Threatened, State Threatened

Bat, tri-colored
Bat, little brown
Bat, little brown
Bat, tri-colored
Bat, little brown
Bat, little brown
Bat, little brown
Bat, little brown
Bat, tri-colored
Bat, little brown
Bat, northern long-eared
Bat, little brown

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.
1001 Boulders Parkway, Suite 300
Richmond, VA 23225
TEL 804.200.6500
www.timmons.com

PROJECT NAME & LOCATION

DOGWOOD SOLAR, LLC

PAGE COUNTY - VIRGINIA

DATE 07/07/2021

PROJECT NUMBER 46369.001

PROJECT NAME DOGWOOD SOLAR, LLC

DESIGNED BY / DRAWN BY J. FRAZIER

NOTES:
Project Limits have been ALTA surveyed by Timmons Group.
WERMS data from DWR.
Bat hibernacula include identifications of Northern long-eared bat, Tri-colored bat, Little-brown bat, Virginia big-eared bat, Gray bat, and Indiana bat.
Aerial imagery from VGIN.

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REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION
WILDLIFE ENVIRONMENTAL REVIEW MAP

SCALE (FEET)
0 1,500 3,000
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE H:1 " = 1,500 '

SHEET NUMBER 1

Y:\852\840\41104 - Dogwood_Solar\GIS\Common Shared Exhibits\41104-WERMS.mxd

8 Species Observations where Bat, little brown (050020) observed

38.56746 -78.57863
is **the Search Point**

Show Position Rings
○ Yes ◉ No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
◉ Yes ○ No
2 Search distance miles buffer

Display at center | **Search Point** is not at map center

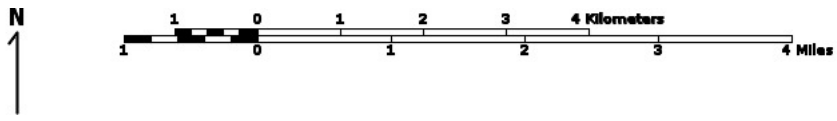
Base Map Choices
BW Aerial Photography

Map Overlay Choices
Current List: Search, SppObs

Map Overlay Legend
2 mile radius Search Area
Data Observation Site

back | Refresh Browser Page | Help

Map Click: Pan Id M
Map Scale: In Zoom Out
Screen Size: Small Size Big



Point of Search 38.56746 -78.57863
Map Location 38.56546 -78.58453

Select **Coordinate System:**
○ Degrees,Minutes,Seconds Latitude - Longitude
◉ Decimal Degrees Latitude - Longitude
○ Meters UTM NAD83 East North Zone
○ Meters UTM NAD27 East North Zone

Base Map source: Black & White USGS Aerial Photography (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 17 NAD 1983 with left 702447 and top 4279324. Pixel size is 14. . Coordinates displayed are decimal Degrees North and West. Map is currently displayed as 1000 columns by 1000 rows for a total of 1000000 pixles. The map display represents 16000 meters east to west by 16000 meters north to south for a total of 256.0 square kilometers. The map display represents 52502 feet east to west by 52502 feet north to south for a total of 98.8 square miles.

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2021-07-19 14:39:51 (qa/qc March 21, 2016 12:20 - tn=1106454.1 dist=3218 I)
$poi=38.5674600 -78.5786399

| DGIF | Credits | Disclaimer | Contact vafwis_support@dgif.virginia.gov |Please view our privacy policy |
© 1998-2021 Commonwealth of Virginia Department of Game and Inland Fisheries

Virginia Department of Game and Inland Fisheries

7/19/2021 2:39:25 PM

Fish and Wildlife Information Service

VaFWIS Search Report Compiled on 7/19/2021, 2:39:25 PM

Help

Known or likely to occur within a **2 mile buffer around polygon; center 38.5674600 -78.5786399**
in **139 Page County, VA**
where (050020) **Bat, little brown** observed.

View Map of Site Location

Species Observations where Bat, little brown (050020) observed

(8 records , 8 Observations with Threatened or Endangered species)

View Map of All Query Results
Species Observations where Bat, little brown (050020) observed

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
316929	SppObs	Jul 18 2006	Virgil Brack	4	FTSE	I	Yes
231051	SppObs	Jul 29 2009	CH	4	SE	I	Yes
604997	SppObs	Jul 28 2009	David ; Yates| Pedro ; Ardapple| Casey; Huck	3	SE	I	Yes
231050	SppObs	Jul 28 2009	PA, CH	5	SE	I	Yes
231049	SppObs	Jul 27 2009	CH	4	SE	I	Yes
606559	SppObs	Jul 27 2009	David ; Yates| Pedro ; Ardapple| Casey; Huck	4	SE	I	Yes
600914	SppObs	Jul 26 2009	David ; Yates| Pedro ; Ardapple| Casey; Huck	3	SE	I	Yes
316930	SppObs	Jul 19 2006	Virgil Brack	1	SE	I	Yes

Displayed 8 Species Observations where Bat, little brown (050020) observed

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need;
II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;
III=VA Wildlife Action Plan - Tier III - High Conservation Need;
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;

b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

Compiled on 7/19/2021, 2:39:25 PM I1106454.1 report=BOVA searchType= P dist= 3218 poi= 38.5674600 -78.5786399

audit no. 1106454 7/19/2021 2:39:25 PM Virginia Fish and Wildlife Information Service

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1 Species Observations where Bat, northern long-eared (050022) observed

38.56746 -78.57863
is **the Search Point**

Show Position Rings
○ Yes ◉ No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
◉ Yes ○ No
2 Search distance miles buffer

Display at center	**Search Point** is not at map center

Base Map Choices
BW Aerial Photography

Map Overlay Choices
Current List: Search, SppObs

Map Overlay Legend
2 mile radius Search Area
Data Observation Site

back | Refresh Browser Page | Help

Map Click: Pan Id M
Map Scale: In Zoom Out
Screen Size: Small Size Big

N
1 0 1 2 3 4 Kilometers
1 0 1 2 3 4 Miles

Point of Search 38.56746 -78.57863
Map Location 38.56546 -78.58453

Select **Coordinate System:**
○ Degrees,Minutes,Seconds Latitude - Longitude
◉ Decimal Degrees Latitude - Longitude
○ Meters UTM NAD83 East North Zone
○ Meters UTM NAD27 East North Zone

Base Map source: Black & White USGS Aerial Photography (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 17 NAD 1983 with left 702447 and top 4279324. Pixel size is 14. . Coordinates displayed are decimal Degrees North and West. Map is currently displayed as 1000 columns by 1000 rows for a total of 1000000 pixles. The map display represents 16000 meters east to west by 16000 meters north to south for a total of 256.0 square kilometers. The map display represents 52502 feet east to west by 52502 feet north to south for a total of 98.8 square miles.

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
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map assembled 2021-07-19 14:37:18 (qa/qc March 21, 2016 12:20 - tn=1106454.1 dist=3218 I)
$poi=38.5674600 -78.5786399

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Virginia Department of Game and Inland Fisheries

7/19/2021 2:37:01 PM

Fish and Wildlife Information Service

VaFWIS Search Report Compiled on 7/19/2021, 2:37:01 PM

Help

Known or likely to occur within a **2 mile buffer around polygon; center 38.5674600 -78.5786399**
in **139 Page County, VA**
where (050022) **Bat, northern long-eared** observed.

View Map of Site Location

Species Observations where Bat, northern long-eared (050022) observed

(1 records , 1 Observation with Threatened or Endangered species)

View Map of All Query Results
Species Observations where Bat, northern long-eared (050022) observed

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
316929	SppObs	Jul 18 2006	Virgil Brack	4	FTSE	I	Yes

Displayed 1 Species Observations where Bat, northern long-eared (050022) observed

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need;
II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;
III=VA Wildlife Action Plan - Tier III - High Conservation Need;
IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
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Compiled on 7/19/2021, 2:37:01 PM I1106454.1 report=BOVA searchType= P dist= 3218 poi= 38.5674600 -78.5786399

audit no. 1106454 7/19/2021 2:37:01 PM Virginia Fish and Wildlife Information Service

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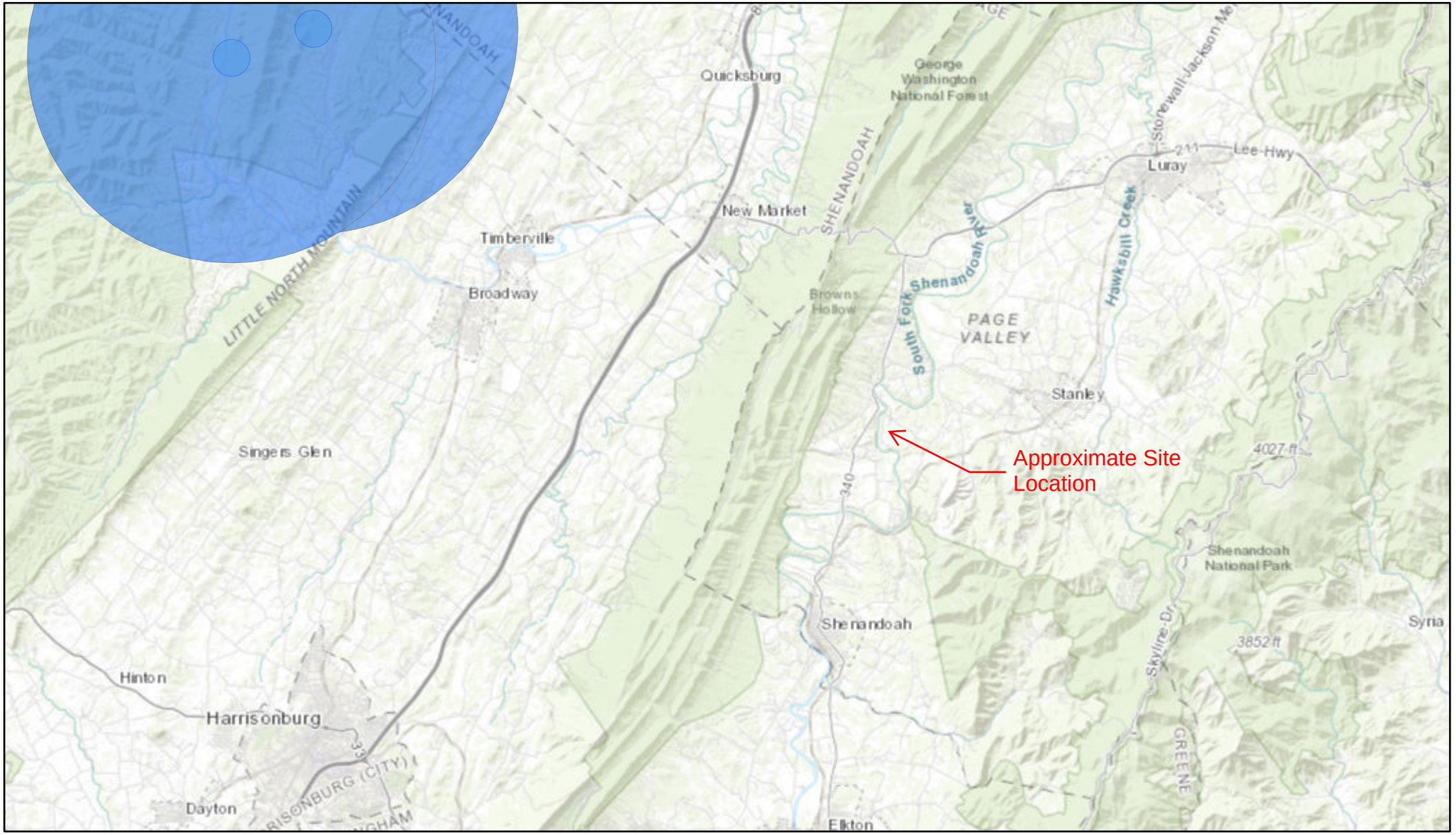
NLEB Locations and Roost Trees



7/8/2021, 4:07:54 PM

NLEB Hibernaculum 5.5 Mile Buffer

NLEB Hibernaculum Half Mile Buffer

1:288,895

0 2 4 8 mi

0 3 6 12 km

VITA, West Virginia GIS, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

VA Dept. Game & Inland Fisheries

VITA, West Virginia GIS, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS |

6 Species Observations where Bat, tri-colored (050027) observed

38.56746 -78.57863
is **the Search Point**

Show Position Rings
○ Yes ◉ No
1 mile and 1/4 mile at the **Search Point**

Show Search Area
◉ Yes ○ No
2 Search distance miles buffer

Display at center | **Search Point** is not at map center

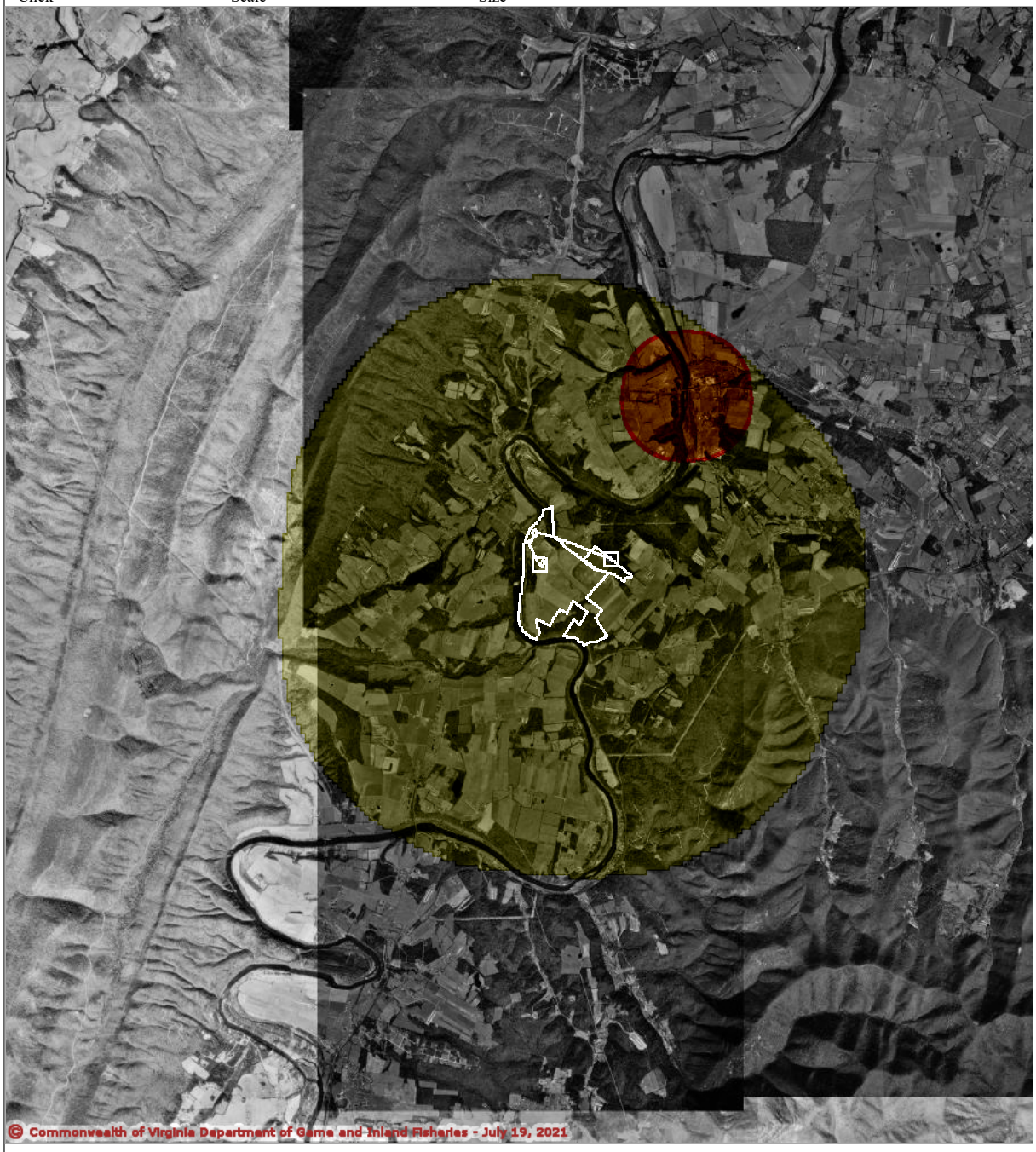
Base Map Choices
BW Aerial Photography

Map Overlay Choices
Current List: Search, SppObs

Map Overlay Legend
2 mile radius Search Area
Data Observation Site

back | Refresh Browser Page | Help

Map Click: Pan Id M | Map Scale: In Zoom Out | Screen Size: Small Size Big



N
1 0 1 2 3 4 Kilometers
1 0 1 2 3 4 Miles

Point of Search 38.56746 -78.57863
Map Location 38.56546 -78.58453

Select **Coordinate System:**
○ Degrees,Minutes,Seconds Latitude - Longitude
◉ Decimal Degrees Latitude - Longitude
○ Meters UTM NAD83 East North Zone
○ Meters UTM NAD27 East North Zone

Base Map source: Black & White USGS Aerial Photography (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 17 NAD 1983 with left 702447 and top 4279324. Pixel size is 14. .
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http://www.national.geographic.com/topo
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map assembled 2021-07-19 14:41:17 (qa/qc March 21, 2016 12:20 - tn=1106454.1 dist=3218 I)
$poi=38.5674600 -78.5786399

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Virginia Department of Game and Inland Fisheries

7/19/2021 2:40:38 PM

Fish and Wildlife Information Service

VaFWIS Search Report Compiled on 7/19/2021, 2:40:38 PM

Help

Known or likely to occur within a **2 mile buffer around polygon; center 38.5674600 -78.5786399**
in **139 Page County, VA**
where (050027) **Bat, tri-colored** observed.

View Map of Site Location

Species Observations where Bat, tri-colored (050027) observed

(6 records , 6 Observations with Threatened or Endangered species)

View Map of All Query Results
Species Observations where Bat, tri-colored (050027) observed

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
231051	SppObs	Jul 29 2009	CH	4	SE	I	Yes
231050	SppObs	Jul 28 2009	PA, CH	5	SE	I	Yes
604997	SppObs	Jul 28 2009	David ; Yates| Pedro ; Ardapple| Casey; Huck	3	SE	I	Yes
606559	SppObs	Jul 27 2009	David ; Yates| Pedro ; Ardapple| Casey; Huck	4	SE	I	Yes
231049	SppObs	Jul 27 2009	CH	4	SE	I	Yes
600914	SppObs	Jul 26 2009	David ; Yates| Pedro ; Ardapple| Casey; Huck	3	SE	I	Yes

Displayed 6 Species Observations where Bat, tri-colored (050027) observed

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need;
II=VA Wildlife Action Plan - Tier II - Very High Conservation Need;
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audit no. 1106454 7/19/2021 2:40:38 PM Virginia Fish and Wildlife Information Service
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Matthew J. Strickler
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Rochelle Altholz
Deputy Director of Administration and Finance

Russell W. Baxter
Deputy Director of Dam Safety & Floodplain Management and Soil & Water Conservation

Nathan Burrell
Deputy Director of Government and Community Relations

Thomas L. Smith
Deputy Director of Operations

August 2, 2021

Julia Jenkins
Timmons
1001 Boulders Parkway, Suite 300
Richmond, VA 23225

Re: 41104, Dogwood Solar

Dear Ms. Jenkins:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

This project has intersected the karst bedrock and DMME sinkhole screening layers. Sinkholes mapped by the Virginia Department of Mines, Minerals, and Energy are within the project site (Figure 1). Typically, additional, smaller unmapped sinkholes can also be present in the vicinity. Sinkholes are areas where surface material has collapsed into the subsurface and into underground watercourses. Sinkhole areas are places where surface water directly affects groundwater quality and flow. What goes into sinkholes comes out in wells and springs, and can degrade drinking water, springs and spring-fed surface waters, and the habitat of subterranean creatures. Discharge of untreated stormwater runoff to sinkholes is discouraged, and sinkholes to which stormwater is diverted or which have been modified to accept stormwater are required by law to be registered as Class 5 Injection Wells with the US Environmental Protection Agency. Filling or alteration of natural (pre-existing) sinkholes is discouraged, and designation of natural buffers around sinkholes is desirable. If the project involves filling or "improvement" of sinkholes or cave openings, DCR would like detailed location information and copies of the design specifications. In cases where sinkhole improvement is for storm water discharge, copies of VDOT Form EQ-120 will suffice.

During every phase of the project, DCR recommends the stabilization of the soil around the site. Minimizing surface disturbance, strict use of E&S control measures appropriate for the location and adherence to best management practices appropriate for karst will help to reduce any potential impact to the karst, groundwater and surface water resources as well as any associated fauna and flora.

If karst features such as additional undocumented sinkholes, caves, disappearing streams, and large springs are encountered during the project, please coordinate with Wil Orndorff (540-230-5960, Wil.Orndorff@dcr.virginia.gov) the Virginia DCR, Division of Natural Heritage Karst Protection Coordinator, to document and minimize adverse impacts. Activities such as discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to environmental impacts including surface collapse, flooding, erosion and sedimentation, contamination of groundwater and springs, and degradation of subterranean habitat for natural heritage resources (e.g. cave adapted invertebrates, bats). These potential

impacts are not necessarily limited to the immediate project area, as karst systems can transport water and associated contaminants rapidly over relatively long distances, depending on the nature of the local karst system.

In addition, this project has intersected the DCR predictive suitable habitat model identifying potential habitat for the Madison Cave isopod (*Antrolana lira*, G2G4/S2/LT/LT). Therefore, DCR recommends coordination with the U.S. Fish and Wildlife Service (USFWS) and Virginia's regulatory authority for the management and protection of this species, the VDWR, to ensure compliance with protected species legislation.

DCR recommends the development of an invasive species management plan for the project and the planting of Virginia native pollinator plant species that bloom throughout the spring and summer, to maximize benefits to native pollinators. DCR recommends planting these species in at least the buffer areas of the planned facility, and optimally including other areas within the project site. Guidance on plant species can be found here: http://www.dcr.virginia.gov/natural-heritage/solar-site-native-plants-finder. In addition, Virginia native species alternatives to the non-native species listed in the Virginia Erosion and Sediment Control Handbook (Third Edition 1992), can be found in the 2017 addendum titled "Native versus Invasive Plant Species", here: https://www.deq.virginia.gov/home/showpublisheddocument?id=2466. Page 3 of the addendum provides a list of native alternatives for non-natives commonly used for site stabilization including native cover crop species (i.e. Virginia wildrye).

Furthermore, the proposed project will fragment Ecological Cores **(C4 and C5)** as identified in the Virginia Natural Landscape Assessment (https://www.dcr.virginia.gov/natural-heritage/vaconvisvnla), one of a suite of tools in Virginia ConservationVision that identify and prioritize lands for conservation and protection. Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: http://vanhde.org/content/map.

Ecological Cores are areas of unfragmented natural cover with at least 100 acres of interior that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Cores also provide benefits in terms of open space, recreation, water quality (including drinking water protection and erosion prevention), and air quality (including carbon sequestration and oxygen production), along with the many associated economic benefits of these functions. The cores are ranked from C1 to C5 (C5 being the least ecologically relevant) using many prioritization criteria, such as the proportions of sensitive habitats of natural heritage resources they contain.

Fragmentation occurs when a large, contiguous block of natural cover is dissected by development, and other forms of permanent conversion, into one or more smaller patches.. Habitat fragmentation results in biogeographic changes that disrupt species interactions and ecosystem processes, reducing biodiversity and habitat quality due to limited recolonization, increased predation and egg parasitism, and increased invasion by weedy species.

Therefore minimizing fragmentation is a key mitigation measure that will reduce deleterious effects and preserve the natural patterns and connectivity of habitats that are key components of biodiversity. DCR recommends efforts to minimize edge in remaining fragments, retain natural corridors that allow movement between fragments and designing the intervening landscape to minimize its hostility to native wildlife (natural cover versus lawns).

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months (February 2, 2022) has passed before it is utilized.

A fee of $395.00 has been assessed for the service of providing this information. Please find attached an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, DCR Finance, 600 East Main Street, 24th Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The VDWR maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Ernie Aschenbach at 804-367-2733 or Ernie.Aschenbach@dwr.virginia.gov.

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

S. René Hypes
Natural Heritage Project Review Coordinator

Cc: Mary Major, DEQ
Ernie Aschenbach, VDWR
Troy Andersen, USFWS
Wil Orndorff, DCR-Karst

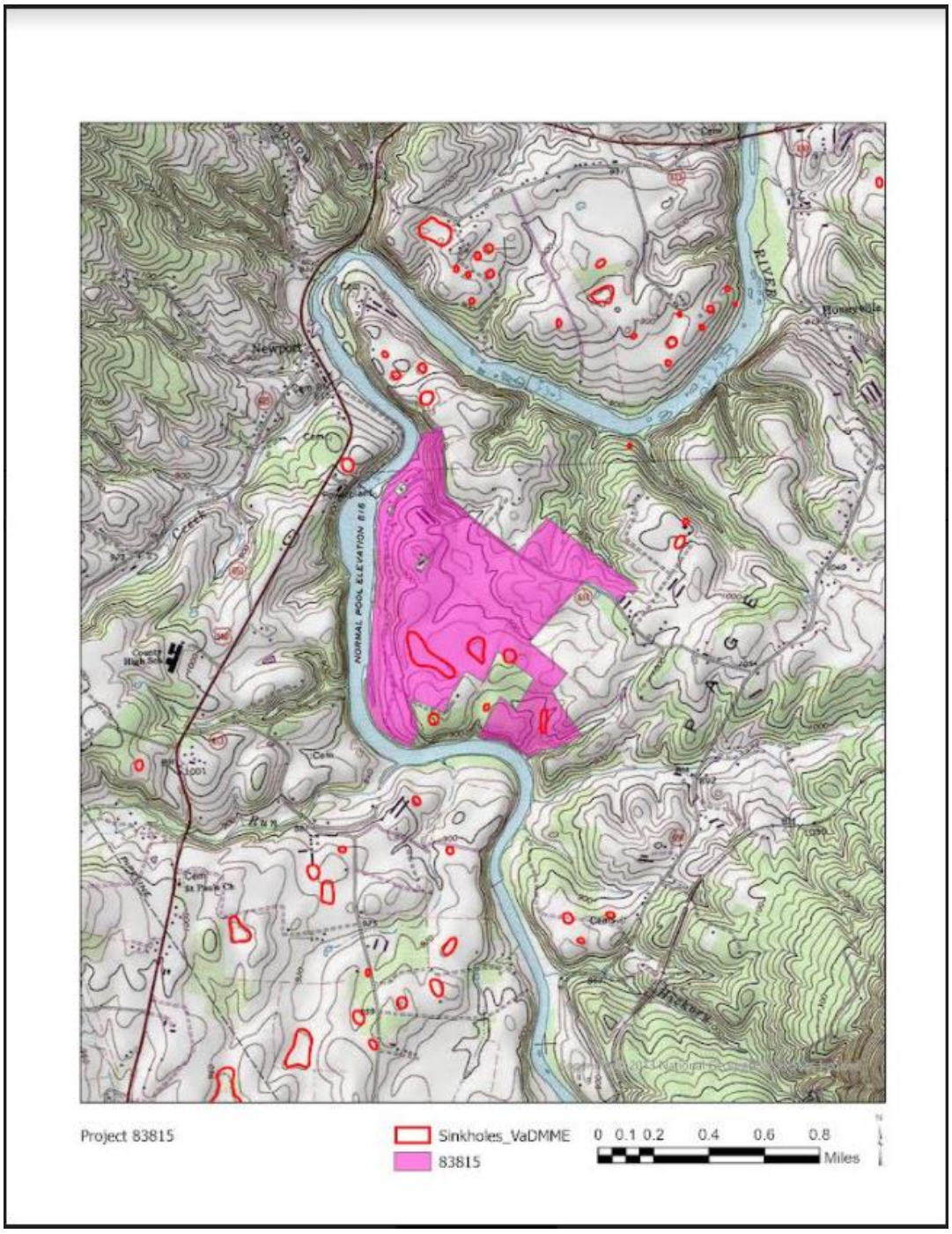
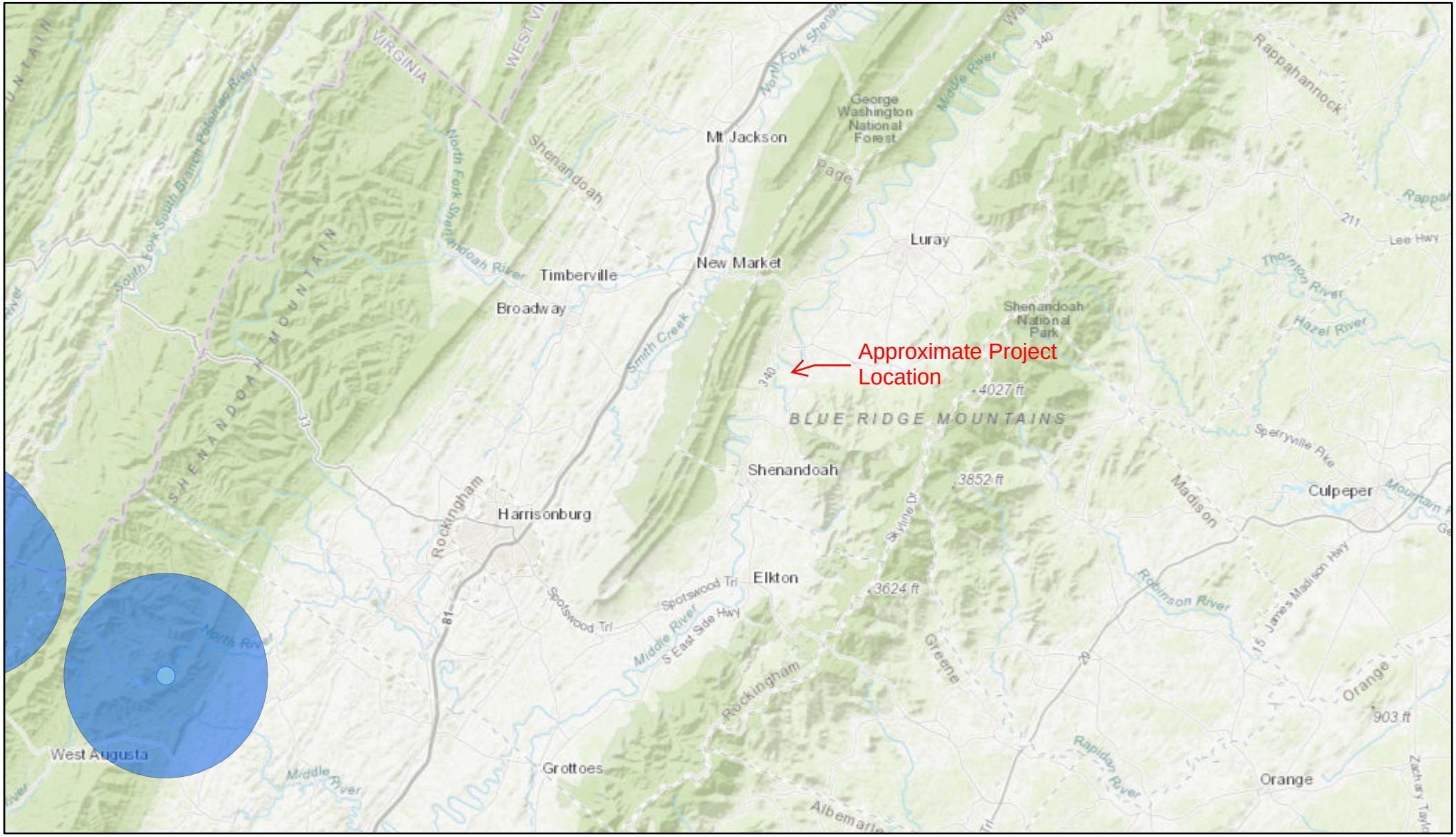


Figure 1- Sinkholes within property boundary and vicinity

Tri-Colored Little Brown Bat Habitat



7/8/2021, 4:08:43 PM

Tri-colored and Little Brown Hibernaculum Half Mile Buffer

Tri-colored and Little Brown Hibernaculum 5.5 Mile Buffer

1:577,791

0 3.75 7.5 15 mi

0 5 10 20 km

Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS

Dept. Game and Inland Fisheries

Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS |

Legend

Site Marker

Coastal Avian Protection Zones

- International Importance, No Survey
- International Importance, Survey Needed
- Regional Importance, Survey Needed
- Regional Importance, No Survey
- Local Importance, No Survey
- Unknown Importance, Survey Needed
- Unknown Importance, Survey Needed (Breeding Eagles)

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.
1001 Boulders Parkway, Suite 300
Richmond, VA 23225
TEL 804.200.6500
www.timmons.com

PROJECT NAME & LOCATION

DOGWOOD SOLAR

PAGE COUNTY - VIRGINIA

DATE	07/07/2021
PROJECT NUMBER	46369.001
PROJECT NAME	DOGWOOD SOLAR
DESIGNED BY / DRAWN BY	J. FRAZIER

NOTES;
Project Limits have been ALTA surveyed by Timmons Group.
Coastal Avain Protection Zone data from VCU's Virginia Coastal Zone Management Program for Virginia Only.
Aerial imagery from ESRI.

These plans and associated documents are the exclusive property of TIMMONS GROUP and may not be reproduced in whole or in part and shall not be used for any purpose whatsoever, inclusive, but not limited to construction, bidding, and/or construction staking without the express written consent of TIMMONS GROUP.

REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION

COASTAL AVAIAN PROTECTION ZONE MAP

Miles

0 6 12

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
1 " = 6 mi	1

Y:\852\840\41104 - Dogwood_Solar\GIS\Common Shared Exhibits\41104-CAPZ.mxd

Attachment G – Cultural Resource Analysis

COMMONWEALTH of VIRGINIA

Matthew J. Strickler
Secretary of Natural Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

June 22, 2021

J. Hope Smith
Dutton + Associates, LLC
1115 Crowder Drive
Midlothian, Virginia 23113

Re: *Dogwood Solar*
Page County, VA
DHR File No. 2021 - 0104

Dear Dr. Smith,

The Department of Historic Resources (DHR) has received the revised report entitled *Phase I Cultural Resource Survey of the +/- 144.7-Hectare (+/- 357.7-Acre) Dogwood Solar Project Area, Page County, Virginia* for the project referenced above, prepared by Dutton + Associates, LLC (D+A) for Urban Grid pursuant to the Department of Environmental Quality's (DEQ's) Small Renewable Energy Projects (Solar) Permit by Rule (PBR) regulation. Our comments are provided as technical assistance to the D+A, Urban Grid, and DEQ.

Thank you for providing photographs demonstrating the ground surface visibility in the agricultural field within the project's limits of disturbance (LOD) as observed at the time of survey. Thank you for conducting additional systematic subsurface testing within the project's current LOD, as well. DHR recommends that the two nondiagnostic lithic debitage specimens recovered from shovel test pit (STP) G2 represent an isolated find location that is *not eligible* for listing in the National Register of Historic Places.

We recommend that future surveys of areas assessed as exhibiting a high probability for containing archaeological resources as part of stratified survey probability models for solar projects are subject to some level of subsurface testing to evaluate the potential for buried deposits even within areas that exhibit ground surface visibility suitable for pedestrian survey. We also recommend that future Phase I technical reports for surveys based on probability models depict the previously assessed probability areas on maps of the survey results.

No additional archaeological survey within the current LOD is recommended. Please be advised that additional survey may be recommended in the event that construction plans are altered such that impacts to previously unsurveyed portions of the project's area of potential effects (APE) are anticipated. Temporary and permanent ground disturbance should be considered within the LOD, including but not limited to locations for solar array installations, access roads, equipment staging, fencing, and tree clearing and planting.

Thank you for consulting with our office. If you have any questions regarding these comments, please contact me at 804-482-6103 or via email, tim.roberts@dhr.virginia.gov.

Sincerely,

Timothy Roberts, Project Review Archaeologist
Review and Compliance Division

c: Christopher Egghart, Cultural Resource Specialist, DEQ
Mary Major, Renewable Energy Program Manager, DEQ

COMMONWEALTH of VIRGINIA

Matthew J. Strickler
Secretary of Natural Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Julie V. Langan
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

April 26, 2021

J. Hope Smith
Dutton + Associates, LLC
1115 Crowder Drive
Midlothian, Virginia 23113

Re: *Dogwood Solar*
Page County, VA
DHR File No. 2021 - 0104

Dear Dr. Smith,

The Department of Historic Resources (DHR) has received the report entitled *Phase I Cultural Resource Survey of the +/- 144.7-Hectare (+/- 357.7-Acre) Dogwood Solar Project Area, Page County, Virginia* for the project referenced above. The report was prepared by Dutton + Associates, LLC (D+A) for Urban Grid pursuant to the Department of Environmental Quality's (DEQ's) Small Renewable Energy Projects (Solar) Permit by Rule (PBR) regulation. Our comments are provided as technical assistance to the D+A, Urban Grid, and DEQ.

