Caden Energix Wytheville LLC
PERMIT BY RULE

Small Renewable Energy Project (Solar) Permit By Rule

APPLICATION DOCUMENTS

Date: April 2020

Table of Contents

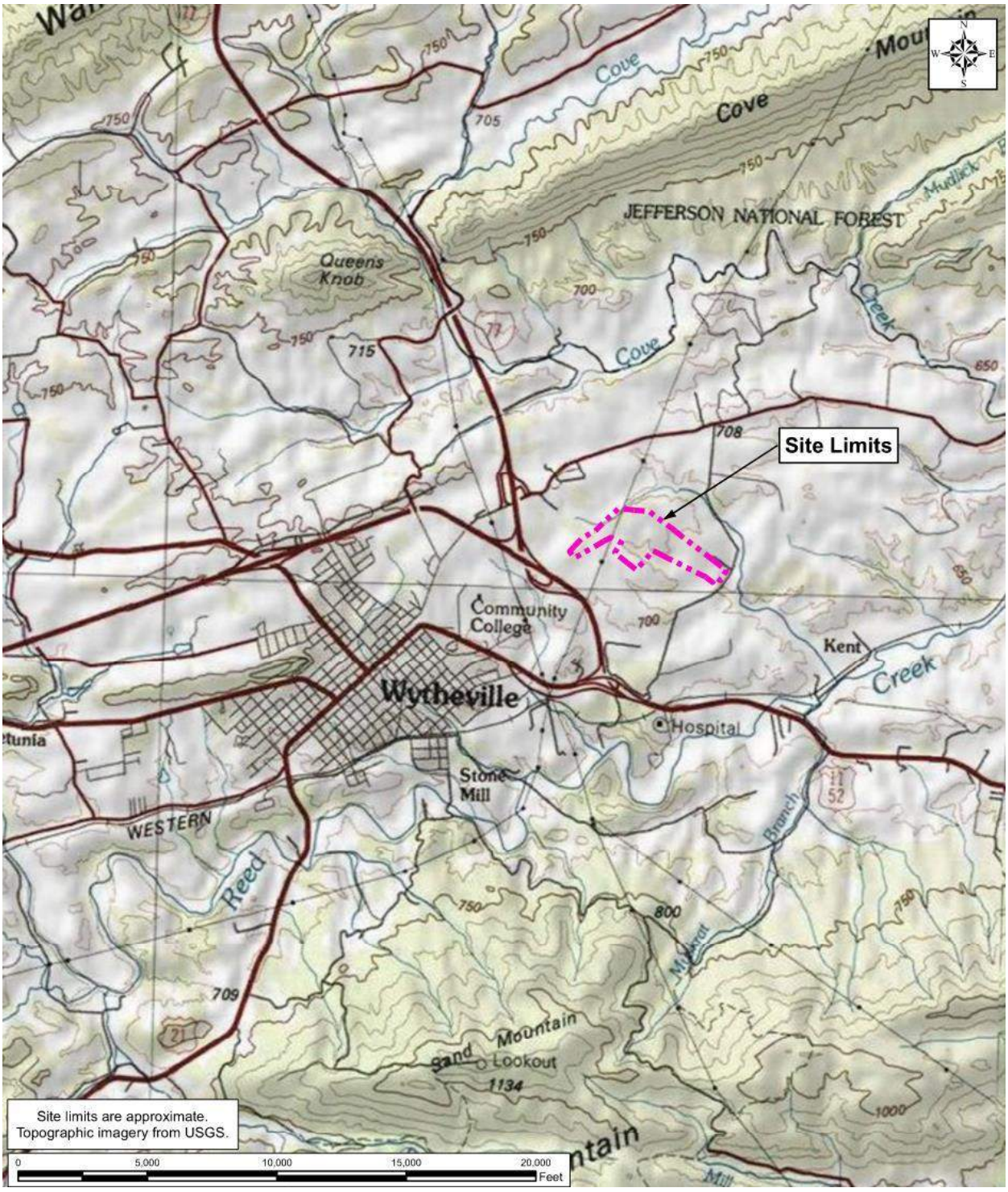
I. INTRODUCTION AND OVERVIEW

The Caden Energix Wytheville Solar project ("Project") is a 20 MW solar facility proposed by Caden Energix Wytheville LLC. The Project is located on a single parcel totaling 154 acres on Nye Road, approximately two miles northeast of Wytheville, in Wythe County, Virginia.

The land is currently 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 Appalachian Power Company. The proposed solar facility is comprised of solar panels that are attached to a fixed tilt or single-axis tracking system. The solar facility has been designed to minimize land disturbance and avoid wetlands, streams, and other environmentally sensitive lands located within the property as able.

This 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: Wythe County, VA
- Total generating capacity of project: 20 MW AC
- Timeframe of project: Construction start August 2020; anticipated construction time of 9 months
- Revised public comment period: April 20 – May 20, 2020



U.S. Geological Survey, 2016. 7.5 Minute Series, Wytheville, 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 was published for Caden Energix Wytheville LLC in Volume 36, Issue 3 of the Virginia Register of Regulations and 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;*

A copy of the Local Governing Body Certification Form, signed by the Zoning Administrator of Wythe County, is included in 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 completed a Distribution Impact Study which is 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 for the Project is pending and when obtained, 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;*

An analysis of the potential environmental impacts of the Project shows that operations will not negatively affect the attainment of national ambient air quality standards (NAAQS). The Project's impacts from the transition from fossil-fuel based electrical generation to renewable energy generation are quantified as follows:

- 24,250 tons of carbon dioxide
- 29,400 lbs of nitrogen oxide
- 5,460 lbs of particulate matter 2.5 µm
- 37,720 lbs of sulfur dioxide

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. Great Lakes / 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;*

The Applicant has 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, as described below.

A. Wildlife Analysis

Threatened and Endangered Species

Information from the Virginia Department of Conservation and Recreation (VDCR), as well as the Virginia Department of Game and Inland Fisheries (VDGIF) was obtained to conduct an analysis on the Project's

potential impact on threatened and endangered species. VDCR's Natural Heritage Database Explorer (NHDE), and VDGIF's Wildlife Environmental Review Map Services (WERMS) systems were queried.

Information provided by VDCR indicates that the Project will not impact any state-listed threatened or endangered plants or insects (Attachment F).

The WERMS map (Attachment F) indicates the presence of two endangered species in the general vicinity of the property. The tri-colored bat (*Perimyotis subflavus*) and the gray bat (*Myotis grisescens*) have been identified outside of the Project but within the two-mile search buffer. Additional information obtained from VDGIF (Attachment F) indicates that the project does not intersect any known tri-colored hibernaculum or its 5.5 mile buffer. The Project is located within the Upper New River basin and is not located within the Tennessee drainage.

All additional species identified within the WERMS map within a two-mile buffer of the project are described as non-threatened and non-endangered.

Expected beneficial and adverse impacts

Based on the reviewed databases, the Project will not result in adverse impacts for either the tri-colored bat or the gray bat based on available VDGIF guidance. No additional restrictions are anticipated for the tri-colored bat since it is outside of VDGIF's hibernaculum buffer. Protections for the gray bat are mandated for projects within the Tennessee river basin; this project is located within the Upper New River basin.

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

Therefore, no adverse impacts to threatened species are anticipated.

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 was prepared and included as Attachment G. 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

The Applicant has conducted a preconstruction historic resources survey consisting of researching known historic resources and a Phase I historic resources survey. 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.

The Phase I Cultural Resource Survey, VDHR #2019-0725 was completed in November 2019. VDHR comments were received on January 9, 2020, and the Phase I Cultural Resource Survey was revised and resubmitted in January 2020. Five new archaeological resources were identified, all of which were recommended not eligible for the National Register of Historic Places (NRHP). The architectural survey did not identify any buildings, structures, and non-archaeological districts and sites, or objects over 50 years of age that were not already previously documented and evaluated. Ultimately, it was determined that no

significant historic resources will be visually impacted, and no further work in the area of potential effects (APE) is recommended.

VDHR first issued a letter concerning their review of the Phase I Historic Resources Survey on January 9, 2020 (Attachment H), and a second letter on February 5, 2020.

In a letter dated February 5, 2020, VDHR stated that it had no further comments on the report and recommends no further survey.

Expected beneficial and adverse impacts

As a result of the Phase I Cultural Resource Survey, the Applicant determined that all new archaeological resources are recommended not eligible for listing, and no further work in the APE is recommended. No architectural resources over 50 years old were identified that had not already been surveyed previously. Furthermore, no significant historic resources will be visually impacted and no further work in the indirect APE is recommended. In a letter dated February 5, 2020, VDHR offered concurrence with the cultural investigation.

C. Additional Natural Resource Analysis

Natural Heritage Resources

VDCR provided comments that the project is situated on karst-forming carbonate rock, and that five sinkholes are present. Avoidance is recommended, along with adherence to erosion and sediment control measures and consideration for aquatic invertebrates if herbicides or pesticides are to be used.

In addition, 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

Karst areas will be avoided by development. Consideration for pollinator-friendly species will be prioritized within the areas of disturbance, as well as planting of Virginia-native species.

Wetland Delineation

A wetland delineation was conducted on the Project in February 2020. The Project was delineated 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 Mountain and Piedmont Region (Version 2.0) and subsequently issued USACE regulatory guidance regarding the identification of jurisdictional stream channels through the recognition of field indicators of an ordinary high-water mark within drainage features. The delineation identified the following:

- 0.81 acres of palustrine emergent (PEM),
- 0.57 acres of palustrine open water (POW),
- 0.50 acres of palustrine forested (PFO),
- 0.077 acres of palustrine scrub shrub (PSS)
- 1,806 linear feet of perennial stream (R3),
- 323 linear feet of intermittent stream (R4), and
- 218 linear feet of ephemeral stream (R6).

Wetlands mapping is included as Attachment I.

Expected beneficial and adverse impacts

No wetland impacts are indicated on the site plan (section 11). In the event wetland impacts are proposed, they will adhere to all applicable permit and regulatory requirements.

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 Project does not have a significant adverse impact to any state-listed threatened and/or endangered wildlife. The Project is not located near a known sea turtle nesting beach and is not located in whole or in part within zones 1,2,3,4,5,10,11,12 or 14 of the CAPZ map. The Applicant has surveyed cultural resources and has found that there will be no impacts, a finding with which DHR concurred.

Wetland and streams are located on the Project and have been delineated will be confirmed by USACE. Impacts to wetland and stream areas are not proposed. In the event wetland impacts are proposed, they will adhere to all applicable permit and regulatory requirements.

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.

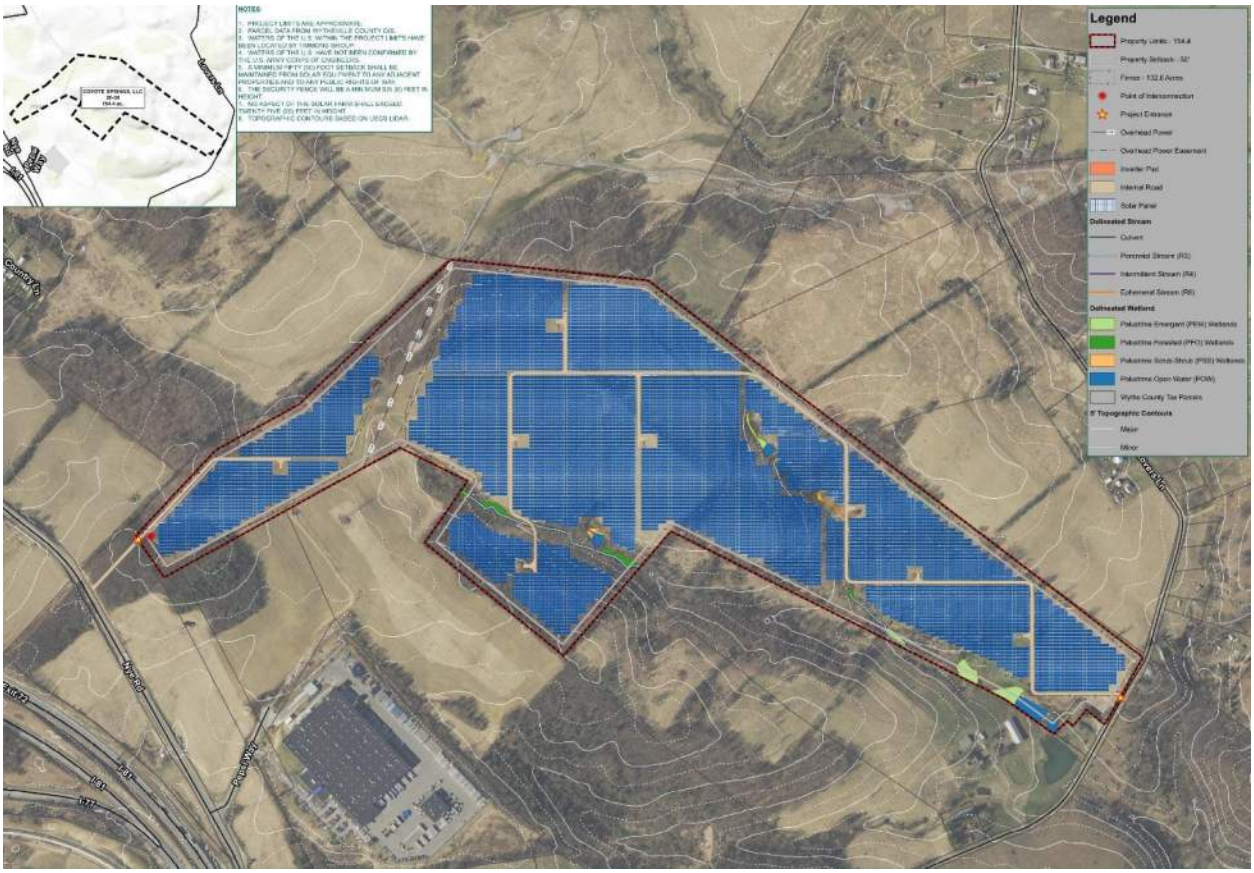


Figure 2 – Site Plan

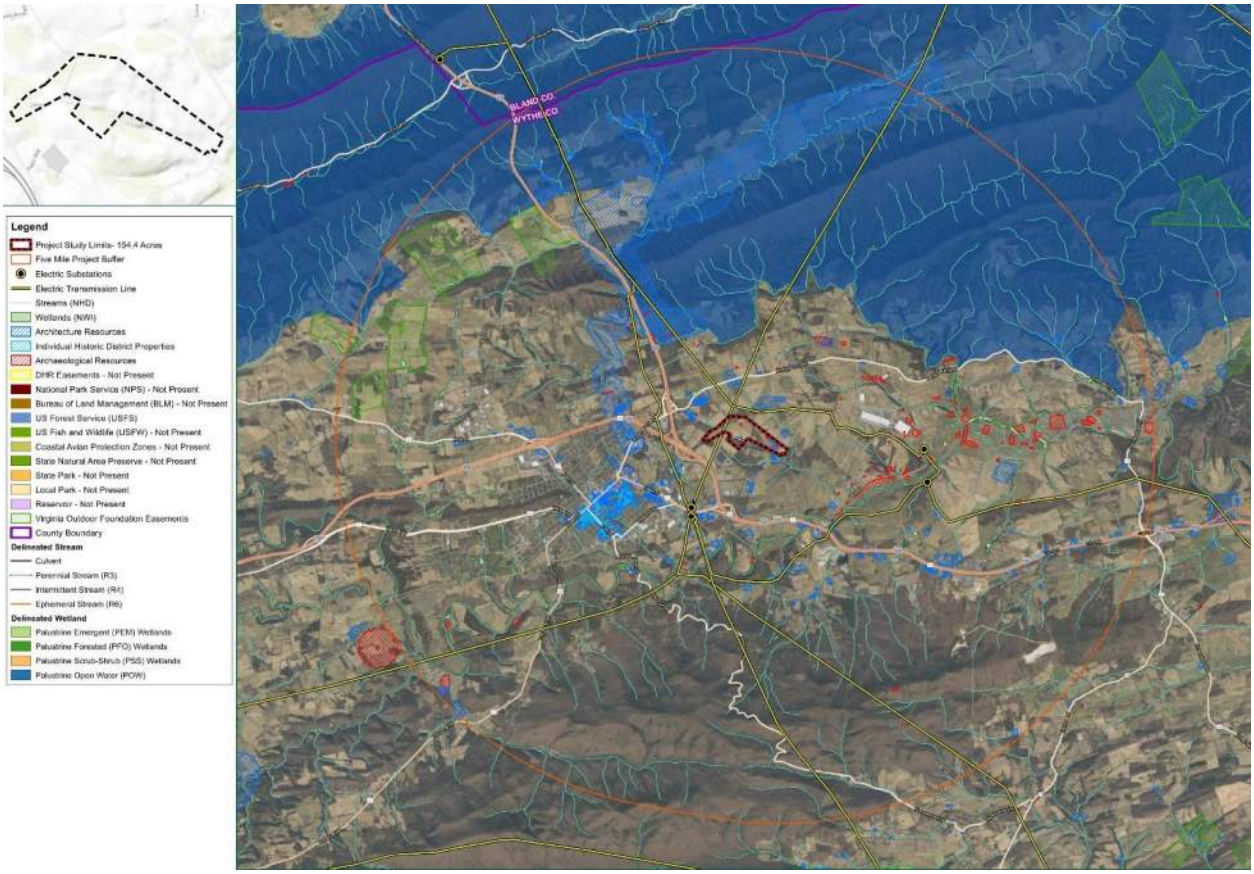


Figure 3 – Context Map

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 between April 20-May 20, 2020 in accordance with § 10.1-1197.6 B 13 and 14 of the Code of Virginia. The public review and comment period will be announced by publication in the Wytheville Enterprise once a week for two consecutive weeks on April 4 and April 11, 2020. Due to Executive Order 55 directing Virginia residents to "stay at home", materials relating to the public comment period are being made available electronically and mail, and the public meeting will be conducted via webinar and telephone.

A copy of the application materials is available for inspection at https://www.cadenenergix.com/wytheville-pbr or by requesting a copy via mail to 2311 Wilson Boulevard, Suite 640, Arlington, VA 22201. A public meeting will be held via telephone and webinar conference on Tuesday, May 5, 2020 from 5:30 to 6:30 pm. The meeting can be accessed by phone at 301-715-8592, Meeting ID 622-470-925 or video conference at https://timmons.zoom.us/j/622470925. If Executive Order 55 is cancelled prior to the meeting, the meeting will also take place at 213 West Main Street, Wytheville, VA 24382.

Materials in support of the public review 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.

Attachment A – Notice of Intent

(Notice of Intent for Solar Energy Project – full PBR projects)

Caden Energix Wytheville LLC
c/o Caden Energix LLC
11 South 12th Street
Suite 317
Richmond, VA 23219

August 27, 2019

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

Dear Ms. Major:

On behalf of **Caden Energix Wytheville LLC** (applicant), I am providing 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 Wythe County, VA pursuant to Virginia Regulation 9VAC15-60.