Architecture

The architectural component of the surveyed sixteen (16) newly recorded resources and eight (8) previously recorded resources within the 0.5-mile study area. Two (2) previously recorded resources have been demolished since they were last surveyed. One (1) resource, Cub Acres (DHR ID #069-0102) is recommended *potentially eligible* and there will be minimal impacts to this resource. The Kite Cemetery (DHR ID #069-5324) is located outside of the limits of disturbance and will be avoided with a minimum of a 100 foot buffer on all sides. DHR concurs with all D+A's eligibility and impact recommendations. Please see the attached table for details.

Archaeology

It is DHR's opinion that additional archaeological survey is necessary to constitute a good faith effort to identify historic properties within the project's area of potential effects (APE). The APE is comprised primarily of agricultural fields the majority of which D+A describe as exhibiting ground surface visibility at or above 80 percent. As stated in the report, "Photos included in this report show the corn fields, but unfortunately do not highlight the high level of visibility in the majority of the plowed fields." DHR concurs with this observation,

but unfortunately without representative photographs there is insufficient information to justify pedestrian survey in lieu of systematic shovel testing.

Based on the preliminary construction plans showing solar array locations presented in Figure 8-7, portions of the property within the project boundaries are not anticipated to support photovoltaic structures. However, potential ground disturbance within the entire APE should be considered among the project's indirect effects, particularly in light of the conceptual level of the construction plans, and project area's very high potential for precolonial Native American archaeological sites and the map projected locations of several possible eighteenth and nineteenth century resources.

The maps in Figures 8-15, 8-18, and 8-20 appear to show that large expanses of the project area were not subjected to pedestrian survey or systematic shovel testing. Similarly, the photograph in Figure 8-21 appears to capture an area larger than what might be expected to be completely surveyed by the 20 shovel tests depicted in this location.

To meet DHR's *Guidelines for Conducting Historic Resources Survey in Virginia* (2017), we recommend systematic subsurface testing of all portions of the project area where sufficient ground surface visibility cannot be demonstrated. Bearing in mind the karst topography of the project area, DHR recommends that subsurface testing also be conducted in areas of colluvial soil deposition including sink holes and the bottoms of broad, limestone swales. DHR may accept a stratified Phase I archaeological survey strategy as described in DEQ's *Best Practices and Required Report Items for Phase I Archaeological Surveys Completed in Support of a Permit by Rule Application for Solar Farms in Virginia* (April 2018).

Please conduct the recommended additional identification efforts and subsequent analyses, as appropriate. One (1) bound copy and one (1) digital copy of the resulting revised report should be submitted to our office for review and approval, prior to any ground disturbance, to determine whether any further investigations or mitigative actions are warranted. If you have any questions regarding these comments, please contact me at 804-482-6103 or via email, tim.roberts@dhr.virginia.gov.

Sincerely,

Timothy Roberts, Project Review Archaeologist
Review and Compliance Division

c: Christopher Egghart, Cultural Resource Specialist, DEQ
Mary Major, Renewable Energy Program Manager, DEQ

ATTACHMENT
April 26, 2021
DHR File No. 2021-0104

DHR ID#	Resource Name/Address	D+A Eligibility	DHR Eligibility	D+A Impact	DHR Impact
069-0044	Newport Dam	D+A: Not Eligible	Not Eligible	N/A	N/A
069-0102	Cub Acres, 337 Jenkins Drive	D+A: Potentially Eligible	Potentially Eligible	Minimal Impact	Minimal Impact
069-0103	Strole Log House, Strole Farm Road	D+A: Not Eligible	Demolished	N/A	N/A
069-5015	Farm, 1299 Dam Acres Road	D+A: Not Eligible	Demolished	N/A	N/A
069-5172	Bridge #1011, U.S. Highway 340 over Foltz Creek	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5271	Bridge #6016, Strole Farm Road over Cub Run	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5272	House, 119 Jenkins Drive	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5273	Farmstead, 663 Strole Farm Road	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5307	House, 191 Jenkins Drive	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5308	House, 467 Strole Farm Road	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5309	House, 330 Double D Lane	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5310	House, 5395 U.S. Highway 340	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5311	House, 1212 Dam Acres Road	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5312	House, 642 Dam Acres Road	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5313	House, 584 Dam Acres Road	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5314	House, 573 Dam Acres Road	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5315	House, 518 Dam Acres Road	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5316	House, 294 Dam Acres Road	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5317	House, 283 Dam Acres Road	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5318	House, 258 Dam Acres Road	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5319	House, 4733 U.S. Highway 340	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5320	House, 4739 U.S. Highway 340	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5321	House, 4849 U.S. Highway 340	D+A: Not Eligible	Not Eligible	N/A	N/A
069-5322	House, 192 Double D Lane	D+A: Not Eligible	Not Eligible	N/A	N/A

TABLE KEY:	Warrants Mitigation	Needs Attention	**DHR does not concur**

ATTACHMENT
April 26, 2021
DHR File No. 2021-0104

DHR ID#	Resource Name/Address	D+A Eligibility	DHR Eligibility	D+A Impact	DHR Impact
069-5324	Kite Cemetery, Dam Acres Road	D+A: Not Eligible	Not Eligible	N/A	100 Foot Buffer

TABLE KEY:	Warrants Mitigation	Needs Attention	**DHR does not concur**

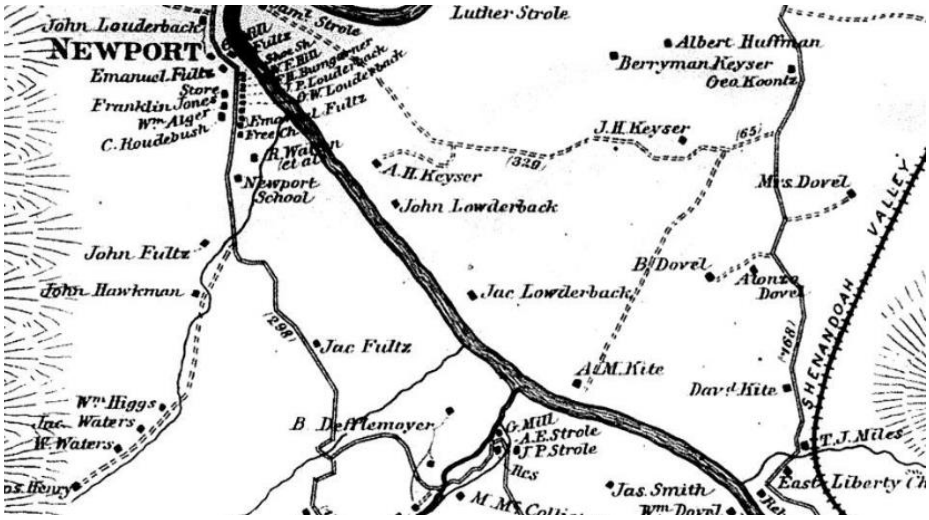
REPORT >

Phase I Cultural Resource Survey of the ±144.7-Hectare (±357.7-Acre) Dogwood Solar Project Area

LOCATION > Page County, Virginia

DATE > March 2021

PREPARED FOR >
Urban Grid



PREPARED BY >
Dutton + Associates, LLC

Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

PHASE I CULTURAL RESOURCE SURVEY OF THE ±144.7-HECTARE (±357.7-ACRE) DOGWOOD SOLAR PROJECT AREA

PAGE COUNTY, VIRGINIA

PREPARED FOR:
URBAN GRID
337 LOG CANOE CIRCLE
STEVENSVILLE, MD 21666

***PREPARED BY*:**
DUTTON + ASSOCIATES, LLC
1115 CROWDER DRIVE
MIDLOTHIAN, VIRGINIA 23113
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J. HOPE SMITH, PHD

MARCH 2021

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ABSTRACT

In January 2021 and May 2021, Dutton +Associates, LLC (D+A) conducted a Phase I cultural resource survey (Phase I) of the ±144.7-hectare (±357.7-acre) Dogwood Solar project area in Page County, Virginia. The effort involved both archaeological and architectural investigations of the property to confirm the presence or absence of cultural resources located within the project area and assess their potential eligibility for listing in the National Register of Historic Places (NRHP). The project area is located in Newport, Virginia and is bordered to the north by Waterside Drive (Route 617) and to the west by the South Fork of the Shenandoah River, with Dam Acres Road located to the east and Route 340 to the west.

The architectural resources survey for the Dogwood Solar project resulted in the identification and recordation of twenty-five (25) architectural resources greater than 50 years of age (constructed in 1971 or earlier) located within the architectural survey area, two of which are located directly within the project area. Of the surveyed resources, eight (8) were previously recorded (VDHR# 069-0044, 069-0102, 069-0103, 069-5015, 069-5172, 069-5271/5273) and sixteen (16) were newly recorded during this Phase I Survey (VDHR# 069-5307/5322, 069-5324). Two of the previously recorded resources were found to have been demolished since they were last surveyed (VDHR# 069-0103 and 069-5015). The 23 extant resources within the survey area and documented as part of this effort consist primarily of domestic buildings and farmsteads from the early- to late-twentieth century, as well as a smaller number of earlier homes, a late-nineteenth/early-twentieth century family cemetery, and two twentieth century bridges.

Of the surveyed resources, just one is considered potentially eligible for listing in the NRHP. This property, Cub Acres, is a farm dwelling from the mid-nineteenth century, and is considered potentially eligible for architecture as a good example of a regional form and style, in addition to the retention of a fairly large, intact complex of historic agricultural buildings. The rest of the surveyed resources are primarily modest frame and masonry dwellings that reflect common forms and types found throughout the region from their respective time period. None of these appear to reflect any unique or significant design or historical associations, and as such, all are considered not eligible for listing in the NRHP individually or collectively.

The one NRHP-eligible resource was assessed for impacts brought about by the project through inspection of existing conditions and viewshed analysis. This effort found that the rolling terrain and existing vegetation patterns between it and the project area located on the opposite side of the South Fork of the Shenandoah River generally inhibit wide or uninterrupted visibility of the project area, and completely screen those portions of the project area where proposed improvements will take place. As the vegetation that screens the project improvement area on both the Cub Acres property and project area will be retained, it is anticipated that the improvements will not be visible from the Cub Acres property or public vantage points bordering it. As such, the Dogwood Solar project is recommended to pose no more than a ***minimal impact*** *to any NRHP-eligible resources.*

VDHR ID#	Resource Name/Address	Year Built	NRHP Eligibility	Project Impacts
069-0102	Cub Acres, 337 Jenkins Drive	1848	NRHP-Eligible	Minimal Impact

Prior to survey, D+A was provided with the client's preliminary construction plans, showing the location of solar arrays and the proposed location of ground disturbance. Solar arrays are shown to be centrally located within the project area. Total ground disturbance within the project area totals to approximately 72 hectares (178 acres). In accordance with the construction plans, the landforms which will undergo disturbance were subjected to either systematic pedestrian survey or subsurface testing, depending on amount of exposed ground surface within the area. Archaeological survey revealed that the majority of the project area consists of plowed agricultural fields, with pastural fields in the northern portion of the project area. At the time of the survey, the majority of the survey area consisted of exposed soils.

Where the soils were exposed, ground was subjected to systematic pedestrian survey as opposed to subsurface survey. When the ground was subjected to systematic pedestrian survey, crew members walked the areas of visible ground surface in 15 meter (50 foot) transects. A total of 50 hectares (123.5 acres) of land which is set to undergo disturbance was subjected to systematic pedestrian survey. A total of 224 shovel tests was excavated throughout the project area, concentrating on the limits of disturbance as demonstrated in the site plans provided by the client. Subsurface testing revealed soils typical of agricultural use, with plowzone capping subsoil in the corn fields and A-horizon sealing subsoil in pastural fields. No archaeological sites were identified within the limits of disturbance during systematic pedestrian survey or subsurface testing.

There is a cemetery located within the project area boundaries – the Kite Family Cemetery (VDHR #069-5324) – this cemetery is located outside of the limits of disturbance as shown in the client's site plans, and will be avoided with more a 30 meter (100 foot) buffer on all sides. As this cemetery is an above ground feature, and no subsurface work was conducted on it, and as the cemetery will be avoided during land development, this cemetery is described in detail in the architecture section of this report, as opposed to the archaeological section.

No archaeological sites or features were identified within the limits of disturbance, as shown in the client's site plans. While the project area contains a terrace which overlooks the Shenandoah River which has very high potential for prehistoric sites, this terrace is located outside of the area of disturbance as shown by the client's site plans. The potential for prehistoric sites within the project area is high, however, the potential for prehistoric sites is highest in the portion of the project area which will not be disturbed by solar panels or installation of solar panels. The portion of the project area which will be subjected to ground disturbance is further east of the river, and while still has high potential for prehistoric sites, has less of a potential for village sites or burial mounds than the terrace which overlooks the river. Lack of prehistoric sites within the limits of disturbance, is likely due to the fact that the attractive river terrace is located just west of the limits of disturbance. If settlement and occupation occurred in the vicinity of the project area, it likely occurred on this terrace as opposed to the uplands within the limits of disturbance. This statement is supported by review of VCRIS recorded sites within Page County, focusing on the areas near the Shenandoah River. VCRIS mapped prehistoric sites tend to be located on terraces overlooking the river, or on terraces overlooking tributaries to the river and confluences of said tributaries.

While there is a cemetery within the boundary of the project area, this cemetery is outside of the limits of disturbance. ***Therefore, it is D+A's recommendation that no further archaeological work is warranted for this project area.***

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1. INTRODUCTION

From January 14 through January 19 2021, Dutton +Associates, LLC (D+A) conducted a Phase I cultural resource survey (Phase I) of the ±144.7-hectare (±357.7-acre) Dogwood Solar project area in Page County, Virginia. The Phase I was conducted for planning purposes in order to confirm the presence or absence of cultural resources located on the property. Background research and field reconnaissance were used to develop an appropriate survey strategy, which was then implemented. The results of the survey include recommendations regarding potential National Register of Historic Places (NRHP) eligibility of identified resources. The project area located in Newport, Virginia and is bordered to the north by Waterside Drive (Route 617) and to the west by the South Fork of the Shenandoah River, with Dam Acres Road located to the east and Route 340 to the west (Figures 1-1 and 1-2).

Hope Smith, Ph.D., served as the Principal Investigator and prepared the research design and coauthored the report. Robert Taylor, M.A., oversaw architectural survey and coauthored the report. Dara Friedberg, M.S. conducted background research and coauthored the report. Copies of all field notes, maps, correspondence, and research materials are on file at D+A's main office in Midlothian, Virginia.

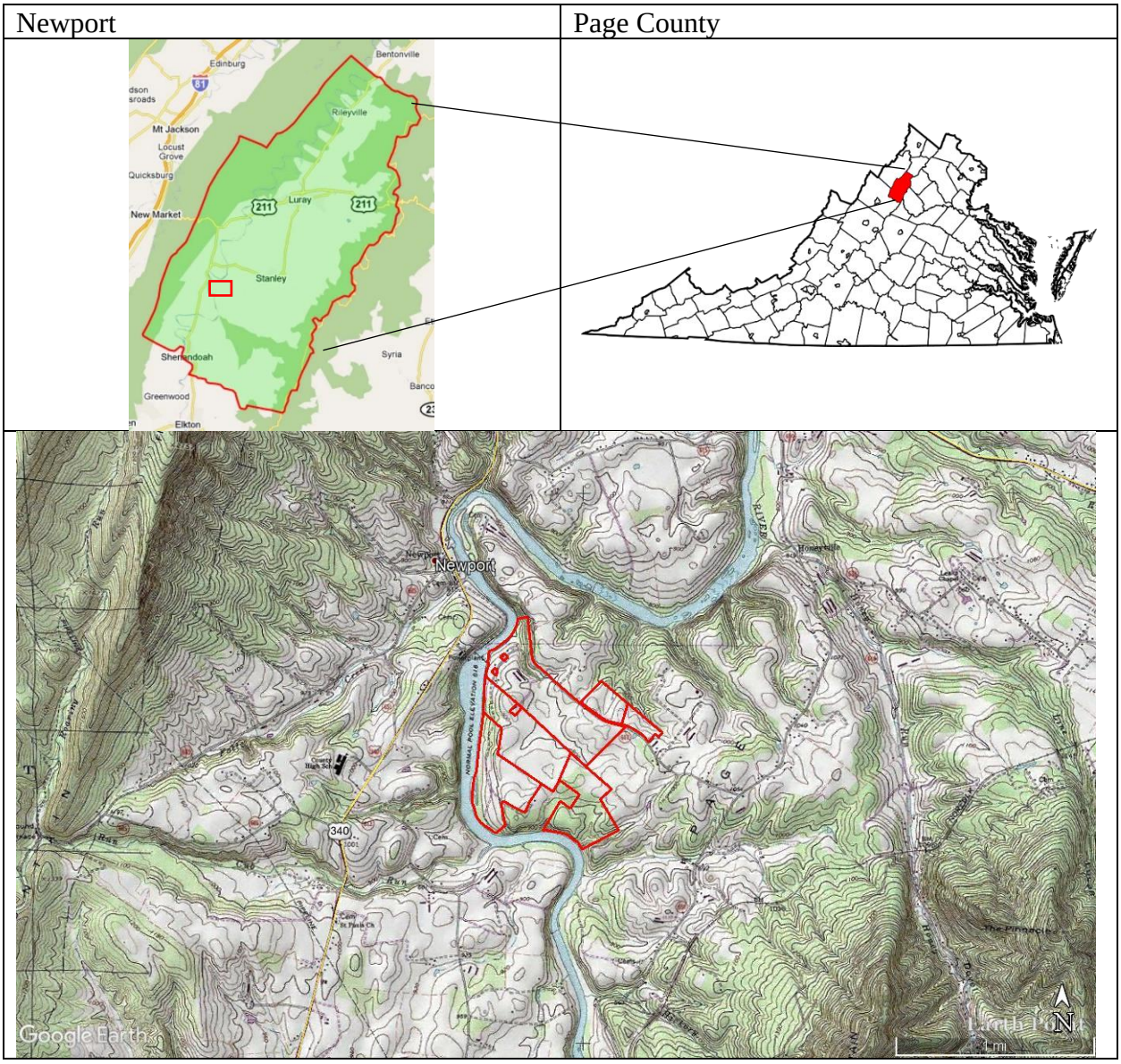

Figure 1-1: General location of the project area.

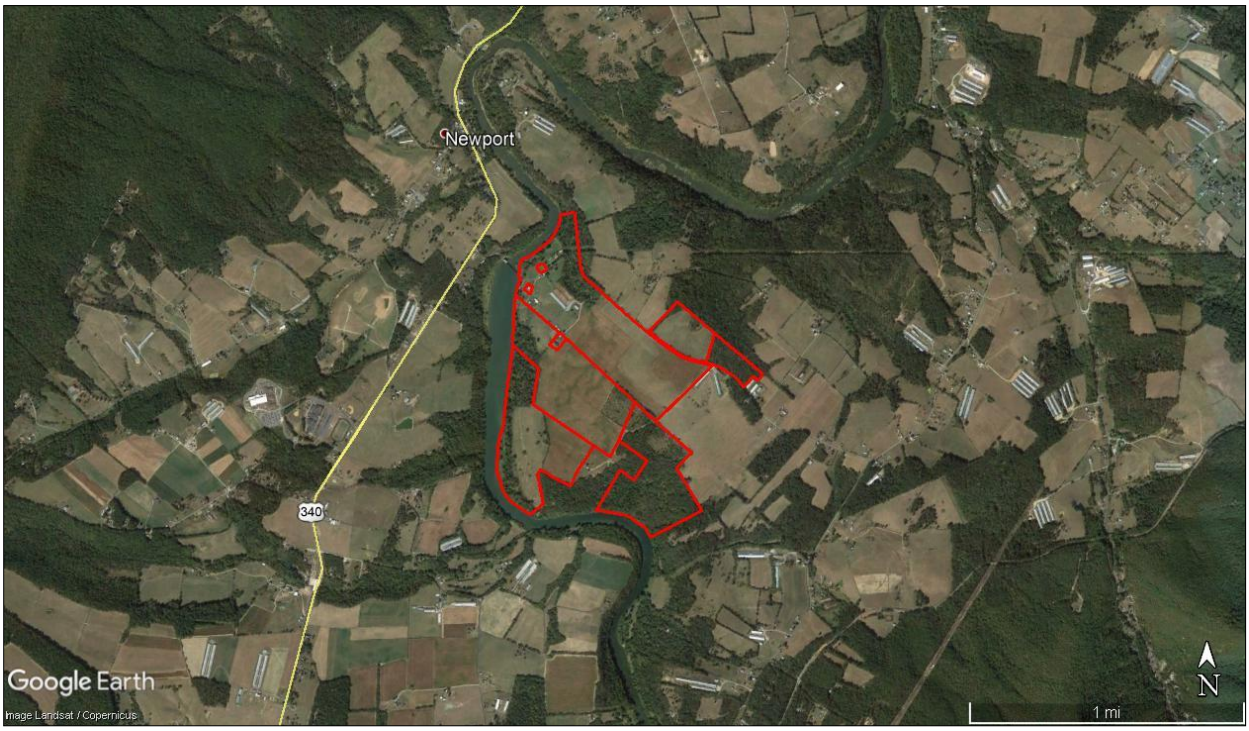

Figure 1-2: Aerial view of project area shown in red. Source: Google Earth 2017.

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2. SURVEY AREA

For the purposes of this project, the survey area was established to define the area in which the project may result in impacts to NRHP-eligible cultural resources. Impacts considered include "direct", in which project construction, components, or other aspects may physically alter a cultural resource. "Indirect" impacts are those which may introduce features, qualities, or other characteristics into the setting of a cultural resource. In the case of solar projects, direct impacts are typically introduced by the location of proposed arrays, access roads, fence lines, and utility easements. Indirect impacts are typically limited to the introduction of visual features.

As such, the archaeological survey area includes the footprint of the project property, workspaces, access roads, and/or any other areas where ground-disturbing activities directly related to the project may take place. Specifically, only the limits of disturbance within the project area where solar arrays will be installed and disturbance associated with the installation of the solar arrays and the laydown area were subjected to systematic survey.

The architectural survey area includes the project area property, as well as the geographic area around the project within which the associated project components may be seen. The default viewshed survey area for solar project according to the Virginia Department of Environmental Quality (DEQ) Permit by Rule (PBR) for Solar Energy Projects is one-half mile, unless topography, vegetation, or other aspects of the landscape warrant a more refined distance. In the case of the Dogwood Solar project, much of the surrounding landscape is rolling with an extensive network of treelines and a patchwork of wooded areas. Of particular note is the project area's location bordering a sharp bend in the South Fork of the Shenandoah River. In this area, the river is bordered by relatively high bluffs with thick wooded areas that screen views from one side of the river to the other. An analysis of aerial photography coupled with field verification confirmed that the areas in which potential visibility of the project area exists are in most cases less than one-half mile. As such, the architectural resources survey area was refined to exclude those areas beyond thick wooded areas or where topography and terrain bordering the river inhibit distant views. A map of the defined survey area for archaeological and architectural resources is illustrated in Figure 2-1.

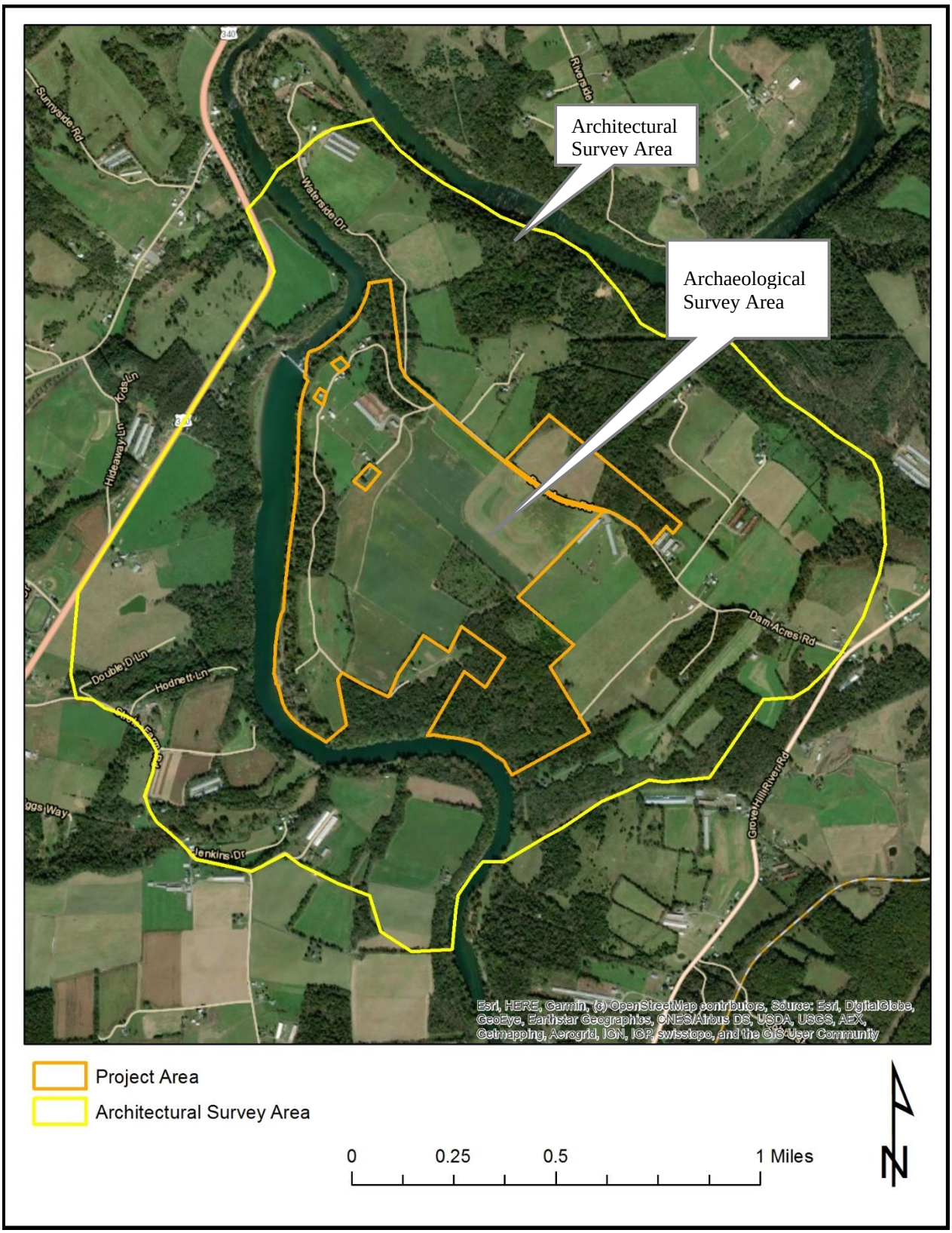

Figure 2-1: Dogwood Solar Project Area with archaeological and architectural survey areas.

3. RESEARCH DESIGN

The Phase I cultural resource survey of the Dogwood Solar project area was undertaken in order to confirm the existing condition of the property, note any surface evidence of cultural activity, recommend and implement an appropriate survey methodology for the property based upon the results of the background research and field reconnaissance, and identify the presence or absence of cultural resources on the property. The background research, field reconnaissance, and field survey methodologies are summarized below.

ARCHIVAL RESEARCH

In, D+A conducted background research with the goal of identifying all previously recorded historic properties located within and in the vicinity of the project area in accordance with VDHR's guidance document titled *Guidelines for Conducting Cultural Resources Survey in Virginia* (Revised October 2017). Background research was conducted at the VDHR and on the internet and including the following sources:

- VDHR V-CRIS site files; and
- National Park Service, American Battlefield Protection Program, maps and related documentation.

As part of this Phase I study, D+A checked resource data at each of the above sources to verify accuracy and ensure the information was up to date at the time of the survey. In further preparation for the Phase I survey, D+A conducted additional review of the following documents and sources for information relative to unrecorded historic property locations in the project area:

- County Tax Assessors records;
- USDA Historic Aerial Imagery;
- U.S. Geological Survey Topographic Maps;
- Previous historic resource survey documents; and
- Local historical society archives.

The additional review conducted in support of the Phase I survey was designed to identify all properties greater than 50 years of age located within the project area. Historic properties include architectural resources, historic and cultural landscapes, battlefields, and historic districts.

CONTEXT DEVELOPMENT

Information from the literature review and background search was used in conjunction with additional research to develop a cultural and historical context to place the project area and any identified historic resources within their appropriate context for evaluations of historical significance. This context was developed through review of previous cultural resource studies, published and unpublished manuscripts, historic maps, aerial photographs, local histories, and a variety of internet sources.

For the purposes of this effort, a comprehensive cultural context of Page County was prepared summarizing general historical trends, settlement patterns, and development with a focus on the vicinity of the project area. Further analysis and context development was undertaken for the defined survey area so that newly recorded resources could be effectively evaluated.

FIELD SURVEY

Architectural Resources

The background research conducted in support of the Phase I reconnaissance survey was designed to identify all properties greater than 50 years of age located within the project area. Visual inspection included digital photo documentation of each property's existing conditions and setting. Photographs of primary elevations and general setting were taken from public ROW and where possible, on private property. Resources over 50 years of age were identified and confirmed by the Page County tax records, historic aerial photography, and field inspection. Virginia Cultural Resource Information System (V-CRIS) site forms were completed for all cultural resources, 50 years of age or older identified during the survey and were submitted to VDHR.

Archaeological Resources

Prior to survey, D+A was provided with the client's preliminary construction plans, showing the location of solar arrays and the proposed location of ground disturbance. Solar arrays are shown to be centrally located within the project area. Total ground disturbance within the project area totals to approximately 72 hectares (178 acres). In accordance with the construction plans, the landforms which will undergo disturbance were subjected to either systematic pedestrian survey or subsurface testing, depending on amount of exposed ground surface within the area.

At the outset of field investigations, a pedestrian survey of the project area was conducted to document existing conditions and to note surface evidence of cultural activity or material and identify areas with the potential for intact subsurface archaeological resources. For any newly encountered archaeological resources identified during the reconnaissance, photographs were taken of the general vicinity and of any visible features. A field map was prepared showing feature locations, permanent landmarks, topographic and vegetation variation, as well as sources of disturbance. Sufficient information was included on the map to permit easy re-identification of the resources.

Following the pedestrian survey, systematic shovel testing was conducted throughout the portions of the project area which were set to undergo ground disturbance and which did not consist of exposed ground, with shovel test placement avoided in areas of documented or visible significant ground disturbance, slopes in excess of 15 percent, and areas in statutory wetlands or water saturated soils at the time of the survey. Shovel tests were excavated at a maximum of 15-meter (50-foot) intervals along transects spaced 15 meters (50 feet) apart. The soil excavated from all shovel tests was passed through 0.63-centimeter (1/4-inch) mesh screen and all shovel tests were approximately 0.38 meters (15 inches) in diameter and excavated to sterile subsoil or the practical limits of excavation. Isolated positive shovel tests were bracketed with radial shovel tests (half the distance to the next shovel test in all four directions) until two negative shovel tests in each

direction were documented. Where ground was exposed at or over 80% visibility, in lieu of subsurface testing, the ground was subjected to systematic pedestrian survey, with crew members walking the areas of visible ground surface in 15 meter (50 foot) transects.

For any archaeological resources identified during the survey, photographs were taken of the general vicinity and of any visible features. A field map was prepared showing site limits, feature locations, permanent landmarks, topographic and vegetational variation, sources of disturbance, and all surface and subsurface investigations. GPS coordinates for all identified site locations were recorded and sufficient information was included on maps to permit easy relocation of sites. Notes were taken on surface and vegetational conditions, soil characteristics, dimensions and construction of features evident, and the amount and distribution of cultural materials present. All subsurface archaeological excavations were backfilled and returned to pre-survey conditions.

LABORATORY ANALYSIS

All artifacts generated in the course of the survey were provenienced in the field and recorded. Following fieldwork, the artifacts were transported to the D+A laboratory facilities where they were cleaned, sorted, and identified. After processing, all artifacts were inventoried using Microsoft Excel. A computer-printed artifact inventory of prehistoric and historic artifacts is included as an appendix to this report.

Identification of diagnostic artifacts was made by consulting existing comparative collections and available regional literature regarding artifact types. Artifacts were assigned dates through the comparison of identified artifacts with other material culture classes having documented use-popularity patterns. Ceramics and glass provided primary chronological information. All artifacts were placed in polyethylene re-sealable storage bags and placed in acid free boxes suitable for permanent curation. At the conclusion of the survey, arrangements will be made with the client regarding final deposition of the artifacts.

REPORT AND RECORD PREPARATION

Information from field survey was used in conjunction with background research and context development to assess each identified cultural resource for potential NRHP-eligibility. A results section was prepared that summarizes the field findings, assessment of significance and NRHP-eligibility. The results of the study are accompanied by maps and photographs as appropriate and were synthesized and summarized in this report along with the research design, archives search, and cultural contexts. All research material and documentation generated by this project are on file at D+A's office in Midlothian, Virginia. VDHR site forms (Virginia Cultural Resources Information System (V-CRIS) were completed for all cultural resources, 50 years of age or older, identified during the survey. Site forms for archaeological sites are include as an appendix to this report.

QUALIFICATIONS AND STANDARDS

The D+A personnel who directed and conducted this survey meet the professional qualification standards of the Department of the Interior (48 FR 44738-9). All work was conducted in

accordance with the *Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation* (Federal Register 48:44716-44742, September 29, 1983), and VDHR's *Guidelines for Conducting Historic Resource Survey in Virginia* (rev. 2017).

4. ENVIRONMENTAL CONTEXT

PHYSICAL DESCRIPTION AND LOCATION

The Dogwood Solar project area consists of approximately ±1.5 hectares (±3.6 acres) of land situated in the Valley and Ridge physiographic region of Virginia. The project area is comprised primarily of agricultural fields and pasture, with small sections of woodland. The project area is bordered to the north by Waterside Drive (Route 617) and to the west by the South Fork of the Shenandoah River, with Dam Acres Road located to the east and Route 340 to the west (Figure 4-1).

Figure 4-1: Aerial view of the Dogwood Solar project area. Source: Google Earth 2020

GEOLOGY AND TOPOGRAPHY

The project area is located on a relatively flat river terrace, with gentle hilltops located in the northwestern and southeastern portions of the project area. A gentle slope leads to the adjacent riverbank. A small drainage leading to the river is located in the northwestern portion of the project area, along Waterside Drive. Moderate relief is and rolling topography is associated with the Great Valley subprovince of the Valley and Ridge physiographic region. The area is underlain by Cambrian and Ordovician carbonate sedimentary rocks such as limestone, dolomite, and shale. A trellis drainage pattern occurs throughout this region, with streams and drainages formed on

perpendicular axes. Elevation ranges from 250 meters (820 feet) above mean sea level (AMSL) in the northeastern portion of the project area to 297 meters (974 feet) AMSL in the southwestern portion of the project area, along the riverbank.

HYDROLOGY

The project area is bordered by the South Fork of the Shenandoah River. Runoff from the western and southern portions of the project area flows directly into the river, while runoff from the northeastern portion first drains into an unnamed tributary of the river. After entering the South Fork, water then flows sequentially into the Shenandoah River, the Potomac River, the Chesapeake Bay, and finally the Atlantic Ocean.

PEDOLOGY

Unison fine sandy loam, Braddock loam, and Braddock cobbly loam are the most abundant soil types in the project area. Collectively, these soils cover about 75% of the project area. All of the survey area, excepting the 1% of the project area comprised of dam or standing water, is well drained or moderately well drained (Table 4-1, Figure 4-2). Slopes range from 0% to 35% grade (Figure 4-3). About 75% of the project area is considered prime farmland by the USDA.

Table 4-1: Unit summary of soils within the Dogwood Solar project area. Source: USDA

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3B	Braddock loam, 2 to 7 percent slopes	Well drained	6.2	1.7%
3C	Braddock loam, 7 to 15 percent slopes	Well drained	44.7	12.5%
4D	Braddock cobbly loam, 15 to 25 percent slopes	Well drained	59.6	16.7%
6E	Carbo-Rock outcrop complex, 15 to 35 percent slopes	Well drained	30.0	8.4%
10A	Combs fine sandy loam, 0 to 3 percent slopes, occasionally flooded	Well drained	3.6	1.0%
11B	Cotaco loam, 2 to 7 percent slopes	Moderately well drained	18.3	5.1%
33B	Monongahela loam, 2 to 7 percent slopes	Moderately well drained	4.8	1.4%
33C	Monongahela loam, 7 to 15 percent slopes	Moderately well drained	6.5	1.8%

37C	Oaklet-Carbo complex, 2 to 15 percent slopes, very rocky	Well drained	18.8	5.3%
49B	Unison fine sandy loam, 2 to 7 percent slopes	Well drained	36.6	10.2%
49C	Unison fine sandy loam, 7 to 15 percent slopes	Well drained	114.9	32.1%
49D	Unison fine sandy loam, 15 to 25 percent slopes	Well drained	10.8	3.0%
DAM	Dam	NA	0.3	0.1%
W	Water	NA	2.5	0.7%
Totals for Area of Interest			**357.7**	**100.0%**

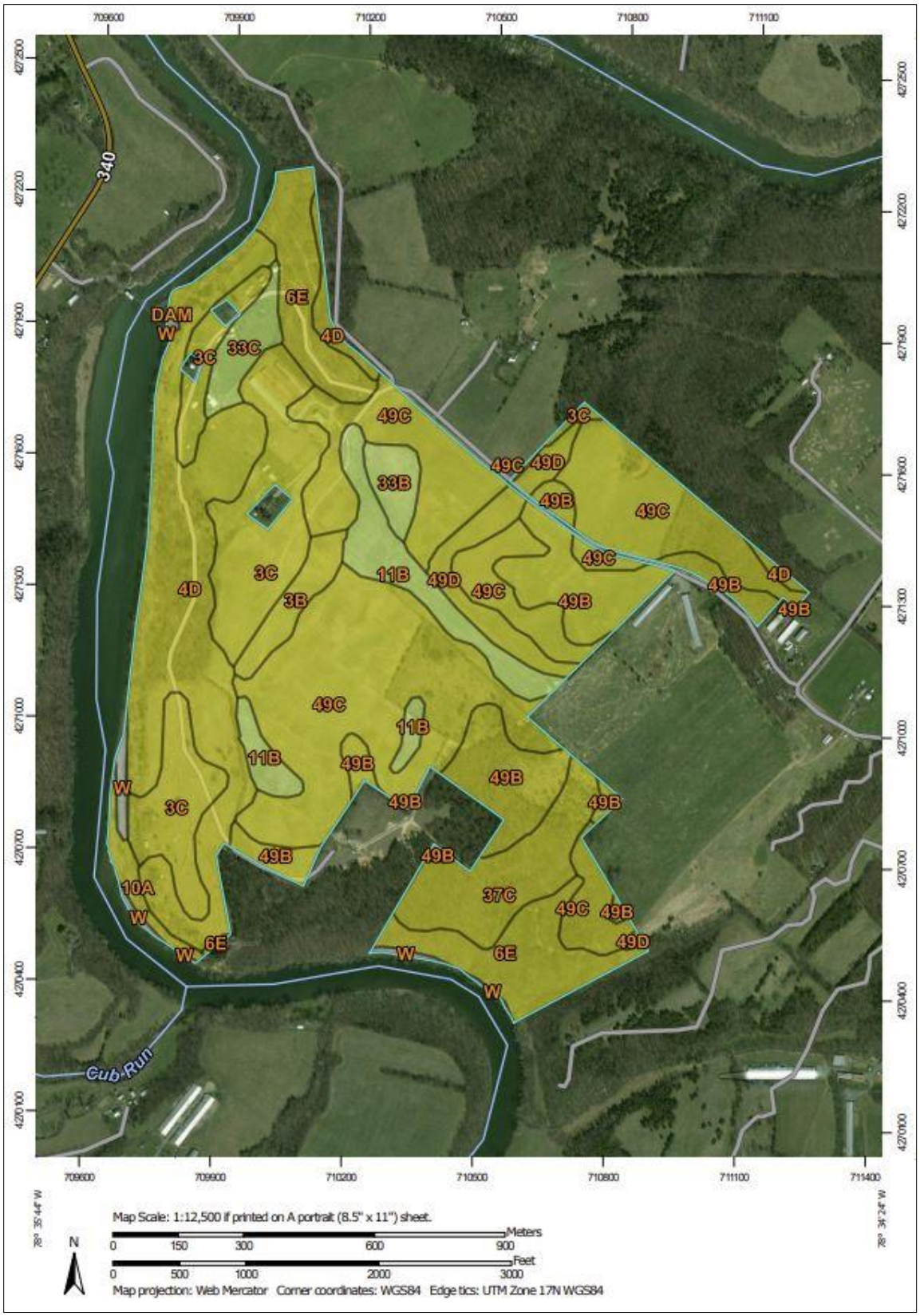

Figure 4-2: Soils map of Dogwood Solar project area, showing drainage class. Source: USDA

Figure 4-3: Soils map of the Dogwood Solar project area, showing representative slope. Source: USDA

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5. PREVIOUS INVESTIGATIONS

This section includes a summary of all the cultural resource management events that have taken place within the project area registered at VDHR through December 2020. It also lists all previously identified architectural resources and archaeological sites located within the project area, as well as within one mile of the project area.

PREVIOUS SURVEYS RELEVANT TO THE SITE

Research in VCRIS reveals that two surveys have been conducted within one mile of the project area (Figure 5-1). Neither of these surveys took place within the project area. The first survey, VDHR ID # PA-015, was conducted in 1976 by the Virginia State Library. The second survey, VDHR ID # PA-021, was conducted in 1987 by James Madison University.

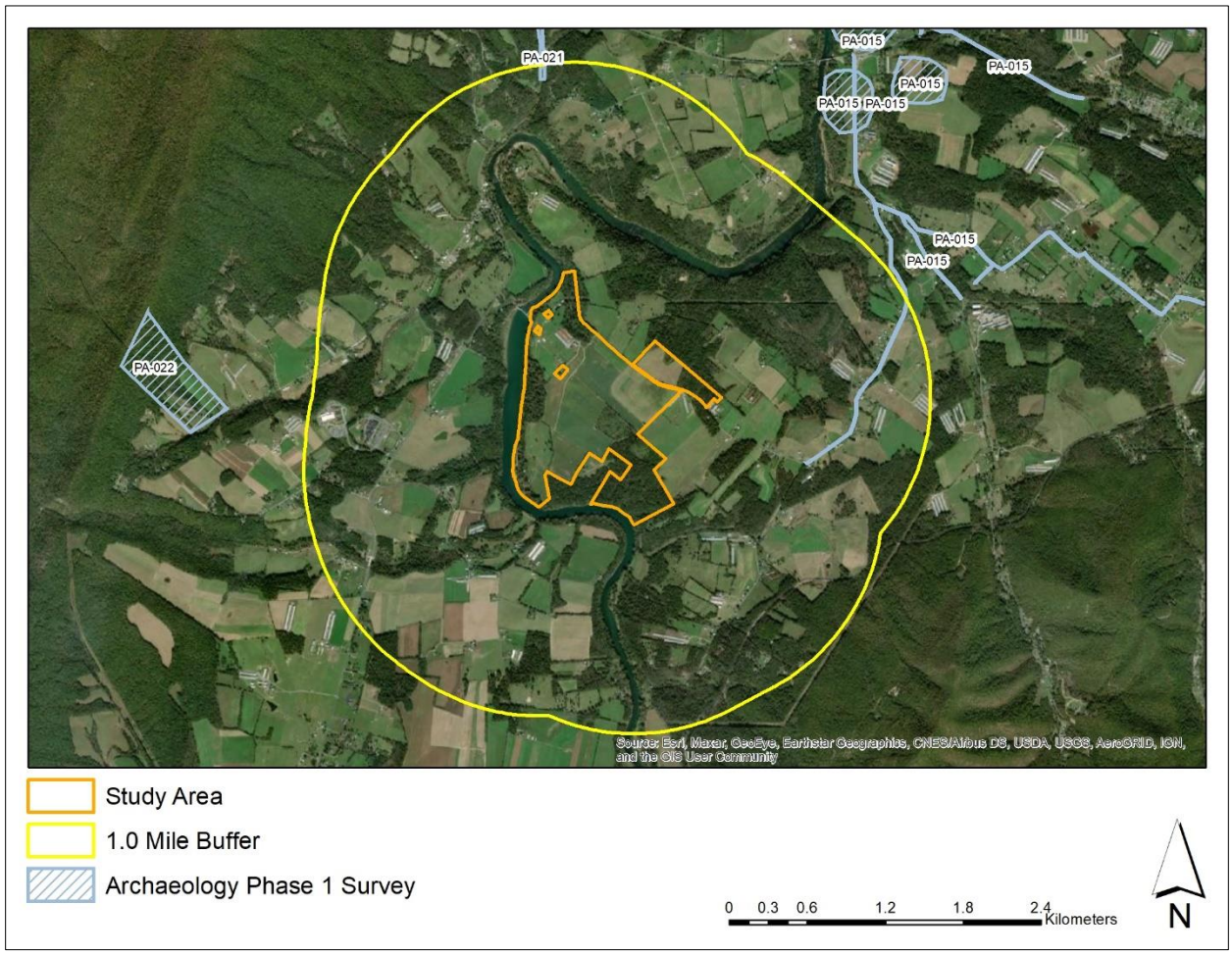

Figure 5-1: Previous surveys (gray) conducted within 1.0 mile (yellow) of the project area (orange). Source: V-CRIS

PREVIOUSLY IDENTIFIED ARCHAEOLOGICAL SITES WITHIN ONE MILE

No archaeological sites are recorded in VCRIS as being located within one mile of the project area (Figure 4-2).

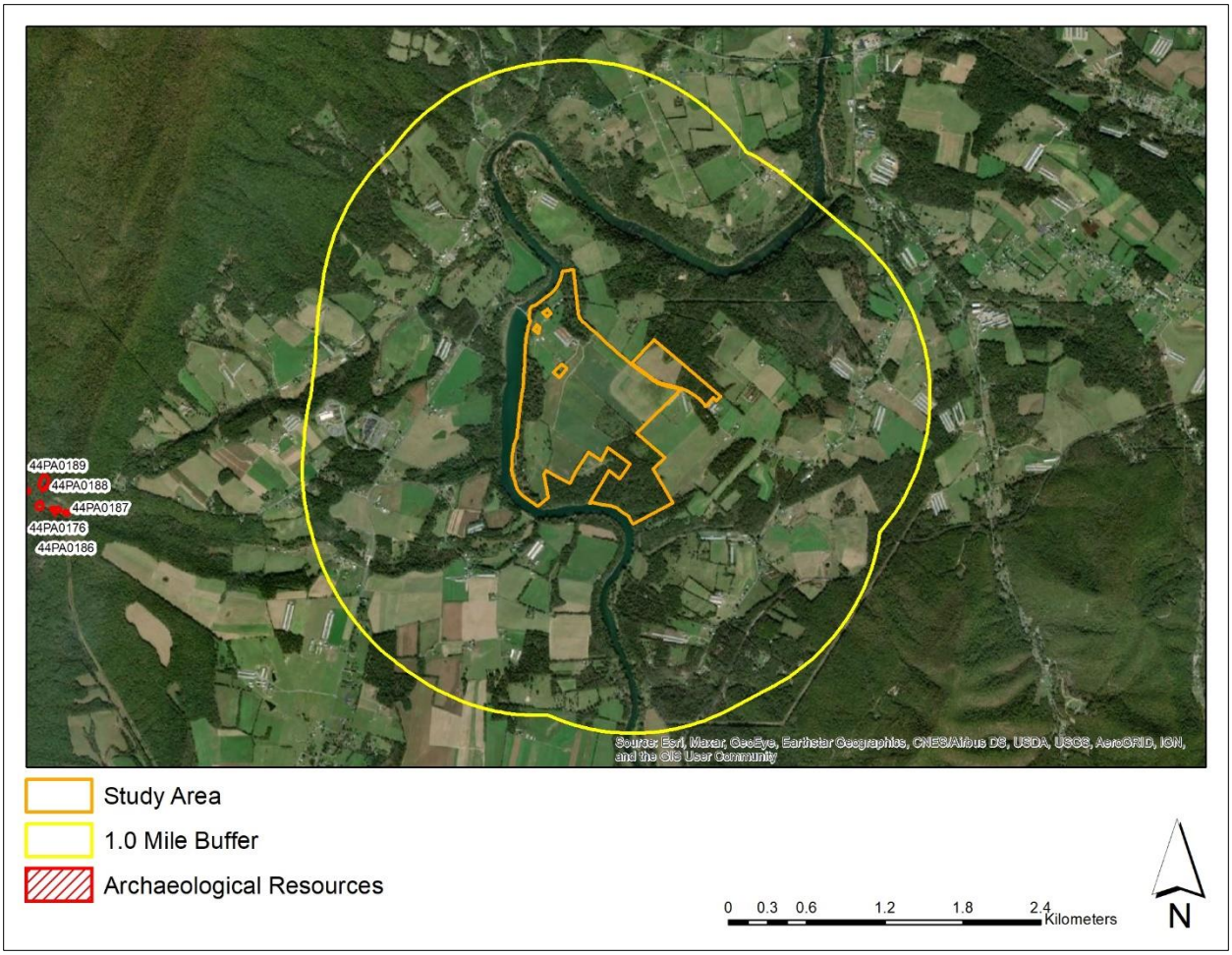

Figure 5-2: Map detailing all archaeological resources (red) within 1.0 mile (yellow) of the project area (orange). Source: V-CRIS

PREVIOUSLY IDENTIFIED ARCHITECTURAL RESOURCES WITHIN ONE MILE

Review of VCRIS records shows that twenty previously recorded architectural resources are located within one mile of the project area (Figure 5-3, Table 5-1); one of these resources, the Keyser Farm, is located directly within the project area. VDHR has determined eleven resources to be not eligible and one resource to be potentially eligible for listing in the NRHP; eight resources have not been formally evaluated. The resources include one mill, two churches, one power plant, three bridges, one stone wall, and ten single dwellings. The resources range in date from the early nineteenth to the early twentieth centuries.

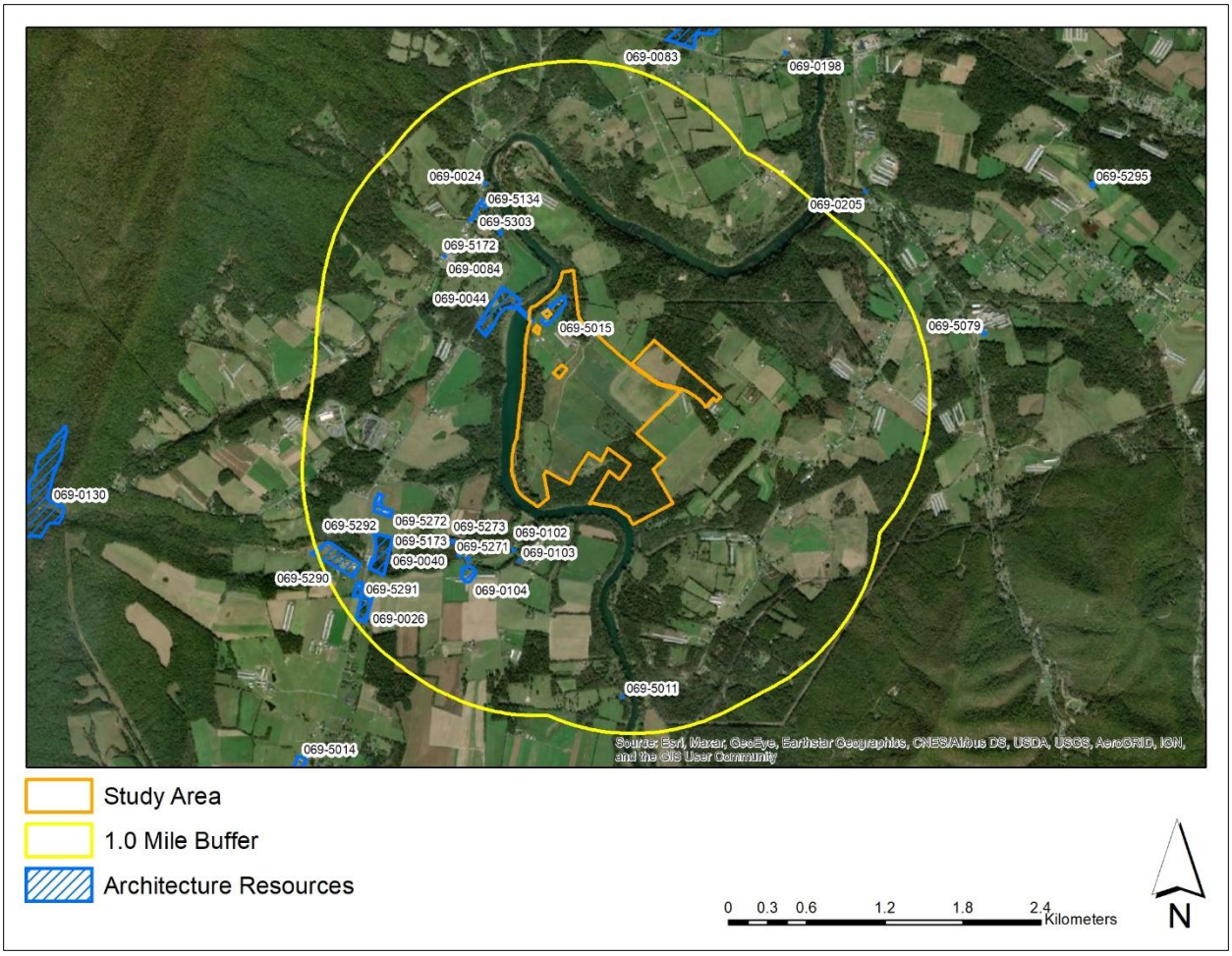

Figure 5-3: Map detailing all architectural resources (blue hatched) within 1.0 mile (yellow) of the project area (orange). Source: V-CRIS

Table 5-1: Previously identified architectural resources located within 1.0 mile of the project area. Resources in bold font are located within the project area. Resources highlighted in orange are considered potentially eligible for listing in the NRHP

VDHR ID#	Property Name	NRHP Eligibility Status	Type	Year
069-0024	Foltz Mill (Historic/Current)	Not Evaluated	Mill	1900Ca
069-0026	Saint Paul's Lutheran Church & Cemetery, 6433 U.S. HWY 340 (Function/Location)	DHR Staff: Not Eligible	Church/Chapel	1927
069-0040	Cub Run Farm, 6011 U.S. HWY 340 (Function/Location), Joe Foltz Home (Historic)	DHR Staff: Potentially Eligible	Single Dwelling	1849Ca
069-0044	Newport Dam (Historic/Current)	Not Evaluated	Power Plant	1921Ca
069-0084	Newport Church of the Brethren (Current)	Not Evaluated	Church/Chapel	1896
069-0102	Cub Acres (Historic/Current)	Not Evaluated	Single Dwelling	1848
069-0103	Strole Log House (Historic/Current)	Not Evaluated	Single Dwelling	1820Ca
069-0104	Farm, Route 615 (Function/Location), Roy Burner Farm (Current)	DHR Staff: Not Eligible	Single Dwelling	1830Ca

VDHR ID#	Property Name	NRHP Eligibility Status	Type	Year
069-5011	William and Christina Dovel House (Historic)	DHR Staff: Not Eligible	Single Dwelling	1845Ca
069-5015	**Keyser, Harry and Sina Farm (Historic)**	**Not Evaluated**	**Single Dwelling**	**1924Ca**
069-5134	Kite's Store (Historic)	Not Evaluated	Commercial Building	1929
069-5172	Bridge #1011 (Current)	DHR Staff: Not Eligible	Bridge	1927
069-5173	Bridge #1012, U.S. HWY 340, spanning Cub Run (Function/Location)	DHR Staff: Not Eligible	Bridge	1927
069-5271	Page County Bridge Number 6016 (Current)	DHR Staff: Not Eligible	Bridge	1930
069-5272	House, Route 613 (Function/Location)	DHR Staff: Not Eligible	Single Dwelling	1895Ca
069-5273	Farmstead, Route 613 (Function/Location)	DHR Staff: Not Eligible	Single Dwelling	1855Ca
069-5290	House, 1918 Cub Run Farm Lane, Off of U.S. HWY 340 (Function/Location)	DHR Staff: Not Eligible	Single Dwelling	1915Ca
069-5291	House, 6322 U.S. HWY 340 (Function/Location)	DHR Staff: Not Eligible	Single Dwelling	1930Ca
069-5292	House, 5879 U.S. HWY 340 (Function/Location)	DHR Staff: Not Eligible	Single Dwelling	1895Ca
069-5303	Stone Wall, Route 685 (Function/Location)	Not Evaluated	Wall	1936Ca

6. CULTURAL CONTEXT

The following section provides a brief summary of the general overarching regional prehistoric and historic themes relevant to Virginia and Page County. The primary emphasis of this context focuses on the anthropological and material culture trends in prehistory and history, and describes how people throughout time could have left their archaeological mark on the landscape of the project area specifically. Prehistoric and historic occupation statistics and trends were analyzed, as were historic maps and available first-hand accounts which aided in establishing the appropriate cultural context for the project area as defined by the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation* and the Virginia Department of Historic Resources' *How to use Historic Contexts in Virginia: A Guide for Survey, Registration, Protection, and Treatment Projects* (VDHR 2017).

PALEOINDIAN PERIOD (PRIOR TO 8000 B.C.)

Recent archaeological findings in Virginia have found the first Paleoindians are projected to have arrived in southeastern North America between 15,000 and 11,000 years ago, or approximately 13000 to 9000 B.C. (McAvoy and McAvoy 1997). Three of the earliest archaeological sites associated with Paleoindian occupation in Virginia are the Cactus Hill site (VDHR #44SX0202) located along the Nottoway River in Sussex County, the Thunderbird Site (VDHR #44WR0011) in Warren County, and the Saltville site (VDHR #44SM0037) in Smyth County. These early populations coincided with the late glacial era when sea levels were approximately 230 feet below their present-day level (Anderson et al. 1996:3). The Laurentide Ice Sheet covered much of northern North America, lowering temperatures in the region and creating an ideal environment for a boreal forest (Delcourt and Delcourt 1981). Paleoindians apparently survived in this environment through opportunistic hunting and gathering of smaller mammals, fish, and wild plants (Anderson 2001). Seasonably mobile, these Paleoindians utilized different food sources at different times of the year, an extensive subsistence pattern that required a large territory.

Accordingly, the Paleoindians may have maintained a central base camp located either in a diverse ecozone where flora and fauna were easily procured or near lithic sources that contained cryptocrystalline stone. Wider ranging satellite camps would then have been seasonally occupied to exploit other natural resources, be they lithic material, flora, or fauna (Anderson et al 1996; Daniel 1996; Binford 1980). Most Paleoindian sites are small and scattered, suggesting that the groups lived in small familial bands distributed across the landscape. The lack of status items among their archaeological remains suggests that these groups recognized little differentiation in status, and probably employed an egalitarian social structure. Ethnographic analogies suggest that Paleoindians might have maintained this rough equality by shunning aspiring leaders, and methods of property redistribution.

The Paleoindians relied upon durable and easily-shaped cryptocrystalline materials such as chert and jasper for their tools. They fashioned these rocks into a variety of instruments, among which were scrapers, gravers, and adzes. Paleoindian projectile points tended to be fluted and bifacially sharpened. Due to time and rising sea levels, many Paleoindian material culture finds are limited to isolated projectile points. Researchers differentiate the Paleoindian Period into three smaller

periods reflecting changes in the morphology of projectile points. These periods include the Early Paleoindian (9500-9000 B.C.), the Middle Paleoindian (9000-8500 B.C.), and the Late Paleoindian (8500-8000 B.C.).

During the Early Paleoindian, Paleoindians produced large fluted Clovis points, a style widespread throughout North America, which could be affixed to a spear shaft. Sites from this period are found throughout the eastern seaboard in very low densities. Regions depicting greater concentrations of these sites are in Tennessee, the Cumberland and Ohio River Valley, western South Carolina, the northern Piedmont of North Carolina, and southern Virginia (Anderson 1990:164-71; Daniel 1996; Ward and Davis 1999).

The Middle Paleoindian saw a modification of Clovis points, such as the disappearance of the fluting in some cases and the addition of "ears" at the base of the point. The appearance of these new types, such as the Cumberland, Simpson, Clovis variants, and Suwanee points, might reflect changes in subsistence patterns as the result of rising global temperatures. During this time, it is theorized that American Indians began to radiate out from their previous range of occupation to exploit resources from more distant environments (Anderson 1990; Anderson et al. 1996; Ward and Davis 1999:31).

Changes to the projectile points intensified during the final centuries of the Paleoindian Period resulting in an increased number of changes in projectile point morphology. The Dalton and Hardaway types and other variants allowed late Paleoindian peoples to hunt new species.

The Paleoindian's scattered settlement pattern and simple culture contribute to the limited number of associated sites in the region, fewer than 75 sites have been identified in present-day Virginia and only 25 have been positively identified in the entire Chesapeake (Turner 1989; Dent 1995). Those Paleoindian sites that have been located tend to be quarry sites, which groups frequently visited and areas where several bands gathered (Meltzer 1988; McAvoy 1992). Many sites were likely destroyed when warming global temperatures melted the glaciers and inundated the low-lying Paleoindian settlements.

ARCHAIC PERIOD (8000 TO 1200 B.C.)

Dramatic climatic changes beginning about 10,000 years ago prompted a reconfiguration of prehistoric people's subsistence strategies and social organization. Specifically, global temperatures began rising with the dawn of the Holocene geological period, simultaneously shrinking the glaciers and raising sea levels. In North America, the Laurentide Ice Sheet gradually receded northward, making the southeastern portion of the modern-day United States warmer and drier. The boreal forest of the Pleistocene era slowly gave way to a mixed conifer and northern hardwood forest. The area began to assume its modern-day climate and floral and faunal species. This warming also resulted in dramatic hydrological changes for coastal Virginia. As the sea level gradually climbed, the land was flooded; as a result, the lower reaches of the Susquehanna River flooded to form the Chesapeake Bay.

These climatic changes created new food sources for prehistoric people. The warmer, drier climate led to a greater biodiversity, especially floral, as spruce and fir forests gave way to nut- and fruit-

bearing trees (Aaron 2009:17). This allowed humans to rely more heavily on gathering wild plants, nuts, and berries. Indeed, archaeologists have discovered tools, such as nutting stones and pestles, for processing vegetable materials. The creation of the Chesapeake Bay, furthermore allowed Archaic people to exploit seafood, such as anadromous fish and shellfish. The appearance of shell middens during the period testifies to the importance of mollusks to the Archaic diet (Dent 1995).

To exploit these new resources, Archaic people likely intensified their seasonal movement, splitting their time between a semi-permanent base camp and smaller, dispersed hunting and gathering camps. Bands of as many as 30 people may have gathered in the base camp for part of the year, and then dispersed into "microbands," composed of a single family or two, in other seasons (Griffin 1952; Anderson and Hanson 1998; Ward and Davis 1999). The range of band movement would have occurred over relatively large regions. These larger base camps are theorized to have been located along rich environmental areas near the Fall Line or along main rivers.

New subsistence patterns also required new technologies and the adaption of existing technologies to be suitable to existing game. "The spear thrower [called an atlatl] added range and power to the hunter's arm. The axe enabled people to fell trees. The mortar and pestle made it easy to pound and grind nuts, seeds, and roots" (quoted in Aaron 2009:18). With new technologies, smaller game could be more easily hunted and plants could be processed more effectively. The resulting products of these technologies differentiate the Archaic Period into three smaller periods. The period also saw innovations in project point manufacturing. In a further divergence with the paleoindians who relied heavily on cryptocrystalline lithics, Archaic people utilized more materials, such as quartzite and quartz.

The Early Archaic (8000-6500 B.C.) is characterized by projectile points with corner and side-notches, rather than hafting the points to a wood shaft by fluting as the Paleoindians did. The resulting points, such as the Kirk Stemmed and Notched, Palmer Corner-Notched, Fort Nottoway, Kessell, Charleston, and Amos, are thus readily distinguishable from Paleoindian points (Custer 1990). Early Archaic people hunted caribous, elk, moose, deer, and bear (Egloff and Woodward 1992:12). Additionally, there appears to be an increase in population at this time.

The Middle Archaic (6500-3000 B.C.) is defined primarily by the appearance of stemmed projectile points which were fitted into a hold in the spear shaft. Therefore, points such as the LeCroy, Stanly, Morrow Mountain, and Guilford are diagnostic of middle Archaic assemblages. Some evidence also points to the use of grinding technology to make atlatls, or spear throwers, in this period. Mortar and pestles also began to appear during the Middle Archaic, as did axes. The ability to more easily clear forests, resulted in a change in hunting as deer, bear, turkey, and other animals came to the cleared land to eat the new, low-lying growth (Egloff and Woodward 1992:14-15).

Researchers have also pointed out that contexts from this period contain a larger amount of "expedient" stone tools, owing in part to the rapid environmental changes of the Climatic Optimum, which dates from 6000 to 2000 B.C. (Wendland and Bryson 1974; Claggett and Cable 1982; Ward and Davis 1999). These tools were makeshift and less formal, allowing their owners to use them for a wider variety of activities than tools designed for specific uses. The greater

density and disbursement of archaeological sites from this period indicates a consistent rise in American Indian populations.

By the Late Archaic (3000-1200 B.C.), a more congenial climate and more abundant food sources led to dramatic population increases, there are estimates of tens of thousands of Virginia Indians during this time (Egloff and Woodward 1992:20). To be certain, this apparent increase might be exaggerated because late Archaic people had a richer material culture than previous peoples and hence left more archaeological evidence of their existence (Klein and Klatka 1991). Nonetheless, the greater number of late Archaic sites relative to earlier periods suggests that the human population did in fact expand over the course of the Archaic Period. According to Barber et al. (1992), late Archaic sites were more than twice as numerous as middle Archaic sites. As humans occupied the land more densely, they also became more sedentary and less mobile, perhaps owing to the greater reliance on plant-based food resources compared to hunting and fishing. Late Archaic people settled along fertile flood plains (Egloff and Woodward 1992:20).

American Indians from this region may also have begun to domesticate plants such as goosefoot, squash, and gourds (Yarnell 1976:268; Chapman and Shea 1981:70). They also used squash and gourds for food storage, in addition to earthen pits (Egloff and Woodward 1992:22). The projectile point technology of the Late Archaic Period is dominated by stemmed and notched point forms, many with broad blades, likely used as projectiles or knives. These points diminish in size towards the latter portion of this period (Dent 1995; Justice 1995).

It should also be noted that prehistoric sites that consist of lithic debitage, no diagnostic artifacts, and an absence of ceramic artifacts likely date to the Archaic Period. These sites are described in the records as "Prehistoric/Unknown," however they are most likely to date to this period despite not having a specific temporal designation.

WOODLAND PERIOD (1200 B.C. TO 1600 A.D.)

The American Indians of the Woodland Period began to maintain a greater reliance on horticulture and agriculture based on the cultivation of maize, imported from Mesoamerica via the Mississippi Valley, as well as squash, beans, and other crops. This increased sedentism and the nucleating of societies (Klein and Klatka 1991; Mouer 1991). Populations during this time began to consolidate into villages near rivers and floodplains with fertile soil, favorable terrain, and access to fauna. Satellite procurement camps are far less frequent than in the Archaic Period.

The Woodland Period is defined foremost by the development of a ceramic technology for storing and cooking food. Although Archaic people had carved out vessels from soft soapstone, prehistoric Americans did not begin shaping ceramic vessels until around 1200 B.C. The earliest pottery produced on the coastal plain, the Marcey Creek Plain, and other types, in fact resembled those soapstone vessels, suggesting that they were used for similar purposes. Woodland peoples, however, modified the square- or oval-shape soapstone inspired vessels. They began decorating the pieces with cord and tempering them with soapstone and other types of grit to make them stronger. Examples include Selden Island ceramics (tempered with soapstone) and Accokeek pieces (which used sand and grit for tempering). Anthropologists divide the period up into smaller periods based on changing projectile points and ceramics, as well as settlement patterns.

The beginning of the Early Woodland (1200 B.C.-A.D. 300) is defined by the appearance of ceramics from prehistoric archaeological context. Ceremonialism associated with the burial of the dead also appears at about 500 B.C. with stone and earth burial cairns and cairn clusters in the Shenandoah Valley (McLearen 1992; Stewart 1992). Early Woodland settlements in the Piedmont region of Virginia are located along rivers as well as in interior areas and there is evidence to suggest the Piedmont areas developed a more sedentary lifestyle during this time (Klein and Klatka 1991; Mouer 1991). Many Early Woodland sites in the Piedmont are permanent or semi-permanent villages that are large and intensively occupied. This corresponds with the domestication of weedy plants such as the goosefoot and sunflower along intentionally cleared riverine areas.

During the Middle Woodland (A.D. 300-1000), there is an increase in sites along major trunk streams and estuaries as people move away from smaller tributary areas and begin to organize into larger groups (Hantman and Klein 1992). The Middle Woodland diet becomes more complex as people begin to exploit nuts, amaranth, and chenopod seeds in addition to fish, deer, waterfowl, and turkey. Corn by this time had transformed into the large ears familiar today. The bow and arrow replaced spears for hunting (Egloff and Woodward 1992:25). With more specialized crafts and increased trade came status. Evidence of rank societies emerges more clearly with the spreading of religious and ritual behavior including symbols and regional styles apparent in ceramic styles and other sociotechnic and ideotechnic artifacts.

Variance in ceramic manufacture is a hallmark of the Middle Woodland Period. Pope's Creek ceramics are associated with the beginning of this period, and Mockely ceramics with the later. Pope's Creek ceramics are tempered with medium to coarse sand, with occasional quartz inclusions, and interior scoring has also been recorded (Stephenson 1963:94; McLearen and Mouer 1989). The majority of Pope's Creek ceramics have net-impressed surfaces (Egloff and Potter 1982:99; McLearen and Mouer 1989:5). Shell-tempered Mockley ceramics first appeared around 200 A.D. in Virginia to southern Delaware. There was a variation in surface treatments for Mockley that included plain, cord-marked, and net-impressed (Egloff and Potter 1982:103; Potter 1993:62).

By the Late Woodland Period (A.D. 1000-1606), the use of domesticated plants had assumed a role of major importance in the prehistoric subsistence system. The arrival and cultivation of beans joined corn and squash as the three major crops (Egloff and Woodward 1992:26). The adoption of agriculture represented a major change in the prehistoric subsistence economy and settlement patterns. Expanses of arable land became a dominant settlement factor, and sites were located on fertile floodplain soils or, in many cases, on higher terraces or ridges adjacent to them.

Virginia Indians became more settled and developed strong identities to their local settings. They began to organize into villages and small hamlets with more substantial housing that may have been placed in rows around a plaza (Egloff and Woodward 1992:26). These villages were highly nucleated and occasionally fortified with palisades. The fortifications demonstrate inter-group conflict.

The fertile river basin of the Shenandoah River was used by American Indians for thousands of years before the arrival of Europeans (Giles and Pezzoni 1998:10). Evidence of their occupation is in the burial mounds in the region, including Page County (Strickler 1996:18).

SETTLEMENT TO SOCIETY (1607 – 1750)

At the time of European arrival, Virginia Indians belonged to three distinct language groups. This included Algonquian-speaking tribes on the coastal plain which was centered around the Powhatan confederacy; Iroquoian-speaking tribes like the Nottoway and Meherrin south of the James River and the Cherokees in southwestern Virginia; and the Sioux or Siouan-speaking people of the Piedmont (Aaron 2009:19-20). In what would become Page County were the Iroquoian-speaking tribes of the Senedos and Tuscarawas and, in greater numbers, the Algonquian-speaking tribe of the Shawnees (Page County 2020:17).

It was not until later in the seventeenth century that exploration began in earnest into western Virginia. Between 1669 and 1670, John Lederer led the first recorded European exploration of the Blue Ridge. With the authorization of Gov. William Berkley, the German physician made three explorations, two into the Shenandoah Valley and one into southwest Virginia. He was followed by Louis Michel who traveled south along the Valley. Documentation left by Lederer and Michel reveal that the Valley was home to a number of American Indian tribes, including the Shawnee, Iroquois, Delaware, and Catawba. The land had cleared tracts on which tobacco, corn, and other vegetables were grown and pasture land for deer, elk, and buffalo (E.H.T. Traceries 2000:5).

Despite these early explorations, settlement remained slow. It was Gov. Spotswood's 1714 establishment of Fort Germanna along the Rapidan River about 30 miles west of present-day Fredericksburg that led to the increase of population to the west. Here, he brought in several groups of German indentured servants; the community grew to over 200 people by the end of the decade. Spotswood lobbied the House of Burgesses to establish a county around his community and in 1720 Spotsylvania County was created on the south side of the Rappahannock River. It was also from here that Spotswood led his Knights of the Golden Horseshoe on a detailed, recorded expedition into the Virginia mountains in 1716 (Maroney 2009:11). That summer, he crossed the Blue Ridge Mountains and camped alongside the Shenandoah River, possibly in the vicinity of present-day Alma (Giles and Pezzoni 1998:10).

It appears that settlement of the Shenandoah Valley and what would become Page County began in the 1720s. German, Scotch-Irish, and others moved south from Maryland and Pennsylvania probably following a relatively good American Indian path which eventually became known as the Great Wagon Road. Portions of today's U.S. Route 11 follow the general alignment of this corridor. These "northern men" were drawn to the region by religious tolerant laws and land that was less expensive than that farther north (Wayland 1912:43; E.H.T. Traceries 2000:6). By the 1730s, a settlement was made at a former American Indian village at Massanutten on the Shenandoah River, then called Buffalo Mountain. By 1740, a trail crossed over the mountain; this is the general alignment of present-day U.S. Route 211 (Strickler 1996:4). Like elsewhere in the colony, settlement initially occurred along major waterways and creeks. The early settlers engaged in a highly self-sufficient agricultural economy on the rich limestone soils of the county's central valley.