The project is located on a single parcel totaling 154 acres on Nye Road, approximately 2 miles NE of Wytheville, VA. Lat: 36.9642°; Long: -81.0498°. The project will have a rated capacity of 20.0 MWac and include approximately 50,000 PV solar panels.

If the Department has questions regarding this project, please contact John Ragone at johnr@cadenenergix.com or phone 804-305-3688.

Sincerely yours,

Kenneth Niemann

Kenneth Niemann
Title: SVP Development

Contact Information: Mary E. Major, Department of Environmental Quality, 1111 East Main Street, Suite 1400, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4423, FAX (804) 698-4319, or email mary.major@deq.virginia.gov.

Caden Energix Wytheville LLC Notice of Intent for Small Renewable Energy Project (Solar) Permit by Rule - Wythe County

Caden Energix Wytheville LLC has provided the Department of Environmental Quality a notice of intent to submit the necessary documentation for a permit by rule for a small renewable energy project (solar) in Wythe County. The project is located on a single parcel totaling 154 acres on Nye Road, approximately two miles northeast of Wytheville, Virginia. Latitude: 36.9642°; Longitude: -81.0498°. The project will have a rated capacity of 20.0 megawatts alternating current and include approximately 50,000 photovoltaic solar panels.

Contact Information: Mary E. Major, Department of Environmental Quality, 1111 East Main Street, Suite 1400, P.O. Box 1105, Richmond, VA 23218, telephone (804) 698-4423, FAX (804) 698-4319, or email mary.major@deq.virginia.gov.

DEPARTMENT OF PLANNING AND BUDGET

Virginia Commercial Activities List for Fiscal Year 2018 and Fiscal Year 2019

Pursuant to § 2.2-1501.1 of the Code of Virginia, the Virginia Department of Planning and Budget (DPB) has updated the Commercial Activities List (CAL). The CAL is posted on the DPB website under Documents, Instructions and Publications as "Commercial Activities List - 2019" and is also included in this notice.

DPB is seeking written comments on the CAL and invites recommendations from the public regarding activities being performed by state agencies that might better be performed by the private sector.

NIGP	NIGP title
90608	Automation; Controls; Instrumentation - Architectural Services
90648	Historical Preservation
91013	Elevator Installation, Maintenance and Repair
91223	Construction, General (Backfill Services, Digging, Ditching, Road Grading, Rock Stabilization, etc.)
91265	Maintenance and Repair, Tennis/Sport Court
91316	Construction, Communication Equipment (Includes Antenna Towers)
91359	Construction and Upgrades, Wastewater Treatment Plant
91360	Construction, Water System/Plants, Main and Service Line
91427	Carpentry
91464	Plastering
91500	Communications and Media Related Services
91522	Communications Marketing Services
91806	Administrative Consulting
91815	Architectural Consulting
91819	Buildings, Structures and Components Consulting
91831	Construction Consulting
91875	Management Consulting
91878	Medical Consulting
91885	Personnel/Employment Consulting (Human Resources)
91887	Purchasing Consulting (Including Specification Development)
92000	Data Processing, Computer, Programming, and Software Services
92022	Data Preparation and Processing Services (Including Bates Coding)
92032	Intelligent Transportation System Software (Including Design, Development, and Maintenance Services)
92037	Networking Services (Including Installation, Security, and Maintenance)
92039	Processing System Services, Data (Not Otherwise Classified)
92040	Programming Services, Computer
92416	Course Development Services, Instructional/Training
92418	Educational Services, Alternative
92474	Special Education
92480	Tutoring
92500	Engineering Services, Professional
93881	Scientific Equipment Maintenance and Repair

Attachment B – County Approval

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

Local Governing Body Certification Form

Facility Name and Location: Wytheville Solar. 455 Richdale Road, Wytheville, Virginia 24382. Tax Map 026-000-0000-0039

Applicant's Name: Caden Energix Wytheville LLC

Applicant's Mailing Address:	Telephone Number and Email Address: (703) 801-0412 ken@cadenenergix.com
2311 Wilson Blvd. Suite 640 Arlington, VA 22201	

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:
Ken Niemann	February 7, 2020

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)

☒ The proposed facility **compiles with** all applicable land use ordinances (See Note)

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

Signature of authorized local government representative:	Date:
Johnny D. Kincer	3-6-2020
Type or print name: JOHNNY D. KINCER	Title: Wythe County ENGINEER
County, City or Town: Wythe County	

Note: Erosion & Sediment Control, and Storm Water Management to be required as part of Construction Permitting Process

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

Local Governing Body Certification Form

Facility Name and Location: Wytheville Solar
Wythe County, Virginia

Applicant's Name: Caden Energix Wytheville LLC

Applicant's Mailing Address:	Telephone Number and Email Address:
2311 Wilson Blvd. Suite 640 Arlington, VA 22201	(703)801-0412 ken@cadenenergix.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:
Ken Niemann	February 7, 2020

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)

☑ 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:
C Wayne Sutherland Jr	03-05-20
Type or print name: C WAYNE SUTHERLAND JR	Title: TOWN MANAGER

County, City or Town: TOWN OF WYTHEVILLE, VA.

County Administrator's Office

340 South Sixth Street – Administration Building
Wytheville, VA 24382-2598
Telephone (276) 223-4500
FAX (276) 223-4515

Stephen D. Bear
County Administrator

May 20, 2019

John Ragone
Finance & Development
1000 5th Street
Miami Beach, FL 33139

Re: Wythe County Virginia - Caden Solar Project
Parcel 26-39

Dear Mr. Ragone:

Please accept this letter as our follow up to our recent discussion of the proposed Caden Solar Project. The Wythe County Board of Supervisors has not adopted a Zoning Ordinance, therefore there are no Special or Conditional Use Permits required for a solar project in Wythe County. The project would need to meet any applicable building, erosion and sediment control, and stormwater management permits.

Please note that part of the parcel referenced above lies within the Town of Wytheville Corporate Limits. Permitting requirements within that area would need to be addressed by the Town of Wytheville.

Please contact me if you have any questions.

Sincerely,

Stephen D. Bear
County Administrator

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TOWN OF WYTHEVILLE

COUNCIL-MANAGER FORM OF GOVERNMENT SINCE 1924

"The Hub of Southwest Virginia"
P.O. BOX 533
150 EAST MONROE STREET
WYTHEVILLE, VIRGINIA 24382-0533
TELEPHONE (276) 223-3333
WWW.WYTHEVILLE.ORG

May 29, 2019

Mr. John Ragone
Finance & Development
1000 5th Street
Miami Beach, Florida 33139

Re: Wytheville Virginia-Caden Solar Project Parcel 26-39

Dear Mr. Ragone

This letter is to confirm our previous conversations that the proposed Caden Solar Project is located in an A-1 Agricultural Zoning District, and that it is a permitted use in this zone as "Public utility generating, booster, or relay stations, transformer substations, transmission lines and towers, pipes, meters and other facilities for the provision and maintenance of public utilities..."

The project would need to meet any applicable regulatory, building code and stormwater management requirements. During construction, approved erosion and sediment control must be provided. Of course, appropriate permits must be obtained for these and all construction and operational activities. A 15 foot setback from the property line would need to be maintained, and the total height of the collector structures cannot exceed 35 feet.

We look forward to the development of this "green" industry in our community. Please do not hesitate to contact me at 276-223-3350, if you have any questions.

Sincerely

C Wayne Sutherland Jr

C. Wayne Sutherland, Jr.
Town Manager

CWSjr/bnj

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Attachment C – Interconnection Studies

Distribution Impact Study

For Caden Energix

Distribution Generation Interconnection Request

For 20,000 KVA of Solar Powered Generation

Near 355 Nye Rd

Wytheville, VA 24382

Confidential

Timothy H Hall
Distribution System Planning
July 29, 2019

Distribution List:

J.H. Croker
C. R. Huffman
J. M. Neal
T. F. Weaver
M. W. Hunt
J. W. Fitzwater
B. W. Clemo
T. J. Johnson
D. M. Nance
J. G. Griffith
J. H. Riley

Request

Caden Energix LLC (DG) has requested to interconnect generation to Appalachian Power Company's (APCO) distribution system via a new metering point for facilities near 355 Nye Rd, Wytheville, VA 24382 that will eventually be served from the Nye Rd circuit and the Wythe sub-station. It should be noted that the circuit currently serving the Nye Rd area is the Tunnel circuit and the Wythe sub-station. However, plans are in progress to reduce load and exposure on the Tunnel circuit and re-name the newly configured circuit as the Nye Rd circuit. The planned in-service date for the circuit changes is December 2019. Caden Energix has requested to operate their generation interconnected to the Appalachian Power distribution grid generating 20,000 kVA back on to the grid, thus requiring this impact study.

Disclaimer

The results of this impact study apply only to the system as described in Caden Energix's Interconnection Request Form. All modeling is based solely on the requested primary metered installation near APCO pole # 37810611D00405 on the Wythe/Tunnel 34.5kV circuit (soon to be Nye Rd circuit) near Wytheville, VA. Caden Energix's one lines are shown in Figures 1 and 2 below.

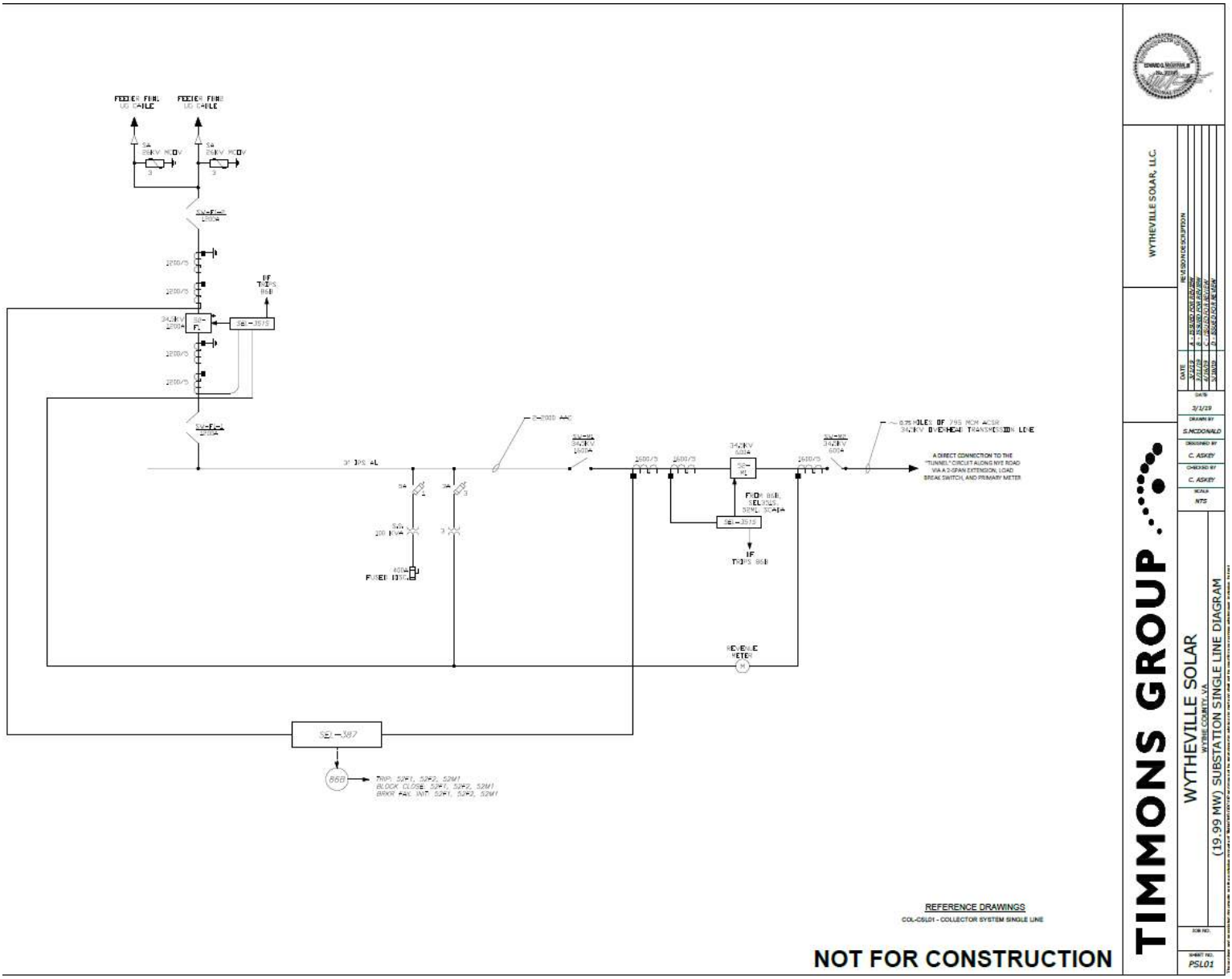

Figure 1: Single Line Diagram

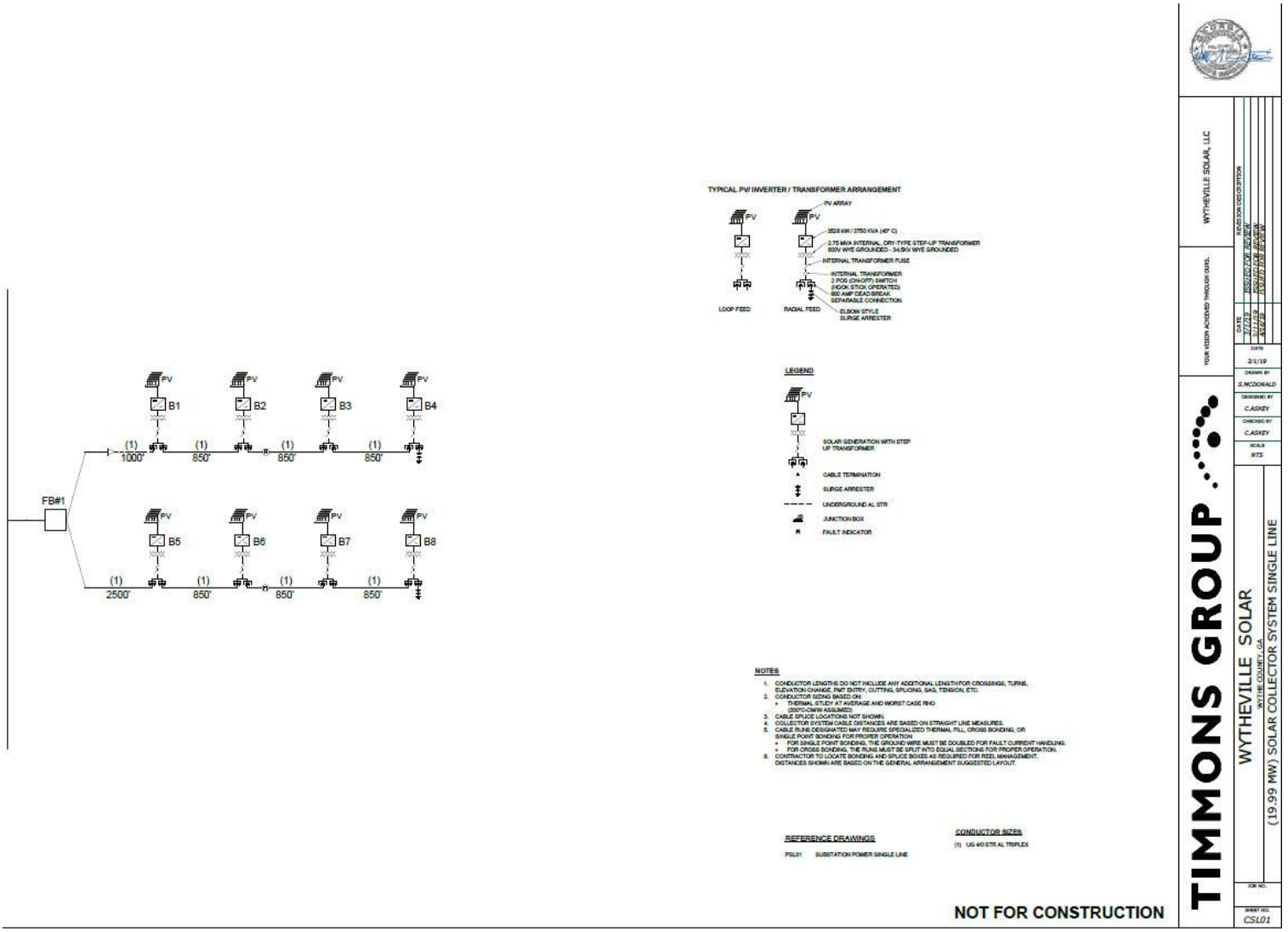

Figure 2: Collector Single Line Diagram Showing Interconnection to the Wythe/Nye Rd 34.5kV Circuit

This review is limited to how operating the generation in parallel could affect APCO's distribution systems and equipment. Caden Energix is required to take all necessary steps to assure compliance with all laws, ordinances, building codes and any other applicable regulations. APCO granting approval of the requested connection is not an endorsement of a particular design nor does it assure that the design will accomplish its intended function.

Caden Energix is expected to understand and comply with all aspects of IEEE 1547, relating to operating distributed generation.

Modeling and Assumptions

It is assumed that Caden Energix has received a copy of the Customer Guide to the Interconnection of Distributed Resources to the American Electric Power (AEP) Distribution System. Generator output was modeled at the maximum allowable output, as noted above, on to the distribution grid with power flow into AEP's (APCO) transmission grid.

The existing circuit that serves where Caden Energix would interconnect is the Wythe/Tunnel 34.5kV circuit. There are plans to reconfigure area circuitry that will affect Wythe, Progress Park, and Lee Highway substations by the end of 2019. As a result, the existing Wythe/Tunnel circuit is being split to create the Nye Rd and the North 4th Street circuits. A Pepsi Beverage Co facility will be the primary customer served from the new Nye Rd circuit but it will also serve a few dozen smaller customers as well.

Analysis was performed with the existing circuit configuration and the proposed circuit reconfiguration. The reasons for this approach is that if (1) the circuit reconfiguration work is delayed and not in service at the time that Caden Energix would interconnect, and (2) even after the circuits are re-configured there is a chance during certain operational circumstances that load could be temporarily transferred around re-creating how the circuits are currently configured. The analysis results focus primarily on how the area circuitry will ultimately be configured for which Caden Energix will interconnect with the Wythe/Nye Rd circuit.

Caden Energix LLC's preferred feed is from the Nye Rd 34.5kV circuit fed from the Wythe Station, 138-34.5kV, 35MVA transformer #4. The Nye Rd circuit is a radial configured, three-phase, multi-grounded, four-wire, wye system with a nominal primary voltage of 34.5kV L-L, 19.9kV L-G.

The Wythe substation 34.5kV bus #4 is regulated by an automatic three phase Load Tap Changer (LTC) on the Wythe #4 transformer which is presently programmed to monitor phase 3 load side voltage to determine a tap change to maintain 35.94kV (125V). The existing LTC control is being replaced with a programmable control capable of Co-Gen mode.

Caden Energix is requesting to connect 20,000 kVA of generation. The point of common coupling (PCC) is assumed to be at Caden Energix's existing primary metering point (near APCO pole # 37810611D00405 / 36.962091, -81.058836). For circuit modelling, a 400-foot line section was assumed between the metering and the first transformer block. The eight transformer blocks each include a 2750 kVA, 34.5 kV Wye-Grounded to 600 V Wye-Grounded with a 2750 kVA inverter operating at 2500 kVA.

Information used in modeling the generation equipment and the transformer were taken from Caden Energix's Application for Interconnection with the APCO Distribution System.

Analysis **(Results did not vary between the existing circuit conditions and the proposed circuit re-configuration planned for the Wythe area).**

System conditions of concern are:

A) System load flows under both light and peak load conditions.
B) Generator fault contribution during parallel operations.
C) System voltage levels at light and maximum load conditions.
D) Overcurrent protective device sensitivity.

System Load Flows

The Wythe #4 transformer may experience reverse power flow into the 138kV transmission bus during periods of light loading and full generator output. The LTC control on the Wythe #4 transformer will soon be replaced with a modern programmable control capable of Co-Generation mode of operation.

The full generator output does not adversely impact any local distribution facilities during peak or light steady state loading when connected at the chosen PCC. The voltages at the PCC are within acceptable levels.

Generator Fault contribution

The existing three-phase fault (LLL) at the PCC is 3385 amps, while the single-phase fault (LG) is 3081 amps. When the generators' full generator output size is connected, the three-phase fault (LLL) at the PCC is 3788 amps and the single-phase fault (LG) is 3184 amps. These values are subject to change if APCO distribution system enhancements and/or substation enhancements are made in the future. These values are also subject to change if the customer changes their equipment.

System Voltage Levels

The full generator output does not introduce any voltage violations on the feeder during peak or light steady state loading when connected at the proposed PCC.

Overcurrent Protective Device Sensitivity

The full generator output does not introduce any instances of overloaded protective devices during light or peak steady state loading when connected at the proposed PCC.

Generator Effect on Nearby Sensitive Loads

A Pepsi Beverages Co facility is located near Caden Energix's chosen PCC, approximately 1600 ft upstream. Pepsi's bottling facility makes up approximately 90% of the peak circuit load on the Nye Rd circuit (after the circuit reconfiguration project near the end of 2019). With the Caden Energix generator facility connected to the Nye Rd circuit, the full generator output has nearly negligible effect on the facility's primary delivery voltage at both peak and light demand levels during steady state or with the sudden loss or injection of generation.

System Protection

Caden Energix's responsibilities include providing adequate protection to Appalachian Power facilities due to events arising from the operation of the generation in parallel under all Appalachian Power distribution system operating conditions. Caden Energix is responsible for protecting their own facilities under all Appalachian Power distribution system operating conditions whether the generation is connected to Appalachian Power facilities or not, including but not limited to conditions noted below:

1) Abnormal voltage or frequency
2) Loss of a single phase of supply
3) Equipment failure
4) Distribution system faults
5) Lightning
6) Excessive harmonic voltages
7) Excessive negative sequence voltages

8) Separation from supply
9) Loss of synchronization

IEEE Standard 1547-2003 “Standard for Interconnecting Distributed Resources with Electric Power Systems” provide the interconnection technical requirements for system protection for which the Generator is responsible.

The interconnection system hardware and software used by a Distributed Resource to meet the technical requirements do not have to be located at the Point of Common Coupling. However, the technical requirements shall be met at the Point of Common Coupling.

Testing

Caden Energix LLC shall test the distributed generation facilities to verify that all the requirements for IEEE 1547 are met. The proposed test plan and independent third party verification shall be agreed upon by APCO prior to the start of testing. The results shall be submitted to APCO in a format as indicated in the attached AEP Guide for Testing and Reporting per IEEE 1547.1. If the test results show non-compliance, Caden Energix LLC must remedy the issue, retest, and submit the new results to APCO prior to operating the generation in a connected state.

Summary

The contents of this impact study apply only to the unit described in the interconnection application submitted by Caden Energix LLC’s for a DG interconnection on APCO’s Wythe/Nye Rd 34.5kV distribution circuit near Wytheville, VA. This study did not identify any adverse impacts on the APCO area distribution system due to the interconnection of the proposed generation.

APCO has an on-going project to upgrade the LTC control on the Wythe #4 substation transformer and will also require communication to Caden Energix LLC’s generation in order to monitor connection status, real power output, reactive power output and voltage as indicated in IEEE 1547 section 4.1.6.

The cost of any damage resulting from a system condition caused by the installation and/or operation of the generation will be borne by Caden Energix LLC.

Abnormal Utility events will be addressed on an individual basis through the AEP system operator. Corrective action shall be based on the judgment of the AEP system operator. Possible corrective action can include but is not limited to DG isolation from the Utility.

This review has been limited to items which may affect the APCO system or to suggestions which may improve operations. Caden Energix LLC must take all necessary steps to assure compliance with all laws, ordinances, building codes and other applicable regulations. Approval of this connection by APCO, when granted, is not an endorsement of a particular design nor does it assure fitness to accomplish an intended function.

Any additional APCO work to mitigate power quality issues not foreseen by this study but associated with the interconnection will be at the sole cost and expense of Caden Energix LLC.

Appalachian Power will require communication to Caden Energix’s generation in order to monitor connection status, real power output, reactive power output and voltage as indicated in IEEE 1547 section 4.1.6.

Facilities

To accommodate the proposed DG output on the APCO distribution system, the following work will be required on the Wythe/Nye Rd 34.5kV distribution circuit:

- Install pole(s) and up to 300' of 4-#556AL to new GOAB pole.
- Install 3-phase, 34.5kV, 600 A, GOAB switch on APCO side of Primary Meter installation.
- Install pole and up to 100' of 4-#556AL to new Primary Meter pole.
- Install 34.5kV Primary Meter.
- Install communication at the PCC for real time monitoring.

Note that the improvements and associated cost provided here are conceptual estimates and do not include taxes or any of the work required by the Generator to extend and connect their generation to the PCC. The preliminary estimated cost of APCO distribution circuit improvements listed above is: $30,000 (circuit) + $40,000 (primary metering) + $50,000 (telecom/monitoring) + $10,000 (station/SCADA) **$130,000 (Total)**.

Attachment D – Interconnection Agreement

Final Interconnection Agreement Pending

Attachment E – Maximum Generating Capacity Certification

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

Facility Name and Location: Caden Energix Wytheville LLC
Wythe County, Virginia

Applicant's Name: Caden Energix Wytheville LLC

Applicant's Mailing Address:	Telephone Number and Email Address:
2311 Wilson Blvd. Suite 640 Arlington, VA 22201	(703)801-0412 ken@cadenenergix.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:
	3/6/20

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

Attachment F – Natural Resources Review

Species Observed within Two Miles		
Common Name	**Federal Status**	**State Status**
Bat, gray	Federal Endangered	State Endangered
Bat, tri-colored	NE/NT	State Endangered
Greensnake, northern rough	NE/NT	NE/NT
Swan, tundra	NE/NT	NE/NT
Bass, smallmouth	NE/NT	NE/NT
Chub, creek	NE/NT	NE/NT
Shiner, mimic	NE/NT	NE/NT
shiner, rosyface	NE/NT	NE/NT
Shiner, spotfin	NE/NT	NE/NT
Stoneroller, central	NE/NT	NE/NT
Minnow, bluntnose	NE/NT	NE/NT
Sculpin, banded	NE/NT	NE/NT
Darter, greenside	NE/NT	NE/NT
Sucker, white	NE/NT	NE/NT
Darter, fantail	NE/NT	NE/NT
Chub, bluehead	NE/NT	NE/NT
Shiner, silver	NE/NT	NE/NT
Sculpin, mottled	NE/NT	NE/NT
Sucker, northern hog	NE/NT	NE/NT
Shiner, New River	NE/NT	NE/NT
Minnow, tonguetied	NE/NT	NE/NT
Dace, longnose	NE/NT	NE/NT
Dace, blacknose	NE/NT	NE/NT
Turtle, eastern musk	NE/NT	NE/NT
Dace, mountain redbelly	NE/NT	NE/NT
Dace, rosyside	NE/NT	NE/NT
Turtle, eastern painted	NE/NT	NE/NT
Shiner, saffron	NE/NT	NE/NT
Shiner, common	NE/NT	NE/NT
Madtom, margined	NE/NT	NE/NT
Bass, rock	NE/NT	NE/NT
Bat, eastern red	NE/NT	NE/NT
Bat, big brown	NE/NT	NE/NT
Egret, great	NE/NT	NE/NT

NE = Non-Endangered, NT = Non-Threatened

Tri-Colored Bat

Bat, gray

Legend

- Project Study Limits- 154.36 Acres
- 2 Mile Buffer
- NLEB Roost Trees - Not Present
- Trout Streams- Not Present
- 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 - Not Present
- Federal or State Listed Observation Area

Species Observed within Two Miles

Federal Status, State Status

- Federal Endangered, State Endangered
- NE / NT, State Endagered
- NE / NT, NE / NT

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Richmond, VA 23225
TEL 804.200.6500
www.timmons.com

PROJECT NAME & LOCATION

CADEN ENERGIX WYTHEVILLE LLC

WYTHE COUNTY, VIRGINIA

DATE 02/17/2020

PROJECT NUMBER 41069.014

PROJECT NAME CADEN ENERGIX WYTHEVILLE SOLAR

DESIGNED BY / DRAWN BY M.COOLEY

NOTES:
Project Limits are approximate.
WERMS data from DGIF.
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.

REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION

WILDLIFE ENVIRONMENTAL REVIEW MAP

SCALE (FEET)

0 1,400 2,800

PLANS PRINTED AS 11X7 ARE HALF SCALE

SCALE H:1 " = 1,400 '

SHEET NUMBER 1

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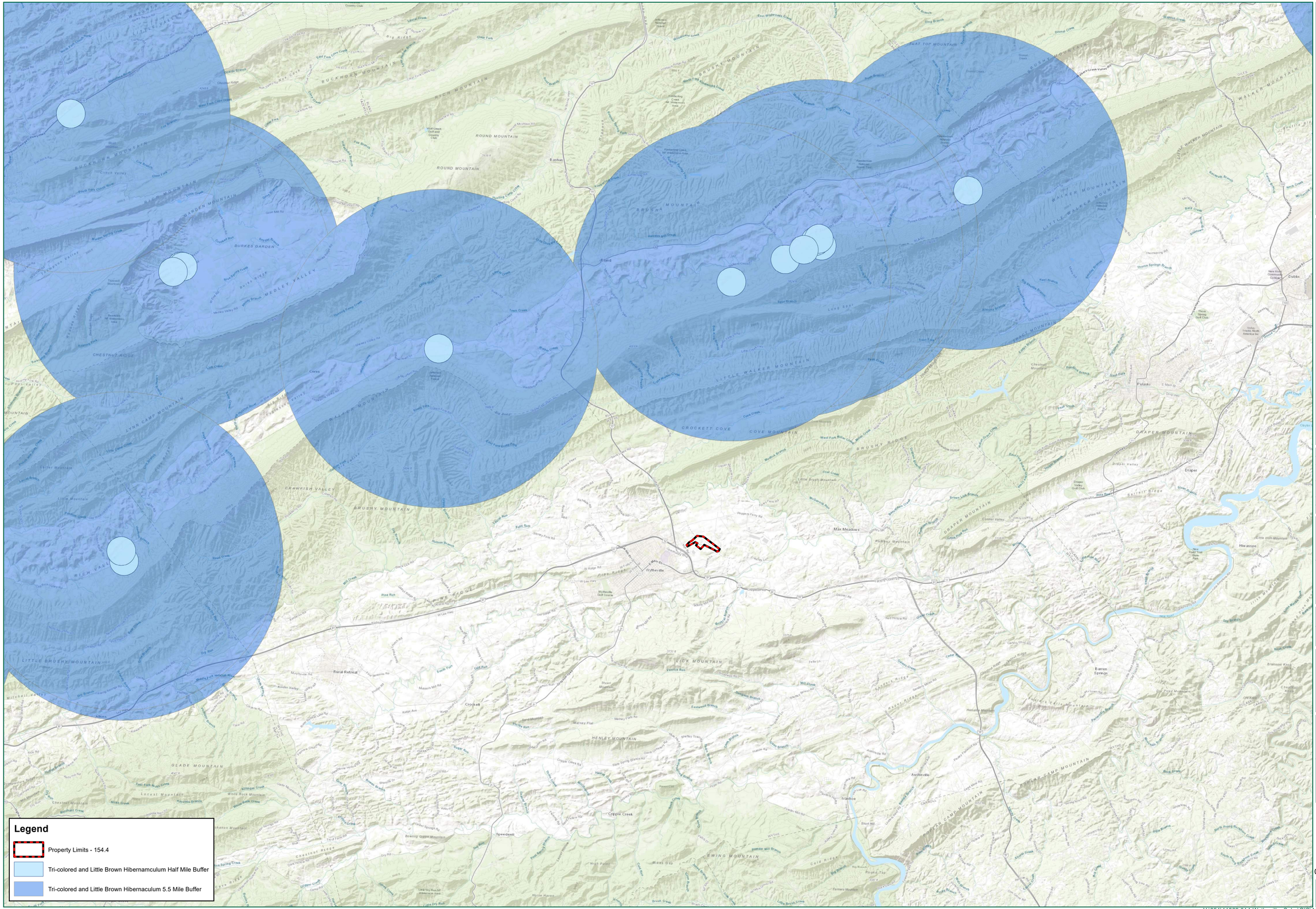

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TEL 804.200.6500
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PROJECT NAME & LOCATION

CADEN ENERGIX WYTHEVILLE LLC

WYTHE COUNTY,
VIRGINIA

DATE	02/26/2020
PROJECT NUMBER	41069.014
PROJECT NAME	CADEN ENERGIX WYTHEVILLE
DESIGNED BY / DRAWN BY	L.WHEELER

NOTES:
Hibernacumlum data from DGIF.
Aerial imagery from VGIN.

REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION

TRI-COLORED AND LITTLE BROWN BAT HIBERNACULUM

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
1 " = 1.5 mi	1

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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

Thomas L. Smith
Deputy Director of Operations

February 27, 2020

Julia Campus
Timmons Group
1001 Boulders Parkway, Suite 300
Richmond, VA 23225

Re: 41069.014, Wytheville Solar

Dear Ms. Campus:

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 is situated on karst-forming carbonate rock and can be characterized by sinkholes, caves, disappearing streams, and large springs. The Virginia DCR karst staff screened this project against the Virginia Speleological Survey (VSS) database and the Virginia DMME sinkhole coverage for documented sensitive karst features and caves.

The Virginia DMME sinkhole coverage map below (Figure 1) shows five sinkholes on the proposed project site. DCR recommends avoiding these features, if possible, to help reduce any potential impact to karst. If any drainage is being directed off the project site, DCR recommends taking steps to ensure that it is not entering nearby caves or sinkholes including the direct injection of water into sinkholes. DCR recommends that erosion and sediment control measures be implemented to protect all of the karst features and the stabilization of the soil around the site be prioritized during all the phases of the project. If herbicides or pesticides are to be used for site maintenance, DCR recommends taking into account resources underground such as aquatic invertebrates when selecting these products.

If any additional karst features including caves are located in the project area, please report entrance location information to Wil Orndorff (540-230-5960, Wil.Orndorff@dcr.virginia.gov) so that the DCR Natural Heritage Karst program may follow up to perform biological inventories. Discharge of runoff to sinkholes or sinking streams, filling of sinkholes, and alteration of cave entrances can lead to surface collapse, flooding, erosion and sedimentation, groundwater contamination, and degradation of subterranean habitat for natural heritage resources. 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. New "Karst Assessment Guidelines" developed by the Virginia Cave Board for land development can be found at http://www.dcr.virginia.gov/natural-heritage/document/karst-assessment-guidelines.pdf

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.