Unlike many areas of Virginia, early in the history of the region, a diverse array of agricultural products were grown and produced. This included wheat, corn, rye, oats, and flax, as well as livestock (Giles and Pezzoni 1998:12). Trade occurred among farms, and as the transportation systems to the east improved, contact with other markets expanded (E.H.T. Traceries 2000:6, 8). Farmers of the future Page County were fortunate in their proximity to the Shenandoah River, allowing them to ship products down the river to markets (Giles and Pezzoni 1998:21).

So far from the county seat of Spotsylvania County, in 1734, the colonial council received a petition from a number of inhabitants living on the northwest side of "the Blue Ridge of Mountains" for a new county and Orange County was created (Wayland 1912:38). Four short years later Orange was divided and Frederick and Augusta counties were established.

The 1744 Treaty of Lancaster amended the 1722 Treaty of Albany which had interpreted the division between English and American Indians as the Blue Ridge. With the new treaty, the Iroquois sold Virginia their claims to lands west of the Blue Ridge and the new barrier would be the Alleghenies. The treaty also authorized Iroquois to use the "Great Road" through Shenandoah Valley in order to reach Yadkin River in western North Carolina (Grymes n.d.a).

The project area lay at the edge of land associated with the Lord Fairfax on the Northern Neck. In 1649, what is now northern Virginia was part of a tremendous land grant known as the Northern Neck Proprietary issued by King Charles II to a group of wealthy English investors. This grant of nearly 5,282,000 acres consisted of all land between the Potomac and Rappahannock Rivers and from there extended westward into much of northern Virginia, over the Alleghenies into West Virginia (Parsons and Ravenhorst 2002:2). In the late seventeenth century the Proprietary was passed to Lord Fairfax.

In 1746, the line of Lord Fairfax's land was defined. The headwaters of the Rapidan River were used as a starting point for the line. This resulted in the boundary through the Massanutten Valley near present-day Newport (Figure 6-1). Residents north of the boundary now had to pay rents to Lord Fairfax and received deeds for the same lands that they had already received from King George II (Strickler 1996:58).

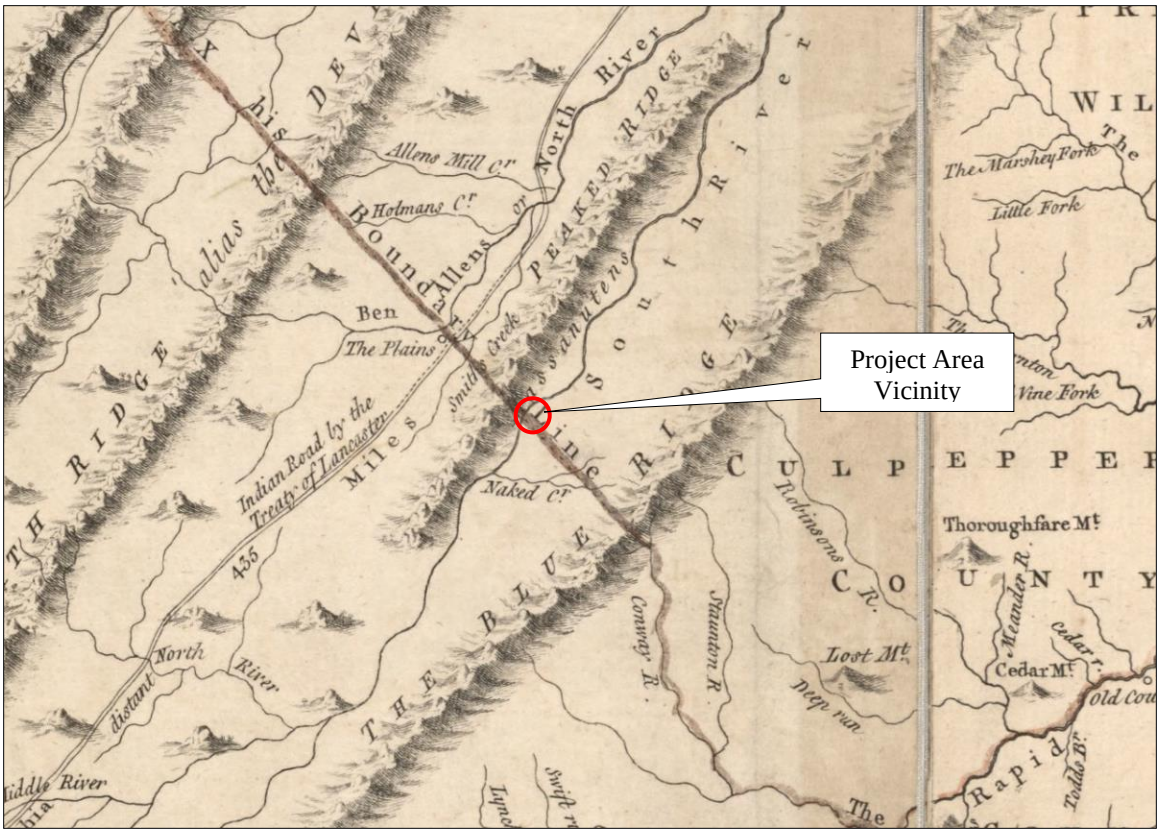

Figure 6-1: Detail of A map of the most inhabited part of Virginia, 1755, depicting the general vicinity of the project area. Source: Library of Congress

COLONY TO NATION (1750 – 1789)

At the western edge of the colony, the Shenandoah Valley was on alert during the French and Indian War (or Seven Years' War, 1756-1763). After the defeat of British Maj. Gen. Edward Braddock in 1755, George Washington became the commander-in-chief of Virginian forces and was tasked with defending the Shenandoah Valley. Indian raids on settlements began immediately and in 1755 Virginia Gov. Robert Dinwiddie chastised Augusta County settlers for fleeing their homes. Between 1754 and 1758, the county's population declined by half. To protect the central and southern parts of the Valley, 23 public forts were erected every 20 to 25 miles between Hampshire County (now in West Virginia) and the Mayo River (Ritchie 2007:4). A massacre occurred at Fort Upper Tract and Fort Seybert, now in Pendleton County, West Virginia, in 1758 during which 40 people were killed (Wayland 1912:51). The conflict in the Valley ended as abruptly as it began when the French abandoned the Forks of the Ohio in 1759 (Ritchie 2007:5).

With the end of hostilities, normalcy resumed in the region. Even as the region's residents continued to farm the fertile land, a nascent iron industry also began to emerge (Giles and Pezzoni 1998:12). In 1760, Nicholas W. Yager established the future county's first iron furnace on Hawksbill Creek approximately north of present-day Luray (Giles and Pezzoni 1998:25). Population of the region slowly grew. Families settling in the general vicinity of the project area included Kite, Shuler, and Foltz (Morris 1936). In 1772 Dunmore County was established, named

in honor of John Murray, Earl of Dunmore, Governor of the colony from 1771 to 1776 (Strickler 1996:1).

While the market for crops grown in Virginia and throughout America was in high demand in European markets, tensions between the colonies and England began to put a strain on trade. At the end of the French and Indian War in 1763, the British government had an immense amount of debt. To pay it, Parliament imposed heavy taxes on its subjects and tightened the administration of trade and navigation acts (Salmon 1983:22). These actions sparked a strong response from the colonies. In 1774, the Virginia Convention adopted resolves against the importation of British goods and the importation of slaves. It also required each county to form a volunteer company of cavalry or infantry to prepare for an armed conflict. As the Governor of Virginia took a strong stance in support of Great Britain, residents of the new county changed the county's name to from Dunmore County to Shenandoah County (Strickler 1996:1). In 1778, Rockingham County was created south of Shenandoah. The new county was named for Charles Watson-Wentworth, the 2nd Marques of Rockingham a British Prime Minister and supporter of the constitutional rights of the early colonists. Though no battles were fought in the Shenandoah Valley during the Revolutionary War, men from the region performed garrison duty at several forts located in present-day West Virginia and residents provided supplies for the cause (Wayland 1912).

Early National Period (1789 – 1830)

After the American Revolution, westward movement increased and the population of Shenandoah and Rockingham counties grew. Between 1790 and 1830, the population of Shenandoah County increased 88 percent from 10,510 residents to 19,750 and that of Rockingham County increased by 178 percent from 7,449 residents to 20,683 (USCB). Observing that the growth may eventually lead to the creation of another county in the future, Luray was established in 1812 as a possible "central and inviting place for a county seat" (quoted in Giles and Pezzoni 1998:15). The religion of many in the region prohibited the ownership of other human beings. While there were a number of enslaved African Americans, it was much smaller than other areas of the Commonwealth. However, enslaved individuals were often rented from eastern Virginian owners during the fall harvests (E.H.T. Traceries 2000:11-13).

To process the grain produced in the county, multiple mills were erected along the waterways. An 1827 map of the county depicts mills along the South Fork of the Shenandoah River north and south of the project area (Figure 6-2). Additional industries in the county included tanning, distilling, and ironmaking (Giles and Pezzoni 1998:24).

Like much of Virginia, the region was rural with few towns or villages which were unable to provide local farmers with a large enough market for produce and livestock. The poor condition of the network of roads, lack of navigable watercourses, and long distances to larger markets restricted growth of the area's economy. The solution to these problems was found in the internal improvement movements of the early nineteenth century. The construction and maintenance of roads had long been the responsibility of localities. Finally, in 1816, the General Assembly created the Fund for Internal Improvement and appointed the Board of Public Works to oversee its use; transportation improvement projects would receive the funding they needed to complete projects (O'Dell 1989). Newly developed roads would also lead to a nascent tourism industry as the natural

wonders of the region were beginning to be revealed. As early as 1825, there was a report on the "mysterious region of wonders" recently explored under Cave Hill near Luray that appeared in the *Shenandoah Sentinel* (quoted in Giles and Pezzoni 1998:43).

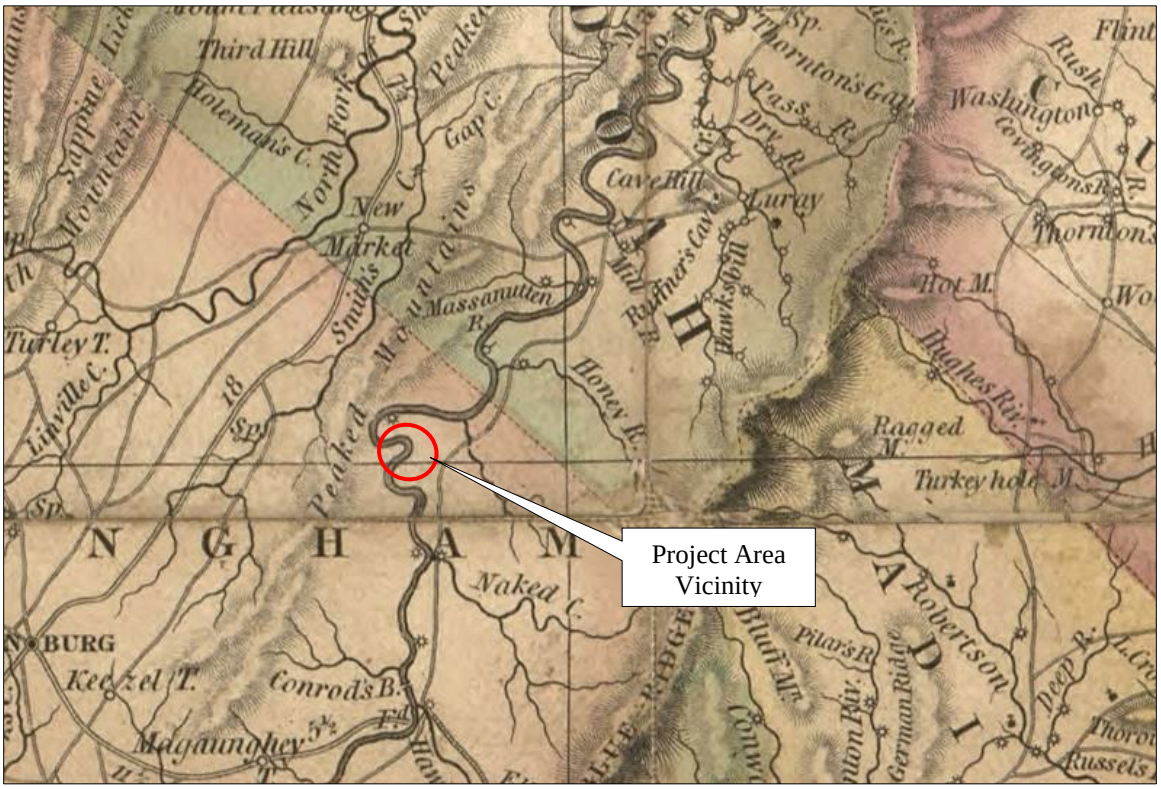

Figure 6-2: Detail of Böÿe's A map of the state of Virginia, 1827, depicting the general vicinity of the project area. Source: Library of Congress

ANTEBELLUM PERIOD (1830 – 1860)

As population continued to grow, Page County was created from Shenandoah and Rockingham counties in 1831; the previously established town of Luray became the county seat. The county was named for John Page, member of the first U.S. Congress, Governor of Virginia (1802-1805), and Lieutenant-Governor during the Revolution (Strickler 1996:1). In Samuel Kerchevel's 1833 *History of the Valley*, he stated that "On the east side of the [Massanutten] mountain, on the River and Hawksbill Creek, are to be seen a number of fine farms, many of them studded with handsome brick buildings. Upon the whole, the traveler is amply rewarded by the gratifying sight, for his labor and fatigue in ascending the mountain" (quoted in PCBC 1976:29). As the Antebellum Period got underway, Page County flourished; businesses expanded, buildings were constructed, new roads were established, and wagons loaded with products of the county made regular trips to Fredericksburg and Alexandria (PCBC 1976:20).

East of the Blue Ridge Mountains, railroads were becoming a major mode of transportation. However, few penetrated the range. When the Baltimore & Ohio Railroad (B&O) reached Harper's Ferry in 1834 farmers and iron manufacturers in the Lower Shenandoah Valley were able to float goods down the Shenandoah River to Harper's Ferry at which point goods would be transferred to

rail. Unfortunately, this was not ideal given the limited navigation that the river allowed. Because Virginia's General Assembly had the authority to issue railroad charters in the state, they worked on keeping as many goods as possible in Virginia ports rather than allowing them up to Baltimore as the B&O did. By the start of the Civil War, railroads had entered the Valley at Harpers Ferry, near Staunton (Virginia Central Railroad), and Front Royal (Manassas Gap Railroad). Therefore, while the railroad greatly benefitted farmers and manufacturers east of the mountains, it initially did little to aid the Valley (Grymes n.d.b).

Despite the lag in transportation improvements, as compared to the east, the region's population and towns slowly grew. At its first federal census in 1840, the county had 6,194 residents. Throughout the Antebellum Period, its population grew by 31 percent to 8,109 residents in 1860 (USCB). Despite the belief system held by many in the county, there were enslaved African Americans. Of the total African-American population in Page County in 1860, nearly one-third (394 of 1,244) were free (Moore 2005:40).

By 1860, approximately 29 percent of the county's land was improved for crops or pasture. Farms produced corn, wheat, tobacco, and dew-rotted hemp. Mills operated on the county's waterways to process products and many villages owed the start to these mills, such as Newport across the river from the project area. Livestock was also raised in great numbers. Additionally, great expanses of timber were harvested. Sawmills often operated alongside gristmills on the waterways until the introduction of portable steam-powered sawmills (Giles and Pezzoni 1998:21, 24).

A Civil War era map depicts the project area on the Shenandoah River (Figure 6-3). The river does not have its present alignment and the land of the project area at this time appears largely cleared. The precursor to Grove Hill Road, east of the project area, is lined with homes.

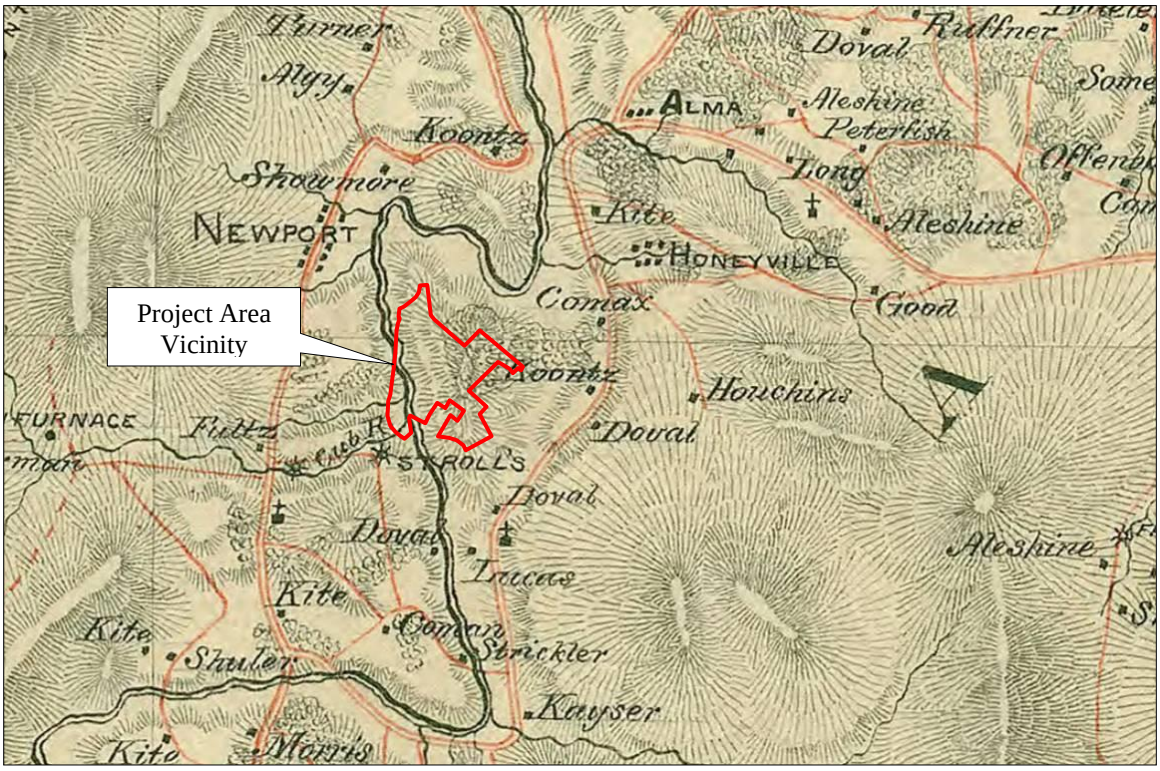

Figure 6-3: Detail of Map of the counties of Greene, Madison, Page, and Rockingham, and parts of the counties of Albemarle, Augusta, Culpeper, Louisa, Orange, and Rappahannock, Va, 1864, depicting the project area. Source: Library of Congress

CIVIL WAR (1861 – 1865)

On April 17, 1861, Virginia voted 88 to 55 to secede from the Union. Those who supported secession were from the state's Tidewater, Piedmont, and Shenandoah Valley regions where slave labor was heavily relied on. Despite the comparatively low slave population, residents of Page County voted for secession and the county sent many of its men to fight in the war. Company K of the 10th Virginia Infantry was formed of men from Page County (PCBC 1976:20).

Though the valley witnessed less military action than east of the mountains, the northeast-southwest orientation of the Shenandoah Valley and the natural screening provided by the Blue Ridge led to frequent troop movements. By defending the gaps in the mountains with cavalry, Confederate armies could move swiftly north behind the protective wall of the Blue Ridge into Maryland and Pennsylvania (E.H.T. Traceries 2000:17).

Page County was spared the heavy fighting witnessed elsewhere throughout the Commonwealth, however it did not make it through the war completely unscathed. With the counties of the Shenandoah Valley supplying the Confederacy with much needed provisions, Union Gen. Ulysses S. Grant sent Maj. Gen. Philip H. Sheridan to recapture the Valley and essentially destroy it. After the Third Battle of Winchester and Battle of Fisher's Hill, Sheridan pursued Confederate Gen. Jubal Early up the Valley. Grant ordered Sheridan to "give the enemy no rest, and if it is possible to follow the Virginia Central [rail]road, follow that far [to Charlottesville]. Do all the damage to railroads and crops you can. Carry off stock of all descriptions, and negroes, so as to prevent further

planting. If the war is to last another year, we want the Shenandoah Valley to remain a barren waste" (quoted in E.H.T. Traceries 2000:27).

Destruction came to the Shenandoah Valley in full force with Sheridan's Campaign of 1864. In October 1864, Col. William H. Powell entered Page County along the Shenandoah River from the south, burning mills and barns in his path (Giles and Pezzoni 1998:18). The burning of the valley had ended by November 1864. With the Valley destroyed and of no aid to the Confederates, Sheridan and his cavalry relocated to Petersburg and the final campaign of the war in Virginia (E.H.T. Traceries 2000:30).

RECONSTRUCTION AND GROWTH (1865 – 1917)

The Civil War severely affected the Shenandoah Valley and Page County. Despite the burning of valley, the high fertility of the soil and previous limited use of slave labor helped the valley recover. With the burning and the lawlessness that filled the region after the war, one of the most important tasks was in rebuilding the lost buildings, structures, and fences and between the war's end (Wayland 1912: 157; E.H.T. Traceries 2000:31). By 1880, the diversified agricultural economy had largely rebounded. Canning of tomatoes, beans, and orchard products would eventually become a major associated industry (Giles and Pezzoni 1998:21, 41).

Prior to 1881, transportation through the county remained limited to wagons and the river (PCBC 1976:25). However, after the Civil War, the focus of railroads in Virginia shifted from getting products only to Virginia ports to transferring people and freight seamlessly across the state. The first railroad to extend through the Shenandoah Valley north to south was the Shenandoah Valley Railroad, built to connect the Virginia and Tennessee Railroad to the Pennsylvania Railroad. The new line extended along the east side of Massanutten Mountain, east of the project area, because of the iron furnaces concentrated there (Grymes n.d.b).

Before long, the Valley and Page County was growing in terms of commerce, trade, and settlement (E.H.T. Traceries 2000:32). Between 1870 and 1910, the population of the county grew by 67 percent, from 8,462 residents to 14,147 (USCB). Maps of Page County during this period illustrate the increase in population with additional homes along the region's roads. An 1875 map depicts the project area consisting of sloped land (Figure 6-4). Though no dwellings are depicted there, it is unclear if this was a matter of no buildings being present in the project area or a matter of the mapmaker taking liberties in depicting dwellings. Ten years later, it appears that buildings were in the vicinity of the project area (Figure 6-5).These were the households of A.H. Keyser, John Lowderback [Louderback], and Jac. Lowderback [Louderback]. This was likely Alexander H. Keyser, John S. Louderback, and Jacob Louderback; all farmers in 1900 (USCB 1900).

The largest jump in population occurred between 1880 and 1890, perhaps a reflection of the railroad entering the county and the boom years that it brought. The railroad became a major factor in the growth of towns of Shenandoah (originally Milnes), as the Shenandoah Furnace Company established the Gem Furnace, and Stanley (originally Sands or Marksville Station) as well as smaller railroad communities (Giles and Pezzoni 1998:39). The railroad also led to the peeling and hauling of oak bark, which was used in tanneries as a source of tannic acid for tanning leather (PCBC 1976:99). A large tannery complex opened in Luray in 1882. Additionally, the traditional

mill industry underwent a transformation as large roller mills were constructed and older mills were adapted for new technologies (Giles and Pezzoni 198:41). Across the Shenandoah River from the project area, Foltz's mill was a large mill at Newport that made flour until 1942 (Strickler 1996:312).

Despite the region being settled since the eighteenth century, nearby natural wonders continued to be explored and discovered. In 1878 a more extensive cavern was discovered near the earlier cave at Luray. This would significantly increase tourism in the region and by 1883 an estimated 15,000 persons were visiting the "Caverns of Luray" annually. The presence of the railroad would also increase interest in Page County's mountain scenery (Giles and Pezzoni 1998:43-44). As the nineteenth century was coming to a close, interest grew in protecting local and national resources. In 1891 the Forest Reserve Act was passed which authorized the creation of Forest Reserves, the forerunner of what was to become the National Forest System (Forest Service n.d.). Forests had long been systematically stripped. The Massanutten Range had been stripped of trees between 1850 and 1880 (Satterthwaite 1993:6). In 1911, the Weeks Act was passed which made it possible for the Federal Government to buy deforested mountain land and protect it for watershed purposes. Land of Massanutten Mountain was among the first considered for acquisition though land would not be purchased until 1917 (Forest Service n.d.).

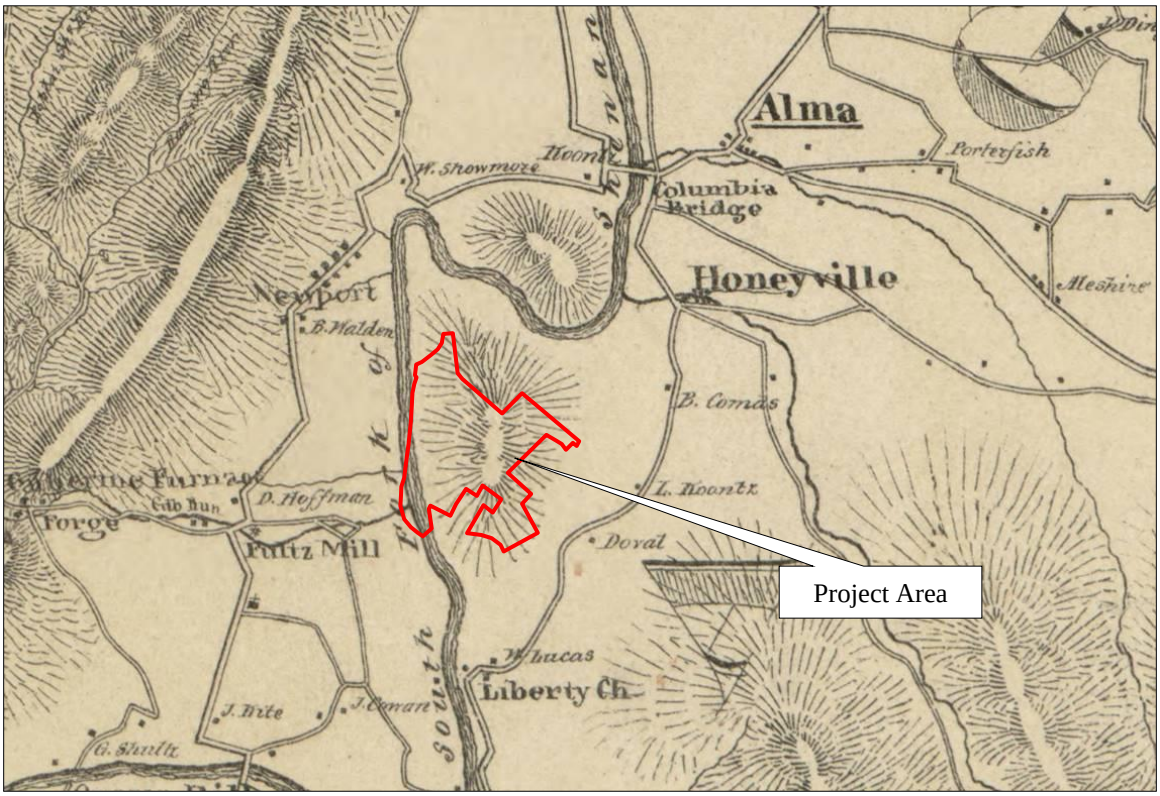

Figure 6-4: Detail of Map of Shenandoah & Page counties and part of Warren County, Virginia, by Hotchkiss in 1875, depicting the project area. Source: Library of Congress

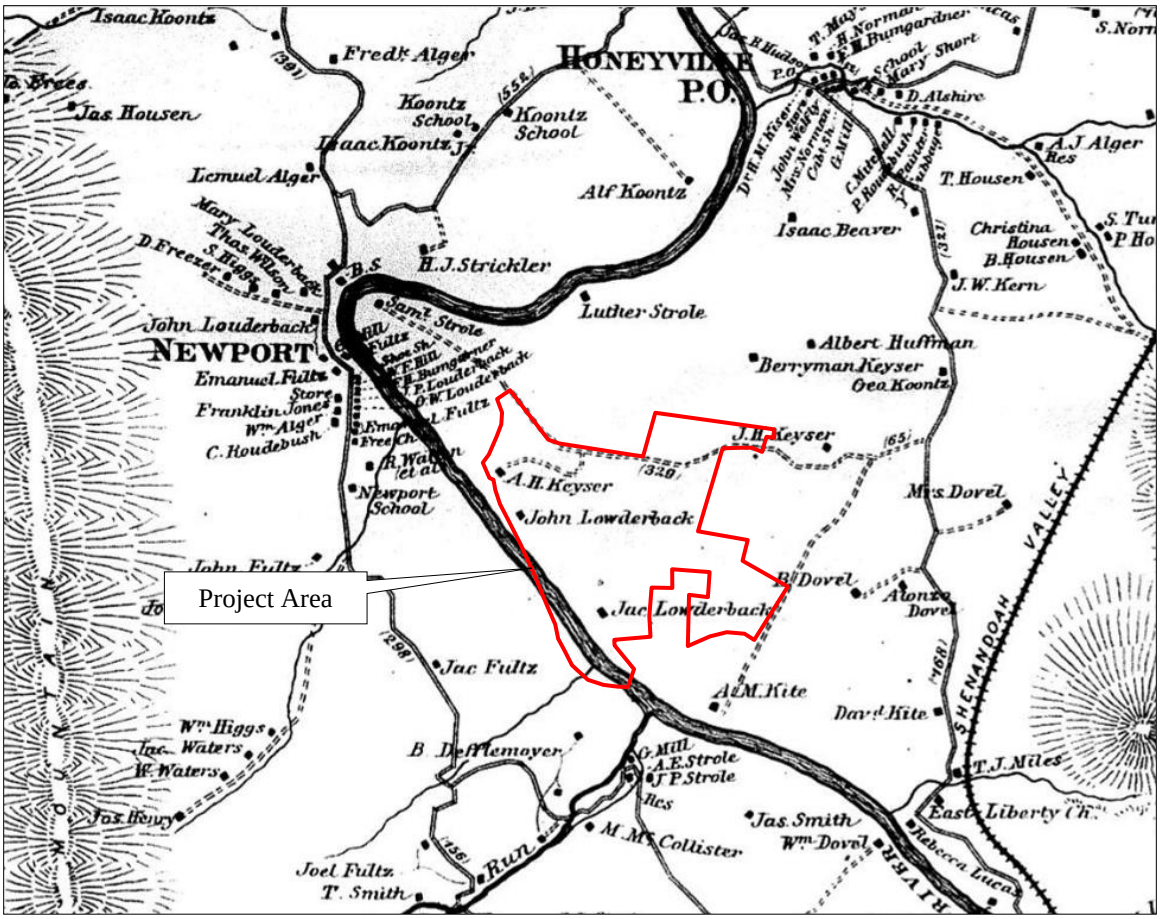

Figure 6-5: Detail of An Atlas of Shenandoah and Page Counties, Virginia, by Lathrop and Griffing in 1885, depicting the project area. Source: Historic Map Works

WORLD WAR I TO WORLD WAR II (1917 – 1945)

The Shenandoah Valley's economy continued to be focused on agriculture with such products as wheat, corn, oats, rye, barley, and grasses, in addition to sheep, hogs, cattle, poultry, and dairy products in Page County (Strickler 1996:3). Canning would continue to play a large role in the economy and by the late 1940s, there were approximately half a dozen canneries operating in the county (Giles and Pezzoni 1998:41).

With the outbreak of World War I, many young men in Virginia enlisted in the army and those who stayed home did their part in cooperating with wartime rations. Farmers were also encouraged to use more modern techniques to increase productivity. When men returned home from World War I, they generally picked up their lives where they had left them and continued working at the same jobs though transportation improvements would continue to draw people away from the homestead (Manarin and Dowdey 2007:250). The automobile would begin to change the landscape of the Commonwealth and country.

In addition to the automobile, great technological improvements were coming to Page County. In the early 1920s, Miller E. Roudabush and associates constructed a hydro-electric plant and dam (VDHR #069-0044) on the South Fork of the Shenandoah River at Newport. This would be one

of three such plants on the river. By 1946, this would come under the Northern Virginia Power Company (Strickler 1996:305).

As previously mentioned, the natural beauty of region was recognized and preserved. In 1917, land was purchased to become Shenandoah National Forest and in 1926 Shenandoah National Park was authorized (Forest Service n.d.; E.H.T. Traceries 2000:36). It would be fully established in 1935 (E.H.T. Traceries 2000:36). To avoid name confusion, the Shenandoah National Forest changed its name to George Washington National Forest (Forest Service n.d.). Large portions of the county lie within the Shenandoah National Park in the Blue Ridge and in the George Washington National Forest in the Massanutten Mountains (Strickler 1996:2). Skyline Drive was created along the Blue Ridge for the mobile motorists between 1931 and 1939. Many of the families displaced by the creation of these parks was provided with government housing, such as that at the village of Ida (Giles and Pezzoni 1998:44). Much of the work done for the parks was completed under government programs brought about by the Great Depression. The stock market crash and Depression of the 1930s brought devastating effects to the economy; however Virginia as a whole did not fare as poorly as other places across the nation. However, the depression combined with severe drought largely brought the agricultural county to a standstill (PCBC 1976:29).

The population of Page County remained fairly steady during this period and there continued to be buildings within the project area during this time (Figure 6-6). In seems that Harry Keyser inherited his family farm (V-CRIS 069-5015). A 1942 topographic map of the region depicts the new alignment of the river caused by its damming and erection of the power plant.

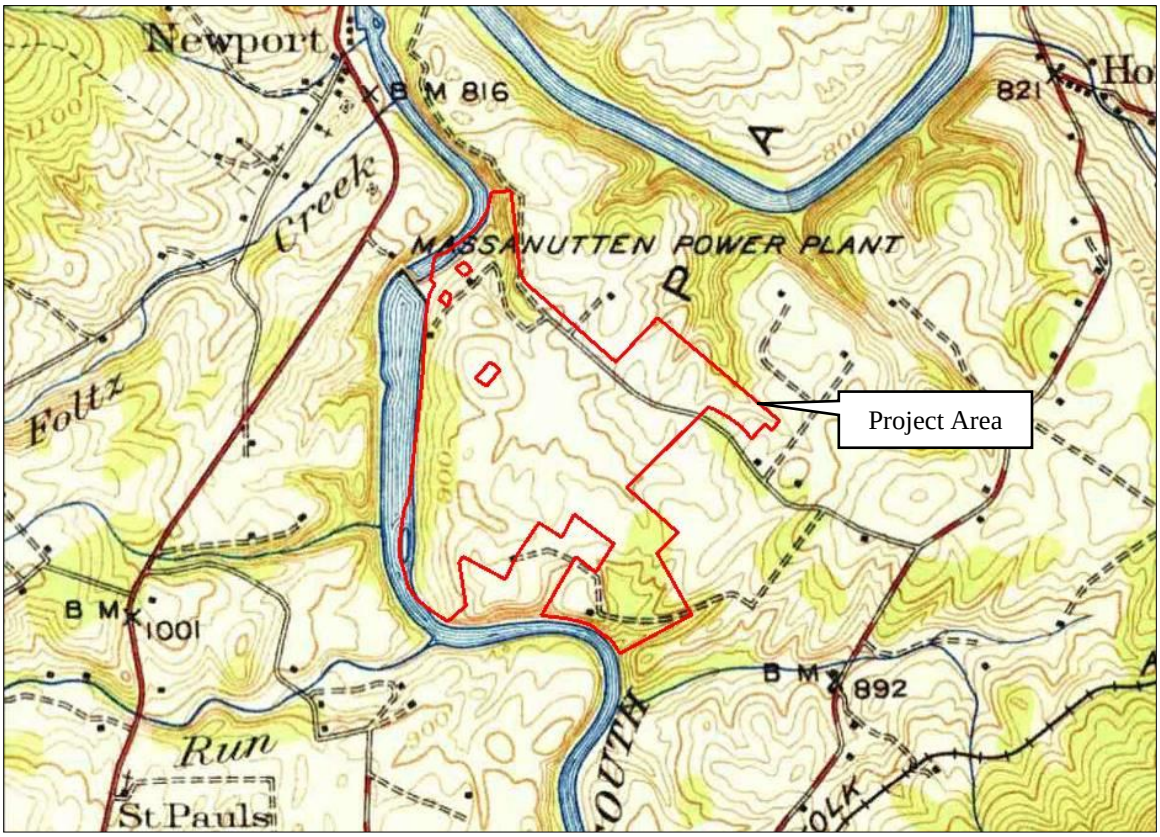

Figure 6-6: Detail of the 1942 topographic map, Mt. Jackson, depicting the project area. Source: USGS

NEW DOMINION (1945 – PRESENT)

As the twentieth century progressed, much of Virginia transitioned from an agricultural society to an urban one. More and more farmland was subdivided and developed, particularly surrounding larger cities and the earlier suburban movement grew with such force that much of the Commonwealth's landscape would forever be altered. Relative to many other areas of Virginia, however, Page County changed very little (Giles and Pezzoni 1998:60). Though at a slower rate than in other counties, the population of Page increased by nearly 59 percent between 1950 and 2010 from 15,152 residents to 24,042 (USCB). It appears that this growth has been focused on Luray and Shenandoah and many new residents are those choosing to retire here (PCBC 1976:29). At the project area, topographic maps depict the increased number of dwellings and agricultural buildings within the project area in the second half of the twentieth century (Figures 6-7 and 6-8).