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 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 VDGIF 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@dgif.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: Wil Orndorff, DCR-Karst

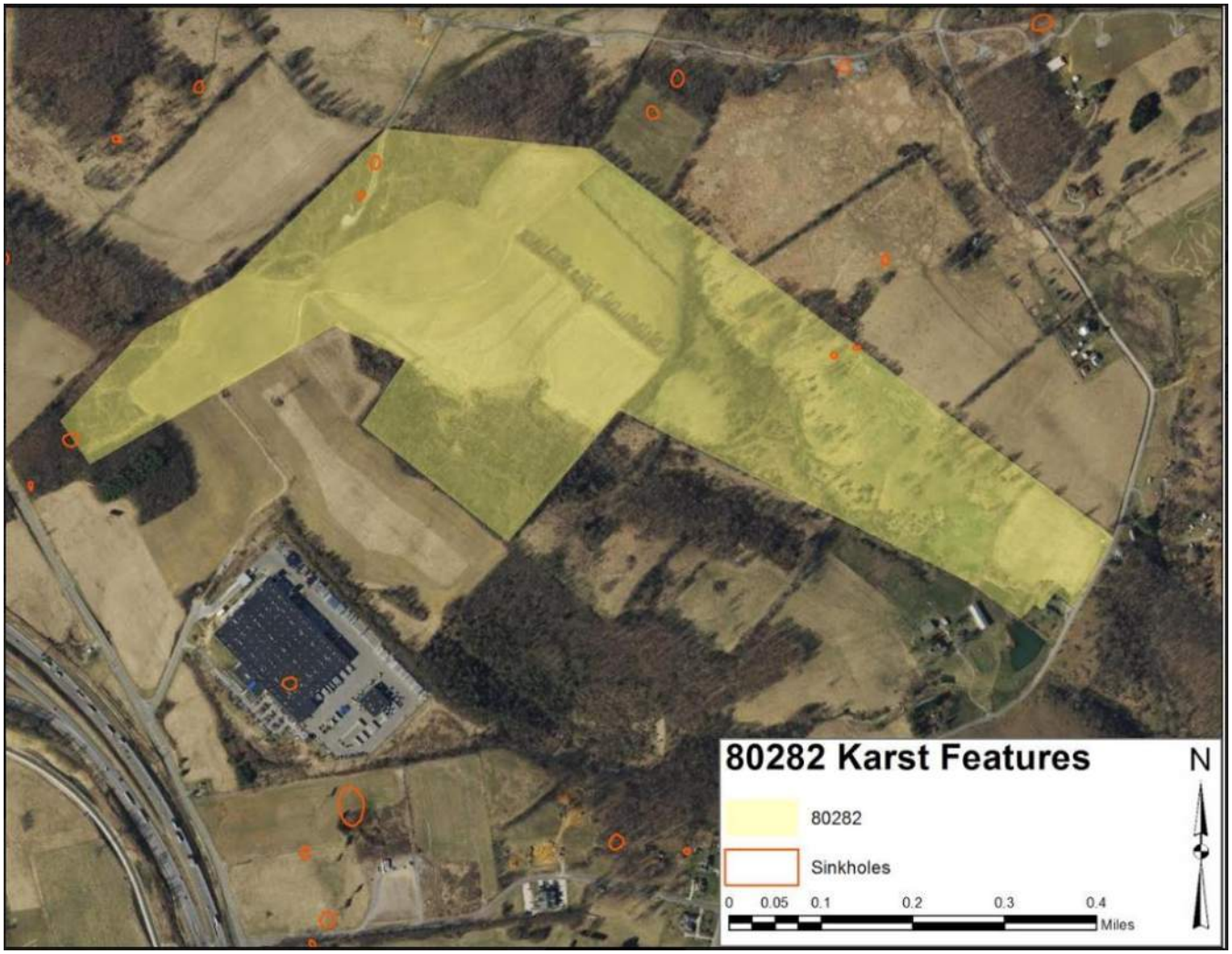
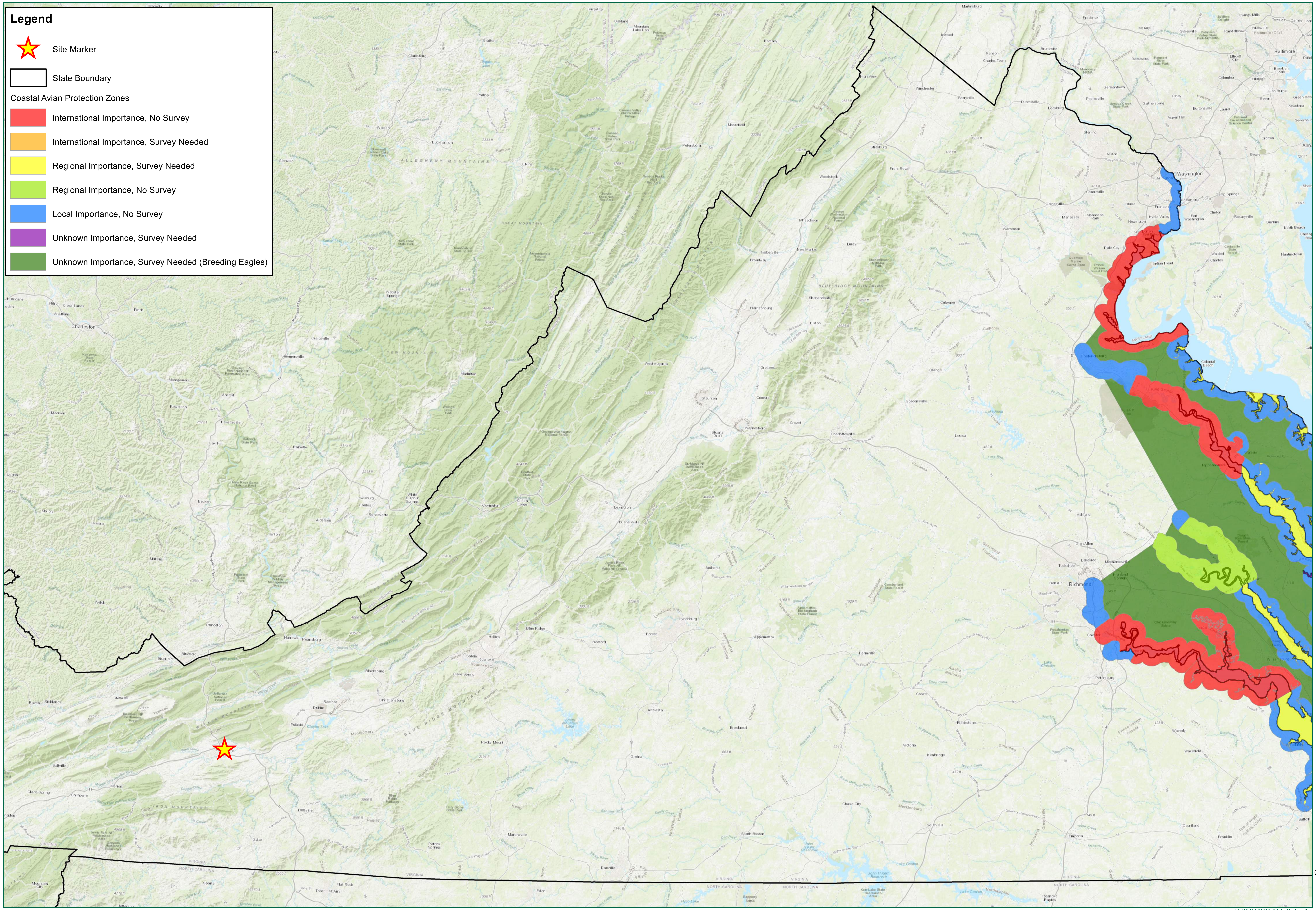


Figure 1: Karst Features

Attachment G – Coastal Avian Protection Zone Map



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PROJECT NAME & LOCATION

CADEN ENERGIX WYTHEVILLE LLC

WYTHE COUNTY - VIRGINIA

DATE 02/17/2020

PROJECT NUMBER 41069.014

PROJECT NAME CADEN ENERGIX WYTHEVILLE

DESIGNED BY / DRAWN BY M.COOLEY

NOTES:
Project Limits are approximate.
Coastal Avain Protection Zone data from VCU's Virginia Coastal Zone Management Program for Virginia Only.
Aerial imagery from ESRI.

REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION

COASTAL AVAIAN PROTECTION ZONE MAP

Miles
0 10 20

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
1 " = 10 mi	1

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Attachment H – Cultural Resources

COMMONWEALTH of VIRGINIA

Matt 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

February 5, 2020

Ms. Dawn Reid
Archaeological Consultants of the Carolinas, Inc.
121 E. First Street
Clayton, NC 27520

RE: *Phase I Historic Resources Survey of the Caden Energix Wytheville LLC Solar Project, Wythe County, Virginia* (November 2019; Revised)
DHR File No. 2019-0725

Dear Ms. Reid:

We have received for review the revised report referenced above prepared by Archaeological Consultants of the Carolinas, Inc. (ACC) for Caden Energix in support of an application to the Department of Environmental Quality (DEQ) for a Permit-by-Rule (PBR) to construct and operate a small solar project in Wythe County. It is our opinion that the revision addresses DHR's comments dated January 9, 2020. DHR has no further comments on the report and recommends no further survey.

If you have any questions regarding these comments or our review of this project, please do not hesitate to contact me roger.kirchen@dhr.virginia.gov.

Sincerely,

Roger W. Kirchen, Director
Review and Compliance Division

c. Mary E. Major, DEQ

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
Tel: (540) 868-7029
Fax: (540) 868-7033

Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

COMMONWEALTH of VIRGINIA

Matt 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

January 9, 2020

Ms. Dawn Reid
Archaeological Consultants of the Carolinas, Inc.
121 E. First Street
Clayton, NC 27520

RE: *Phase I Historic Resources Survey of the Caden Energix Wytheville LLC Solar Project, Wythe County, Virginia* (November 2019)
DHR File No. 2019-0725

Dear Ms. Reid:

We have received for review the report referenced above and associated documentation prepared by Archaeological Consultants of the Carolinas, Inc. (ACC) for Caden Energix in support of an application to the Department of Environmental Quality (DEQ) for a Permit-by-Rule (PBR) to construct and operate a small solar project in Wythe County. We have reviewed the submitted materials and provide the following comments.

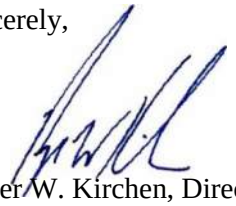
The archaeological survey of the 154-acre project area identified three (3) sites and two (2) isolated finds. The isolated finds are, by definition, not eligible for listing in the Virginia Landmarks Register (VLR) or National Register of Historic Places (NRHP) and no further consideration of these resources is warranted. The consultant recommends and DHR concurs that sites **44WY0311**, **44WY0312**, and **44WY0313** are *not eligible* for VLR/NRHP listing. It is our opinion that the report lacks sufficient documentation of the location of excavated shovel tests. We recommend that the report be amended to include a figure showing the location of judgmental shovel tests in low-potential areas, and updates to Figures 3.4 and 3.11 showing the location of all shovel tests associated with identified sites.

The architectural study area was previously surveyed in support of the Bland Area Improvements 138kV Transmission Line Rebuild Project (DHR File No. 2014-1320). Thirty-nine (39) previously-recorded architectural resources are located within the current study area and all were determined not eligible for VLR/NRHP listing by DHR in 2016. Two (2) previously-recorded resources (DHR ID #s 098-5062 and 098-5063) are located within the project area, but have been demolished. We reiterate our previous

recommendations of not VLR/NRHP eligible for the 39 resources within the current study area. No additional architectural survey is recommended.

Thank you for the opportunity to review this document. If you have any questions regarding these comments or our recommendations, please do not hesitate to contact me roger.kirchen@dhr.virginia.gov.

Sincerely,



Roger W. Kirchen, Director
Review and Compliance Division

c. Mary E. Major, DEQ

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 22655
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Eastern Region Office
2801 Kensington Avenue
Richmond, VA 23221
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Fax: (804) 367-2391

Phase I Historic Resources Survey of the Caden Energix Wytheville LLC Solar Project Wythe County, Virginia

Archaeological Consultants of the Carolinas, Inc.
January 2020

Phase I Historic Resources Survey of the Caden Energix Wytheville LLC Solar Project Wythe County, Virginia

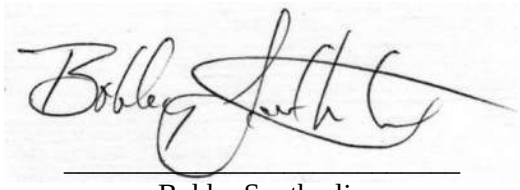
Prepared for

Caden Energix
Arlington, Virginia

By

Luan Thanh Cao
Archaeologist

under the supervision of



Bobby Southerlin
Principal Investigator

Archaeological Consultants of the Carolinas, Inc.
January 2020

Management Summary

In October 2019, Archaeological Consultants of the Carolinas, Inc., conducted a Phase I historic resources survey of the proposed Wytheville solar facility tract in Wythe County, Virginia. This investigation was undertaken on behalf of Caden Energix in compliance with state and federal permit regulations addressing the identification and management of significant cultural resources. These regulations include Section 104 of the Clean Water Act of 1994 (33 USC 1344), as amended; Section 106 of the National Historic Preservation Act of 1966 (16 USC 470), as amended, and 36 CFR Part 800: Protection of Historic Properties; Section 40 of the Small Renewable Energy Projects (Solar) Permit by Rule (9VAC15-60-40-B). The primary goals of this investigation were to identify all cultural resources located within the project's Area of Potential Effect (APE), assess those resources for eligibility to the Virginia Landmarks Register (VLR) and the National Register of Historic Places (NRHP), and advance management recommendations, as appropriate.

The project APE is a 154.3-acre parcel and a half-mile visual APE in Wythe County, Virginia. The tract is located off Lovers Lane (Route 647) in the eastern edge of the town of Wytheville, generally at the center of Wythe County. The parcel consists of approximately 64.2 acres of agricultural fields (53.2 acres of corn and 11.0 acres of pumpkin), 54.2 acres of pasture, and 35.9 acres of woods

Background research included a review of records on vile on the Virginia Cultural Resource Information System (V-CRIS) to identify previously recorded cultural resources within or in the vicinity of the project tract. A total of 39 previously recorded historic resources were identified within a half-mile radius of the project area. This task also included examination of historic maps and aerial photography.

The archaeological survey focused most intensively on portions of the project tract defined as having high potential for the presence of intact cultural deposits. These areas were defined based on soil drainage, topographic setting, and proximity to water sources, and historic roads. Approximately 44.7 acres were determined to have high potential. These areas were surveyed by excavating 15-meter interval shovel tests along parallel transects spaced 15 meters apart. A reconnaissance survey was conducted in the remaining 109.6 acres consisting of pedestrian walkover and judgmentally placed shovel tests.

The architectural survey served to identify all buildings, structures, and non-archaeological districts (including historic landscapes) and sites, and objects over 50 years of age, either previously documented or unrecorded. The Wythe County Geographic Information System (GIS) was consulted to identify the parameters of the parcels in the indirect visual APE and identify properties that are over 50 years in age. Any previously recorded resources whose boundaries fell within or partially within the indirect visual APE was revisited unless their eligibility determination occurred within the last five years or if the resources was destroyed. An architectural survey conducted in 2015 covered the entirety of the Wytheville solar facility tract visual APE (Groesbeck et al. 2016). All 39 historic resources identified in a 2015 survey have been evaluated as not eligible. No additional historic resources were identified that fell within 50-year threshold since the 2015 survey.

The archaeological survey resulted in the identification of five archaeological resources, three new archaeological sites and two isolated finds (Table i.1 and Table i.2). Overall, the identified archaeological resources have been adversely impacted by agricultural activity and razing. All five resources are recommended not eligible, and no further work at these sites is recommended.

Table i.1. Summary of Archaeological Sites Identified During This Investigation.

VDHR ID	Description	NRHP Recommendation
44WY311/098-5063	Ca. 1930 Farm Complex	Not Eligible
44WY312/098-5062	Ca. 1930 Farm Complex	Not Eligible
44WY313	Unknown Prehistoric Lithic Scatter	Not Eligible

Table i.2. Summary of Isolated Finds Identified During This Investigation.

Isolated Find	Component	Assemblage
3	Historic Ceramic Isolate	Blue Hand Painted Pearlware Ceramic (n=1)
5	Unknown Prehistoric Lithic Isolate	Ridge and Valley Chert Flake (n=1)

Table of Contents

List of Figures

List of Tables

Chapter 1. Introduction and Methods of Investigation

Introduction

In October 2019, Archaeological Consultants of the Carolinas, Inc., conducted a Phase I historic resources survey of the proposed Wytheville solar facility in Wythe County, Virginia. This archaeological investigation was undertaken on behalf of Caden Energix in compliance with state and federal permit regulations addressing the identification and management of significant cultural resources. These regulations include Section 104 of the Clean Water Act of 1994 (33 USC 1344), as amended; Section 106 of the National Historic Preservation Act of 1966 (16 USC 470), as amended, and 36 CFR Part 800: Protection of Historic Properties; Section 40 of the Small Renewable Energy Projects (Solar) Permit by Rule (9VAC15-60-40-B). The primary goals of this investigation were to identify all cultural resources located within the survey area, assess those resources for eligibility to the Virginia Landmarks Register (VLR) and the National Register of Historic Places (NRHP), and advance management recommendations, as appropriate. Mr. Bobby Southerlin served as Principal Investigator, Mr. Luan Cao as Field Director, and Ms. Abigail McCoy as Crew Chief. Field technicians were Ms. M. Brooke Brilliant, and R. Andy Jordan.

Project Area

The project tract is a 154.3-acre parcel in Wythe County, Virginia. The tract is located off of Lovers Lane (Route 647), east of the town of Wytheville in the central part of Wythe County (Figure 1.1). The parcel consists of approximately 64.2 acres of agricultural fields (53.2 acres of corn and 11.0 acres of pumpkin), 54.2 acres of pasture, 35.9 acres of woods, and a transmission line right-of-way (Figure 1.3 - Figure 1.6). Landforms across the tract include ridge tops, ridge noses, sideslope, and drainages.

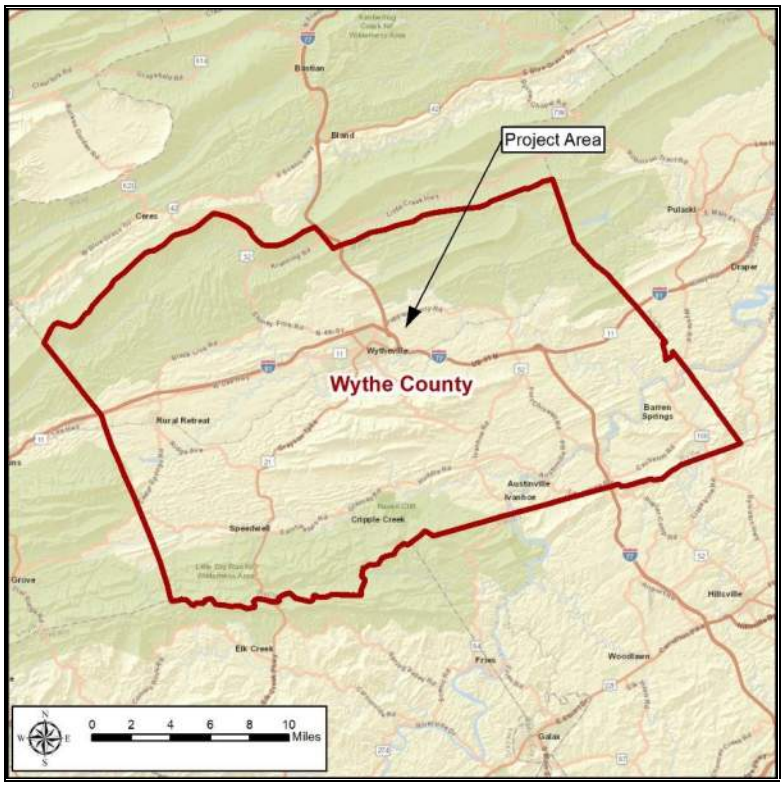


Figure 1.1. Location of project area.

Methods of Investigation

This investigation was comprised of four separate tasks: Background Research, Field Survey, Laboratory Analysis, and Report Production. Each of these tasks is described below.

Background Research

Background Research included a review of records on file on the Virginia Cultural Resource Information System (VCRIS) to identify previously recorded cultural resources within a half-mile radius vicinity and/or in the project tract. This task also included examination of historic maps and aerial

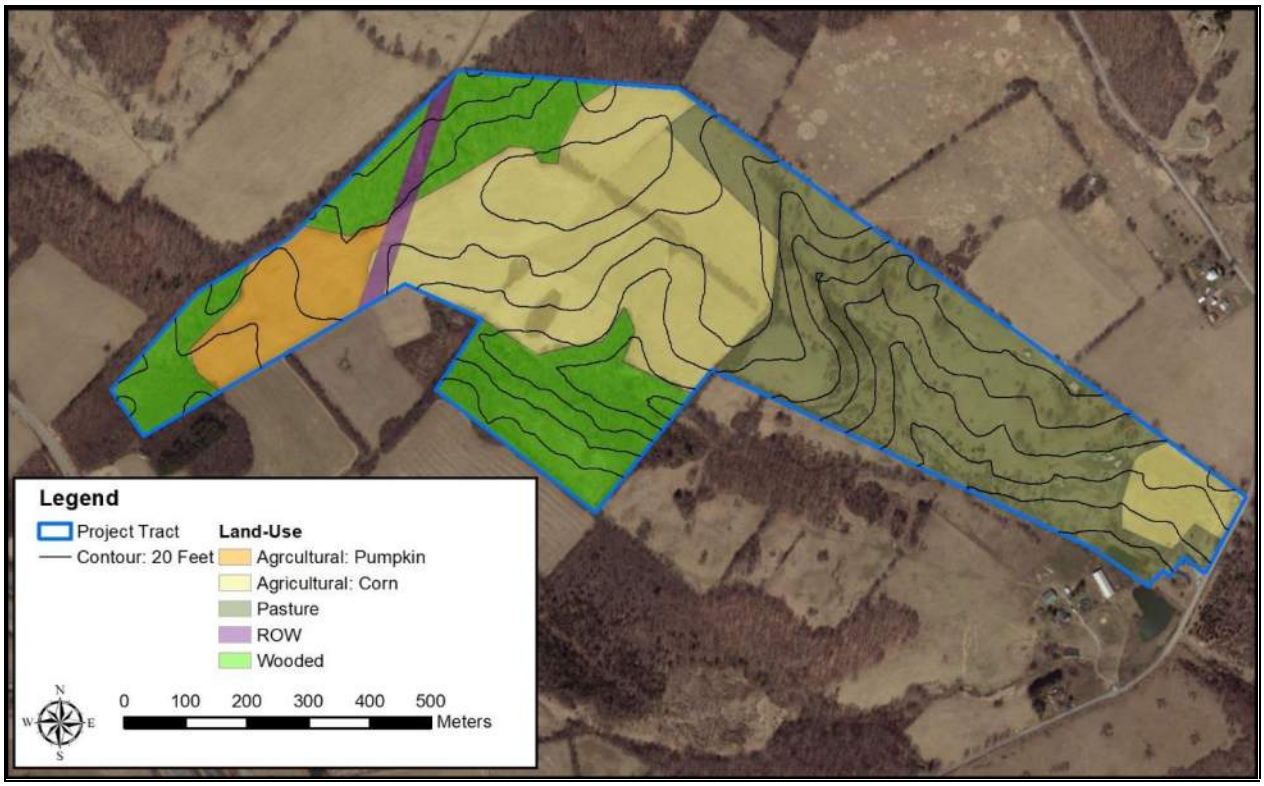


Figure 1.2. Aerial view of the project area.

Figure 1.3. Pumpkin fields, facing southwest.

Figure 1.4. Corn fields and farm road, facing northeast.

Figure 1.5. Pastures, facing southeast.

Figure 1.6. Woods, facing southeast.

photography. Geological and soil data were examined, as were LiDAR maps of the project area. Soil data was gathered from published soil surveys and from the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey.

Field Survey: Archaeology

The field survey was most intensively focused on portions of the project tract determined to have high potential for the presence of intact cultural deposits. These areas were defined based on soil drainage, topographic setting, and proximity to waterways and historic roads. Approximately 44.7 acres were determined to have high potential (Figure 1.7). These areas were surveyed by excavating 15-meter interval shovel tests along parallel transects spaced 15 meters apart. Areas with surface exposure greater than 50 percent were systematically visually inspected at 15-meter intervals with complimentary subsurface sampling at 30-meter intervals. A reconnaissance survey was conducted in the remaining 109.6 acres consisting of pedestrian walkover and judgmentally placed shovel tests or sampling at 30-meter interval transects at 60-meter intervals. The reconnaissance focused on the identification of micro-landforms, such as benches bordering waterways and subtle rises in fields. These tasks resulted in a 10 percent sample or greater of the low potential areas.

Shovel tests measured approximately 40 centimeters in diameter and were excavated into culturally sterile subsoil, bedrock, or to the water table. All soil fill was screened through 1/4-inch (6.4-mm) hardware cloth. Shovel tests were backfilled upon completion.

Shovel tests were not excavated in standing water, on steep slope, or in areas with severe disturbance. Records of each shovel test location were kept in field notebooks, including information on content (e.g., presence or absence of artifacts, artifact descriptions) and context (i.e., soil color and texture descriptions, depth of definable levels, observed features). All field methods utilized during this

investigation comply with the *Guidelines for Conducting Historic Resources Survey in Virginia* (VDHR 2017).

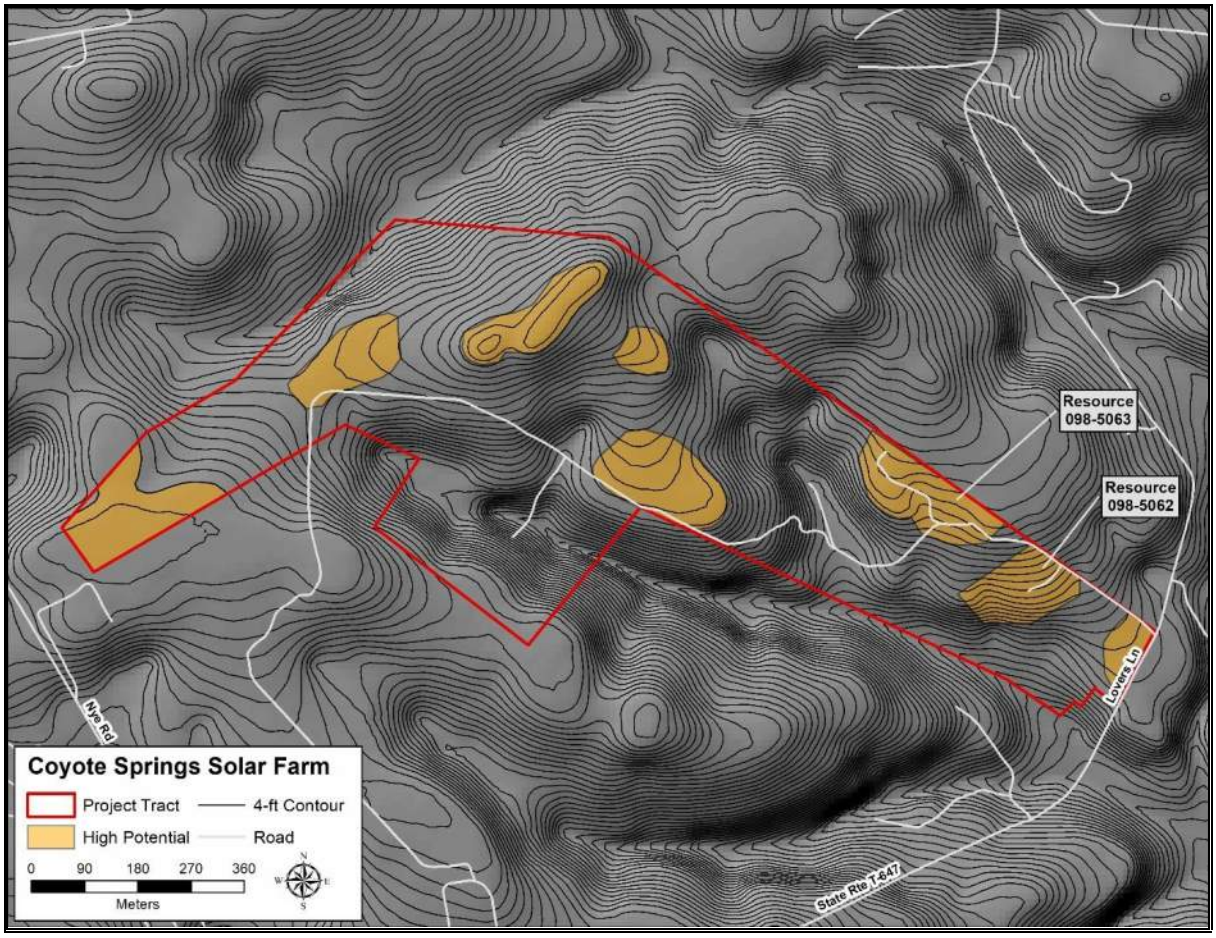


Figure 1.7. Aerial view of the project tract showing high potential areas.

For the purposes of this project, a site was defined as an area containing three or more artifacts of a possible single occupation in a 30 meter or less diameter of surface exposure; or where at least two shovel tests within 30 meters contained one or more artifacts; or where surface or subsurface cultural features are present. Additional smaller interval shovel tests were excavated around shovel tests with no adjacent positive shovel tests to determine if a resource was a low-density site or an isolated find. If an area does not contain features or ruins, artifacts recovered must have some utility of meaning associated with their location (i.e., the area containing artifacts is of interest to a research, educational, or other purpose). A relatively small number of obviously redeposited artifacts, even if greater than three in number, would typically not be defined as a site without a compelling research or other reason. Similarly, artifacts of recent age (less than 50 years) would typically not define a site without a compelling research or management reason.

Isolated finds are those locations with fewer than three artifacts, not containing features or ruins. As noted above, an isolated find may also be represented by more than five artifacts if the location has no utility of meaning for a research or other purpose. Isolated finds are generally assumed to be ineligible for the NRHP; however, recording of these finds includes location and environmental data similar to that recorded for archaeological sites.

One of the goals of this project was to provide sufficient data to the State Historic Preservation Office (SHPO) to determine whether any cultural resources identified were significant. Cultural resources (i.e., districts, buildings, structures, sites, and objects) are generally evaluated based on the criteria for eligibility to the NRHP, as specified in Department of Interior Regulations 36 CFR Part 60: *National Register of Historic Places*. According to 36 CFR Part 60.4 (Criteria for evaluation), cultural resources (referred to as properties in the regulations) can be defined as significant (i.e., eligible for the NRHP) if they "possess integrity of location, design, setting, materials, workmanship, feeling, and association," and if they:

(A) Are associated with events that have made a significant contribution to the broad pattern of history; or

(B) Are associated with the lives of persons significant in the past; or

(C) Embody distinctive characteristics of a type, period, or method of construction, or represents the work of a master, possesses high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or

(D) Have yielded, or may be likely to yield, information important in prehistory or history.

Archaeological sites are usually evaluated relative to Criterion D. As locations of human activities which include physical remains of those activities, archaeological sites are potential sources of important information. However, some archaeological sites, particularly those representing historic period occupation or use, can be considered eligible under Criterion A (if they are associated with specific important events or trends in American history), under Criterion B (if they are associated with important people), or under Criterion C (if important structural elements are preserved) (Savage and Pope 1998; Townsend et al. 1993). Architectural resources can be recommended eligible for the NRHP under any of the criteria and are frequently recommended under several.

Field Survey: Architectural

The architectural survey served to identify all buildings, structures, and non-archaeological districts (including historic landscapes) and sites, and objects over 50 years of age, either previously documented or unrecorded. The Wythe County Geographic Information System (GIS) was consulted to identify the parameters of the parcels in the indirect visual APE and identify properties that are over 50 years in age. Any previously recorded resources whose boundaries fell within or partially within the indirect visual APE was revisited unless their eligibility determination occurred within the last five years or if the resources was destroyed. Any property that are identified as having any buildings, structures, and non-archaeological districts and sites, and objects over 50 years that were not already recorded resources were documented through written notes and digital photographs.

Laboratory Analysis

Laboratory Analysis began with the washing of all recovered artifacts. A provenience number, based on context of artifact (i.e., surface or subsurface), was assigned to each positive shovel test location. Within each provenience, each individual artifact or artifact class was then assigned a catalog number. Artifacts were cataloged based on specific morphological characteristics such as material in the case of lithics, and decoration and temper type in the case of ceramics. Ceramics were compared to published type descriptions and cataloged by type when possible. Sherds less than 2 centimeters (0.8 in) in diameter were

classified as *residual*. Artifact descriptions, counts and weights were recorded. All diagnostic and cross-mended artifacts were labeled with a 10 percent solution of Acryloid B-72 and acid free permanent ink.

All artifacts were placed in acid free resealable plastic bags with acid free labels listing the provenience and field identification information. Upon acceptance of the final project report, all analysis sheets, field notes, photographs, maps, and artifacts will be prepared according to federal guidelines and transferred to the Virginia Department of Historic Resources.

Report Production

Report production involved the compilation of all data gathered during the previous tasks. This document presents the results of the archival research, field investigation, and laboratory analysis. The following chapters will provide environmental and cultural overviews for the project area. This information allows us to place identified cultural resources into a context and relate them to the prehistory or history of the area. Next, the results of the field investigation are discussed. Each identified site is described, shown on project maps, and NRHP eligibility recommendations are advanced. The data obtained through laboratory analysis is included in site descriptions. Finally, a summary of the overall project is presented along with management recommendations

Chapter 2. Environmental and Cultural Overview

The natural environment, technological development, and ideological values are all intertwined in shaping the way humans live. In this chapter, details about the local environment and cultural development in the region are presented.

Environmental Overview

Wythe County falls within the Blue Ridge and Ridge and Valley physiographic provinces of Virginia (Figure 2.1) and lies between the Allegheny and Blue Ridge Mountains. The Great Valley sub-province, which is a broad valley with low to moderate slopes underlain by carbonate rocks, runs through the county. Elevations in the Great Valley range from 500 to 2,300 feet above mean sea level (amsl). In the project area elevations range between 1,980 and 2,280 feet amsl (Gall and Edmunds 1992).

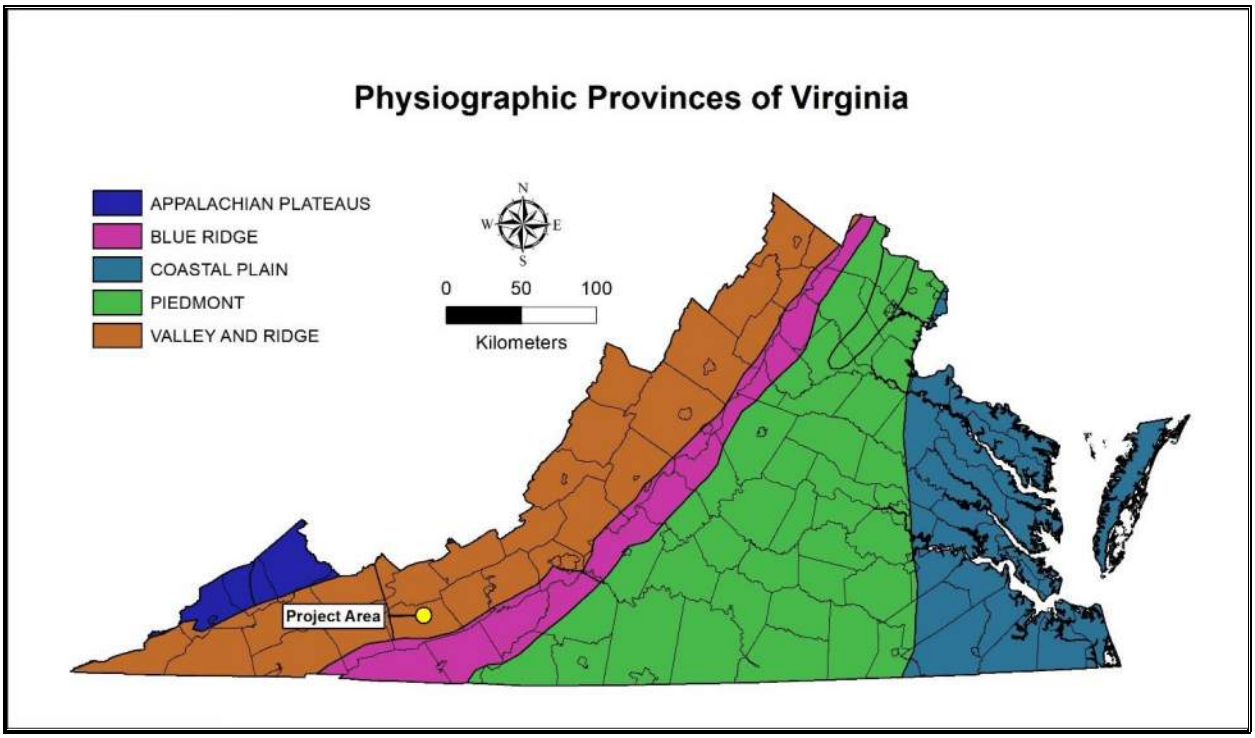


Figure 2.1. Physiographic map of Virginia showing the location of the project area.

Climate

The climate of southwestern and south-central Virginia is influenced by a variety of factors, such as elevation, latitude, local topography, and wind and storm patterns. Heavier annual precipitation occurs here than any other part of the United States except certain portions of the Pacific Northwest. As moisture bearing winds are forced to rise approaching the mountains, they are cooled to the point of condensation, producing heavy cloud cover and precipitation.

In the Valley and Ridge physiographic province, temperatures range from an average of 34˚ Fahrenheit (F) in winter to 69˚ F in summer (Gall and Edmonds 1992). Rainfall averages 96 cm (38 in) and generally falls during the growing season, which is April through September (Gall and Edmonds 1992).

In the Blue Ridge province, temperatures are significantly lower and much of the precipitation takes the form of snow, especially on the higher peaks. Average winter temperature is 36˚ F and summer temperatures average 73˚ F (Gall and Edmonds 1992). Thunderstorms are frequent and yearly precipitation averages 122 centimeters (48 in), of which 18 centimeters (7 in) is snow.

Flora and Fauna

The study area is considered part of the Southern Oak-Pine Forest (Braun 1950). Various oaks, as well as hickory and other deciduous hardwoods, make up most of the forest, although there is a heavy mixture of shortleaf, loblolly, and Virginia pines. This mixed forest is highly productive and covers over half of the county (Butler 1982:2). Flowering plants are also abundant. This environment supports an active faunal community including deer and small mammals (e.g., various squirrels and mice, opossum, raccoon, rabbit, fox, skunk); birds (e.g., various songbirds, ducks and wading birds, quail, turkey, doves, hawks, owls); and reptiles/amphibians (e.g., frogs, toads, lizards, snakes, and turtles) (Booker and Associates 1980; Butler 1982). Fish are abundant in the New River and its tributaries, as well in the numerous small creeks and streams present in the area (Booker and Associates 1980).

Drainage

The project area lies within the New River watershed (Figure 5), one of the oldest rivers in the world. The New River flows inland rather than towards the Atlantic Ocean from its headwaters in the Blue Ridge Mountains. The New River meanders from Boone, North Carolina through western Virginia and empties into the Ohio River in West Virginia (DCR 2008). The Ohio River empties into the Mississippi River, which in turn provides an avenue to the Gulf of Mexico. The project tract is drained by intermittent streams and which drain into Reed Creek about 1.5 km southeast of the project area; Reed Creek flows into the New River about 22 miles east of the project area.