The agricultural economy continues to be strong in Page County, particularly commercial poultry production. Meanwhile, largescale industries established earlier in the county are giving way to smaller enterprises (Giles and Pezzoni 1998:60). Tourists continue to be drawn to the natural wonders of Page County: to the caves of Luray and the mountains of Massanutten and the Blue Ridge.

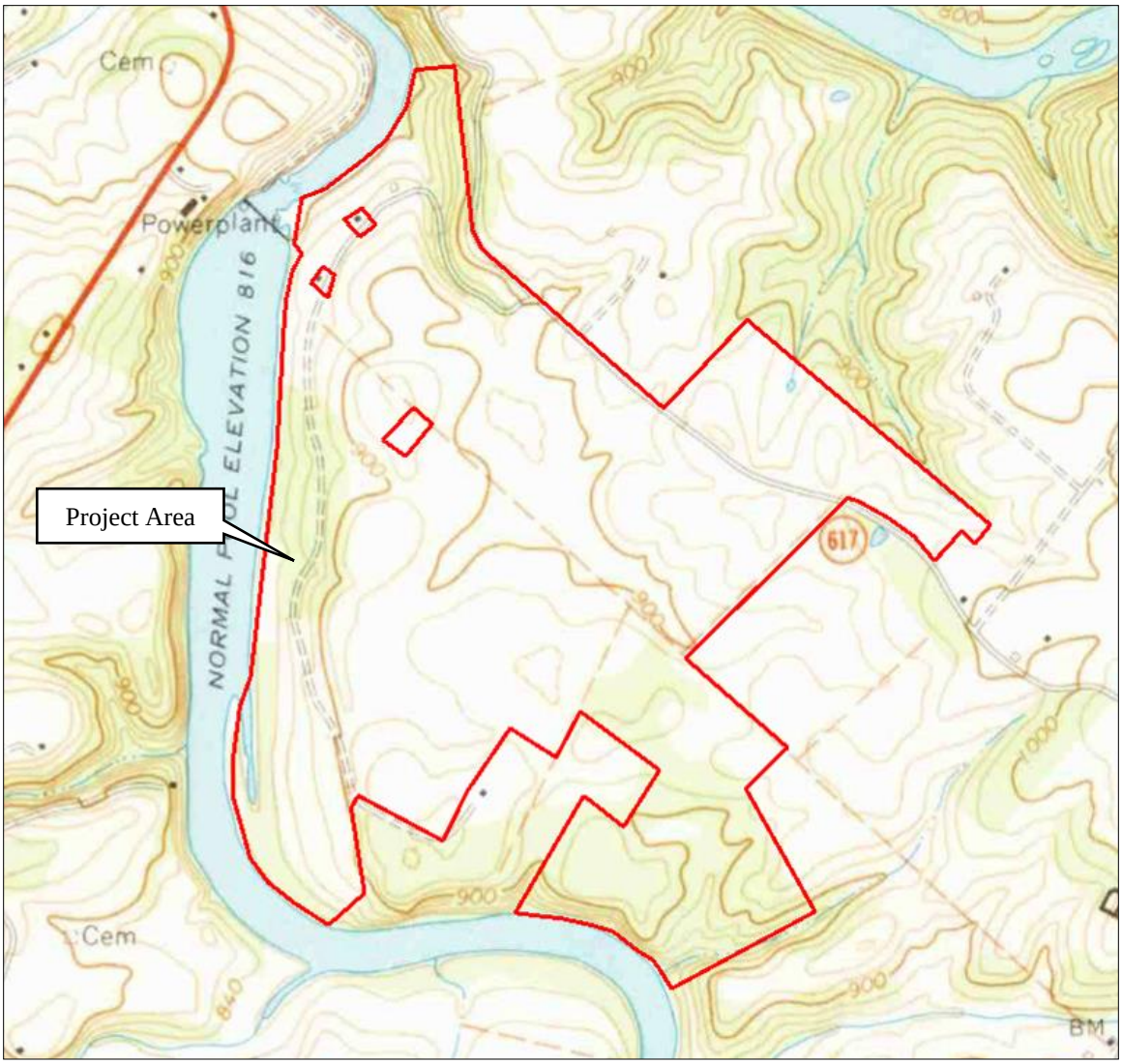

Figure 6-7: Detail of the 1967 Stanley topographic map depicting the project area. Source: USGS

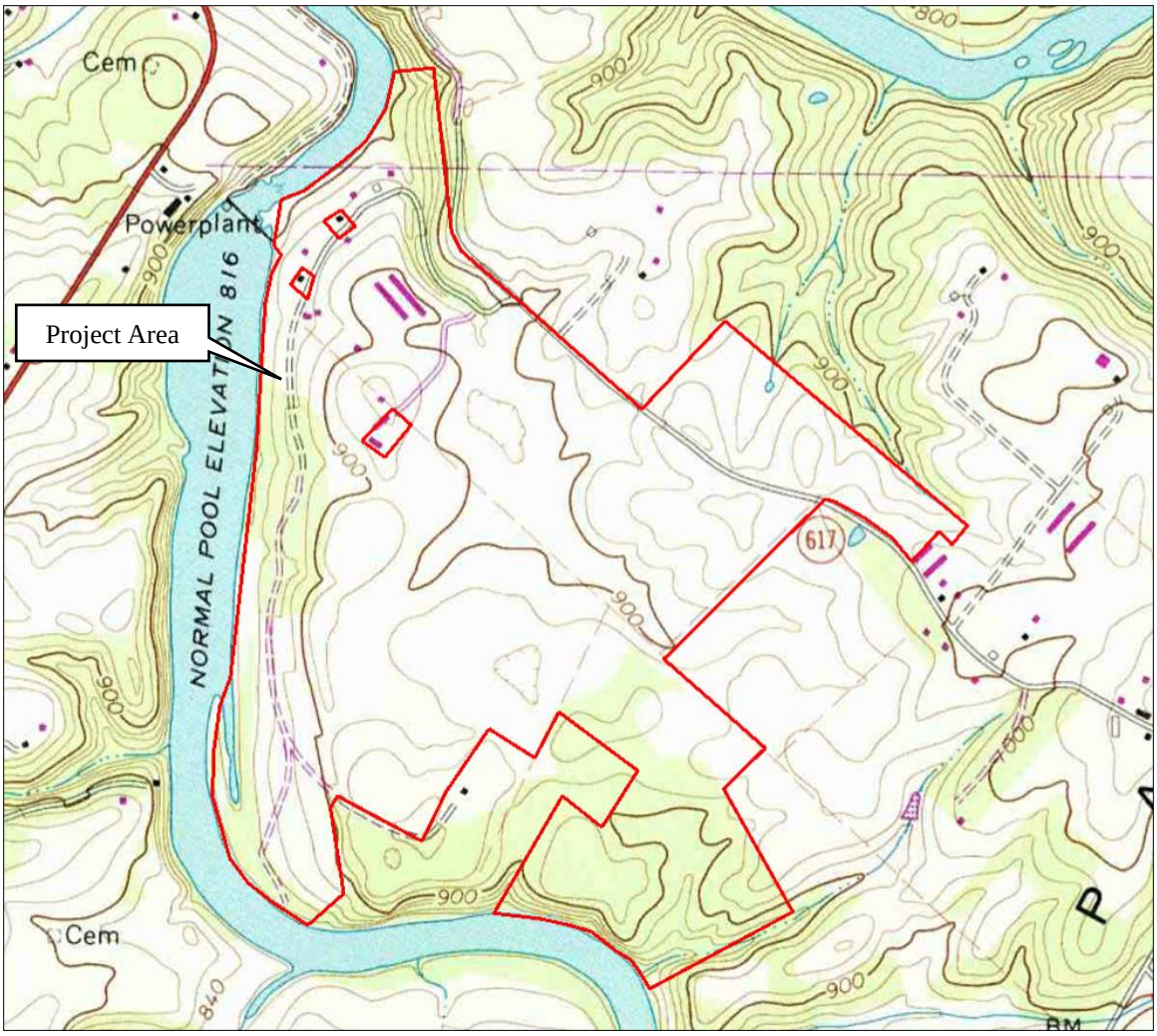

Figure 6-8: Detail of the 1987 Stanley topographic map depicting the project area. Source: USGS

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7. EXPECTED RESULTS

A number of factors must be considered in determining the types of sites that can reasonably be expected to be found in the course of an archaeological testing program. Environmental data such as geology and hydrology along with historic data including transportation routes and proximity to settled areas can provide indications about general use and settlement. In addition to background research, data on previously identified sites can shed light on the types of resources one might expect to find. The following section summarizes the types of cultural resources expected to be present within the project area following a review of these factors.

ENVIRONMENTAL CONSIDERATIONS

Prior to modern disturbances the character and type of soil would have had a direct effect on the kind of vegetation and hydrology of the area and on the potential for human habitation and usage. There is a strong correlation between settlement density and soil fertility. A well-known study of settlement patterns in relation to soil types (Lukezic 1990) indicates that historic settlement is closely correlated with the location of prime farmland, and Native Americans during the late prehistoric period also appear to have had preferences for specific site locations and soil types (Rountree and Turner 2002:69).

The topography is characterized by a relatively flat river terrace, with gentle hilltops located in the northwestern and southeastern portions of the project area. A gentle slope leads to the adjacent riverbank. A small drainage leading to the river is located in the northwestern portion of the project area. All of the survey area, excepting the 1% of the project area comprised of dam or standing water, is well drained or moderately well drained. About 75% of the project area is considered prime farmland by the USDA.

MAP PROJECTED SITES

Historic documents, maps, and literature provided some evidence on the likelihood for the project area to contain prehistoric or historic archaeological sites. As illustrated earlier in the cultural context section of this report, in the 1770s, families within the vicinty of the project area inlcuded Kite, Shuler, and Foltz. A 1885 map shows dwellings associated with the following familes located within the project area: Alexander H. Keyser, John S. Louderback, and Jacob Louderback; all of whom were farmers in 1900. These dwellings are projected to be located outside of the area of ground disturbance, as referenced in the abstract and research design section of this report.

PREVIOUSLY RECORDED SITES

While documentary sources have bias and often are limited in their attention to detail, information on previous surveys and recorded resources in the vicinity of the project area, as well as regional settlement models offer additional information and perspective on the project area's potential to contain intact significant archaeological deposits.

Review of the VDHR VCRIS records no previously recorded archaeological resources in the project area. VDHR # 069-0040 – Cub Run Farm or Joe Foltz Home is located within the project area. This resource is potentially eligible for inclusion in the NRHP, but is located outside of the proposed area of disturbance as discussed in the abstract and the research design section of this report.

PREHISTORIC SITE POTENTIAL

The project area contains a terrace which overlooks the Shenandoah River. The potential for prehistoric sites is high, however, the potential for prehistoric sites is highest in the portion of the project area which will not be disturbed by solar panels or installation of solar panels. The portion of the project area which will be subjected to ground disturbance is further east of the river, and while still has high potential for prehistoric sites, has less of a potential for village sites or burial mounds than the terrace which overlooks the river. Large sites within this area would have focused on the river terrace.

HISTORIC SITE POTENTIAL

There are mapped dwellings within the project area, however not within the vicinity of the proposed area of disturbance. A historic road runs east-west along the northern portion of the project area. The historic site potential is high.

8. FIELD SURVEY RESULTS

ARCHITECTURAL FIELD RESULTS

The architectural resources survey for the Dogwood Solar project resulted in the identification and recordation of twenty-five (25) architectural resources greater than 50 years of age (constructed in 1971 or earlier) located within the architectural survey area, two of which are located directly within the project area. Of the surveyed resources, eight (8) were previously recorded (VDHR# 069-0044, 069-0102, 069-0103, 069-5015, 069-5172, 069-5271/5273) and seventeen (17) were newly recorded during this Phase I Survey (VDHR# 069-5307/5322, 069-5324). Two of the previously recorded resources were found to have been demolished since they were last surveyed (VDHR# 069-0103 and 069-5015). VCRIS site file forms were prepared or updated for each recorded resource.

The 23 extant resources within the survey area and documented as part of this effort consist primarily of domestic buildings and farmsteads from the early- to late-twentieth century, as well as a smaller number of earlier homes, a nineteenth century family cemetery, and two twentieth century bridges.

The survey area occupies a mostly rural area of south-central Page County, just south and east of the village of Newport. The project area itself is composed of a large farm tract on the south side of Dam Acres Road, generally bordered by the South Fork of the Shenandoah River to the west and south. Most of the project area is open agricultural field and pasture, with some smaller patches of woodland. There are two farm complexes within the project area, each with a single family dwelling and multiple barns and outbuildings. The surrounding survey area is also mostly rural, and spans both sides of the South Fork of the Shenandoah River. U.S. Highway 340 serves as the western border of the survey area, and is the primary north-south transportation corridor in the region. A number of secondary routes also cross through the survey area on both sides of the river.

Most development within the survey area consists of single family dwellings and farmsteads set along the secondary roads that cross through the area. Most are set near the road with associated property to the sides and rear, although there are several homes and farms set further back from the road on larger properties. The majority of development within the survey area dates from the twentieth century although there are several earlier properties from the mid- to late-nineteenth century as well. Many of the homes from the nineteenth and twentieth century reflect various Vernacular forms; the most prominent being the I-house. There are also a number of homes with subdued interpretations of more nationally prevalent styles, including Craftsman, Minimal Traditional, and Ranch. Most surveyed resources include a variety of barns, agricultural buildings, and other outbuildings from throughout the twentieth century to the modern day, most of which are modest frame utilitarian structures.

Of the surveyed resources, just one is considered potentially eligible for listing in the NRHP. This property, Cub Acres, is farm dwelling from the mid-nineteenth century, and is considered potentially eligible for architecture as a good example of a regional form and style, in addition to the retention of a fairly large, intact complex of historic agricultural buildings. The rest of the

surveyed resources are primarily modest frame and masonry dwellings that reflect common forms and types found throughout the region from their respective time period. None of these appear to reflect any unique or significant design or historical associations, and as such, all are considered not eligible for listing in the NRHP individually or collectively.

Provided in the following pages are a table of all surveyed resources (Table 8-1), a map with the location of each resource surveyed (Figure 8-1), and descriptive narratives and photographs of each of the identified historic resources. Resource narratives include a physical description, discussion of history, integrity, and NRHP-eligibility. For the one resource considered NRHP-eligible, an assessment of project impacts is also provided.

Table 8-1: Surveyed Architectural Resources. Bold font denotes resource is NRHP-eligible. Orange highlight denotes resource is located directly within the project area.

VDHR ID#	Resource Name/Address	Year Built	NRHP Eligibility
069-0044	Newport Dam	1923	D+A: Not Eligible
069-0102	**Cub Acres, 337 Jenkins Drive**	**1848**	**D+A: Potentially Eligible**
069-0103	Strole Log House, Strole Farm Road	c.1820	D+A: Not Eligible
069-5015	Farm, 1299 Dam Acres Road	c.1924	D+A: Not Eligible
069-5172	Bridge #1011, U.S. Highway 340 over Foltz Creek	1927	D+A: Not Eligible
069-5271	Bridge #6016, Strole Farm Road over Cub Run	1930	D+A: Not Eligible
069-5272	House, 119 Jenkins Drive	c.1895	D+A: Not Eligible
069-5273	Farmstead, 663 Strole Farm Road	1840	D+A: Not Eligible
069-5307	House, 191 Jenkins Drive	1959	D+A: Not Eligible
069-5308	House, 467 Strole Farm Road	1971	D+A: Not Eligible
069-5309	House, 330 Double D Lane	1923	D+A: Not Eligible
069-5310	House, 5395 U.S. Highway 340	1918	D+A: Not Eligible
069-5311	House, 1212 Dam Acres Road	1886	D+A: Not Eligible
069-5312	House, 642 Dam Acres Road	1913	D+A: Not Eligible
069-5313	House, 584 Dam Acres Road	1903	D+A: Not Eligible
069-5314	House, 573 Dam Acres Road	1970	D+A: Not Eligible
069-5315	House, 518 Dam Acres Road	1900	D+A: Not Eligible
069-5316	House, 294 Dam Acres Road	1965	D+A: Not Eligible
069-5317	House, 283 Dam Acres Road	1903	D+A: Not Eligible
069-5318	House, 258 Dam Acres Road	1933	D+A: Not Eligible
069-5319	House, 4733 U.S. Highway 340	1943	D+A: Not Eligible
069-5320	House, 4739 U.S. Highway 340	1953	D+A: Not Eligible
069-5321	House, 4849 U.S. Highway 340	1961	D+A: Not Eligible
069-5322	House, 192 Double D Lane	1929	D+A: Not Eligible
069-5324	Kite Cemetery, Dam Acres Road	c.1889	D+A: Not Eligible

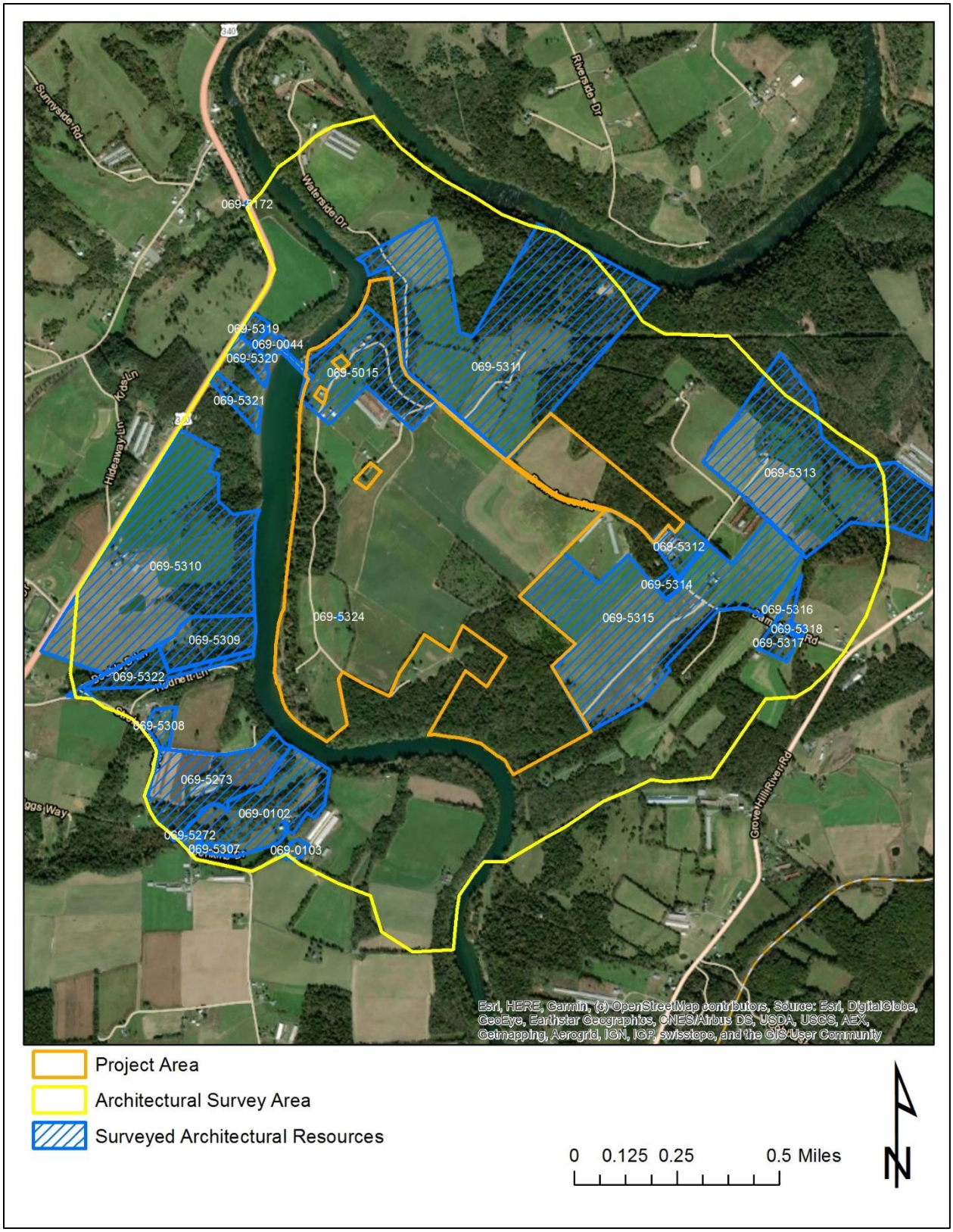

Figure 8-1: Location of surveyed architectural resources in relation to the project area

RESOURCE NARRATIVES

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VDHR# 069-0044
Newport Dam, Shenandoah River

The Newport Dam was originally built in 1923 and substantially rebuilt in 1987 according to written records. The structure consists of a concrete dam that stretches the full-width of the river with a hydro-electric generation facility at the west bank. The generation building rises one story above the level of the dam and consists of a masonry structure, composed of yellow brick laid in a common bond set above a poured concrete base. It is topped by a flat roof and the wall is pierced by a multi-light industrial style casement window. The dam itself is a poured concrete structure that measures a total of 518 feet, including the spillway, powerplant, navigation lock, and fish pass.

The Newport Dam spans the South Fork of the Shenandoah River just upriver from the village of Newport. The dam spans the full-width of the river with the powerplant set on the western edge near the shoreline. Both ends of the dam are bordered by steep shorelines. An access road has been cut into the western bank to provide access to the powerplant. Set atop the bluff uphill from the powerplant is a modern substation and interconnect.

The Newport Dam was built in 1923 as part of a series of hydroelectric facilities along the Shenandoah River. The dam continues to generate power, and is operated by PE Hydro Generation, LLC as part of a public utility. The power plant it a utilitarian building that reflects subtle influences of the Art Deco style. The dam is a simple poured concrete structure that spans the river. The overall structure was substantially rebuilt in 1987 at which time the associated substation appears to have been built. As the dam represents a common resource type throughout the region with little architectural distinction and reconnaissance-level research did not reveal any known significant historical associations, it is considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-0102
Cub Acres, 337 Jenkins Drive

This single dwelling was built in 1848 according to previous study and exhibits a Vernacular design. The two-story on raised basement building has an I-house form. The masonry structural system is comprised of brick laid in a Flemish bond that rests on a continuous foundation. It is topped by a side-gable roof covered with standing seam metal that is flanked at each end of the ridge by exterior end brick chimneys. The main entrance is set centrally on the front and is sheltered within a full-width one-story hipped roof porch that has been enclosed with siding and windows. A full-width porch with square columns and a balustrade remains open on the rear. Fenestration consists of nine-over-six double-hung sash windows. The building is ornamented with boxed and molded cornices, gable returns, and molded window frames.

This dwelling is located at the terminus of Jenkins Drive on a large rural property. The building sits back from the road on a sloped grassy lawn with a few shade trees and other landscaping scattered around the house. Jenkins Drive transitions into a private driveway and leads past the around the front and far side of the house to a complex of outbuildings set to the rear. Set in the backyard just to the rear of the house is what appears to be a wellhouse. Set further downhill to the side, and bordering a small creek are additional historic outbuildings including a garage, equipment barn, shed, chicken coop, and multiple barns. Beyond the buildings and across the creek is a small agricultural field that extends to the bank of the Shenandoah River along with an animal barn and run-in shelter. Bordering the building complex and near fields are a variety of treelines, wooded areas, and a patchwork of fields.

This property represents what appears to be a good example of an antebellum rural dwelling and farm in the region. The building reflects a Vernacular I-house form, and likely reflects at least subtle stylistic influences, however, close inspection was not possible as part of this survey. It includes a large and relatively intact collection of historic barns and outbuildings, although most appear to date from the twentieth century. Overall, the property may represent trends in rural

domestic and agricultural architecture from the nineteenth and twentieth century and warrants further investigation to determine if any significant historical associations assist. At this time, the property should be treated as *potentially eligible* for listing in the NRHP.

As an ***NRHP-eligible*** resource, an assessment was conducted to determine whether the project may pose any impacts to its eligibility. Improvements related to the Dogwood Solar project are proposed to take place within the landscape across the river to the east of the Cub Acres property. Although the project area boundary is located directly across the river from the property, the house is set centrally within the large property, and because project improvements will be setback from the river, the nearest project improvements to the house will be roughly 0.44 mile away (Figure 8-2). The landscape of the property and the adjacent portion of the project area is generally characterized by rolling terrain with a patchwork of open field and woodland, including thick wooded areas on the bluffs bordering both sides of the river.

To assess whether the project or any associated components may pose an impact to the resource, a viewshed assessment was conducted. Inspection was performed and photographs taken from the public right-of-way in front of the property and in the vicinity to document existing setting, visibility, and lines of sight (Figures 8-3 through 8-5).

This assessment found that the historic rural landscape around the resource is generally intact. The Cub Acres house itself sits centrally within its property, on a slope leading downhill from the private lane to a lower valley bordering Cub Run, a tributary to the South Fork of the Shenandoah River. The home rests on a grassy yard, with the majority of its associated outbuildings near to the side and rear. The home is oriented to the southeast, with the project area generally to its east side. Set between the house and the project area is a narrow agricultural field lined by treelines, with a thicker treeline bordering the river on its property. A thicker wooded area extends along the east bank of the river where the project area is located. Although the project area extends to the east bank of the river, the nearest improvements associated with the project are set well back from the river, atop a terrace behind the existing wooded area.

Inspection from Jenkins Lane before it becomes the private driveway for the Cub Acres property revealed that a treeline extending along a ridge the front and side of the house screens all views of the river and the project area beyond. Inspection from Strole Farm Road set at a higher elevation revealed a narrow view of the river with a wider view of the project area on the east bank of the river. However, visibility is limited to the wooded bluff that extends along the river. The cleared field beyond the bluff where the nearest project improvements are proposed is completely screened by the topography and existing vegetation.

As the wooded bluff along the river that screens the vicinity of project improvements will remain in place and not be cleared, it is anticipated that the project will not be visible from the Cub Acres house, or public vantage points along the edge of the property. A site plan for the project, depicting setbacks, existing vegetation, and proposed improvements is provided in Figure 8-6. As such, the Dogwood Solar project is recommended to pose no more than a ***minimal impact*** on the Cub Acres property.

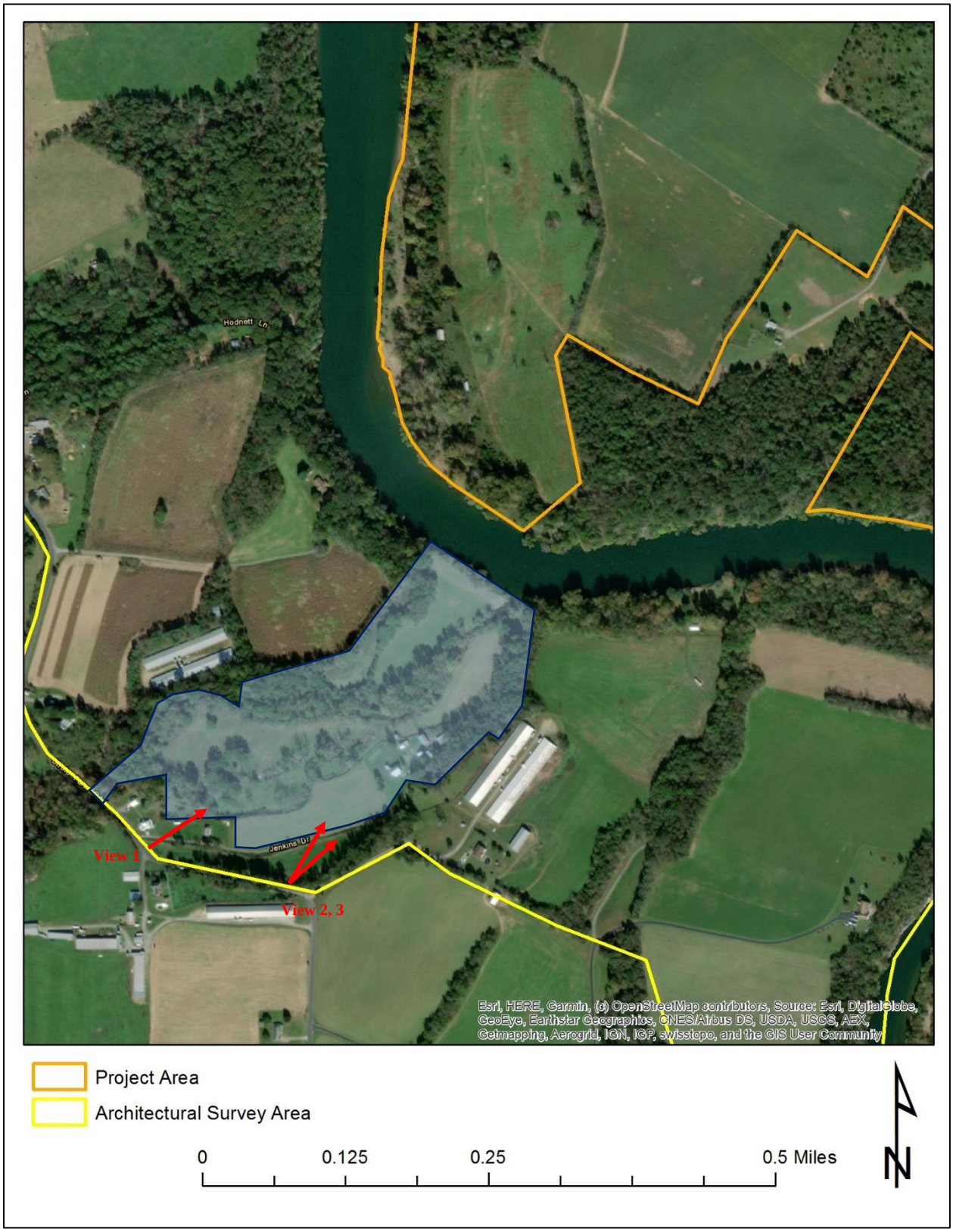

Figure 8-2: Location of Cub Acres in relation to the project area showing direction of representative and viewshed photos

Figure 8-3: View 1- View towards Cub Acres and the project area from the end of the driveway, facing northeast

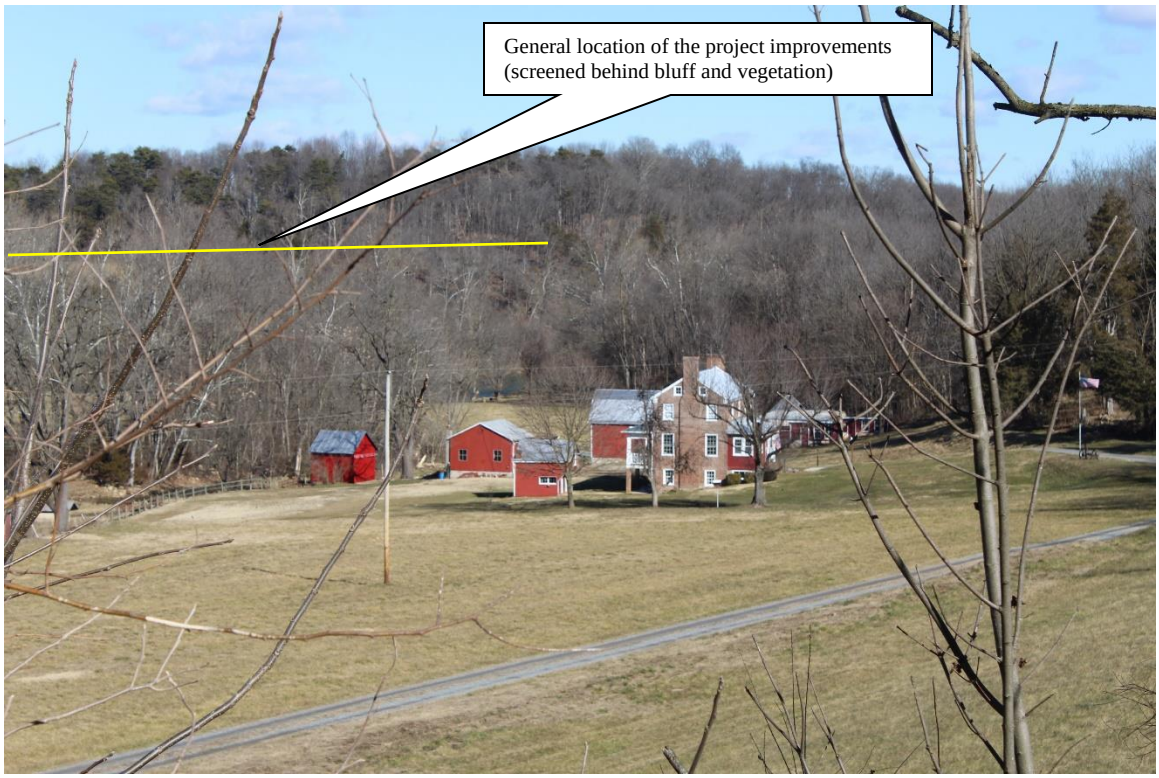

Figure 8-4: View 2- View from Strole Farm Road in front of Cub Acres towards the project area (not visible), facing northeast

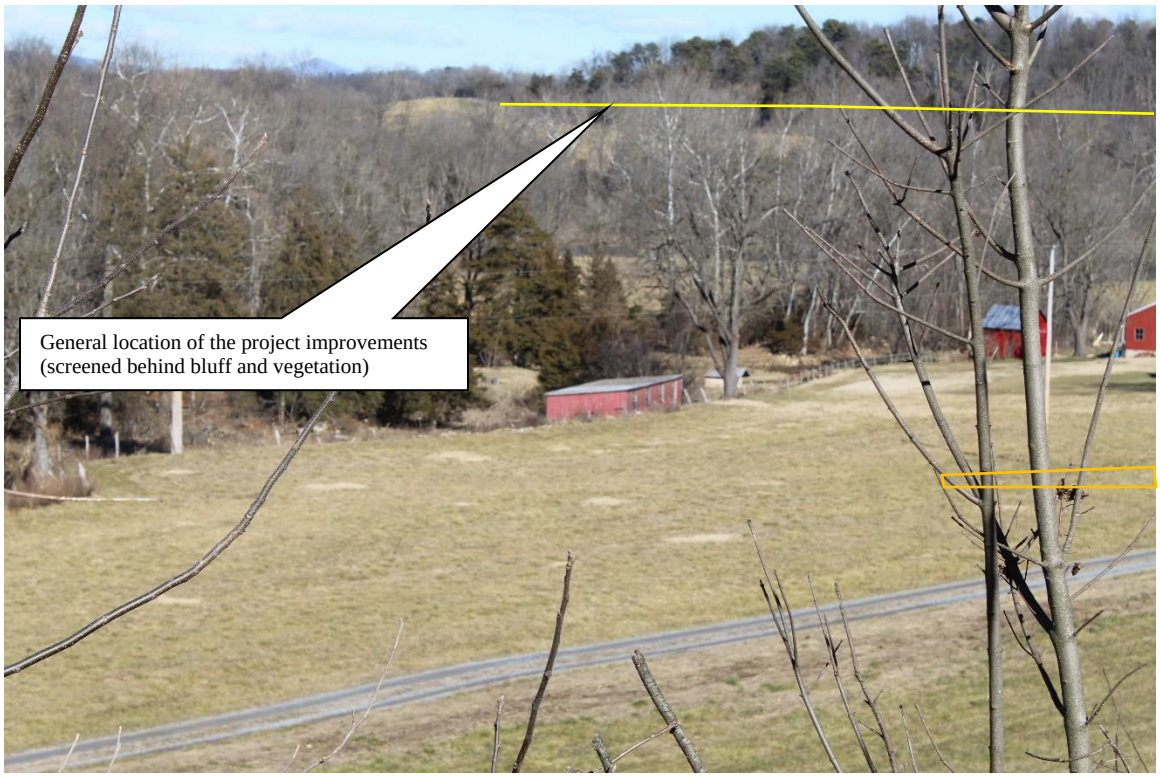

Figure 8-5: View 3- View from Strole Farm Road in front of Cub Acres towards the project area (not visible), facing northeast

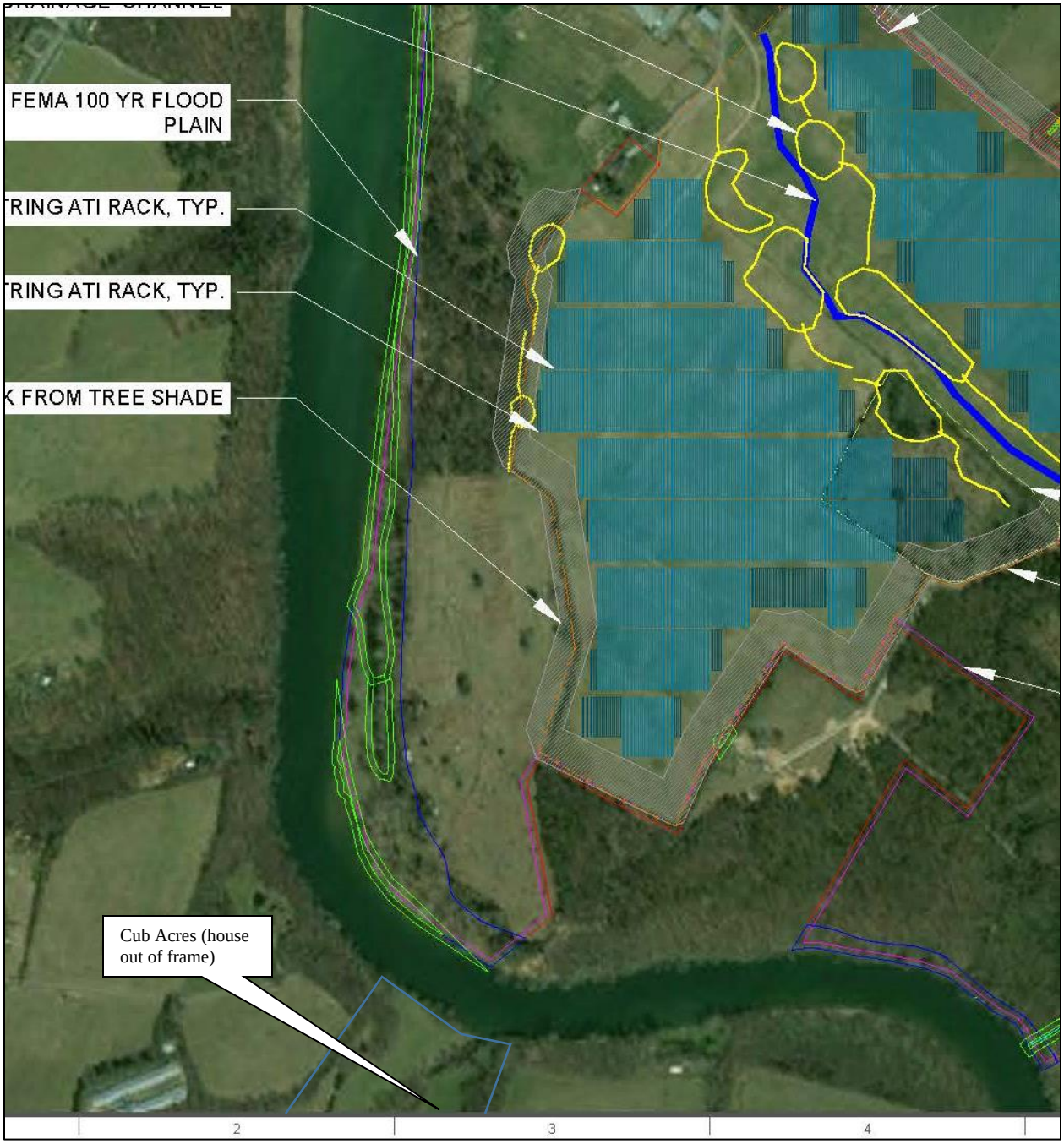

Figure 8-6: Detail of conceptual site plan illustrating improvement setback and vegetative screening in the vicinity of Cub Acres. Source: Urban Grid

VDHR# 069-0103
Strole Log House, Strole Farm Lane

This resource was previously recorded as a single dwelling built circa 1820. The building was recorded as a three-story log structure set on a stone foundation with brick chimneys. At this time, that building no longer appears to be present on the property and is assumed to have been demolished.