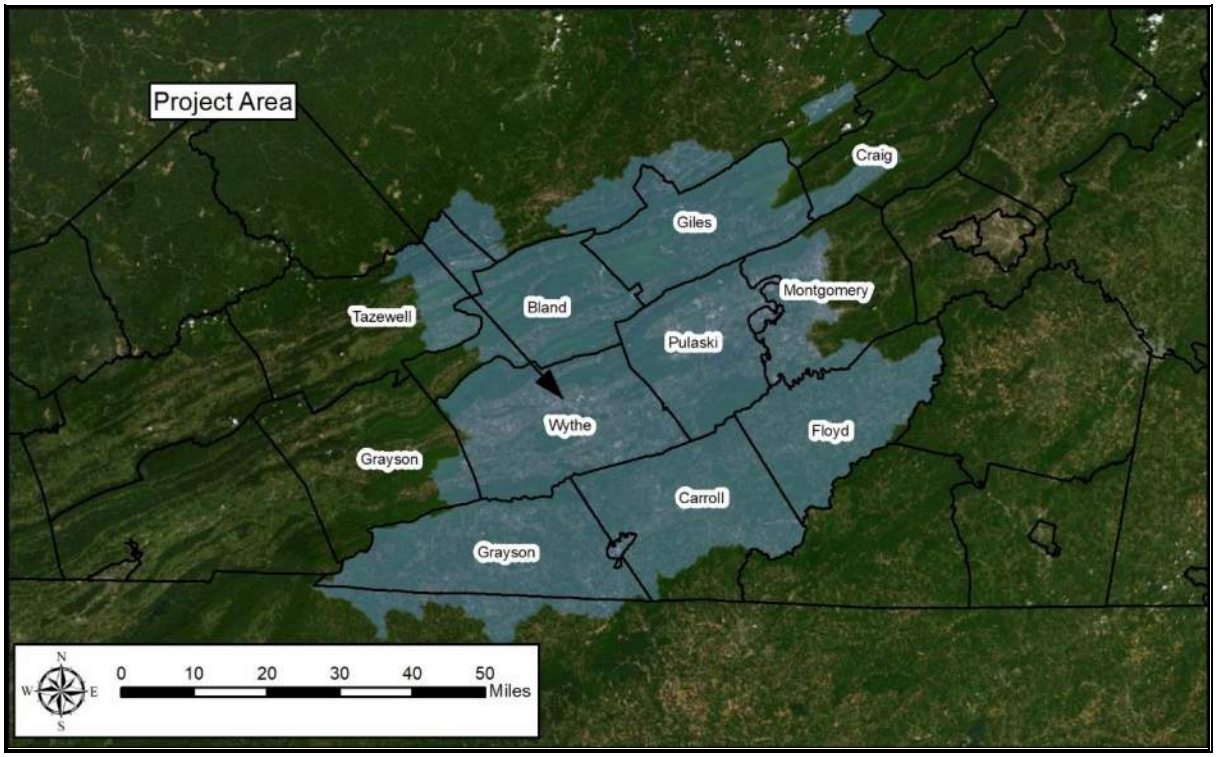


Figure 2.2. Map of the New River basin showing the location of the project area.

Geology/Physiography

Wythe County falls within the Blue Ridge and Valley and Ridge physiographic provinces of Virginia (Figure 4). The Great Valley sub-province, which is a broad valley with low to moderate slopes underlain by carbonate rocks, runs through the county (Gall and Edmunds 1992). The project area consists of rolling hills, with elevations ranging between 647 and 721 meters above mean sea level (amsl).

All of Wythe County falls within the Karst Topographic Zone in the state of Virginia. Karst topography is formed when soluble carbonate rocks, such as limestone and dolomite, are dissolved by slightly acidic groundwater. This process results in a landscape of caves, sinking streams, and sinkholes. The groundwater runs through a system of underground channels and cavities formed by the ongoing dissolution of the bedrock (DCR 2008; Zokaites 1997). Although none are present in the project area, 109 caves have been reported in Wythe County (VSS 2019). Numerous sinkholes are present throughout the county. Sinkholes are depressions in the ground surface caused by underground voids (DMME 2015).

Soil

There are nine soil types present in the survey area (Figure 2.3 and Table 2.1). The most prevalent soil types are Austinville silty clay loam and Shottower loam, with varying degrees of slope. Both of these soil types form on hills and summits. Shottower loam also forms on stream terraces. Austinville soils form from the residuum of the underlying limestone and dolomite. Frederick loams form from the clayey residuum form weathered dolomite. The remaining soil types form in various topographic settings from

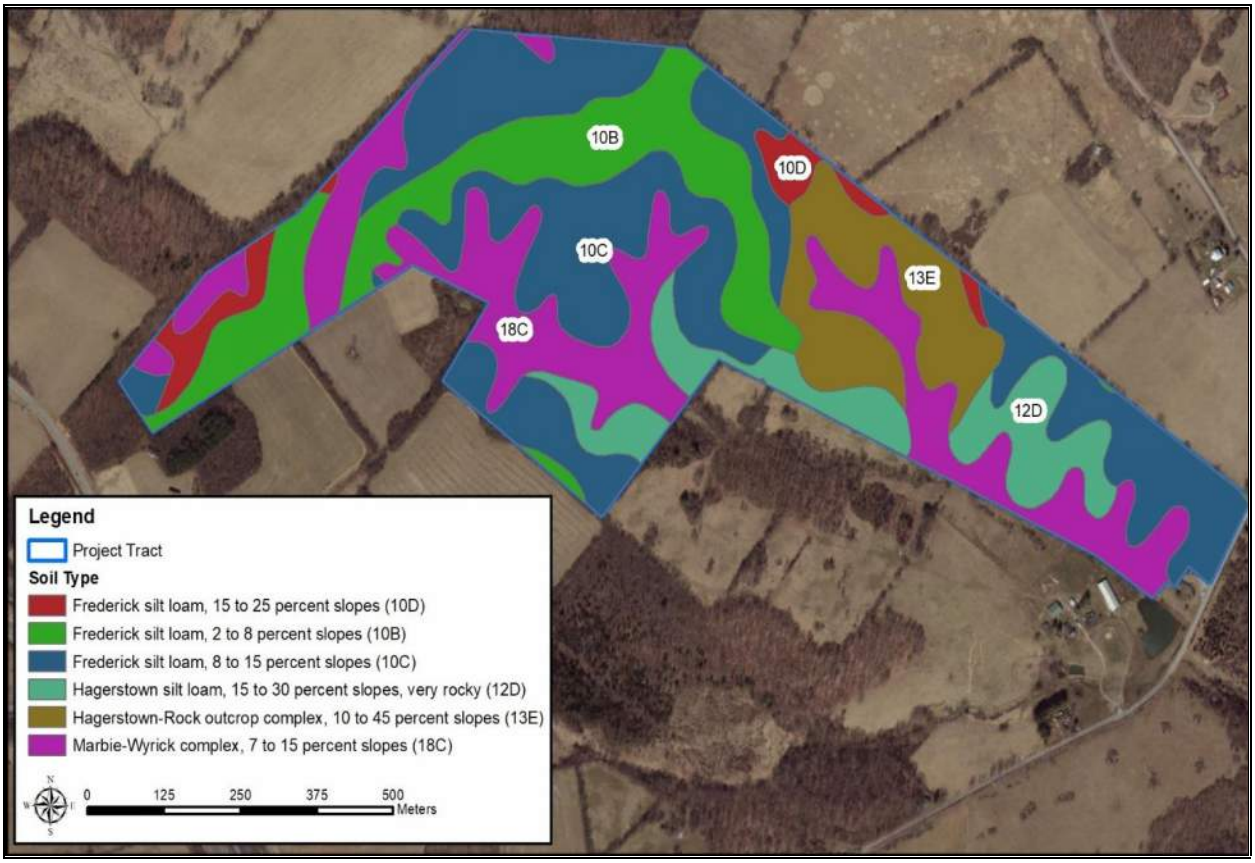


Figure 2.3. Map showing the soil types present in the project tract.

Table 2.1. Summary of Soils Present in the Project APE (USDA 2019).

Soil Type	Description	Percent Area
Frederick silt loam (10B)	2-8% slope, forms from residuum derived mainly from dolomite limestone on uplands.	17.1
Frederick silt loam (10C)	8-15% slope, forms from residuum derived mainly from dolomite limestone on uplands.	35.3
Frederick silt loam (10D)	15-25% slope, forms from residuum derived mainly from dolomite limestone on uplands.	3.7
Hagerstown silt loam (12D)	15-30% slope, forms from residuum of hard gray limestone along valley floors and adjacent hillside.	10.7
Hagerstown-rock outcrop (13E)	10-45% slope, forms from residuum of hard gray limestone along valley floors and adjacent hillside.	10.2
Marble-Wyrick complex (18C)	7-15% slope, forms from sandy glaciofluvial deposits or eolian sand on terraces and escarpments.	23.0

colluvium and alluvium weathering of limestone, sandstone, and shale. All of these soil types are well drained with the exception of Marbie-Wyrick complex, which is moderately well drained. The Wythe County soil survey also reflects sinkholes in parcels adjacent to the project tract, as well as several gravelly areas and rock outcrops in the tract (USDA 2019).

Paleoenvironment

Paleoclimatological research has documented major environmental changes over the last 20,000 years (the time of potential human occupation of the Southeast) including a general warming trend, melting of the large ice sheets of the Wisconsin glaciation, and an associated rise in sea level. About 12,000 years ago the ocean was located 50 to 100 miles east of its present position, and the project area was probably a rather unremarkable interriverine Coastal Plain flatwoods. During the last 5,000 years there has apparently been a 400 to 500-year cycle of sea level fluctuations of about two meters (Brooks et al. 1989; Colquhoun et al. 1981).

The general warming trend that led to the melting of glacial ice and the rise in sea level greatly affected vegetation communities in the Southeast. During the late Wisconsin glacial period, until about 12,000 years ago, boreal forest dominated by pine and spruce covered most of the Southeast. Approximately 10,000 years ago, a modern, somewhat xeric, forest developed and covered much of the Southeastern United States (Kuchler 1964; Wharton 1989). As the climate continued to warm, increased moisture augmented the northward advance of the oak-hickory forest (Delcourt 1979). In a study by Sheehan et al. (1985), palynological evidence suggests that spruce, pine, fir, and hemlock rapidly decreased in importance between 9,000 and 4,000 years before present (BP). By the mid-Holocene, the oak-hickory forest was gradually being replaced by a pine dominated woodland (Wharton 1989).

From 4,000 years BP to the present, the upland vegetation of the Southeast was characterized by a thinning of the deciduous forests (Delcourt and Delcourt 1981). Hickory and gums were generally less important, with alder and ragweed increasing in representation in the palynological record (Delcourt 1979; Sheehan et al. 1985). This forest thinning suggests an increase in human related landscape modifications (i.e., timbering, farming). Similarly, the importance and overall increase in pine species in the forest during this time would have depended on several factors, including fire, land clearing, and soil erosion (Plummer 1975; Sheldon 1983). Since that time, the general climatic trend in the Southeast has been toward slightly cooler and moister conditions, leading to the development of the present Southern Mixed Hardwood Forest as defined by Quarterman and Keever (1962).

Faunal communities have also changed dramatically over time. A number of large mammal species (e.g., mammoth, mastodon, horse, camel, giant sloth) became extinct towards the end of the glacial period 12,000 to 10,000 years ago. Human groups, which for subsistence had focused on hunting these large mammals, readapted their strategy to exploitation of smaller mammals, primarily deer in the Southeast.

Cultural Overview

In evaluating cultural resources, determining their ability to provide data about the lifeways of past inhabitants of the region is key. The following discussion provides a brief summary of the different various occupations in south central Virginia and north central North Carolina, emphasizing cultural change, settlement, and site function throughout prehistory.

Prehistoric Overview

It is accepted by archaeologists that humans migrated to the Western Hemisphere many thousands of years ago, but there is much debate about when humans actually arrived, and the route(s) by which they traveled. Until relatively recently, it was commonly accepted that humans arrived around in North America about 12,000 years ago. However, investigations at a number of Native American sites in North and South Americas have produced radiocarbon dates predating 12,000 years. The Monte Verde site in South America has been dated to 10,500 BC (Dillehay 1997; Meltzer et al. 1997). In North America, the Meadowcroft Rockshelter in Pennsylvania had deposits dating to 9,500 BC. Current research conducted at the Topper Site in South Carolina indicates occupations dating between 15,000 to 19,000 (or more) years ago (Goodyear 2006). Two sites, 44SM37 and Cactus Hill, in Virginia have yielded similar dates. Debate continues about the implications of sites with occupations predating 10,000 BC.

Paleoindian Period (13,000-10,000 BP)

For decades archaeologists have referred to the earliest period of human occupation in the Southeast as the Paleoindian Period. The major artifact marker for this occupation is the Clovis lanceolate fluted spear point (Gardner 1974, 1989; Griffin 1967; Holland 1970; McCary 1984). Smaller fluted and nonfluted lanceolate spear points, such as Suwannee and Simpson, mark a Middle Paleoindian subperiod beginning about 9000 BC and extending to about 8500 BC (Anderson and Joseph 1988; Gardner 1988). A late Paleoindian subperiod is thought to begin about 8500 BC and extend to 7990 BC (Goodyear 1982); Dalton Hardaway and Quad unfluted points are markers for this subperiod (Holland 1970). The Hardaway point, first described by Coe (1964), is seen as a regional variant of Dalton (Holland 1970; Oliver 1985; Ward 1983). Perkinson (1971, 1973) recorded Paleoindian fluted points in North Carolina, and their distribution seems to indicate a more intensive occupation of the Piedmont of North Carolina, rather than the Coastal Plain. McCary (1984) surveyed fluted points in Virginia. Paleoindian remains in Virginia seem to cluster within the Roanoke and James River Valleys.

Most Paleoindian materials occur as isolated surface finds in the eastern United States; this has indicated to many scholars that population density was extremely low during this period, and that groups were small and highly mobile (Meltzer 1988). Williams and Stoltman (1965) mapped the occurrence of fluted point finds in the eastern United States and noted that these had a high correlation with reports of extinct mastodon finds in the region. They concluded that Paleoindian hunters were focusing on mastodon. Other researchers have determined that the Paleoindian subsistence pattern was largely based on large migratory mammals and wild plants (Custer 1990; Gardner 1989; Holland 1970). In the Valley and Ridge province of southwestern Virginia, Paleoindian sites have reflected a settlement strategy focused on high quality lithic resources. Custer (1990) and Stevenson (1985) suggest a seasonal round was employed with

quarries and outcrop locations serving as base camps for forays focused on other resources. Turner (1989) refers to system as tethering, calling Paleoindian groups "tethered nomads."

Artifacts associated with fluted points (gravers, scrapers, burins, and cores) have been found east of our project area in the Roanoke River Valley (Miller 1962). These finds would appear to indicate that Paleoindian occupations of the Roanoke River Valley involved at least short-term habitation areas and not just kill sites or hunting stations. It appears that the Roanoke River saw relatively intensive use during this period (Brockington et al. 1992). Closer to the project area, the Saltville site in Smyth County yielded 35 Clovis points (Barfield 1990). Other Paleoindian sites in the Valley and Ridge province include the Thunderbird and Fifty sites in the northwestern part of Virginia. Both of these sites have large Paleoindian and Archaic occupations (Gardner 1974, 1989).

Archaic Period (10,000-8,000 BP)

Caldwell (1958) proposed a general settlement/subsistence model for the Southeastern Archaic period; he termed this model Primary Forest Efficiency. Archaic period populations were seen as small, mobile hunters and gatherers, faced with readapting a subsistence pattern based on hunting of large game in the preceding Paleoindian Period to one based on smaller game and forest resources that came into existence in the Early and Middle Holocene (Brockington et al. 1992).

During the Archaic Period hunting was carried out using corner notched, side notched bifurcate based, and stemmed spear points hafted to throwing spears. An early focus developed on nut and acorn processing. Hunting continued but played a lesser role (Barber et al. 1997). The sylvan strategy soon gave way to a more riverine focus when the drainage systems and associated resources (seeds, fish, mussels) settled into a modern and stable distribution (Mouer 1990).

Tool style changed during this period. Clovis points were gradually replaced by serrated blades that were notched to facilitate hafting. McMillian and Klippel (1981) see this change as reflecting a shift towards to the more intensive exploitation of smaller mammals. The Early Archaic (10,000-8,000 BP) tools include Kirk Stemmed, Kirk and Palmer Notched, and Le Croy and MacCorkle bifurcated projectile points. Other tools reflecting this period include drills, adzes, scrapers, and gravers (Gardner 1989; Lowery and Custer 1990). In addition, Blanton and Sassaman (1989) note an increasing trend towards expedient technologies. This trend, and the apparent change in focus from chert to quartz and metavolcanics cryptocrystalline has been interpreting as suggesting shifts in residential mobility patterns, wherein more locally available raw lithic resources would be exploited (Odell 1994). Groundstone tools for plant processing, such as mortars and pestles and nutting stones, were introduced during this period.

The Middle Archaic period (8,000-5,000 BP) saw the development of large base camps along major waterways with small resource collection camps in the upland. The presence of storage pits and middens indicate longer term habitation of sites (Smith 1986). Lithic tool forms are generally large notched and stemmed forms, beginning with Stanly points, a broad bladed stemmed form (Coe 1964). These were followed by Morrow Mountain Stemmed; Morrow Mountain and Big Sandy points are characteristically manufactured from quartz, and are found on numerous small sites throughout Virginia, the Carolinas and Georgia (Coe 1964; Holland 1970). Guilford points, also often made of quartz, but more lanceolate in form, follow Morrow Mountain in the Middle Archaic sequence (Brockington et al. 1992; Holland 1970). Halifax side notched points are thought to mark the transition between the Middle and Late Archaic periods. The types of groundstone tools expands to include metates and mans and celts, suggesting an increase reliance on plant resources (Ford 1977).

The Late Archaic period (5,000-3,000 BP) is defined by increased sedentism and the introduction of ceramics (Coe 1964). The hallmark of the Late Archaic period is the Savannah River stemmed point, defined by Coe (1964). This often large, broad bladed and stemmed point is found widely over the

Southeast and Eastern United States. Caldwell (1958) suggests that the Archaic groups were well-adapted to the resources in the area. However, he also believed that the nature of such localized adaptations would have included foraging strategies similar to those in Flannery (1968) in which he referred to as "broad-spectrum" or Cleland (1976) describes as "diffuse."

Holland's (1970) study of the Piedmont Archaic site distributions in southwestern Virginia indicates that Archaic groups settled in very specific locations: those that produced the largest stands of hardwood, nut-bearing trees. Nuts, deer, and turkey were the principal food sources. Holland (1970) describes a number of dense multi-component Archaic sites found in the string of foothills along the base of the Blue Ridge. The conditions here are excellent for nut collecting and for autumn or winter deer hunting. The density and size of artifacts reported from these sites suggest continual reuse, perhaps a base camp, throughout the Archaic phase.

Woodland Period

The Woodland Period (3,000-300 BP) was a direct outgrowth of the Archaic and the transition is sometimes difficult to determine. Although the defining attributes were not fully developed until the end of the period, the general trends were present at the onset. Fired clay ceramics, in the form of cooking and storage pots, made their appearance. Due to their fragile nature, this artifact group suggests a certain amount of sedentism (Barber et al. 1997). Circular sapling "wigwams" also were used and mark an ability to remain in one place for a more extended period of time (McLearan 1989). Triangular projectile points make their first appearance in Virginia and mark the development and use of the bow and arrow as an ever more efficient hunting tool (Barber et al. 1997).

Woodland sites are typically found right along the streams course, often on terraces carrying stands of more hydrophytic trees, such as beech and sycamore. A variety of evidence suggest that these groups used the stream-side habitats as an extension of the riverine environments (Mouer 1982).

In terms of material culture, during the *Early Woodland* (3,000-2,550 BP) there is a rapid phasing out of broad spear points and stemmed point forms – particularly those of the Savannah River tradition – which continues into at least the first few hundred years of the time period. By about 900-750 BC the use of a number of small lanceolate, notched, and stemmed forms made of quartz, chert, and various other lithic materials. By the end of the period, small expedient tools are generally the norm. Ground stone technology carries over from the Late Archaic, some forms still being used, but with the addition of more elaborate and well-made polished implements and ornaments. Ceramic technology develops, within a short period of time, and an experimental stage in pottery manufacture encompasses the region (Egloff 1991; Sassaman 1993). Full blown typical Woodland technology and vessel forms are present by about 900 BC in most of Virginia. There seems to be a lag in southwestern Virginia until this later technology is introduced to the south, about 600 BC or a little earlier. Rock cluster and hearth platform feature types continue. A few sites have pit forms that appear to be typical of storage and cooking technology. At one site there is evidence of architecture, which is seen in later Woodland phases (McLearen 1989).

The *Middle Woodland* period (2,550-1,250 BP) is characterized by further changes in tool types. Hafted projectile point forms such as Potts, Rossville, Fox Creek, and triangular stemless points become common. Ceramic technology expands to include limestone and crushed quartz temper (Gardner 1982). Settlement continues to focus on increased sedentism and the exploitation of locally available resources (Blanton 1992).

Although gathering and hunting remained an important part of the subsistence strategy, horticulture gained prominence and was the most important foodway by the *Late Woodland* (1,250-300 BP). By this period, the gardening of corn, beans, and squash through swidden agriculture provided the main food items.

In areas where broad flood plains dominated, large nucleated villages often developed frequently with a circular palisade encompassing the settlement. Isolated hamlets were also occupied, perhaps by nuclear families and more dispersed, linear towns were also present found along natural levees paralleling major drains. Examples of such settlement patterns were examined to the southeast at the Fort Chiswell Woodland era site (44WY45) and to the southwest at the Wolf Creek Village Site. At the advent of European peopling in the early 1600s, the Native American populations were, for the most part, absent (Barber et al. 1997).

Historic Overview

Although English explorers reached the mouth of the Roanoke River in early 1585, colonization of the Virginia-Carolina coastal area did not begin until many years later. In 1626, the Governor and Council of Virginia wrote to the Privy Council in England "that discoveries by land are of great hope both for the riches of the mountains and probabilities of finding passage to the South Sea" (Kegley 1938:6). This was followed by a similar petition in 1641 (Kegley 1938:6). Beginning with the Wood/Bland expedition described by Bland (1911) in *The Discovery of New Britaine,* a series of expeditions left Fort Henry to explore to the south and west. Bland and Wood traveled only 96 kilometers (60 miles) to the south, but it was the first documented instance of white men venturing into the interior. The expedition resulted in the establishment of trade with the Indians of North Carolina. Wood made an extensive exploratory trip in 1654 and appears to have "discovered" a major river flowing west into the Mississippi River, naming it Wood's River (Browning 1996). It was later renamed the New River (Browning 1996).

In an effort to push settlement, the Virginia Council granted huge tracts of land to individuals and groups. One grant south or west of the New River including the Holston, Clinch River Company for 100,000 acres with another tract of equal size available. This grant appears to have been the first to include most or all of the project area (Browning 1996). In 1671, Thomas Batts, Robert Fallom, and Thomas Wood set out to cross the Blue Ridge. They descended into a valley six miles long at the foot of which was the Totera Town (Kegley 1938). The visitation by Batts and Fallom to the Tutelo Indians in the Roanoke River valley marks the first recorded entry of Europeans into the Great Valley of Virginia (Kegley 1938).

At the time of substantial European contact in the early seventeenth century, the major known Native American presence nearest the project was the Occaneechi at the confluence of the Staunton/Roanoke and Dan Rivers on the North Carolina border. Due to their trade network, the Occaneechi were extremely important for early European trade efforts. The end of the seventeenth century saw the virtual elimination of the remnant Native American population in Virginia through disease, attrition, or resettlement efforts by the Virginia government (Browning 1996).

In April 1691, the Assembly passed an act that granted "a free and open trade for all persons, at all times, and at all places with all Indians whatsoever." By 1701, pack trains were regularly leaving what had become known as Peter's Point or Petersburg to go down the Occaneechee Trail. The trade consisted of guns, gunlocks, flints, powder, shot, axes, knives, awls, blankets, needles, hoes, scissors, shirts, belts, hats, salt, paint (ochre), kettles, and shell money. In return the traders got furs (Briceland 1987). Colonel Spotswood, then the Governor of Virginia under the rule of King George II, set out to explore the Shenandoah Valley in August 1716 (Barber et al. 1997). It was not until the 1720's that the first settlers began occupying land in western Virginia.

Settlement on the Virginia and North Carolina upper Piedmont border region was already in place when William Byrd conducted his survey of the state dividing line in 1728 (Byrd 1929). Byrd pushed the survey to Peter's Creek, about halfway across Henry County. By 1749, the border was pushed 145 km (90 miles) farther west to Steep Rock Creek near the northwest border of North Carolina. The line was pushed to Bristol, Tennessee in 1779 (Byrd 1929).

Groups of Scotch-Irish Presbyterian immigrants from Pennsylvania traveled further into the project area throughout the 1730s and 1740s. Settlers migrated down the Great Valley into the area that was to become Wythe County, establishing sparse settlements (Winegar and Winegar 1998). The settlers followed well-known historic roads including the Wilderness Road (now U.S. Route 11), and the Rye Valley Road (now Route 674) (Barber et al. 1997).

Complaints about European encroachment by the Iroquois and Cherokee resulted in the issuance of a royal proclamation in 1763 that forbade settlement in southwest Virginia. The proclamation also mandated the removal of settlements that had been made. For a short time, the Cherokee and Iroquois successfully used the system to protect their territory. However, the proclamation was only effective for three years. Once the New River was crossed, settlement spread rapidly through the New River valley and down the Valley of Virginia into the Holston Valley of the Tennessee River drainage (Browning 1996). Treaties were signed by the Iroquois at Fort Stanwick, New York in 1768 and by the Cherokee at Lochaber, South Carolina in 1770. These treaties stated that the Native Americans ceded their territory south of the Ohio River and east of the Cumberland Mountains. The net effect was that southwest Virginia was open for settlement (Browning 1996).

During this same time period, colonial dissatisfaction with British rule was growing. A series of tax acts were passed by the British Parliament from 1763 to 1765, creating widespread protest in the colonies (Rankin 1959). Violent protests broke out, which only resulted in the passage of further taxes by the British. In April of 1775, colonists attacked British troops in Massachusetts beginning the Revolutionary War (Rankin 1959). The project area was affected in varying degrees by this war, but generally, the area saw little actual fighting.

Southwestern Virginia was more directly impacted by the Civil War. Completion of the Atlantic, Mississippi and Ohio Railroad, prior to 1841, had revitalized the industrial economy in southwest Virginia. The railroad provided increased access to markets, commercial centers, and manufacturing facilities (Barber et al. 1997). Mining production, which had come to play a large role in the development of area, was substantially increased with the availability of the rail line. Coal, iron, zinc, and copper were all extracted and processed in the project area. These mines provided vast amounts of the metals required by the Confederate Army during the Civil War (McIlhaney 1989).

Despite the hardships following the Civil War, by the end of the nineteenth century, the project area was well developed. Numerous towns and communities and transportation routes are shown on historic maps. Mills of various functions were prevalent.

Wythe County History

In the 1740s, settlers migrated down the Great Valley into the area that was to become Wythe County and established sparse settlements. The settlers followed the well-known historic roads including the Wilderness Road (now U.S. Route 11), and Rye Valley Road (now Route 674; Barber et al. 1997). Due to the relative remoteness of the settlements and the difficulty in reaching the then county seat of Botentourt County, residents of the New River Valley petitioned for the formation of a new county. Fincastle County was formed in 1772 and the county seat was established in the lead mines area of what was to become Wythe County. Fincastle County was short-lived and was abolished in 1776. The area subsequently became Montgomery County, with its county seat at Fort Chiswell. Montgomery County encompassed 12,000 square miles and over the years was broken up into 25 separate counties (Montgomery Museum & Lewis Miller Regional Art Center 2011).

Wythe County was formed in 1790 from Montgomery County. It was named for George Wythe, the first Virginia signer of the Declaration of Independence. The first county court sessions were held at

the home of James McGavock at Fort Chiswell. The town of Evansham was constructed on land donated by two local residents. It had a courthouse and laid out half-acre lots. Following a devastating fire in 1869, the town was renamed Wytheville. Wythe County in its current geographical position is bordered on the north by the top of Walker and Little Walker Mountains, on the south by the ridges of the Iron Mountains, Ewing Mountain, an arbitrary line to a point on Poplar Camp Mountain and another arbitrary line to the Pulaski, Carroll, and Wythe corner and on the east and west by arbitrary lines (Kegley 1989).

Large lead deposits were discovered in 1756 in Austinville, near the current location of the Interstate 81/Interstate 77 junction (Browning 1996). Fort Chiswell, strategically located along the Great Valley corridor (McCartney 1976), was erected in 1760 to exploit these deposits and to provide protection for and control of the miners (McIlhaney 1989). During the Civil War, these deposits were the primary domestic source of lead for the Confederacy, suppling nearly one-third of the lead used (Donnelly 1959). The lead mines were closed in 1982 due to new environmental regulations. Several iron furnaces were established in Wythe County soon after the American Revolution, making the area the first industrial producer in the state and one of the major producers in the colonies (Browning 1996). The construction and use of iron furnaces continued into the early twentieth century, with coke fired furnaces gradually replacing the earlier charcoal fired furnaces (Barber et al. 1997).

Several actions took place in Wythe County during the Civil War, particularly in vicinities of the various shot towers. The most well-known battle occurred at Cove Mountain in the Jefferson National Forest. In 1864, Union Brigadier Generals George R. Crook and William W. Averell raided the Virginia and Tennessee Railroad, destroying numerous wagon loads of supplies. Confederate General William E. Jones' forces beat back the Union forces, who escaped in the overnight hours, leaving the town of Wytheville intact (NA 2013).

In the mid-1800s, lead and pig iron were transported by wagon to Lynchburg, then floated to Richmond's Tredegar Iron Works. By 1880, the Norfolk and Western Railroad spanned the central portion of the county, providing improved transportation of iron to Pittsburgh, where it was used to make wheels for steam engines and railroad cars. Over time, better sources of iron were identified in the Great Lakes area and the iron industry in Wythe County began to flag. By 1930, the last of the iron mines had closed (Pulice 2009).

Agriculture and dairy farming have contributed to the overall economy in more recent times. Today, the project area is primarily livestock pastureland, and the dairy industry is the largest employer in the county. Wythe County is ranked in the top ten livestock counties in the state. The majority of the residents of the area, however, commute to larger cities such as Roanoke and Danville. The abundance of mountains

Chapter 3. Results of the Investigation

Background Research Results

As part of the background research, historic maps of the project vicinity were examined. Figure 3.1 shows the project area on a portion of a late nineteenth century geologic map (Boyd 1890). The project area is within the area designated as "Great Valley Limestones and Cherts." In the vicinity of the project tract are labels indicating that the area was used for the cultivation of cabbage and potatoes. No structures are shown in the project tract on any of the historic maps examined.

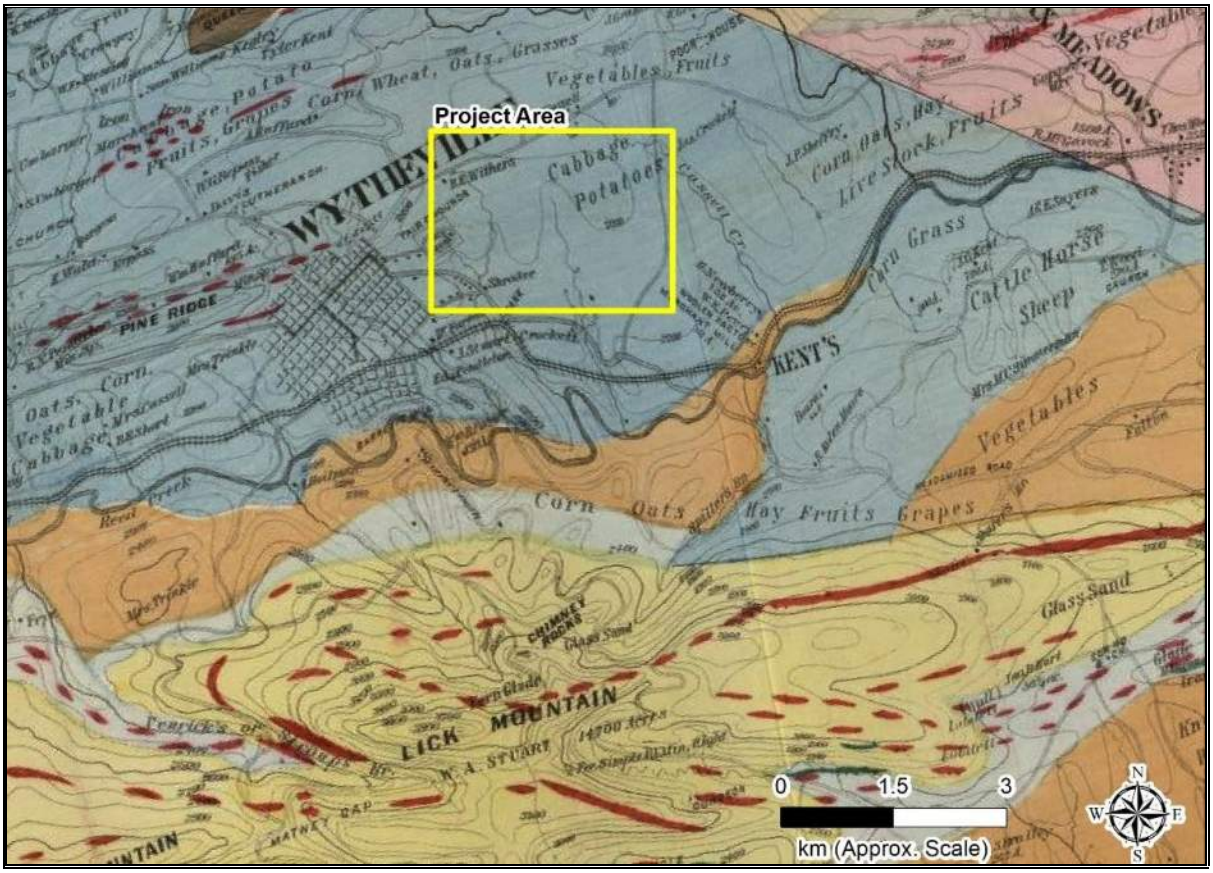


Figure 3.1. View of a portion of the 1890 Boyd map showing the geology and other details in the project vicinity.

Archaeological background research was comprised of a review of records on file on the Virginia Cultural Resource Information System (VCRIS) to identify previously recorded cultural resources within or in the vicinity of the project tract. To date, no archaeological sites have been recorded within a 0.5-mile radius of the project tract. However, 39 historic resources are recorded within this radius, two of which are located within the project boundaries (Figure 3.2; Table 3.1).

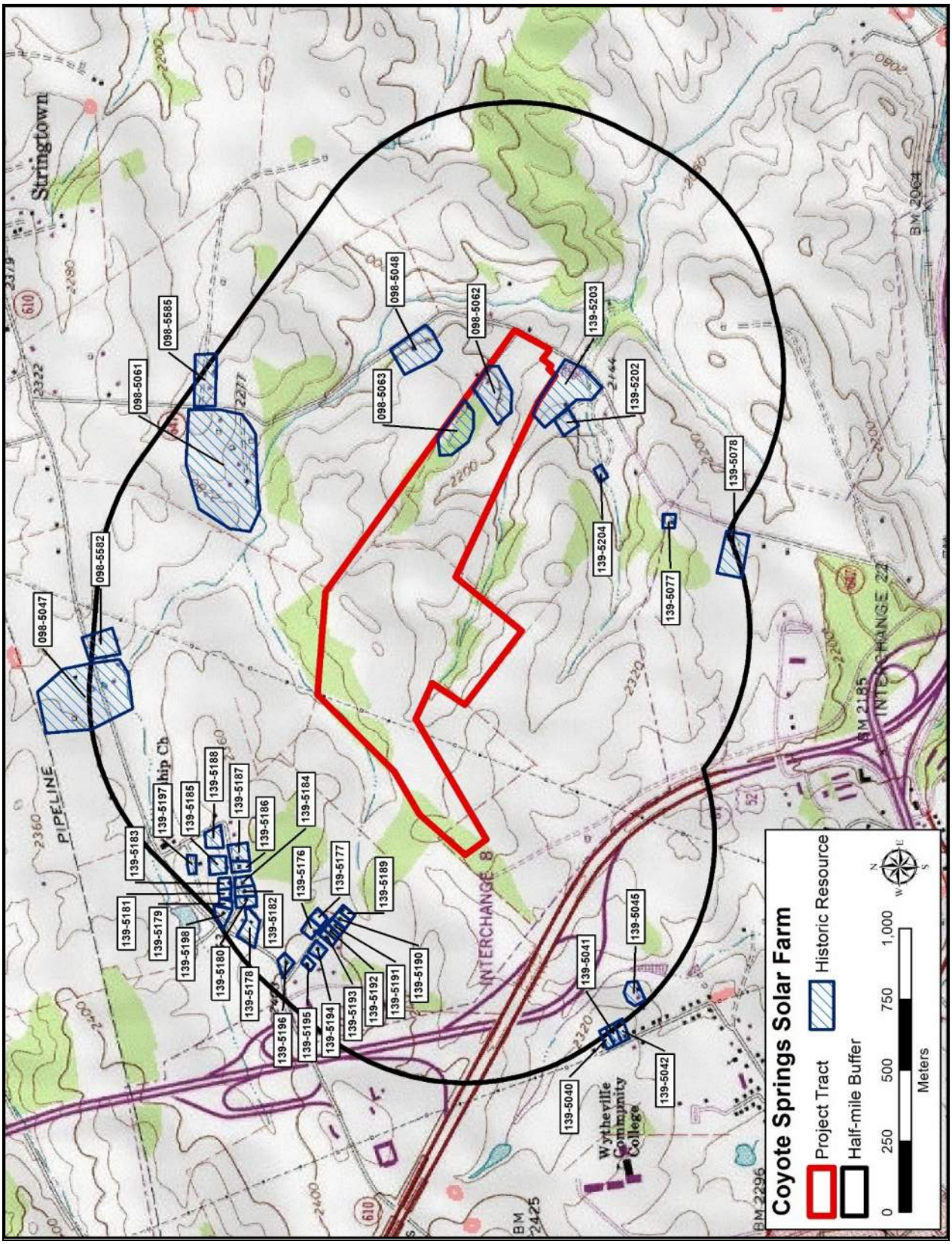


Figure 3.2. Map of recorded cultural resources within one-half mile of the project area (1968 *Wytheville, VA* USGS 7.5 minute topographic quadrangle).