This dwelling was previously located on a rural property at the end of Strole Farm Lane. Previous mapping placed the home within a small field near the front of the property. At this time, the building is no longer present, although a wellhouse remains in the vicinity, as do a barn and several other historic outbuildings. A modern home and large poultry barns are also now located nearby on parcels that have been subdivided.

This property was previously recorded as a circa 1830 log dwelling with a complex of outbuildings. At this time, the primary dwelling was not observed and is assumed to have been demolished. Several outbuildings remain, although many were not visible and also assumed to have been demolished. As the primary dwelling no longer remains, and all that remains are a few isolated outbuildings which appear to date to the twentieth century, the property is considered ***not eligible*** for listing in the NRHP individually or as part of a historic district.

VDHR# 069-5015
Farm, 1299 Dam Acres Road

This single dwelling was built circa 1924 according to previous oral history and exhibited a Craftsman Foursquare style, however, according to the property owners at this time, the home burned circa 2005. Inspection of the site revealed that all that remains of the original dwelling is a stone chimney.

This dwelling was located centrally on a large rural property set along Dam Acres Road. The original dwelling is no longer extant, however, a secondary dwelling and large collection of barns and outbuildings remains scattered throughout the property. A modern dwelling and poultry operation are set on a subdivided parcel nearby.

This property was an example of a typical early-twentieth century rural dwelling and farm in the region. According to previous survey, the building was constructed circa 1924 and reflected a Craftsman Foursquare form. The farm complex also included a collection of assorted barns and outbuildings from throughout the twentieth century. The primary dwelling burned circa 2005, although many of the barns and outbuildings remain. A modern dwelling and poultry operation are now located on a subdivided parcel nearby. As the primary dwelling is no longer extant and the remaining outbuildings are now isolated secondary resources that reflect typical rural and agricultural development in the region from the twentieth century, this resource is considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5172
Bridge #1011, U.S. Highway 340 over Foltz Creek

VDOT Bridge #1011 was originally built in 1927 and has been upgraded and retrofitted at various dates, including most recently in 2005. The bridge is a simple girder-span structure built of poured concrete. The bridge is two-lanes, or approximately 26-feet wide, and spans 33-feet with at-grade approaches. The deck is paved with asphalt and lined with poured concrete railings that have been supplemented with metal guard rails.

The bridge is located on U.S. Highway 340 in the Newport vicinity of Page County. It crosses Foltz Creek within a rural area. The surrounding setting is characterized by a mix of single family homes set on small lots, as well as a patchwork of open pasture and woodland.

This bridge was built as a vehicular bridge to carry Highway 340 over Foltz Creek in 1927. It has since been updated with modern paving and guardrails. As this bridge is a typical two-lane secondary route bridge, and does not embody distinctive characteristics or possess significant or unique architectural or design features, it was determined not eligible by the VDHR in 2005. At this time, it is still considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5271
Bridge #6016, Route 613 over Cub Run

VDOT Bridge #6016 was originally built in 1930 and was substantially rebuilt in 2005. The bridge is a simple girder-span structure built of poured concrete. The bridge is two-lanes, or approximately 24-feet wide, and spans 66-feet with at-grade approaches. The deck is paved with asphalt and lined metal guard rails. The only remaining visible componants of the original construction are stacked stone abutments lining the creek as it approaches the bridge.

The bridge is located on Route 613 (Strole Farm Road) in the Newport vicinity of Page County. It crosses Cub Run within a mostly wooded rural area. The surrounding setting is characterized my mostly undeveloped wooded area, with a small farm and associated property at the south end.

This bridge was built as a vehicular bridge to carry Route 613 over Cub Run in 1930. It has since been almost completely rebuilt. As this bridge is a typical two-lane secondary route bridge that is mostly modern in construction, and does not embody distinctive characteristics or possess significant or unique architectural or design features, it was determined not eligible by the VDHR in 2005. At this time, it is still considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5272
House, 119 Jenkins Drive

This single dwelling was built circa 1895 according to previous survey and exhibits a Vernacular design. The one-and-a-half-story building has an L-shaped form with an offset rear wing that has been expanded with a one-story addition that wraps around the side and rear. The wood frame structural system is clad with vinyl siding and rests on a continuous concrete foundation. It is topped by a side-gable roof covered with standing seam metal that is pierced at the ridge by an interior brick chimney. A central gabled wall dormer is set on the front slope of the roof. The main entrance is set centrally on the front and is sheltered by a nearly full-width, hipped roof porch with replacement fluted columns. Fenestration consists of six-over-six double-hung sash windows. The building is simple and minimally ornamented.

This dwelling is located on the north side of Jenkins Drive at the intersection with Strole Farm Road on a small rural property. The building sits downhill from the road on a mostly open grassy yard and is oriented to face Strole Farm Road. A paved driveway leads from the road to a modern two-story garage set in the yard to the side of the house. Set to the opposite side of the house, on the hill abutting Jenkins Drive is a historic wellhouse.

This property is an example of a typical mid-twentieth century rural dwelling in the region. The building reflects a Craftsman style with little architectural distinction. It includes a small collection of typical manufactured outbuildings. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5273
House, 663 Strole Farm Road

This single dwelling was built in 1840 according to local tax records and exhibits a Vernacular design. The two-story building has an I-house front block with an offset rear wing and a two-story addition filling in the corner. The wood frame structural system is clad with vinyl siding and rests on a continuous brick foundation. It is topped by a side-gable roof covered with standing seam metal that is flanked at each end of the ridge by exterior end brick chimneys with an interior brick chimney on the ridge of the rear wing. The main entrance is set centrally on the front and is sheltered by a nearly full-width, hipped roof porch with square wood columns. A second entrance, which now appears to be used as the primary entry is set on the side of the rear wing and is sheltered by a partial-width hipped roof porch with plain posts. Fenestration consists of one-over-one double-hung sash windows. The building is minimally ornamented with boxed cornices, wide chimney stacks, and window shutters.

This dwelling is located on the east side of Strole Farm Road on a large rural property. The building sits near the road atop a knoll with a variety of shade trees scattered around the yard and homesite. Set immediately to the rear of the house is a historic domestic outbuilding that is previously recorded as a smokehouse but may be a wellhouse. The home is approached by a gravel driveway that extends uphill and makes a loop in front of the rear wing. Set within the loop of the driveway is a small historic shed. At the base of the driveway near the road is a drive-through corncrib. An extension of the driveway leads past the rear of the house to a modern complex of poultry houses set further to the rear. At the far edge of a field behind the building complex is a small family cemetery.

This property is an example of a typical mid-nineteenth century rural dwelling and farm in the region. The building reflects a Vernacular design with little architectural distinction that has been further altered through addition and renovation. It includes a small collection of typical historic and modern barns and outbuildings. Overall, the property does not embody distinctive

characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5307
House, 191 Jenkins Drive

This single dwelling was built in 1959 according to local tax records and exhibits a Craftsman style. The one-and-a-half-story building has rectangular Bungalow form. The wood frame structural system is clad with drop siding and rests on a continuous concrete block foundation. It is topped by a front-gable roof covered with asphalt shingles that is pierced on the side slope by an interior brick chimney. The main entrance is set centrally on the front and is sheltered by a full-width, hipped roof porch with cast metal supports. Fenestration consists of three-over-one double-hung sash windows that are set in pairs. The building is minimally ornamented with heavy window frames and window shutters.

This dwelling is located on the north side of Jenkins Drive on a small rural property. The building sits downhill from the road on a relatively flat, open grassy yard that is bordered to the rear by a small creek. A short driveway extends to an unsheltered parking area to the front of the building. Set in far rear corner of the yard are two modern manufactured storage sheds.

This property is an example of a typical mid-twentieth century rural dwelling in the region. The building reflects a Craftsman style with little architectural distinction. It includes a small collection of typical manufactured outbuildings. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5308
House, 467 Strole Farm Road

This single dwelling was built in 1971 according to local tax records and exhibits a Ranch style. The one-story building has rectangular form with an integral open-sided carport at one end. The masonry structural system is clad with brick laid in a stretcher bond and rests on a continuous walkout basement foundation. It is topped by a two-part, side-gable roof covered with asphalt shingles. The main entrance is set centrally on the front and is sheltered by an integral roof overhang with cast metal supports which extends along the front of the building to the carport. Fenestration consists of one-over-one and two-over-two double-hung sash windows, as well as a multi-light picture window on the front. The building is minimally ornamented with brick window sills and shutters.

This dwelling is located on the north side of Strole Farm Road on a small rural property. The building sits near the road on a mostly open grassy yard that slopes downhill creating a walk-out basement on the side of the house. A gravel driveway extends from the road to the integral carport. Beyond the carport, built into the side of a hill, is a small historic barn. Set in the yard to the rear of the house is a nonhistoric storage shed.

This property is an example of a typical mid-twentieth century rural dwelling in the region. The building reflects a Ranch style with little architectural distinction. It includes a small collection of typical rural outbuildings. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5309
House, 330 Double D Lane

This single dwelling was built in 1923 according to local tax records and exhibits a Vernacular design. The one-story building has what appears to be a hall-and-parlor form with an offset rear ell. The wood frame structural system is clad with weatherboard and rests on a foundation that could not be seen at the time of this survey. It is topped by a side-gable roof covered with standing seam metal that is pierced at the ridge by a central interior brick chimney. The main entrance is set centrally on the front and is sheltered by a partial-width shed roof porch with square posts. Fenestration consists of one-over-one double-hung sash windows. The building is simple and unornamented.

This dwelling is located on the south side of Double D Lane on a large rural property. The building sits near the private road at the back edge of a grassy clearing bordered to the sides and rear by woods. A small historic outbuilding of unknown function is set just to the rear corner of the house and the ruins of another barn are set within the treeline further to the southwest.

This property is an example of a typical early-twentieth century rural dwelling and farm in the region. The building reflects a Vernacular design with little architectural distinction. It includes a single surviving outbuilding as well as the ruins of at least one other barn. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5310
House, 5395 U.S. Highway 340

This single dwelling was built in 1918 according to local tax records and exhibits a Vernacular design. The two-story building has an I-house front block with an offset two-story rear wing and a later two-story rear addition. The wood frame structural system is clad with vinyl siding and rests on a continuous brick foundation. It is topped by a side-gable roof covered with standing seam metal that is pierced at the ridge by an exterior end brick chimney and on the rear slope by an interior brick chimney. The main entrance is set centrally on the front and is sheltered by a one-bay gabled porch with cast metal supports. A hipped roof porch enclosed with jalousie windows wraps around the side and rear. Fenestration consists of one-over-one double-hung sash windows. The building is ornamented with boxed cornices, gable returns, and window shutters.

This dwelling is located on the east side of Highway 340 on a large rural property. The building sits back from the road on a grassy homesite with large shade trees. Set to the rear of the house, and also within the fenced homesite is a late-twentieth century carport. A paved driveway extends past the house to the carport, and continues into the interior of the property and a complex of agricultural buildings. Set across the driveway to the rear corner of the house is a large, multi-car nonhistoric garage. Set to the side of the garage is a late-twentieth century barn. Further to the rear, within a fenced pasture area is another modern barn, and set in the field to the side of the large is a large modern cattle barn.

This property is an example of a typical early-twentieth century rural dwelling and farm in the region. The building reflects a Vernacular design with little architectural distinction that has been further compromised through nonhistoric addition. It includes a collection of nonhistoric barns and outbuildings. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous

historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5311
House, 1212 Dam Acres Road

This single dwelling was built in 1886 according to local tax records and exhibits an Italianate style. The building appears to have been vacant for an extended period of time and remains in a poor condition. The two-story building has an I-house front block with an offset two-story rear wing. The wood frame structural system is clad with weatherboard and rests on a continuous brick foundation. It is topped by a hipped roof covered with standing seam metal that is pierced on each side slope by interior end brick chimneys. The main entrance is set centrally on the front and is sheltered by a partial-width hipped-roof porch with turned posts. Fenestration consists of two-over-two double-hung sash windows. The building is ornamented with boxed and molded cornices, plain friezes, and scrollwork and bargeboarding on the front porch.

This dwelling is located on the north side of Dam Acres Road on a large rural property. The building sits far back from the road atop a slight knoll within a cluster of trees. The home is oriented sideways to the road, and faces a long gravel driveway that extends past the front of the building and makes a loop to the side. Aerial photography reveals a small outbuilding to the side of the house that could not be seen at the time of survey. Set at the end of the loop is a large twentieth century barn. Set to the north of the homesite along a farm road extension of the driveway is an early-twentieth century silo and set in a field to the front of the house are the ruins of an early-twentieth century barn.

This property is an example of a typical late-nineteenth century rural dwelling and farm in the region. The building reflects an Italianate style with little architectural distinction that remains in poor condition. It includes a small collection of twentieth century barns and outbuildings. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant

historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5312
House, 642 Dam Acres Road

This single dwelling was built in 1913 according to local tax records and exhibits a Vernacular design. The two-story building has an I-house main block with a central two-story rear wing and one-story additions flanking both sides of it. The wood frame structural system is clad with vinyl siding and rests on a parged foundation. It is topped by a side-gable roof with central cross gable covered with standing seam metal that is pierced at the ridge by an exterior end concrete block chimney. The main entrance is set centrally on the front and is sheltered by a full-width hipped-roof porch with cast metal supports. Fenestration consists of one-over-one double-hung sash windows. The building is minimally ornamented with window shutters.

This dwelling is located on the north side of Dam Acres Road on a small rural property. The building sits near the road on a grassy yard with a large shade tree in front. A gravel driveway extends past the side of the house and makes a loop to the rear. Set in the corner of the backyard is an early-twentieth century wellhouse. Set at the end of the driveway is a small late-twentieth century storage shed and across the driveway is a mid-twentieth century barn. Near the front corner of the barn is a small utility shed. Further to the rear is a large late-twentieth century pole barn. To the side of the main building complex, along the road, are two large late-twentieth century poultry houses.

This property is an example of a typical early-twentieth century rural dwelling and farm in the region. The building reflects a Vernacular design with little architectural distinction. It includes a small collection of historic and nonhistoric barns and outbuildings. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5313
House, 584 Dam Acres Road

This single dwelling was built in 1903 according to local tax records and exhibits a Vernacular design. The two-story building has an I-house main block with an offset two-story rear wing and multiple one-story additions to the sides and rear. The wood frame structural system is clad with vinyl siding and rests on a foundation that could not be seen at the time of this survey. It is topped by a side-gable roof covered with asphalt shingles that is pierced at each end of the ridge by interior end brick chimneys. The main entrance is set centrally on the front and is sheltered by a full-width hipped-roof porch with square columns. Fenestration consists of one-over-one double-hung sash windows. The building is ornamented with boxed cornices, gable returns, a plain frieze, and window shutters.

This dwelling is located on the north side of Dam Acres Road on a large rural property. The building sits far back from the road on a grassy homesite with shade trees scattered throughout, at the end of a long private driveway. The home is oriented sideways to the road and faces the driveway as it takes a dogleg turn and approaches the house. Set to the rear corner of the house is a small mid-twentieth century wellhouse. Set along the driveway to the front of the house are two late-twentieth century barns and two smaller outbuildings that could not be seen at the time of survey.

This property is an example of a typical early-twentieth century rural dwelling and farm in the region. The building reflects a Vernacular design with little architectural distinction that has been altered through nonhistoric alteration and addition. It includes a small collection of historic and nonhistoric barns and outbuildings. Overall, the property does not embody distinctive

characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5314
House, 573 Dam Acres Road

This single dwelling was built in 1970 according to local tax records and exhibits a Ranch style. The one-story building has an L-shaped form with an attached carport to the end. The masonry structural system of the main block is clad with brick laid in a common bond while the forward wing has a brick knee wall with vinyl siding above. The building rests on a continuous brick foundation. It is topped by a cross-gable roof covered with asphalt shingles that is pierced on the front slope by an interior end brick chimney. The main entrance is set centrally on the front and is sheltered by a full-width integral roof porch with brick columns set on a knee wall. Fenestration consists of six-over-six double-hung sash windows as well as a single light picture window on the front. The building is ornamented with boxed cornices, a frame front wing with knee wall, and brick window sills.

This dwelling is located on the south side of Dam Acres Road on a small rural property. The building sits near the road in a small clearing with trees scattered around and a thicker wooded area around it. A gravel driveway leads to the attached carport with a detached garage set near the front of the property and a detached carport to its side. Set in the woods to the side of the house are a late-twentieth century vehicle shed, equipment shed, and prefabricated storage shed.

This property is an example of a typical late-twentieth century rural dwelling in the region. The building reflects a Ranch style with little architectural distinction. It includes a small collection of typical rural outbuildings. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5315
House, 518 Dam Acres Road

This single dwelling was built in 1900 according to local tax records and exhibits a Vernacular design. The two-story building has an L-shaped form beneath a square roof that creates a two-story rear porch. The wood frame structural system is clad with vinyl siding and rests on a continuous parged stone foundation. It is topped by a hipped roof covered with standing seam metal that is flanked by an exterior end brick chimney on the side slope. The main entrance is set centrally on the front and is sheltered by a partial-width hipped roof porch with turned posts. Fenestration consists of six-over-six double-hung sash windows. The building is ornamented with boxed cornices with wide roof overhangs, window shutters, and decorative porch brackets.

This dwelling is located on the north side of Dam Acres Road, although the large rural property spans both sides of the road. The building sits back from the road atop a grassy knoll with a few trees scattered around the homesite. The home is oriented sideways to the driveway, facing a bend in the road to the east. Set in the vicinity of the house, mostly to the side and rear, are a collection of outbuildings and barns, including a wellhouse to the side, a carport just to the rear, and several small barns and sheds further to the rear. The building complex is bordered by agricultural fields. Set near the front of the property across the road are several additional barns and equipment sheds.

This property is an example of a typical early-twentieth century rural dwelling and farm in the region. The building reflects a Vernacular design with little architectural distinction. It includes a collection of typical rural barns and outbuildings, most of which appear to date from the mid- to late-twentieth century. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5316
House, 294 Dam Acres Road

This single dwelling was built in 1965 according to local tax records and exhibits a Minimal Traditional style. The one-story building has an L-shaped main block with two carports attached to the end. The masonry structural system is clad with brick laid in a stretcher bond and rests on a continuous foundation. It is topped by a cross-gable roof covered with asphalt shingles that is pierced on the front slope by an interior brick chimney. The main entrance is offset on the front and is sheltered by a full-width shed roof porch with turned posts. Fenestration consists of one-over-one double-hung sash windows, as well as a large single-light picture window on the front. The building is ornamented with weatherboard in the front gable, window shutters, and decorative brackets on the porch.

This dwelling is located on the north side of Dam Acres Road on a small rural lot. The building sits near the road on a manicured grassy lawn. A paved driveway with a landscaping island at the front leads to the attached carports. Set in the yard behind the house is a contemporary workshop. Behind the workshop are two modern prefabricated lawn sheds. Set in the yard to the opposite side of the house is a contemporary one-car garage.

This property is an example of a typical mid-twentieth century rural dwelling in the region. The building reflects a Minimal Traditional style with little architectural distinction. It includes a small collection of typical rural outbuildings. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5317
House, 283 Dam Acres Road

This single dwelling was built in 1903 according to local tax records and exhibits a Vernacular design. The two-story building has an I-house front block with an offset two-story rear wing with a wrap-around one-story addition. The wood frame structural system is clad with vinyl siding and rests on a continuous stone foundation. It is topped by a side-gable roof covered with standing seam metal. The main entrance is set centrally on the front and is sheltered by a full-width hipped roof porch with replacement fluted Tuscan columns. Fenestration consists of one-over-one double-hung sash windows. The building is minimally ornamented with boxed cornices, gable returns, and window shutters.

This dwelling is located on the south side of Dam Acres Road on a small rural property. The building sits near the road on an open grassy lawn. A paved driveway extends past the side of the house towards a modern carport. Set in the back yard are a historic storage shed and workshop.

This property is an example of a typical early-twentieth century rural dwelling in the region. The building reflects a Vernacular design with little architectural distinction. It includes a small collection of typical rural outbuildings. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5318
House, 258 Dam Acres Road

This single dwelling was built in 1933 according to local tax records and exhibits a Craftsman style. The one-and-a-half-story building has a Bungalow form with a partial-width one-story rear ell. The wood frame structural system is clad with vinyl siding and rests on a continuous concrete foundation. It is topped by a side-gable roof covered with standing seam metal that is flanked on the front slope by an exterior end brick chimney. The main entrance is set centrally on the front and is sheltered by a partial-width gable-roof porch with cast metal supports. Fenestration consists of one-over-one double-hung sash windows. The building is minimally ornamented with wide roof overhangs and window shutters.

This dwelling is located on the south side of Dam Acres Road on a small rural property. The building sits near the road on a slightly raised grassy yard with a stone retaining wall along the road. A gravel driveway extends past the side of the house to an open parking area to the rear. A historic one-car garage is set along the road at the front of the driveway facing the road. Set to the rear corner of the house is a historic wellhouse. In the far back corner of the back yard is a modern pergola. To the side of the building complex is a small open field. The entire property is bordered by a post and wire fence.

This property is an example of a typical mid-twentieth century rural dwelling in the region. The building reflects a Craftsman style with little architectural distinction. It includes a small collection of typical rural outbuildings. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5319
House, 4733 U.S. Highway 340

This single dwelling was built in 1943 according to local tax records and exhibits a Minimal Traditional style. The one-story building has an L-shaped form with a smaller side wing to the end opposite the forward wing. The masonry structural system is clad with stucco and rests on a continuous foundation. It is topped by a cross-gable roof covered with asphalt shingles that is pierced at the ridge by an interior brick chimney. The main entrance is set adjacent to the forward wing and is sheltered by an overhang of the cross gable roof with wood posts. Fenestration consists of four-over-one and one-over-one double-hung sash windows, as well as a single light picture window on the front. The building is ornamented with vertical board with mousetoothing on the front gable, and brick window shutters.

This dwelling is located on the east side of Highway 340 on a small rural property. The building sits near the road on a small clearing with trees scattered around the house and thicker wooded areas beyond. A gravel driveway extends to a parking area along the side of the house. No outbuildings were observed on the property.

This property is an example of a typical mid-twentieth century rural dwelling in the region. The building reflects a Minimal Traditional style with little architectural distinction. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5320
Apartments, 4739 U.S. Highway 340

This apartment building was built in 1953 according to local tax records and exhibits no discernable style. The one-story building has a long, linear form with five living units spaced along the front. The masonry structural system is clad with brick laid in a stretcher bond and rests on a continuous foundation. It is topped by a side-gable roof covered with asphalt shingles. There are five entries spaced along the front, all of which are sheltered by a full-width integral-roof overhang porch with plain posts. Fenestration consists of one-over-one double-hung sash windows that are set in pairs. The building is minimally ornamented with a continuous band of soldier bricks that stretch along the front as door and window lintels.

This building is located on the east side of Highway 340 on a small rural property. The building sits back from the road atop a slight ridge with a grassy lawn to the front and wooded slope leading down to the river to the rear. A paved driveway leads uphill to a parking area along the side of the building. Set in the front yard is a nonhistoric greenhouse structure. Set to the rear corner of the building opposite the current parking area is a historic garage.

This property is an example of a typical mid-twentieth century rural multiple unit apartment building. The building reflects no discernable style with little architectural distinction. It includes a small collection of typical rural outbuildings. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5321
House, 4849 U.S. Highway 340

This single dwelling was built in 1961 according to local tax records and exhibits a Ranch style. The one-story building has an L-shaped form with an attached carport to the end. The masonry structural system of the main block is clad with brick laid in a common bond while the forward wing has a brick knee wall with vinyl siding above. The building rests on a continuous brick foundation. It is topped by a cross-gable roof covered with asphalt shingles that is pierced on the ridge by an interior brick chimney. The main entrance is set centrally on the front and is sheltered by a full-width integral roof porch. Fenestration consists of single light sliding windows and a multi-light bowed casement window on the front. The building is ornamented with boxed cornices, a frame front wing with knee wall, brick window sills, and geometric concrete block screening on the wall of the carport.

This building is located on the east side of Highway 340 on a small rural property. The building sits back from the road atop a slight ridge with a grassy lawn to the front and wooded slope leading down to the river to the rear. A paved driveway leads uphill to the attached carport. The sides of the yard are delineated by hedgerows and additional landscaping is scattered along the front of the house. No outbuildings were observed on the property.

This property is an example of a typical mid-twentieth century rural dwelling in the region. The building reflects a Ranch style with little architectural distinction. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5322
House, 192 Double D Lane

This single dwelling was built in 1929 according to local tax records and exhibits a Vernacular design. The two-story building has an I-house main block with an offset one-story rear ell. The wood frame structural system is clad with weatherboard and rests on a foundation that could not be seen at the time of this survey. It is topped by a side-gable roof covered with standing seam metal that is pierced at the ridge by a central interior brick chimney. The main entrance is set centrally on the front and is sheltered within a full-width hipped roof porch that has been enclosed as living space. Fenestration consists of six-over-six double-hung sash windows. The building is minimally ornamented with boxed cornices.

This dwelling is located on the south side of Double D Lane on a large rural property. The building sits near the private road on a small grassy clearing bordered to the sides and rear by woods. The private road continues past the house to another property set further to the northeast. Set to the east side of the house is what appears to be a historic garage and to the other side is a cluster of small, nonhistoric chicken coops. Set across the road to the front of the house is a mid-twentieth century barn. Set further to the southwest of the home with the woods is a deteriorated early-twentieth century barn.

This property is an example of a typical early-twentieth century rural dwelling and farm in the region. The building reflects a Vernacular design with little architectural distinction. It includes a small collection of typical rural barns and outbuildings. Overall, the property does not embody distinctive characteristics or possess significant or unique architectural or design features and reconnaissance-level research revealed no known significant historical associations. The building is located in an area of discontiguous historic resources, and is, therefore, considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

VDHR# 069-5324
Kite Cemetery, Dam Acre Road

This family cemetery consists of an unknown number of graves commemorated by a single granite monolith headstone and what appears to be a smaller footstone. The stone commemorates four members of the Kite family. Alfred Kite (d. 3/20/1889) and Drugilla, his wife (d. 8/31/1913) are noted on one side of the stone, and two of their children, James Kite (d. 6/11/1850 aged 13 years) and Robert Kite (d. 5/1/1875 aged 10 years) are identified on another side. It is unclear if all four members are buried nearby or not. A single, smaller footstone is set nearby.

This cemetery is located on the east side of Dam Acres Road on a large farm property bordering the east side of the South Fork of the Shenandoah River. The small burial plot rests within an open field at the edge of a treeline with agricultural fields beyond. There is no fence or barrier around the cemetery, although there are several relic cedar trees in the vicinity.

The cemetery is an undistinguished example of a typical late-nineteenth/early-twentieth century rural family plot and does not embody distinctive characteristics or possess significant or unique architectural or design features. The cemetery therefore does not meet NRHP Criterion Consideration D and is considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district.

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ARCHAEOLOGY FIELD RESULTS

Archaeological survey was conducted throughout the portions of the project area where ground disturbance is planned (Figure 8-7). This included the locations of the solar arrays and the laydown construction area. The total planned area of ground disturbance is approximately 72 hectares (178 acres).

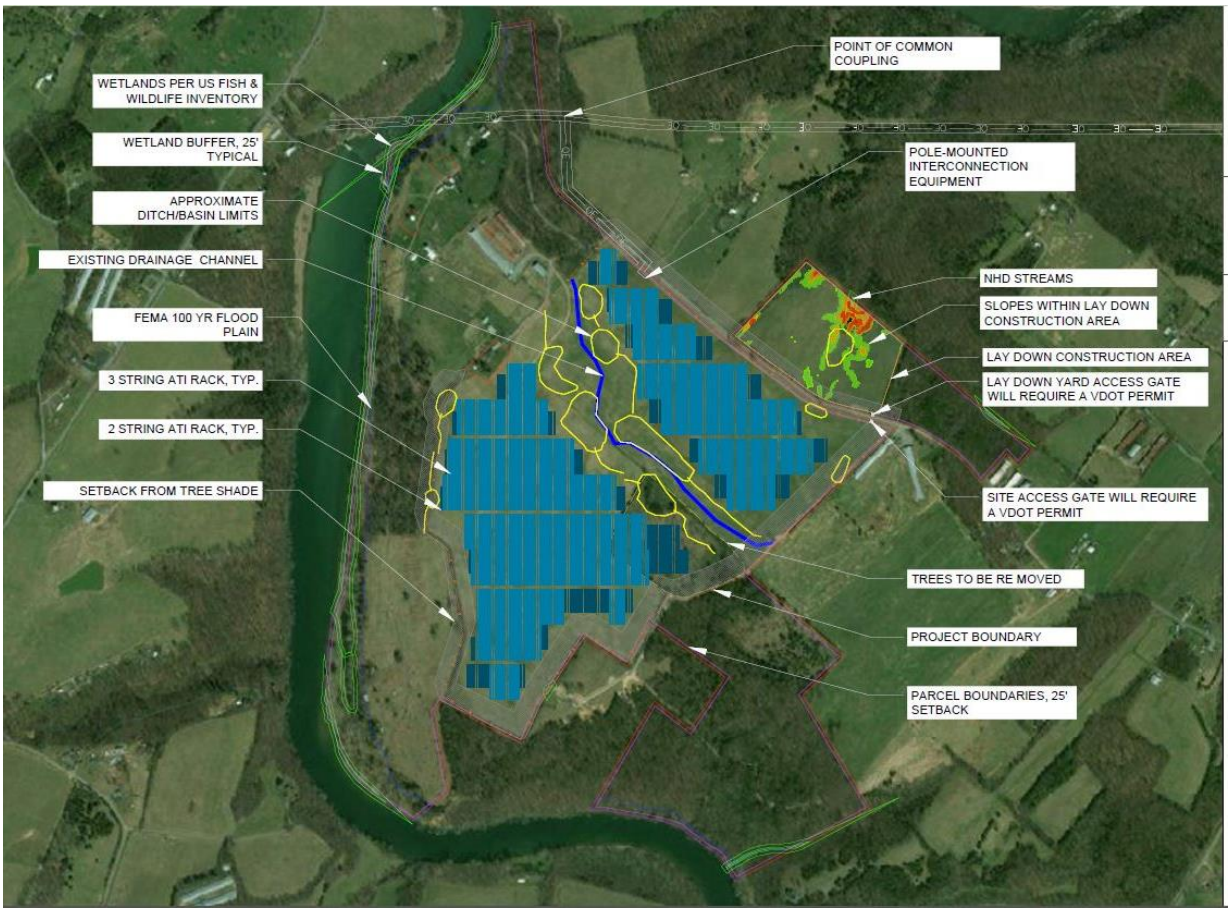

Figure 8-7: Site plans showing solar array locations (shaded blue).

At the outset of fieldwork, a pedestrian reconnaissance was conducted throughout the entire area of disturbance, including portions of the project area which are not included within the limits of disturbance as shown in Figure 8-7. Following pedestrian reconnaissance, systematic subsurface testing was conducted in conjunction with a systematic pedestrian survey in areas where ground surface visibly was at or above 80%. The project area was divided into two large areas, labeled A and B, which were further subdivided into sub-areas based on vegetation and terrain. The results are detailed by area, below.

PEDESTRIAN RECONNAISSANCE

The area where solar arrays will be installed consists of a series of agricultural fields located to the east of the farm complex and set back 175 meters (574 feet) or more from the South Fork of the Shenandoah River, which forms the west border of the project area. Farm roads make up the

eastern boundary of the area of disturbance. A small field on the north side of Dam Acres Road (Route 617) is planned for use as a construction laydown area.

Land use is divided between hay fields, a corn field, and pasture. The hay fields are located on either side of Dam Acres Road (Figure 8-8). The pasture, which is currently not in use, is located in the central east side of the area of disturbance (Figure 8-9). Recently-harvested corn fields cover the remainder of the survey area. Access throughout the survey area is provided by one well-established farm road leading from the barn complex south into the field, and by rough dirt tracks that skirt the edges of the fields.

Figure 8-8: Overview of western side of hayfield, looking west toward farm complex.

Figure 8-9: Abandoned pasture (Area B5), facing east.

Topography within the project area is typical of a karst landscape. Terrain south of Dam Acres Road consists of several small knolls separated by a wide, irregular depression, likely associated with an underground stream, that extends west across the north side of the survey area towards the river. A sinkhole is located in the west side of this depression, and two other sinkholes are located on the southwest and southeast sides of the survey area (Figure 8-10). Exposed limestone outcrops surround the edges of the sinkholes. Terrain to the north of Dam Acres Road consists of two knolls flanking another depression and underground stream (Figure 8-11).

Figure 8-10: Sinkhole in south of pasture, facing southeast.

Figure 8-11:Terrain on north side of Dam Acres Road, facing south.

Vegetation at the time of survey varied by land use. In the hayfields, vegetation consisted of short grasses. The cornfields had been harvested recently, and ground cover consisted of dead corn stalks interspersed with sparse grass and weed seedlings. The ground surface was mostly visible in the cornfields, except on the tops of some of the landforms, where grasses and weeds had grown back more quickly (Figure 8-12). Vegetation in the disused pasture consisted of a few Osage orange and locust trees with a ground cover of short grasses (Figure 8-13).

Figure 8-12: Vegetation on top of landform in cornfield, facing north.

Figure 8-13: Vegetation within pasture, facing north.

During pedestrian survey, the Kite Family cemetery (VDHR #069-5324) was identified outside of the limits of disturbance, as indicated by Figure 8-7. As this cemetery is an above ground feature, and no subsurface work was conducted on it, and as the cemetery will be avoided during land development, this cemetery is described in more detail in the architecture section of this report. The cemetery consists of an unknown number of graves commemorated by a single granite monolith headstone and what appears to be a smaller footstone. This cemetery is located on the east side of Dam Acres Road on a large farm property bordering the east side of the South Fork of the Shenandoah River. The small burial plot rests within an open field at the edge of a treeline with agricultural fields beyond. There is no fence or barrier around the cemetery, although there are several relic cedar trees in the vicinity (Figure 8-14).

Figure 8-14: Kite Family cemetery marker.

The cemetery (VDHR #069-5324) is an undistinguished example of a typical late-nineteenth/early-twentieth century rural family plot and does not embody distinctive characteristics or possess significant or unique architectural or design features. The cemetery therefore does not meet NRHP Criterion Consideration D and is considered ***not eligible*** for listing in the NRHP on an individual basis or as part of a historic district. As shown in Figure 8-7, the cemetery will be avoided with at least a 30 meter (100 foot) buffer during development.

SUBSURFACE TESTING

Following the pedestrian survey, a plan for systematically testing the project area was implemented. A total of 13 grids were excavated on portions of the landforms included within the limits of disturbance which were not composed of plowed, exposed soils. Where the soils were exposed, ground was subjected to systematic pedestrian survey as opposed to subsurface survey. When the ground was subjected to systematic pedestrian survey, crew members walked the areas of visible ground surface in 15 meter (50 foot) transects. A total of 50 hectares (123.5 acres) of land which is set to undergo disturbance was subjected to systematic pedestrian survey. Where ground surface was below 80%, subsurface testing was utilized. Areas which sloped more than 15% or are in delineated wetlands were not subjected to subsurface testing. Grids were labeled A1 through A5 and B1 through B9 (Figure 8-15). A total of 224 shovel test pits were laid out across the project on the tops of the landforms, where grasses and weeds had grown back more quickly,

making the ground visibility less than 80% and in pastural fields, where there was a general lack of surface visibility. Small grids were utilized in order to cover flat terrain, as such, grids were placed on the flat tops of landforms, and terminated at the sloped terrain. These grids of shovel tests were placed at 15-meter (50-foot) interval.

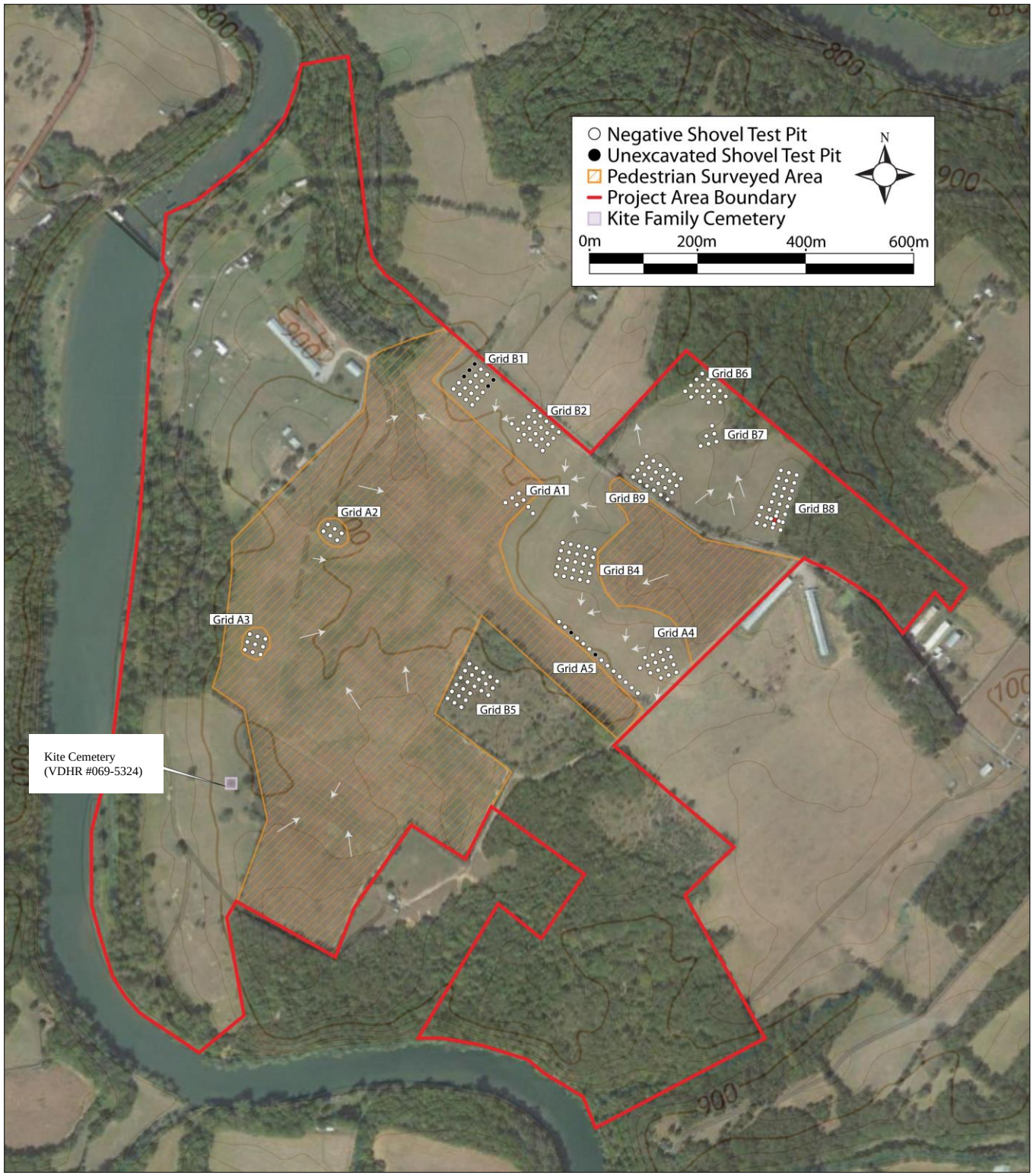

Figure 8-15: Aerial map of the project area with topographic overlay. Arrows show direction of slope.

Area A

Area A is located within the center of the project area, in the vicinity of the proposed solar panel array. The majority of Area A was subjected to systematic pedestrian survey, due to the fact that the ground had recently been plowed, and there was minimal ground coverage, allowing for 80% of exposed soils. Five grids – A1 though A5 – were placed within the area where regrowth had limited the ground visibility (Figure 8-16). No artifacts or features were identified within Area A during pedestrian or subsurface testing.

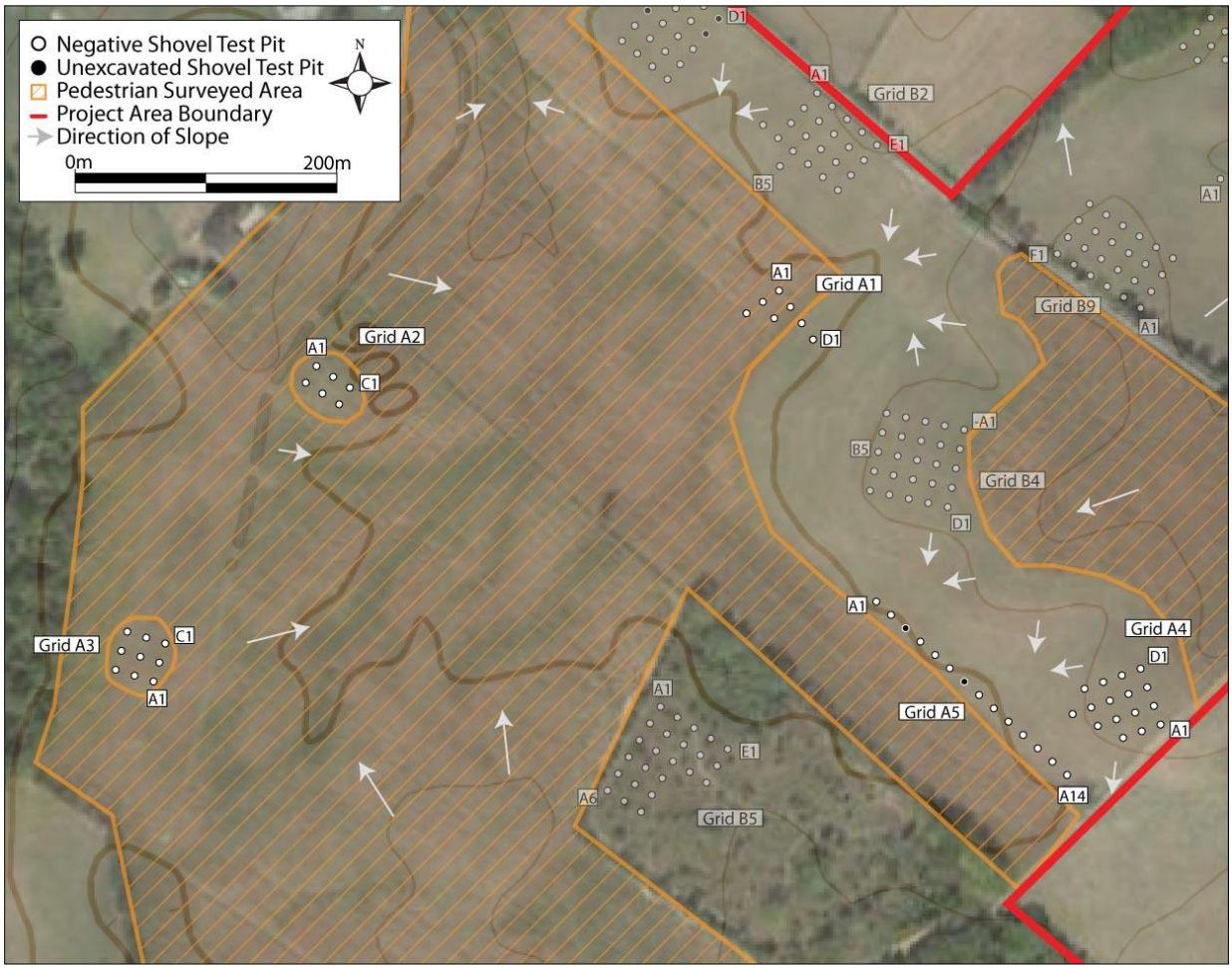

Figure 8-16: Aerial map of Area A with topographic overlay.

Vegetation in Area A consists of plowed corn fields with exposed soils (Figures 8-17; 8-19). In some locations, grass had begun to grow between rows, diminishing soil visibility, in other cases, along the edges of the plowed fields, lush grass was present. In these cases, small grids were placed on landforms within the locations of limited ground visibility (Figures 8-20 through 8-23). Due to the topography within the project area, small grids were placed on tops of landforms and terminated when said landforms begin to slope at grades over 15%. (Figure 8-24).

Figure 8-17: Typical terrain and vegetation in Area A, showing corn fields with exposed soils. Facing north in the southwestern portion of Area A.

Figure 8-18: Typical terrain and vegetation in Area A, showing corn fields with exposed soils. Southwest of A5, facing northwest.

Figure 8-19: Typical terrain and vegetation in Area A, showing corn fields with exposed soils, from left to right: facing south and west. Photos taken in the southwestern portion of Area A.

Figure 8-20: Details of exposed soils in Area A.

Figure 8-21: Typical terrain and vegetation in Area A, showing regrowth typical of gridded areas, at shovel test pits A1 in Grid A3, facing west.

Figure 8-22: Grassy field at Grid A4, facing north.

Figure 8-23: Grassy field at Grid A5, facing southeast.

Figure 8-24: Slope at Grid A4, taken within Grid A4, facing northwest.

A total of 52 shovel test pits were excavated in a total of 5 small grids. All shovel test pits were placed at 15-meter (50-foot) intervals. No artifacts were recovered in these shovel test pits.

Soils were typical of those which have been utilized as agricultural fields, ranging in depth 27 to 43 cm. A typical profile representative the stratigraphy in Area A consisted of 5YR 4/6 yellowish red silty clay loam which came down to 2.5YR 4/8 red silty clay subsoil (Figure 8-25).

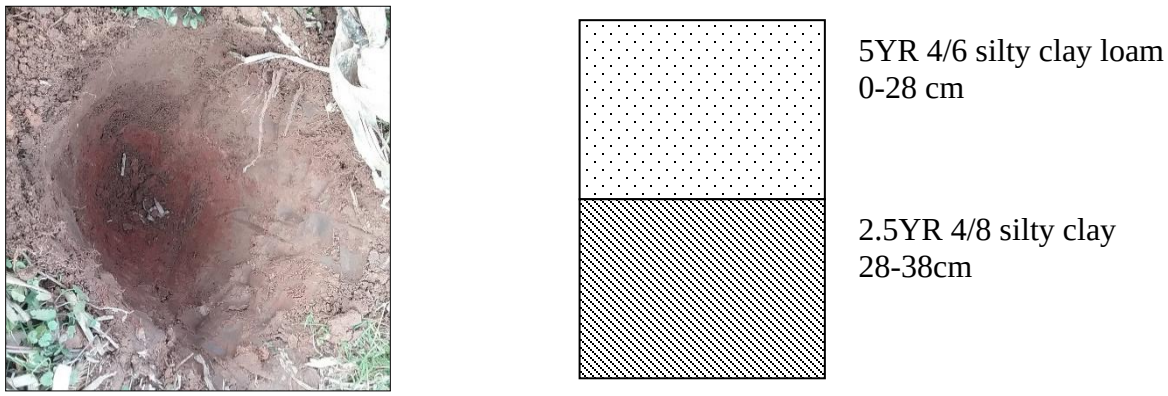

Figure 8-25: Soil profile of Shovel Test A1 in Grid A2.

Area B

This area is located in the vicinity of the proposed solar arrays in the north eastern portion of the project area (Figure 8-26) and consists of a knoll with undulating terrain. About a third of the knoll which comprises much of Area B was subjected to systematic pedestrian survey, due to the fact that the ground had recently been plowed, and there was minimal ground coverage, allowing for 80% of exposed soils (Figures 8-27 through 8-29). However, in the northern portion of Area B and in the eastern portion of Area B, just southwest of the project area boundary, the land consists of pastural fields which do not possess surface visibility. Eight grids – B1 through B9 (excluding B3) were placed within the pastural fields which lacked surface visibility. Due to the rolling terrain, small grids were placed on the flat portions of the landform and terminated as land begin to slope (Figures 8-30 through 8-33).

One shovel test pit – G2 – was positive for two flakes, this does not constitute a site. No further work is recommended.

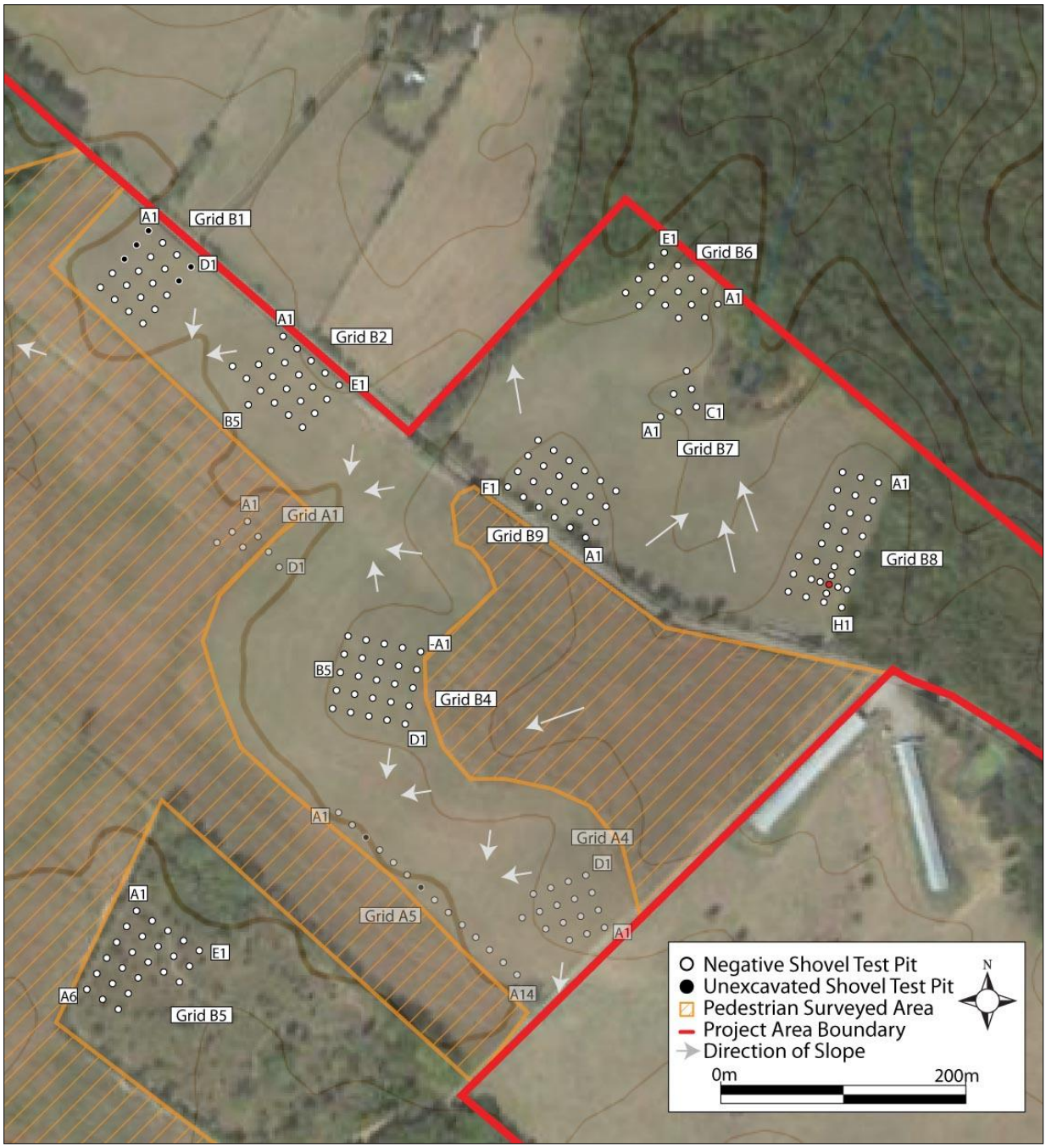

Figure 8-26: Aerial map of Area B with topographic overlay.

Figure 8-27: Corn fields which were pedestrian surveyed, west of Grid B5. Facing north.

Figure 8-28: Corn fields which were pedestrian surveyed, west of Grid B5. Facing northeast.

Figure 8-29: Details of exposed soils in pedestrian surveyed portion of Area B.

Figure 8-30: Pastural fields typical of those in the gridded portions of Area B. Photo taken south of Grid B7, showing draw between Grid B7 and B8, facing northeast.

Figure 8-31: Pastural fields typical of those in the gridded portions of Area B. Photo taken from of Grid B4, facing southeast.

Figure 8-32: Pastural fields typical of those in the gridded portions of Area B, showing rolling terrain. Photo taken from Grid B8, facing northwest towards Grid B9.

Figure 8-33: Pastural fields typical of those in the gridded portions of Area B, showing rolling terrain. Photo taken from Grid B8, facing northwest towards Grid B9.

Figure 8-34: Terrain in the eastern portion of Grid B5, facing east.

A total of 172 shovel test pits were laid out in a total of 8 small grids, which covered the portions of the area which were not sloped and which did not consist of exposed ground. Five shovel test pits were left unexcavated due to slope. All shovel test pits were placed at 15-meter (50-foot) intervals. Shovel test pit G2 contained two flakes. Radials excavated around G2 were negative. These two artifacts do not constitute a site. No further work is recommended.

Soils were typical of those which have been utilized as pastural fields, ranging in depth 16 to 32 cm, with one exception reaching rock at 5 cm below surface. A typical profile representative the stratigraphy in Area B consisted of 7.5YR 4/4 brown silty clay loam which came down to 7.5YR 5/8 strong brown silty clay subsoil (Figure 8-33).

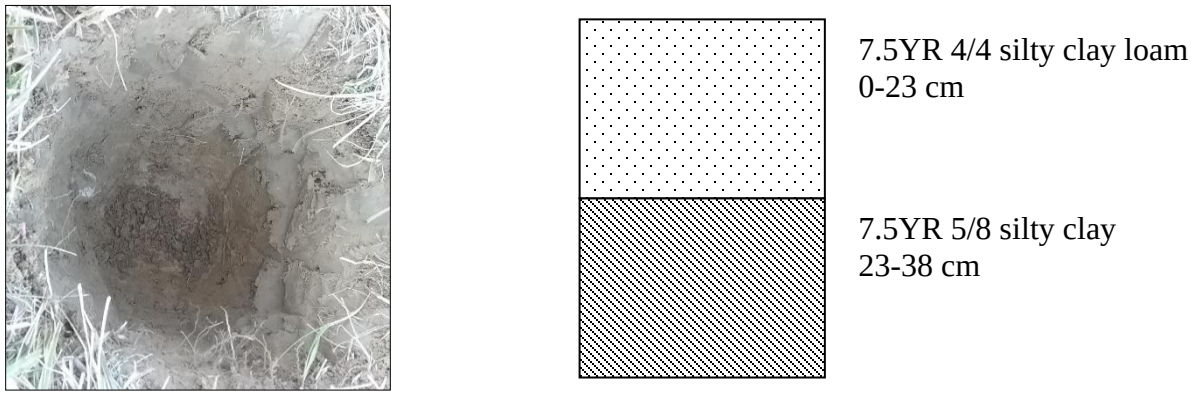

Figure 8-35: Soil profile of Shovel Test C2 in Grid B2.

9. CONCLUSIONS AND RECOMMENDATIONS

In January 2021, Dutton +Associates, LLC (D+A) conducted a Phase I cultural resource survey (Phase I) of the ±144.7-hectare (±357.7-acre) Dogwood Solar project area in Page County, Virginia. The effort involved both archaeological and architectural investigations of the property to confirm the presence or absence of cultural resources located within the project area and assess their potential eligibility for listing in the National Register of Historic Places (NRHP). The project area is located in Newport, Virginia and is bordered to the north by Waterside Drive (Route 617) and to the west by the South Fork of the Shenandoah River, with Dam Acres Road located to the east and Route 340 to the west.

The architectural resources survey for the Dogwood Solar project resulted in the identification and recordation of twenty-five (25) architectural resources greater than 50 years of age (constructed in 1971 or earlier) located within the architectural survey area, two of which are located directly within the project area. Of the surveyed resources, eight (8) were previously recorded (VDHR# 069-0044, 069-0102, 069-0103, 069-5015, 069-5172, 069-5271/5273) and sixteen (16) were newly recorded during this Phase I Survey (VDHR# 069-5307/5322, 069-5324). Two of the previously recorded resources were found to have been demolished since they were last surveyed (VDHR# 069-0103 and 069-5015). The 23 extant resources within the survey area and documented as part of this effort consist primarily of domestic buildings and farmsteads from the early- to late-twentieth century, as well as a smaller number of earlier homes, a late-nineteenth/early-twentieth century family cemetery, and two twentieth century bridges.

Of the surveyed resources, just one is considered potentially eligible for listing in the NRHP. This property, Cub Acres, is a farm dwelling from the mid-nineteenth century, and is considered potentially eligible for architecture as a good example of a regional form and style, in addition to the retention of a fairly large, intact complex of historic agricultural buildings. The rest of the surveyed resources are primarily modest frame and masonry dwellings that reflect common forms and types found throughout the region from their respective time period. None of these appear to reflect any unique or significant design or historical associations, and as such, all are considered not eligible for listing in the NRHP individually or collectively.

The one NRHP-eligible resource was assessed for impacts brought about by the project through inspection of existing conditions and viewshed analysis. This effort found that the rolling terrain and existing vegetation patterns between it and the project area located on the opposite side of the South Fork of the Shenandoah River generally inhibit wide or uninterrupted visibility of the project area, and completely screen those portions of the project area where proposed improvements will take place. As the vegetation that screens the project improvement area on both the Cub Acres property and project area will be retained, it is anticipated that the improvements will not be visible from the Cub Acres property or public vantage points bordering it. As such, the Dogwood Solar project is recommended to pose no more than a **minimal impact** to any NRHP-eligible resources.

VDHR ID#	Resource Name/Address	Year Built	NRHP Eligibility	Project Impacts
069-0102	Cub Acres, 337 Jenkins Drive	1848	NRHP-Eligible	Minimal Impact

Archaeological survey revealed that the majority of the project area consists of plowed agricultural fields, with pastural fields in the northern portion of the project area. At the time of the survey, the majority of the survey area consisted of exposed soils. Prior to survey, D+A was provided with the client's preliminary construction plans, showing the location of solar arrays and the proposed location of ground disturbance. Solar arrays are shown to be centrally located within the project area. Total ground disturbance within the project area totals to approximately 72 hectares (178 acres). In accordance with the construction plans, the landforms which will undergo disturbance were subjected to either systematic pedestrian survey or subsurface testing, depending on amount of exposed ground surface within the area.

Where the soils were exposed, ground was subjected to systematic pedestrian survey as opposed to subsurface survey. When the ground was subjected to systematic pedestrian survey, crew members walked the areas of visible ground surface in 15 meter (50 foot) transects. A total of 50 hectares (123.5 acres) of land which is set to undergo disturbance was subjected to systematic pedestrian survey. A total of 224 shovel tests was excavated throughout the project area. This subsurface testing revealed soils typical of agricultural use, with plowzone capping subsoil in the corn fields and A-horizon sealing subsoil in pastural fields. No archaeological sites were identified within the limits of disturbance during systematic pedestrian survey or subsurface testing.

There is a cemetery located within the project area boundaries – the Kite Family Cemetery (VDHR #069-5324)– this cemetery is located outside of the limits of disturbance as shown in the client's site plans, and will be avoided with more a 30 meter (100 foot) buffer on all sides. As this cemetery is an above ground feature, and no subsurface work was conducted on it, and as the cemetery will be avoided during land development, this cemetery is described in detail in the architecture section of this report.

No archaeological sites or features were identified within the limits of disturbance, as shown in the client's site plans. While the project area contains a terrace which overlooks the Shenandoah River which has very high potential for prehistoric sites, this terrace is located outside of the area of disturbance as shown by the client's site plans. The potential for prehistoric sites within the project area is high, however, the potential for prehistoric sites is highest in the portion of the project area which will not be disturbed by solar panels or installation of solar panels. The portion of the project area which will be subjected to ground disturbance is further east of the river, and while still has high potential for prehistoric sites, has less of a potential for village sites or burial mounds than the terrace which overlooks the river. Lack of prehistoric sites within the limits of disturbance, is likely due to the fact that the attractive river terrace is located just west of the limits of disturbance. If settlement and occupation occurred in the vicinity of the project area, it likely occurred on this terrace as opposed to the uplands within the limits of disturbance. This statement is supported by review of VCRIS recorded sites within Page County, focusing on the areas near the Shenandoah River. VCRIS mapped prehistoric sites tend to be located on terraces overlooking the river, or on terraces overlooking tributaries to the river and confluences of said tributaries. While there is a cemetery within the boundary of the project area, this cemetery is outside of the limits of disturbance. ***Therefore, it is D+A's recommendation that no further archaeological work is warranted for this project area.***

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APPENDIX A: RESUMES

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DAVID H. DUTTON
Managing Partner

Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

Education

Master of Arts, 1990
Archaeological Studies
Boston University
Boston, Massachusetts

Bachelor of Science, 1986
Anthropology and Sociology
Virginia Commonwealth University
Richmond, Virginia

Appointments

Historic Advisory Committee, Woodrow Wilson Bridge Design Competition, 1998

Dept. of the Army Counterpart Regulations Task Force, NCSHPO, 1999

Virginia Department of Historic Resources Archaeology Advisory Group, 2000

Historic Preservation Committee Chesterfield County, Virginia 2011

Dominion Historic, Scenic, and Cultural Advisory Group, 2017

Mr. Dutton has over 25 years of professional historic preservation experience throughout the East Coast, with a focus on Section 106 coordination and review. He directed the Virginia Department of Historic Resources Division of Project Review where he managed all federal and state environmental reviews, rehabilitation tax credit project certification, historic preservation easements, covenants, and archaeological permits. Prior to his work at the state, Mr. Dutton served as a project review archaeologist for the President's Advisory Council on Historic Preservation. His geographic responsibility was the southeastern United States.

Mr. Dutton has managed the successful completion of multiple cultural resource projects for public and private clients including identification, evaluation, and data recovery efforts for archaeological and architectural properties, HABS documentation, Battlefield Cultural Heritage Plans, Interpretive Concept Plans, and Integrated Cultural Resource Management Plans (ICRMP). In addition, he has negotiated successful agreements under Section 106 for a wide variety of projects. Specific examples include a memorandum of agreement for the Dominion Surry-Skiffes-Whealton transmission line project and a programmatic agreement for the closure of Fort Monroe, a National Historic Landmark District.

Mr. Dutton brings clients both experience and expertise ensuring cultural resource requirements are successfully and efficiently integrated into project planning and construction.

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Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

DAVID H. DUTTON
Managing Partner

Professional Experience

Dutton + Associates, LLC, Managing Partner, Richmond, Virginia, 2005 – Present. Directs the firm's technical services which include review of projects pursuant to federal and state historic preservation regulations, cultural resource plan development, field investigations, laboratory processing and analyses, and report preparation.

American Civil War Center *at Historic Tredegar*, Chief Operating Officer, Richmond, Virginia, 2002 – 2006. Managed the Tredegar Iron Works site, the financial performance of the Foundation and construction of the Foundation's new exhibition facility and exhibit *In the Cause of Liberty*.

Cultural Resources Inc., President and Principal Investigator, Williamsburg, Virginia, 1999 – 2002. Managed the firm's financial and technical performance. Directed and authored several cultural resource management studies including identification, evaluation, and data recovery efforts.

Virginia Department of Historic Resources, Director, Division of Project Review; Richmond, Virginia, 1994-1999. Managed all federal and state review and compliance programs; generated policies, specifications, and standards; directed the state historic preservation easement program; interfaced with federal and state executives, elected officials, developers, architects, and engineers on project development and implementation; managed the review and certification of plans for federal and state rehabilitation tax credits; and commented on proposed federal and state legislation and regulations as well as on national and regional historic preservation issues.

Virginia Department of Historic Resources, Archaeologist Planner; Richmond, Virginia, 1992-1994. Planned, coordinated, and supervised the statewide program in archaeological preservation planning; developed and implemented historic preservation plans; and managed, monitored, and evaluated grantee performance for departmental grants awarded in preservation planning.

Advisory Council on Historic Preservation, Historic Preservation Specialist, Staff Archaeologist; Washington, D.C. 1989 – 1992. Reviewed federal projects under Section 106 of the National Historic Preservation Act for the southeast United States; consulted with Congressional offices, federal and state agencies, local governments, and members of the general public; developed and reviewed historic property management plans; and assisted in development of federal policy for the identification and treatment of historic property.

Example Projects and Publications

2007 Project Management of cultural resource team for King William Reservoir Archaeological Services Contract.

2008 Programmatic Agreement for the Closure of Fort Monroe and the Management of Historic Properties.

2017 Regulatory assistance for the Surry-Skiffes-Whealton Transmission Line Project, Surry and James City Counties and the City of Newport News.

2017 Regulatory assistance for the Atlantic Coast Pipeline project, North Carolina, Virginia, West Virginia, and Penssylvania.

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J. HOPE SMITH
PRINCIPAL INVESTIGATOR

Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

Education

PhD, 2017
Anthropology
University of Tennessee
Knoxville, Tennessee

Bachelor of Arts, 2005
Historic Preservation
University of Mary Washington
Fredericksburg, Virginia

Memberships

Register of Professional Archaeologists

Society for Historical Archaeology

Hope Smith holds a PhD in Anthropology, concentrating in Historical Archaeology, from the University of Tennessee and a B.A. in Historic Preservation from the University of Mary Washington. Her area of focus is eighteenth and nineteenth-century Virginia, and her research interests include material culture studies, artifacts of personal adornment, and the intersection of race and gender in plantation archaeology. She has over 12 years of experience in archaeology and has participated in both historic and prehistoric projects at all levels of investigation.

Her experience in Cultural Resource Management includes supervising fieldwork, analyzing field and artifact data, and authoring reports.

Prior to working at Dutton + Associates, she was employed as a Teaching Associate at the University of Tennessee, where she taught archaeology field schools and courses in archaeology, including a course on Cultural Resource Management law and practice.

As a project archaeologist for Dutton + Associates, Dr. Smith collaborates on all aspects of archaeological work, including supervising field work, and authoring project reports.

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J. HOPE SMITH
PRINCIPAL INVESTIGATOR

Professional Experience

Dutton+Associates, LLC, Project Archaeologist
Richmond, Virginia, 2017
Conducts archaeological investigations (Phase I, II, III and monitoring), prepares research designs, manages and directs archaeological field crew, analyzes artifacts, writes reports.

University of Tennessee, Knoxville, Graduate Teaching Associate
Knoxville, Tennessee, 2011-2017
Supervised fieldwork during two archaeological field schools; taught undergraduate-level archaeology courses.

James Madison's Montpelier Crew Chief
Montpelier Station, Virginia 2008-2011
Performed fieldwork and supervised students and interns in excavation and survey projects; drew maps and coauthored site reports.

The Louis Berger Group Field Technician, Richmond, Virginia, 2005-2007.
Performed fieldwork at all levels of excavation on a wide variety of projects.

The Ottery Group Field Technician, Silver Springs, Maryland, 2005.
Performed fieldwork on a complex multi-component historic Phase III in Gloucester, Virginia.

Example Projects and Publications

Phase I Surveys
Mecklenburg Timber and Prison sites, Mecklenburg Co
Dranesville Rd. Development, Fairfax Co
Pavilion Development, Prince William Co
Dry Mill, Loudoun Co
Remington to Gordonsville Transmission Line
Montebello Farm, Loudoun Co.
Arbordale, York Co.
Spotsylvania Town Center, City of Fredericksburg
Palmer's Creek, Spotsylvania Co.

Phase II Evaluations
44LD1244, Loudoun Co
44WM0312, Westmoreland Co

Museum Technical Reports
Object Report and Museum Purchasing Recommendations, The Montpelier Foundation, Orange Co
Report of Archaeological Testing at Mount Pleasant, The Montpelier Foundation, Orange Co
Archaeological Dataset and Context, Digital Archaeological Archive of Comparative Slavery

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ROBERT J. TAYLOR, JR
Senior Architectural Historian

Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

Education

Master of Arts, 2009
Historic Preservation
Savannah College of Art and Design
Savannah, Georgia

Bachelor of Arts, 2005
Historic Preservation
University of Mary Washington
Fredericksburg, Virginia

Awards

Eagle Scout, 2001

Mr. Taylor holds a B.A. in Historic Preservation from University of Mary Washington and a M.A. in Historic Preservation from Savannah College of Art and Design. He has over 10 years of Cultural Resource Management Experience and has taken part in projects in Virginia, North Carolina, Maryland, Delaware, New Jersey, Rhode Island, Pennsylvania, Ohio, Florida, and California.

His experience in Cultural Resource Management includes working on both Architectural and Archaeological projects while participating in all phases of compliance from project initiation and development to completion. His work includes conducting field surveys, researching and documenting historic resources, completing site file forms, writing reports, preparing *NRHP* evaluations and documentation for individual resources and historic districts, compiling HABS/HAER documentation packages, preparing Cell Tower compliance packages, and conducting archaeological testing. He has a thorough understanding of the laws and regulations that govern cultural resources and has assisted with a number of Cultural Resource Management Plans, Programmatic Agreements, and Memorandum of Agreements. Outside of CRM, he has worked for the Thomas Jefferson's Monticello Foundation where he was a field archaeologist and assisted with the long-term, Plantation Survey Project on Monticello Mountain. Mr. Taylor's primary interests lie in Architectural Forensics and the study of building evolution.

As Senior Architectural Historian for Dutton + Associates, Mr. Taylor manages and conducts all aspects of historic and architectural resource projects and studies.

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Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

ROBERT J. TAYLOR, JR
Senior Architectural Historian

Professional Experience

Dutton + Associates, LLC, Architectural Historian, Richmond, Virginia, March 2009-present.
Manages architectural history studies, provides regulatory and compliance consultation, conducts Historic Resources Surveys, prepares NRHP nominations, HABS/HAER packages, site forms, and other documentation packages; performs research and context development, and authors project reports.

Thomas Jefferson Monticello Foundation, Field Archaeologist, Charlottesville, Virginia, Winter 2008- 2009. Conducted archaeological testing, assisted with site research, performed lab work

Janus Research, Inc, Architectural Historian, Tampa, Florida, August 2005- May 2008.
Conducted field surveys, Prepared NRHP and HABS/HAER documentation packages, authored Cultural Resource Assessment Survey Reports

Example Projects and Publications

Transmission Line Projects
Phase I Cultural Resources Survey of the Cunningham to Elmont 500 kV Transmission Line, Multiple Counties
Phase I Cultural Resources Survey of the TL47 230kV Transmission Line Rebuild, Multiple Counties
SCC Pre-Application Study for the Gainesville-Haymarket Substation and Transmission Line, Prince William Co
Cultural Resources Survey of the Bearwallow-Faraday Transmission Line Rebuild Project, Tazewell County
Phase I Cultural Resources Survey of the Dominion Line 567 Wilcox Wharf to Windmill Point Rebuild Project, Charles City and Prince George County
Phase I Survey of the Chase City-Kerr Dam, Line 137 and 138, Mecklenburg County
SCC Pre-Application Study of the Mount Storm-Valley Rebuild Project, Rockingham County
Phase I Survey of the Hayes-Yorktown 230kV Transmission Line, Gloucester County

Substation Projects
SCC Pre-Application Study of the Elklick Substation Expansion, Fairfax Co
SCC Pre-Application Study of the Roundtable Substation, Fairfax County
Phase I Survey of the Possum Point Project, Prince William County

Wind Power Projects
Phase I Cultural Resources Survey of the Rocky Forge Wind Project, Botetourt County

Solar Projects
Phase I Survey of the Briel Solar Farm, Henrico Co
Phase I Survey of the Puller Solar Project, Middlesex County
Phase I Survey of the Whitehouse Solar Project, Louisa County
Phase I Survey of the Hosier Road Solar Project, Suffolk County
Phase I Survey of the Twitty Creek Solar Project, Charlotte County

Other
Phase III Investigations of the Spring Hill Plantation Site for the Dominion Reymet Road Expansion Project, Chesterfield County
HALS Photography for the Skiffe's Creek 500kV Transmission Line Project, Charles City County

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DARA FRIEDBERG
Architectural Historian

D
A

Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

Education

Master of Science, 2004
Historic Preservation
University of Pennsylvania
Philadelphia, Pennsylvania

Bachelor of Arts, 1999
Historic Preservation
Mary Washington College
Fredericksburg, Virginia

Ms. Friedberg holds a M.S. in Historic Preservation, concentrating in Architectural Conservation, from University of Pennsylvania and a B.A. in Historic Preservation from Mary Washington College. She has worked in historic preservation and conservation since 1999 and has taken part in projects in Virginia, Maryland, Pennsylvania, Washington, D.C., South Carolina, Georgia, Connecticut, New York, Illinois, Ohio, and Tennessee.

Her experience in Cultural Resource Management includes conducting field surveys, researching and documenting historic resources, preparing National Register of Historic Places nominations, performing archival research, assisting in Federal Tax Credit projects, and completing material analyses of historic mortar and paint.

Prior to working at Dutton + Associates, she was employed as a conservator. This allowed her to conduct multiple conditions assessments of architecture, monuments, and sculptures as well as provide treatment recommendations and project specifications. She has also physically worked on the conservation of stone, metal, and decorative painting. At the completion of each project she provided thorough documentation of each process undertaken.

As an Architectural Historian for Dutton + Associates, Ms. Friedberg collaborates on all aspects of historic and architectural projects including performing field work, conducting project research, and authoring project reports.

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Dutton + Associates
CULTURAL RESOURCE SURVEY, PLANNING, AND MANAGEMENT

DARA FRIEDBERG
Architectural Historian

Professional Experience

Dutton + Associates, LLC, Architectural Historian, Midlothian, Virginia, 2013-Present
Conducts historic resources surveys, performs background research, develops historic contexts, writes National Register nominations, and authors and formats project reports

Kreilick Conservation, LLC, Conservator, Oreland, Pennsylvania, 2006-2012
Completed conditions assessments and treatment recommendations for stone and metal projects, conserved stone and metal architectural elements, monuments, and sculptures, and authored conservation reports.

Powers & Company, Inc., Preservation Associates, Philadelphia, Pennsylvania, 2002-2006
Conducted historic resources surveys, performed background research, assisted with Federal Historic Preservation Tax Credit projects, completed mortar and historic paint analyses, completed conditions assessments and recommendations for buildings, produced reports for large scale restoration projects, and created project specifications.

Albert Michaels Conservation, Inc., Conservation Technician, Harrisburg, Pennsylvania, 2001-2002
Conserved decorative paintings and refinished ornate wood, and authored conservation reports.

KCI Technologies, Inc., Cultural Resource Specialist, Hunt Valley, Maryland, 2000-2001
Conducted historic resources surveys, performed background research, and authored project reports.

Restoration Concepts, Restoration Intern, Burlington, Vermont, 1999
Assisted in the restoration of a building.

Example Projects

National Register of Historic Places Nominations
- Tower Building, Richmond
- Lee Medical Building, Richmond
- Fuqua Farm, Chesterfield

Preliminary Information Forms
- North Thompson Street Historic District, Richmond
- Virginia Avenue Elementary School, Petersburg

Interpretive Signs
- Skiffes Creek Interpretive Signs, multiple counties
- Spring Hill Plantation Interpretive Signs, Chesterfield Co.

Viewshed Analyses
- Viewshed Assessment for Fort Evans, Loudoun Co.
- Viewshed Analysis for Ellerslie, Surry Co.

Military Analyses and Landscape Studies
- Phase IA Assessment and Military Terrain Analysis of the Plantation Woods Property, Spotsylvania Co.
- Phase I, Viewshed Assessment, and Military Terrain Analysis for the Potato Run Mitigation Bank, Culpeper Co.
- Assessment of Two Core Areas of the Battle of Buckland Mills, Prince William Co.

Cultural Resource Survey and Compliance Reports
- Cultural Context and Thematic Study for the Proposed Revitalize RVA Project, Richmond
- Assessment of Fulton Gas Works, Richmond
- Documentary Study of the Cromley Row Project Area, Alexandria
- Study of Washington Boundary Ditches, Fairfax Co.
- Intensive Level Survey for Warehouse No. 3 of the Richmond Intermediate Terminal, Richmond
- Economic Context of Middlesex County and the Palmer House, Middlesex Co.
- Phase I Survey for the Remington-Gordonsville Transmission Line Rebuild Project, multiple counties
- Phase II Archaeological Evaluation of Site 44LD1244, Loudoun Co.

1115 CROWDER DRIVE, MIDLOTHIAN, VIRGINIA 23113 • TEL 804.897.1960

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APPENDIX B: ARTIFACT CATALOG

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Provenience	Stratigraphy	Main Material, Subtype, Decoration and Color	Qty.	Part
Grid B8				
G2	**I**	chert	1	flake
G2	**I**	quartzite	1	flake

Attachment H – Wetland Assessment

GeoEnvironmental Services, Inc.

March 5, 2021

via electronic correspondence

Robert Propes
Urban Grid
robert.propes@urbangridco.com

Re: Wetland Assessment
Dogwood Solar Project
Page County, VA

Mr. Propes:

This letter documents a site investigation that was conducted for the purpose of identifying the presence or absence of waters and wetlands occurring within the approximate boundary limits of the above referenced project illustrated on Figure 1. On November 23 and 24, 2020, GeoEnvironmental Services, Inc. (GESI) conducted a site reconnaissance to identify the potential occurrence and location of Waters of the United States, including wetlands that may be regulated under Section 404 of the Federal Clean Water Act. Our assessment consisted of a full site reconnaissance to identify wetland indicators and other potential waters of the United States in accordance with guidelines set forth in the *1987 Corps of Engineers Wetlands Delineation Manual, ('87 Manual)* and the *Regional Supplement to the '87 Manual: Eastern Mountains and Piedmont Region (Version 2.0), April 2012.*

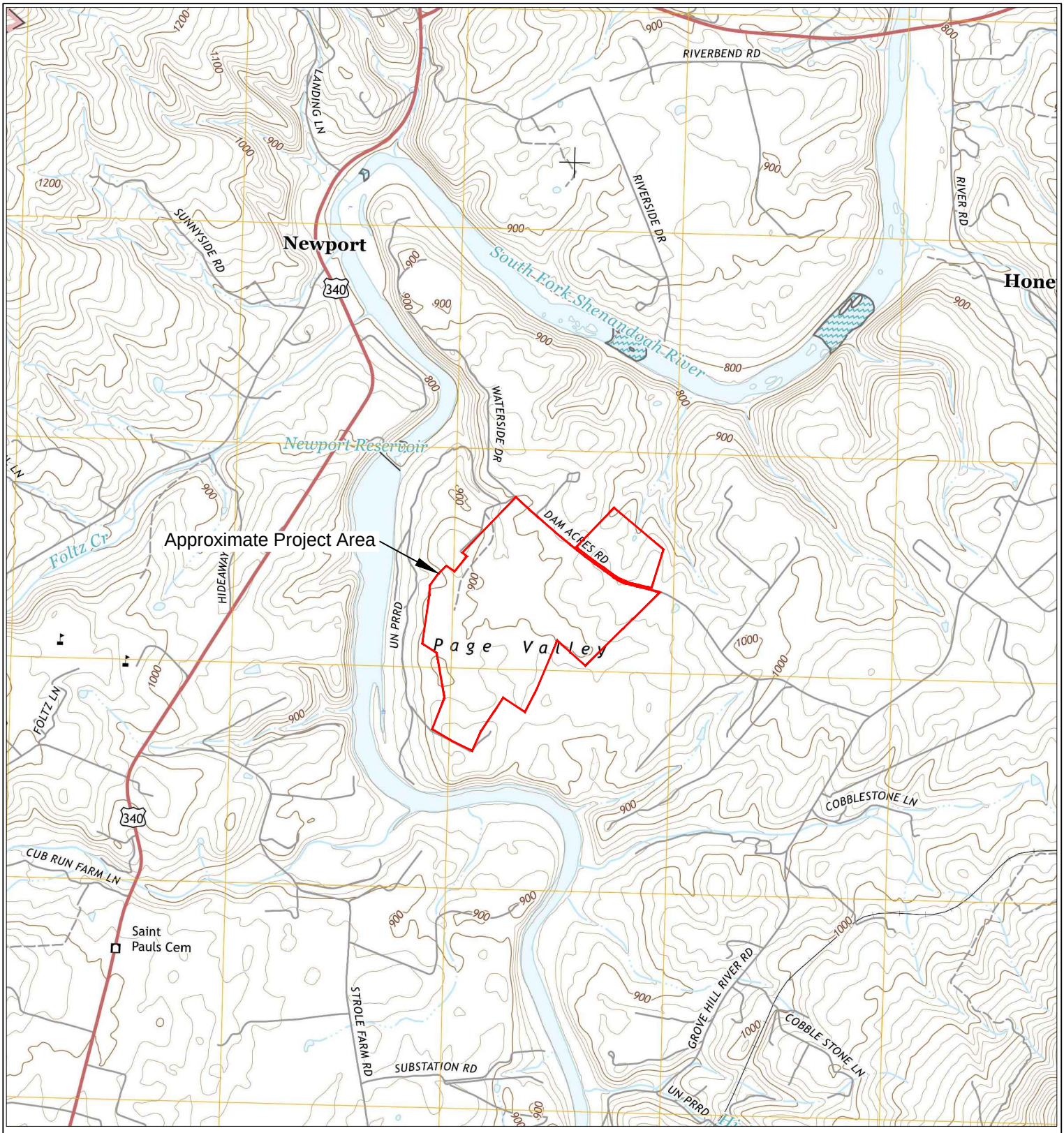
Information required to complete Wetland Determination Data Forms was collected at eleven (11) locations considered to potentially exhibit wetland characteristics (i.e. drainage swales, depressions). The data station locations were recorded using a Trimble Geo 7 series GNSS unit equipped with a dual frequency external antenna. The survey data was overlaid onto an aerial photograph obtained from the Page County GIS website (Figure 2). Table 1 presents the latitude and longitude for each data station. None of the areas evaluated met the criteria necessary to be classed as a jurisdictional wetland that is regulated under Section 404 of the Federal Clean Water Act.

We appreciate the opportunity to have been of service for this project. Please do not hesitate to contact us should you have any questions regarding the information provided in this missive.

Sincerely,

Kirk R. Sweeney, LPSS, OSE
Professional Soil Scientist

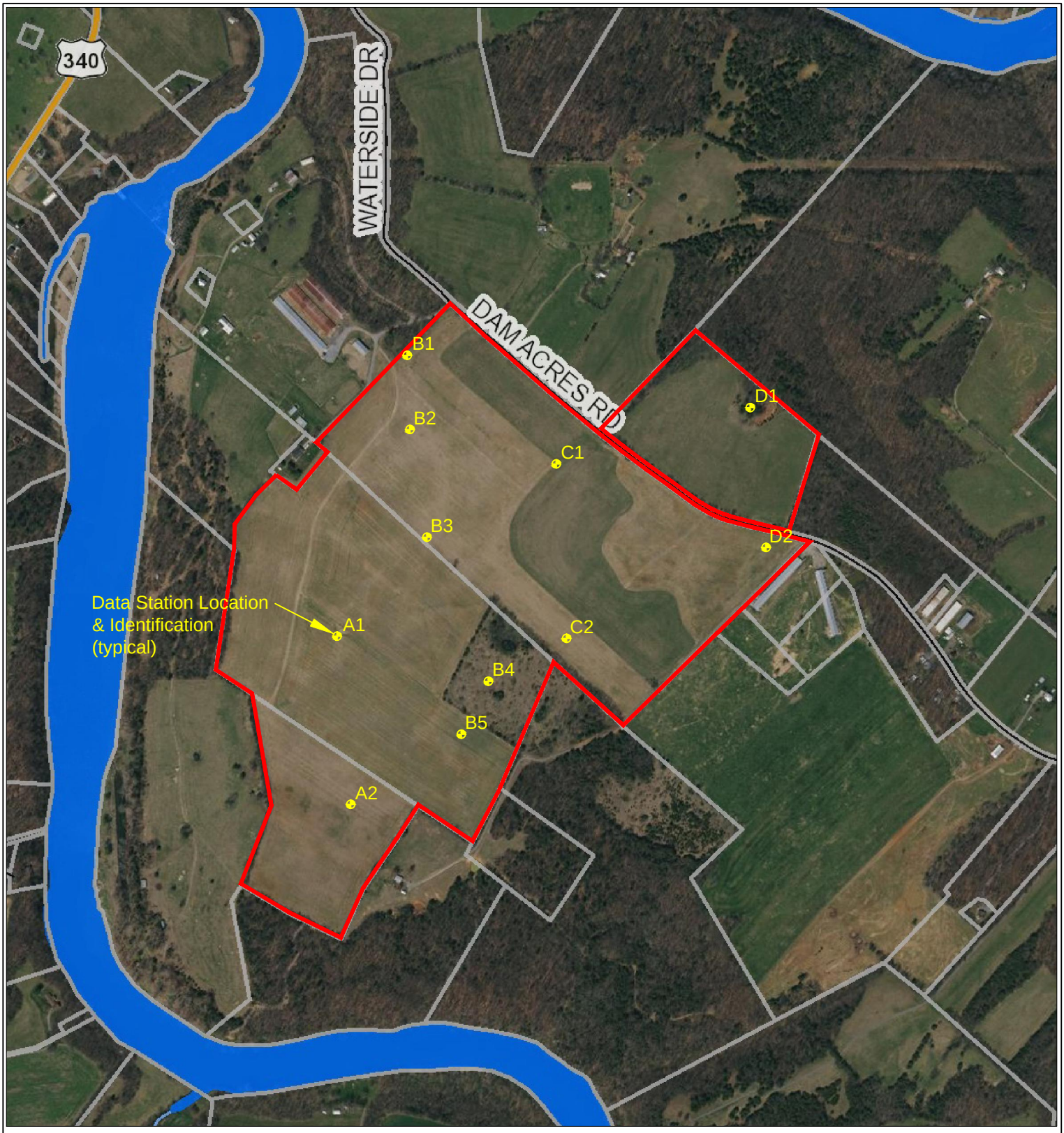
Enclosures
Figure 1 – Site Vicinity Map
Figure 2 – Wetland Data Station Location Map
Table 1 – Data Station Coordinates



COORDINATES:
38° 33' 54.1" N
78° 35' 16.5" W

NORTH

GEOENVIRONMENTAL SERVICES, INC. P.O. BOX 1555 MECHANICSVILLE, VA 23116 PH: (804) 730-8220	2016 USGS Topographic Map Stanley, VA Quadrangle Dogwood Solar Project Page County, Virginia	March 5, 20210 SCALE 1"=2,000 FT. FIGURE 1



Source: Page County GIS

0' ~800' ~1,600'

Project Area - ±168 Acres

NORTH

GEOENVIRONMENTAL SERVICES, INC.
P.O. BOX 1555
MECHANICSVILLE, VA 23116

PH: (804) 730-8220

Wetland Data Station Location Map

Dogwood Solar Project
Page County, Virginia

March 5, 2021
SCALE 1"~800 FT.
FIGURE 2

Table 1

Data Station Coordinates
Dogwood Solar Project
Page County, VA

Data Station Identification	Latitude	Longitude
A1	38.56419	-78.58882
A2	38.56143	-78.58853
B1	38.56879	-78.58736
B2	38.56758	-78.58730
B3	38.56581	-78.58695
B4	38.56345	-78.58566
B5	38.56258	-78.58622
C1	38.56701	-78.58425
C2	38.56415	-78.58403
D1	38.56794	-78.58020
D2	38.56565	-78.57987

Attachment I – Mitigation Plan

Mitigation Plan

The mitigation strategy is summarized below:

According to the reviewed desktop resources, there is a potential for threatened or endangered species on the project area. The Applicant intends to implement a tree clearing time of year restriction between June 1 – July 31 to avoid adverse impact to bat species. Additionally, the Project is situated primarily upon agricultural fields, and minimal tree clearing is anticipated.

Cultural resources on the Site have been investigated and it has been determined that there will be no adverse impacts to any existing or newly-discovered resources. The Kite Family Cemetery (VDHR# 069-5324) will be avoided with 100' buffers.

A wetland assessment was completed for the Project to identify wetlands and other potential waters of the United States, and no jurisdictional areas were found.

Attachment J – Certification of Design

Virginia Department of Department of Environmental Quality
Small Renewable Energy Projects

Certification of Design

Facility Name and Location

Name: Dogwood Solar

Location: Page County, Virginia

Applicant's Name: Dogwood Solar, LLC

Applicant's Mailing Address:	Telephone Number and Email Address:
307 Log Canoe Circle Stevensville, MD 21666	(434)953-8810 James.crawford@urbangridco.com

Certification Requirement: The applicant is submitting an application for a small renewable energy Permit by Rule from the Virginia DEQ, in accordance with §10.1-1197.6 B9 of the Code of Virginia, before such permit application can be considered complete, the applicant furnishes to the department a certification signed by a professional engineer licensed in Virginia that the project is designed in accordance with 9VAC15-60-80.

Professional Engineer Licensed in Virginia

Name: Dan Jamison, P.E.

License Number: 38979

Phone: (804)200-6538

Email: dan.jamison@timmons.com

COMMONWEALTH OF VIRGINIA
DANIEL J. JAMISON
Lic. No. 38979
7/29/21
PROFESSIONAL ENGINEER

I hereby certify that the site plan furnished to comply with §10.1-1197.6 B [illegible] submitted as part of this Permit by Rule application is correct and fulfills the requirements of §10.1-1197.6 B 9 of the Code of Virginia.

Signature

DAN JAMISON
Name

7/29/21
Date

Attachment K – Operating Plan

Dogwood Solar, LLC Facility

Operations Plan

This document details the Operations Plan for the Dogwood Solar, LLC solar facility, located along Dam Acres Road approximately 4 miles west of Stanley, in Page County. This Operations Plan describes basic criteria for usage during routine operations at Dogwood Solar.

Per the Dogwood Solar, LLC SUP, before beginning any clearing, grading, or other land-disturbing activity, the Project will obtain construction/electrical plan approval, including erosion and sediment control plans from Page County.

Grounds Maintenance

Landscaping will be maintained in a healthy condition at all times. Dead or dying plant materials will be removed and replaced within 90 of notification. Additionally, all plants and trees that are dead will be removed and replaced no later than May 31st anuually, regardless of notification to Dogwood Solar, LLC.

Vegetation around the solar panel modules and inverters (typically grass) will be maintained to appropriate height. When necessary, the presence of invasive herbaceous species will be managed with approved herbicides.

If necessary, tree management via trimming and removal will occur periodically in areas that shade solar panels or that present a hazard to the solar array and/or related equipment.

Grounds Usage

Areas outside of the fenced solar array will not be manicured to maintain natural conditions (typically forested).

Exterior lighting will be directed downward and away from adjacent properties and road, and light fixtures will not exceed 20′ in height.

Hours of construction will be limited to Monday-Saturday, 7am-7pm.

The Kite Family Cemetery will be avoided with a minimum buffer of 100′.

Site Access

Site access will be controlled by fencing around the solar array and inverters. No trespassing signs with appropriate contact information will be posted along the fence for security. The fence will be properly maintained at all times.

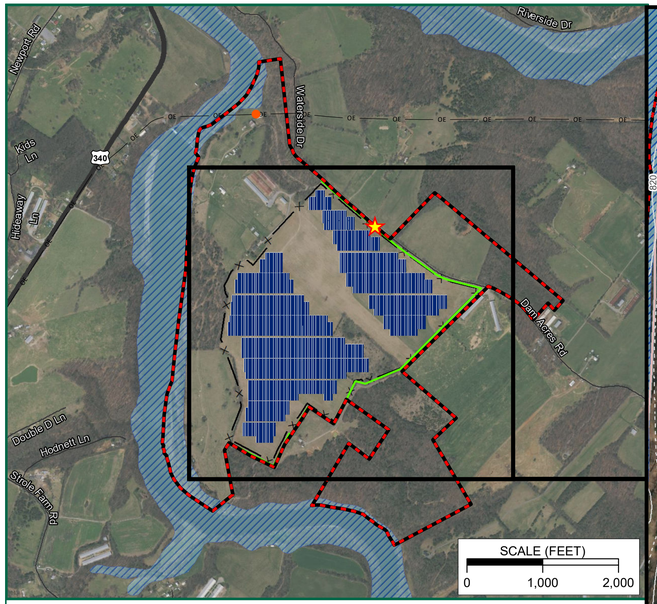
Solar Equipment

Equipment status will be monitored by Dogwood Solar, LLC personnel, or its designees. If maintenance is required, staff will be dispatched to the location to identify and correct the issue(s).

Soils Testing

Before site approval, every five years once the Project is energized, and during decommissioning the Project will submit soils testing reports to the county.

Attachment L – Site Plan, Context Map



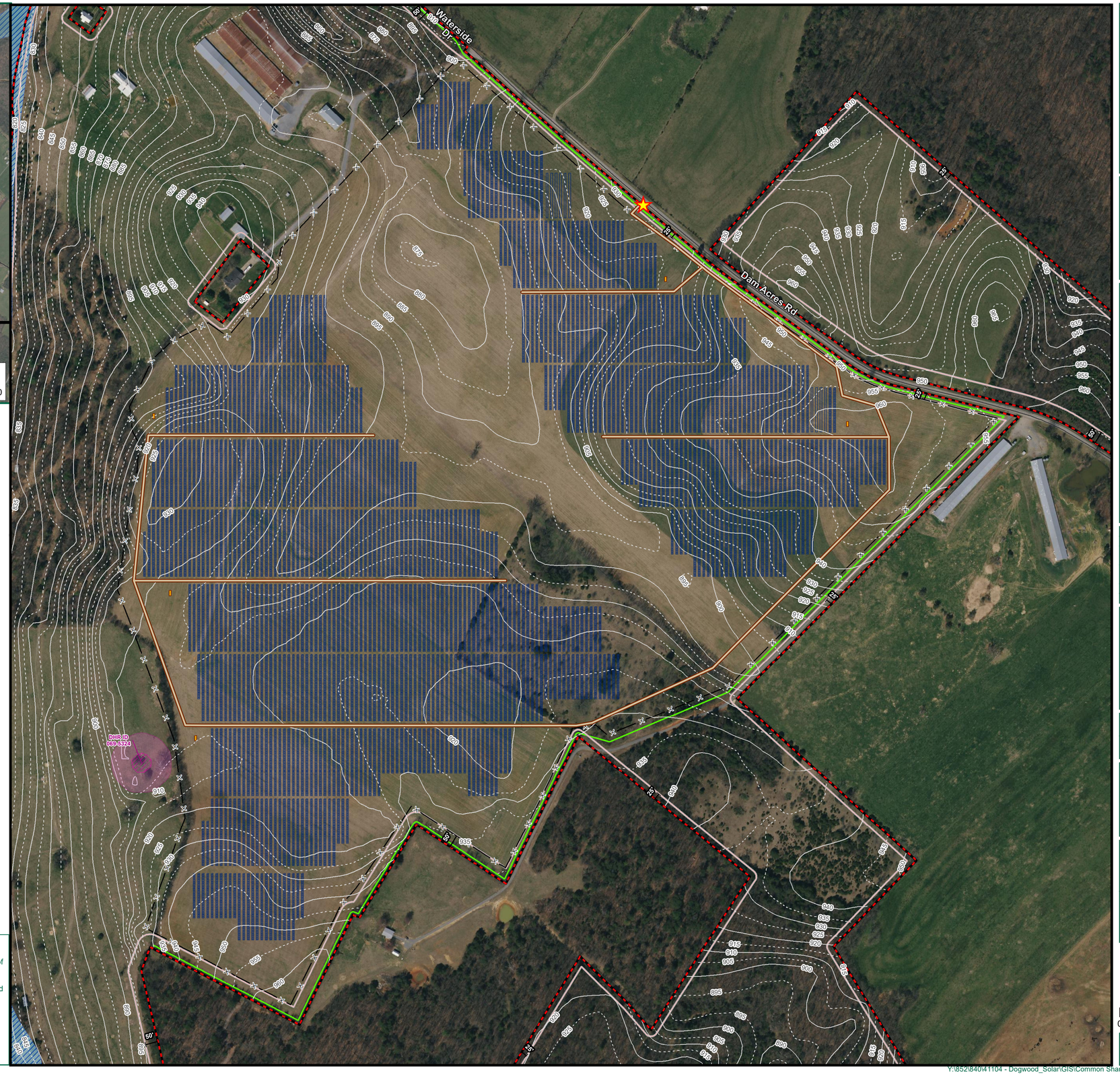
Legend

- Project Limits - 350.4 Acres
- Property Setbacks - 25' / 50' / 75' as noted
- Project Entrance Location
- Point of Interconnection
- OE — Overhead Electric Line
- Streams - Not Present
- Vegetative Buffer
- Internal Roads
- Solar Array - 15' maximum height
- Inverter - 14' maximum height
- Fence - 146.2 Acres
- Cemetery
- Cemetery Buffer - 100'
- Wetlands - Not Present
- 1% Annual Chance Flood Hazard

Topographic Contours

- 10'
- 5'

1. Project Limits have been surveyed by Timmons Group.
2. Site layout is for design purposes only. Not for construction.
3. A minimum setback as shown will be maintained where the project abuts non-participating land and public rights of way.
4. The proposed fence will be at least six (6) feet in height and not greater than twelve (12) feet in height.
5. Vegetative buffer shall consist of existing vegetation and, where existing vegetation is not sufficient, an installed landscaped strip consisting of two rows of trees offset with spacing not to exceed ten (10) feet.
6. GeoEnvironmental determined that wetlands and streams are absent from the site.
7. Topographic contours based on USGS LiDAR.
8. Aerial imagery from VGIN.
9. Flood Hazard data from FEMA's National Flood Hazard Layer.
10. Cemetery data from VDHR.



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.
1001 Boulders Parkway, Suite 300
Richmond, VA 23225
TEL 804.200.6500
www.timmons.com

PROJECT NAME & LOCATION

DOGWOOD SOLAR, LLC
PAGE COUNTY, VIRGINIA

DATE 07/06/2021
PROJECT NUMBER 46369.001
PROJECT NAME DOGWOOD SOLAR, LLC
DESIGNED BY / DRAWN BY L. WHEELER

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REVISIONS

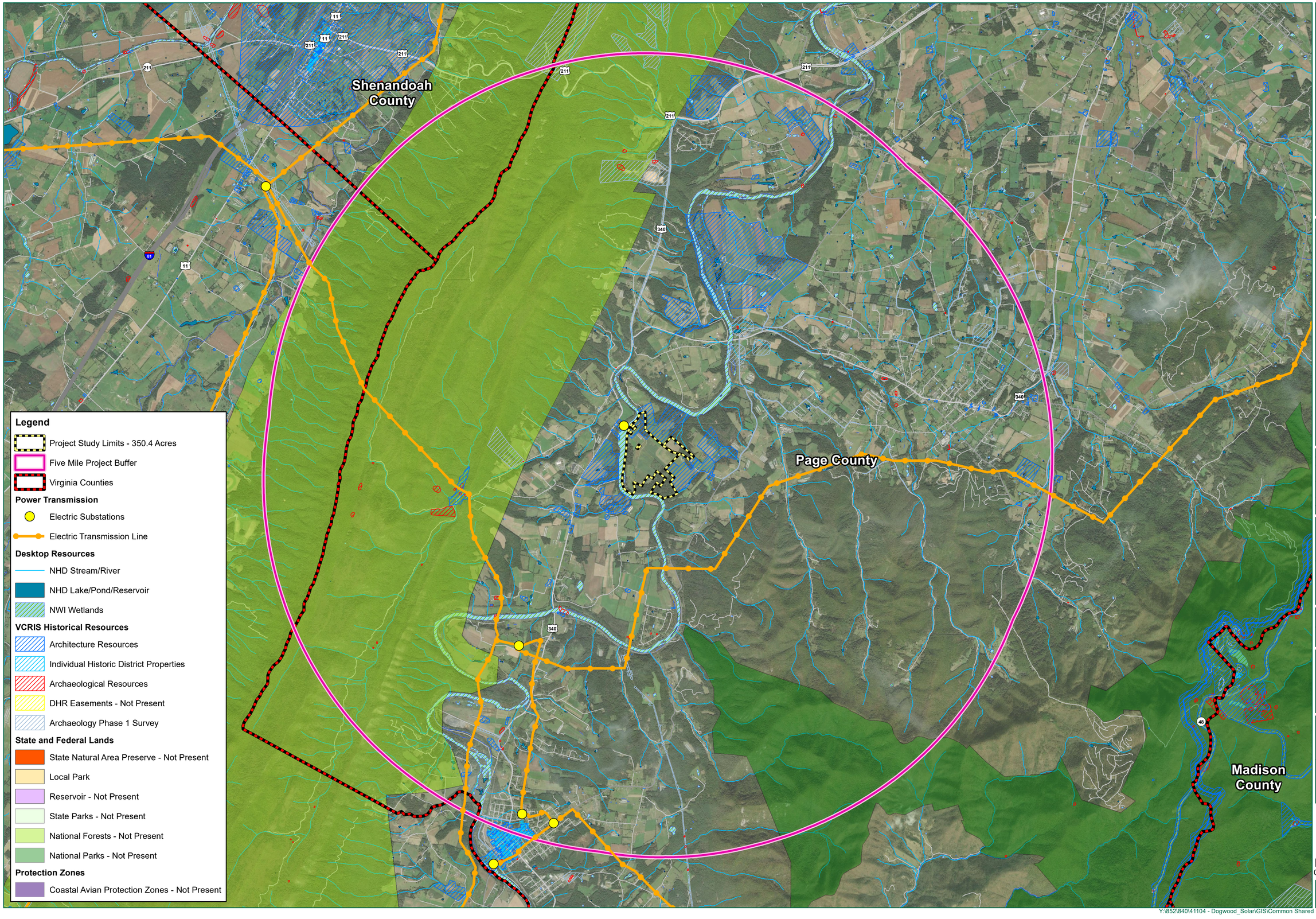
#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION
PRELIMINARY SITE PLAN

SCALE (FEET)
0
200
400
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H:1 " = 198 '	1

Y:\852\840\41104 - Dogwood_Solar\GIS\Common Shared Exhibits\Dogwood_PBR.mxd



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PROJECT NAME & LOCATION

DOGWOOD SOLAR, LLC

PAGE COUNTY, VIRGINIA

DATE 07/06/2021

PROJECT NUMBER 46369.001

PROJECT NAME DOGWOOD SOLAR, LLC

DESIGNED BY / DRAWN BY J. FRAZIER

NOTES:
Project Limits are approximate.
Cultural Resource data from DHR.
Local parks data from DCR.
National parks data from ESRI.
Aerial imagery from VGIN.

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REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION
CONTEXT MAP

SCALE (FEET)
0 3,200 6,400
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE H:1 " = 3,200 '

SHEET NUMBER 1

Y:\852\840\41104 - Dogwood_Solar\GIS\Common Shared Exhibits\41104-ContextMap.mxd

Attachment M – Environmental Permit Certification Form

Virginia Department of Environmental Quality
Small Renewable Energy Projects (Solar)
Environmental Permit Certification Form

Facility Name and Location: Dogwood Solar
Page County, Virginia

Applicant's Name & Title: Dogwood Solar, LLC

Applicant's Mailing Address:	Telephone Number and Email Address:
307 Log Canoe Circle Stevensville, MD 21666	(434)953-8810 james.crawford@urbangridco.com

The applicant is submitting an application for a small renewable energy permit by rule from the Virginia DEQ. In accordance with § 10.1-1197.6 B 12 of the Code of Virginia, before such permit application can be considered complete, the applicant must certify that the small renewable energy project has applied for or obtained all necessary environmental permits.

List all state and local environmental permits that are necessary for the small renewable energy project listed above. Indicate for each whether the permit has been applied for and/or obtained. If the permit has been obtained, attach either a copy of the permit or a letter from the appropriate agency staff member on agency stationery stating that the permit has been issued and the date of issuance. If a permit has not yet been obtained but has been applied for, provide the name of the permit, name and address of the receiving agency, name of the staff person at the receiving agency to whom the application was addressed (if available), and the date on which the application was submitted. If no permits are necessary, write the word "none" in the first column.

Permit	Permitting Agency / Authority, Address, Contact Person	Applied for (Date)	Obtained (Date)
General VPDES Permit for Discharges of Stormwater from Construction Activities	Page County Planning & Community Development 103 S Court St Suite B Luray, VA 22835 (540)743-6674 Kelly Butler	8/11/2021	

I hereby certify *that the information provided above (and any attached information) is correct and fulfills the requirements of § 10.1-1197.6 B 12 of the Code of Virginia and 9 VAC 15-40-30 A 12.*

Applicant's Signature	Date:
James A Crawford Jr	08/11/2021

Attachment N – Non-Utility Certification Form

Virginia Department of Environmental Quality
Small Renewable Energy Projects
Non-Utility Certification Form

Facility Name and Location: Dogwood Solar
Page County, Virginia

Applicant's Name: Dogwood Solar, LLC

Applicant's Mailing Address:	Telephone Number and Email Address:
307 Log Canoe Circle Stevensville, MD 21666	(434)953-8810 james.crawford@urbangridco.com

The applicant or his authorized representative an application for a small renewable energy permit by rule from the Virginia Department of Environmental Quality. In accordance with § 10.1 -1197.6 H of the Code of Virginia, before such permit application can be considered complete, the applicant must certify the project is proposed, developed, constructed or purchase by a person that is NOT a utility regulated pursuant to Title 56 of the Code of Virginia.

The undersigned is an responsible official for the proposed project and certifies that the project is proposed, developed, constructed or purchased by a person that is NOT a utility regulated pursuant to Title 56 of the Code of Virginia.

Applicant's signature:	Date:
James A Crawford Jr	07/19/2021

Attachment O – Public Review Documents

PUBLIC NOTICE
DOGWOOD SOLAR LLC

A solar renewable energy project is proposed to be located on approximately 350 acres located along Dam Acres Road approximately 4 miles west of Stanley, Virginia.

The project has been approved by the Page County Board of Supervisors under a Special Use Permit. The proposed project is now proceeding through the Virginia Permit by Rule process. The project will have a maximum capacity of 20 Megawatts Alternating Current (AC) utilizing traditional photovoltaic solar modules which will rotate on a single axis to track the sun. Approximately 55,900 panels will be utilized with a maximum height of 12'.

We welcome the opportunity to present this project to interested parties. The purpose of the public participation is to (i) acquaint the public with the technical aspects of the proposed project and how the standards and the requirements of the Virginia Department of Environmental Quality PBR regulations will be met, (ii) identify issues of concern, (iii) facilitate communication, and (iv) establish a dialogue between the owner or operator and persons who may be affected by the project.

A 30-day comment period, in accordance with 9VAC15-60-90 C will be held commencing September 3, 2021, through October 3, 2021. Any interested parties may contact the applicant to ask questions or provide comments, view the application materials during the public comment period at the Kibler Library or request a copy of the application materials by contacting:

Urban Grid Solar Project, LLC
ATTN: Robert Propes
337 Log Canoe Circle
Stevensville, MD 21666
443-642-1280
Robert.Propes@UrbanGridCo.com

A public meeting will be held in accordance with 9VAC15-60-90 C on September 22, 2021, at 6:00 PM until 7:30 PM at The Mimslyn Inn, located at 401 W. Main St. Luray, VA 22835. Information will be presented on poster boards in a space that will allow for social distancing. Individuals may be required to wait to enter if capacity of the space is exceeded. Face coverings will be required. Questions and comments will be addressed and documented by Dogwood Solar, LLC representatives while maintaining social distancing practices.

Copies of the documentation to be submitted to the DEQ in support of the Permit by Rule application will be available for inspection during the public comment period at the Kibler Library, located at 140 East Main Street Stanley, VA, and on the following website: (http://www.urbangridsolar.com/news).