Table 3.1. Previously Recorded Cultural Resources Within 0.5 Miles of the Project Tract.

Resource Number	Resource Type	Comments	NRHP Status
098-5047	Cassell-Crockett Farm	Middle-19th century log farmhouse; multiple additions, middle-20th century house, outbuildings	Not Eligible
098-5048	Eversole Farm	Middle 19th century	Not Eligible
098-5061	Cassell Farm	Circa 1910	Not Eligible
098-5062	*Spraker Farm 1*	*Circa 1930; Destroyed*	*Not Eligible*
098-5063	*Spraker Farm 2*	*Circa 1930; Destroyed*	*Not Eligible*
098-5582	House	Circa 1940	Not Eligible
098-5085	House	Circa 1940	Not Eligible
139-5040	House	Circa 1945	Not Eligible
139-5041	House	Circa 1940	Not Eligible
139-5042	House	Circa 1940	Not Eligible
139-5045	Testerman House	Circa 1900	Not Eligible
139-5077	House	Circa 1950	Not Eligible
139-5078	House	Circa 1925	Not Eligible
139-5176	House	Circa 1950	Not Eligible
139-5177	Chicken House	Circa 1930	Not Eligible
139-5178	House	Circa 1930	Not Eligible
139-5179	House	Circa 1960	Not Eligible
139-5180	House	Circa 1960	Not Eligible
139-5181	House	Circa 1960	Not Eligible
139-5182	House	Circa 1960	Not Eligible
139-5183	House	Circa 1960	Not Eligible
139-5184	House	Circa 1960	Not Eligible
139-5185	House	Circa 1960	Not Eligible
139-5186	House	Circa 1960	Not Eligible
139-5187	House	Circa 1960	Not Eligible
139-5188	House	Circa 1950	Not Eligible
139-5189	House	Circa 1920	Not Eligible
139-5190	House	Circa 1940	Not Eligible
139-5191	House	Circa 1940	Not Eligible
139-5192	House	Circa 1935	Not Eligible
139-5193	House	Circa 1935	Not Eligible
139-5194	House	Circa 1935	Not Eligible
139-5195	House	Circa 1935	Not Eligible
139-5196	House	Circa 1935	Not Eligible
139-5197	Crenshaw House	Circa 1920	Not Eligible
139-5198	House	Circa 1960	Not Eligible
139-5202	House	Circa 1890; modern outbuildings	Not Eligible
139-5203	House	Circa 1945	Not Eligible
139-5204	House	Circa 1940; dilapidated	Not Eligible

Two of the previously documented historic resources, 098-5062 and 098-5063, are located in the southeastern portion of the project tract. Figure 10 shows these two resources on an aerial map. These farm complexes were first documented in 2002 (Lautzenheiser and Ralbian 2002) and revisited in 2016 (Groesbeck et al. 2016). Each of these resources is discussed below.

Resource 098-5062 (Spraker Farm #1). This resource consisted of a circa 1935 one and one-half story three bay frame bungalow built from rough-hewn lumber by Claude Spraker. The structure had a basement, storm windows, and two chimneys. One chimney was an exterior end chimney and the other was an interior end chimney. The house had a one-story full width front porch and a metal roof with a central shed dormer. The exterior was covered with vinyl siding. In addition to the house, there were two barns, four sheds, and one other outbuilding. None of these buildings were still present during the reconnaissance.

Resource 098-5063 (Spraker Farm #2). This resource consisted of a circa 1930 one story frame house also built by Claude Spraker. It had a poured concrete foundation, 3/1 windows, storm windows, and a three paneled wood door with four windows. The front porch had square support posts on brick piers. There was a central chimney composed of common bond brick with a corbelled cap. The house exterior was covered with vinyl siding. In addition to the house, there was a barn, three sheds, a chicken house, and a spring house. None of these buildings were present during the reconnaissance.

The current property owner, Mr. Eric Crowley, was interviewed for information about the tract. Mr. Crowley has owned the property for three years, having purchased the property from the Spraker family. Mr. Crowley said he was unaware of any prehistoric artifacts having been found in the project tract. He said that the structures associated with Resources 098-5062 and 098-5063 were still standing when he acquired the property. Material was first salvaged from the structures, then they were dismantled. The rubble pile was burned, and foundation and structural elements were bulldozed and buried.

Although two historic resources with standing structures are documented within the project tract, no archaeological investigations have occurred within the Wytheville solar facility Solar Farm tract. However, a cultural resources survey of over 1100 acres about 1.0 mile east of the project tract provides data which is relevant to this survey. The cultural resources survey of the Wythe IDA Industrial Park (Barber et al 1997) surveyed approximately 1,136 acres of agricultural land mostly used as pasture. The IDA tract fronts Reed Creek, a significant tributary of the New River, and extends over 1.5 miles into the adjacent uplands; the setting of the Wytheville solar facility tract is similar to the upland portions of the IDA tract. For this reason, the findings of the Wythe IDA Industrial Park cultural resources survey are used as a model for expectations of the types of prehistoric archaeological resources potentially present in the Wytheville solar facility tract.

The survey of the IDA industrial park resulted in the identification of 32 archaeological resources. These include two sites with historic components, two sites with both historic and prehistoric components, and 28 sites with only historic components. Site types include small lithic scatters, camps, village sites, and one chert quarry. Most of the sites recorded by Barber et al (1997) are clustered near Reed Creek and minor intermittent drainages. All village sites were near the creek. Archaeological sites are present in the interior uplands, but much less frequently than along the creek and drainages; only five sites were recorded over 1.0 mile from Reed Creek. Similarly, of those sites with potentially significant archaeological deposits, six were directly adjacent to Reed Creek and six were bordering the smaller drainages.

Based on the Barber et al (1997) survey, the Wytheville solar facility tract is not in a setting where we would expect to find many archaeological sites, and it is also a setting where we would not expect to find many (if any) significant sites. The tract is at a relatively high altitude and would be a cold and windswept during the winter. Based on the results of the Barber et al (1997) survey and discussions with Chris Egghart (Cultural Resources Specialist with the Virginia Department of Environmental Quality), anticipated preferred settings for prehistoric archaeological sites in the project tract would include:

- Landforms with southward trending slopes facing the sun;
- Protected landforms (benches, saddles, terraces, etc.), less exposed to the elements;

- Settings within 100 meters of drainages and spring heads;
- Good quality chert outcrops (quarry sites)

Historic sites may also occur in these settings, but areas with road frontage tend to have greater association with historic sites.

Field Survey: Archaeology

Approximately 44.7 acres of the project area was classified as having high potential for the presence of intact cultural deposits (see Figure 1.7). These areas were surveyed with 15-meter interval shovel testing. Areas in the high potential areas with surface exposure over 50 percent were visually inspected at a maximum of 15-meter intervals in lieu of subsurface testing with supplemental shovel testing at 30-meter intervals. The remaining 109.6 acres were considered to have low potential for the presence of archaeological deposits for a variety of reasons, including poor soil drainage, slope, and severity of erosion as observed during the Phase 1A reconnaissance conducted by Mr. Bobby Southerlin prior to instigation of this Phase I survey. These low potential portions of the tract were visually inspected with 100 percent pedestrian survey and judgmentally placed shovel tests or subsurface sampling at 30-meter interval transects at 60-meter intervals, resulting in a 10 percent sample of these areas. Figure 3.3 presents the shovel test grid.

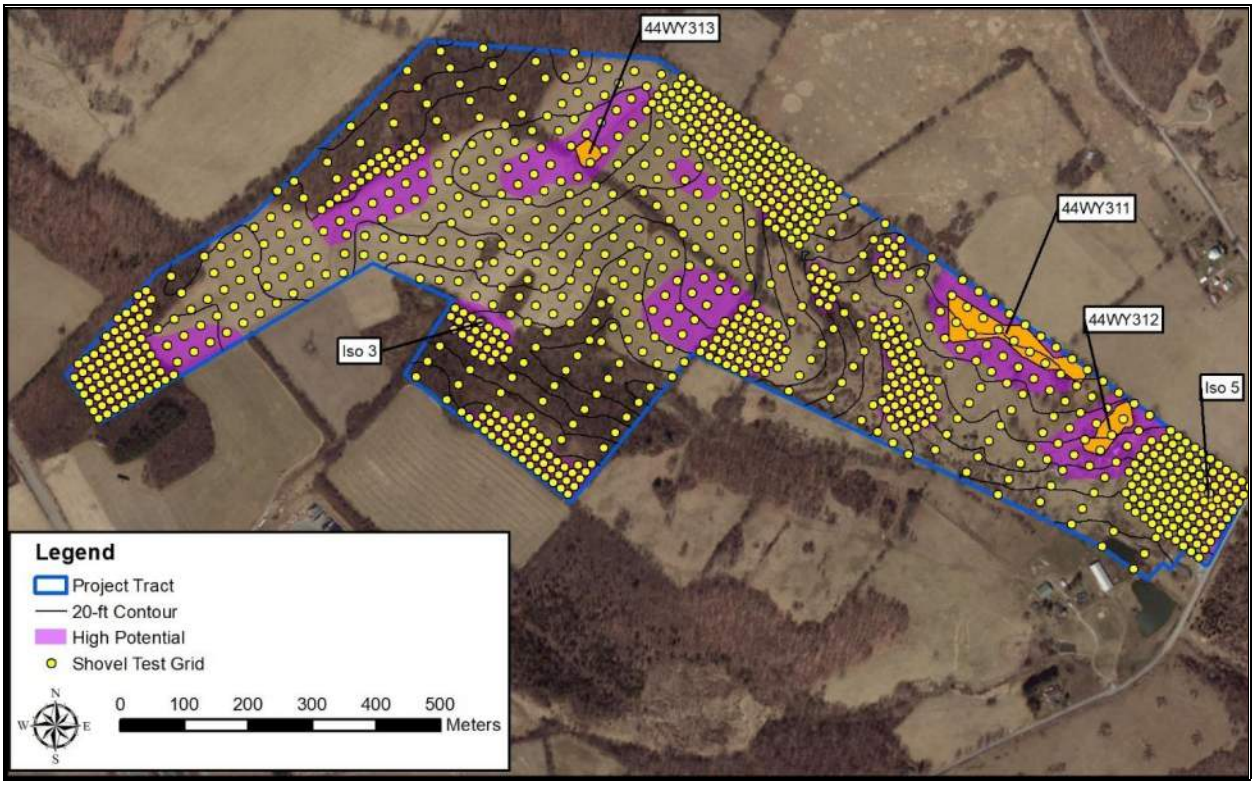


Figure 3.3. Map showing new archaeological resources, high potential areas, and the shovel test grid.

A total of 444 shovel test locations were examined. Shovel tests in low potential areas generally exposed soil profiles comprised of 5 to 20 centimeters of yellowish brown (10YR5/6) silty loam overlying brownish yellow (10YR6/8) silty clay. No archaeological resources were identified in the low potential areas. Exposed soil profiles in shovel tests excavated in high potential areas consisted of 5 to 10 centimeters of dark yellowish brown (10YR4/4) silt loam overlying yellowish brown (10YR5/6) silt loam. Subsoil of brownish yellow (10YR6/8) silty clay was generally encountered at a depth of 30 centimeters. Three new archaeological sites and two isolated finds were identified in high potential areas during this survey (Figure 3.4; Table 3.2, and Table 3.3). Each of these resources are discussed below.

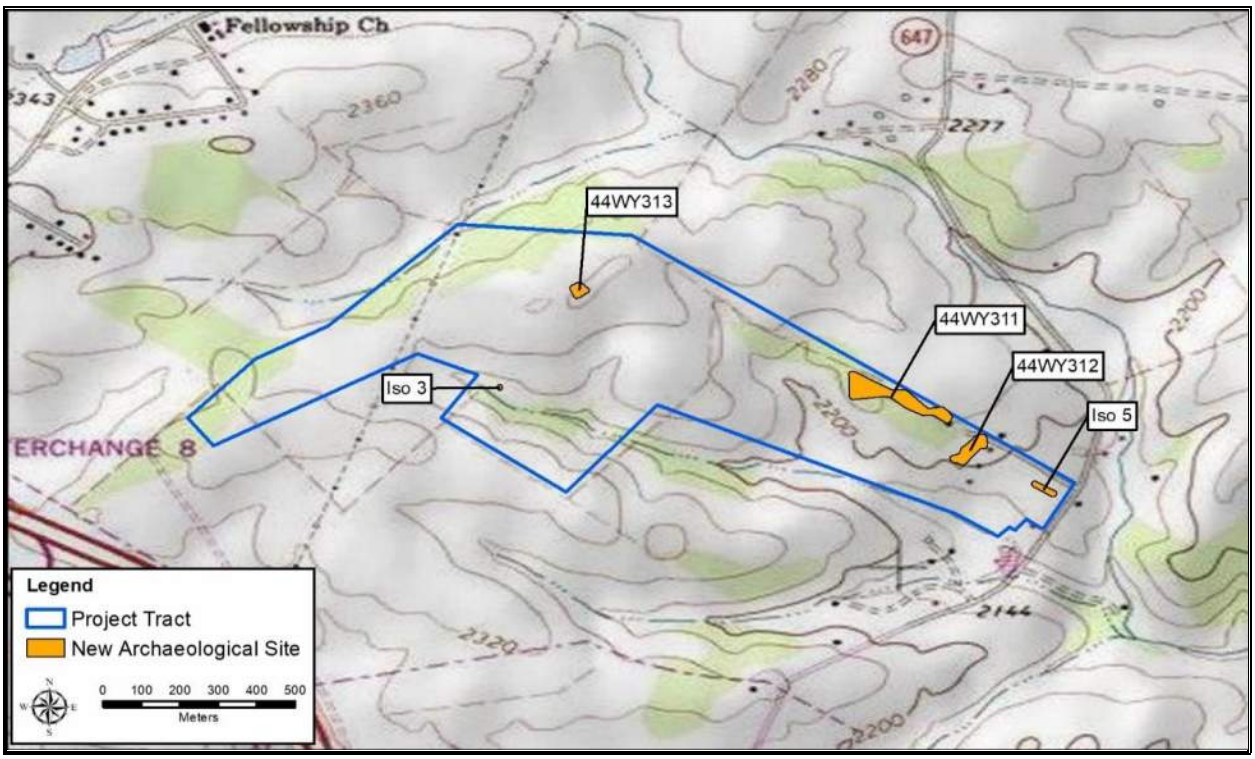


Figure 3.4. Map showing new archaeological sites and isolated finds (1965 *Wytheville, VA*, USGS 7.5 minute topographic quadrangles).

Table 3.2. Summary of Archaeological Sites Identified During This Investigation.

VDHR ID	Description	NRHP Recommendation
44WY311/098-5063	Ca. 1930 Farm Complex	Not Eligible
44WY312/098-5062	Ca. 1930 Farm Complex	Not Eligible
44WY313	Unknown Prehistoric Lithic Scatter	Not Eligible

Table 3.3. Summary of Isolated Finds Identified During This Investigation.

Isolated Find	Component	Assemblage
3	Historic Ceramic Isolate	Blue Hand Painted Pearlware Ceramic (n=1)
5	Unknown Prehistoric Lithic Isolate	Ridge and Valley Chert Flake (n=1)

Site 44WY311/098-5063

Site Type: Farm Complex	**UTM Coord. (NAD83):** E 496300 N 4090719
Component: Ca. 1930 - 2016	**USGS Quad:** Wytheville, VA
NRHP Eligibility: Not Eligible	**Soil Type:** Frederick Silt Loam

Historic Resource 098-5063 (Sparker Farm #2) at 1167 Lovers Lane (Route 647) was initially recorded in 2001 and revisited in 2014 (Lautzenheiser 2002; Merritt 2016). The resource was described as a circa 1930 farm complex comprised of a dwelling and six associated secondary resources/outbuildings. The outbuildings include a spring house, a chicken house, a barn, and sheds. Merritt (2016) recommended the resource not eligible for the NRHP stating:

> It is in the opinion of the surveyor that this single dwelling, built ca. 1930s, does not possess architectural and historical significance and is not eligible for inclusion in the National Register. The dwelling is a typical bungalow form and does not possess characteristics of demonstrable significance with respect to design, construction or use of materials (Criterion C). The dwelling does not appear to be associated with significant broad patterns, events, or persons (Criteria A and B). It has not yielded, nor is likely to yield, information to history or prehistory (Criterion D).

The resource was determined not eligible by the Virginia Department of Historic Resources (VDHR) in 2016.

Site 44WY311 (Historic Resource 098-5063) is the remains of historic resource 098-5063. Its remains were located in the eastern end of the project tract (see Figure 3.4). The site sits on a ridge nose that slopes towards the southwest. The area around the former dwelling, spring house, and a shed is lightly wooded with light to moderate overgrowth. The area surrounding the remaining outbuildings, the barn, chicken house, and two sheds, is cattle pasture. General surface visibility around the site area was < 50%, but overgrowth did not impede the visibility of structural debris.

The site was delineated with visual inspection, selective surface collection, and supplemental shovel testing. A total of 19 shovel tests were excavated. Artifacts were recovered from two shovel tests. Architectural debris and remains was generally concentrated within 15 meters of the former location the structures. Site dimensions of 250 by 60 meters were established from remains of the farm complex (Figure 3.5). However, material was identified as far as 100 meters from the closest known location of the former structures. Soil profiles on site consisted of 0 to 25 centimeters of brown (10YR 4/4) silt loam overlying a brownish yellow (10YR 6/8) silty clay subsoil with upwards of 25 percent angular chert gravel.

A total of 16 artifacts were recovered from the site (Table 3.4). The artifacts were all domestic and included one undecorated ironstone ceramic fragment, clear bottle and light green flat glass, a rubber comb, plastic, and coal. Artifacts were recovered on the surface and between 0 and 20 centimeters below the surface. The artifacts recovered were mostly common during the early twentieth century. Some artifacts, including the ironstone ceramic and the thumbscrew lid clear bottle glass fragment, were manufactured beginning in the nineteenth century. In general, these artifacts correspond to the early occupation of the circa 1930 farm complex and may suggest an earlier occupation. A review of historic maps did not identify any structures in the vicinity of the site area, although the area was cultivating cabbages and potatoes (Boyd 1890).

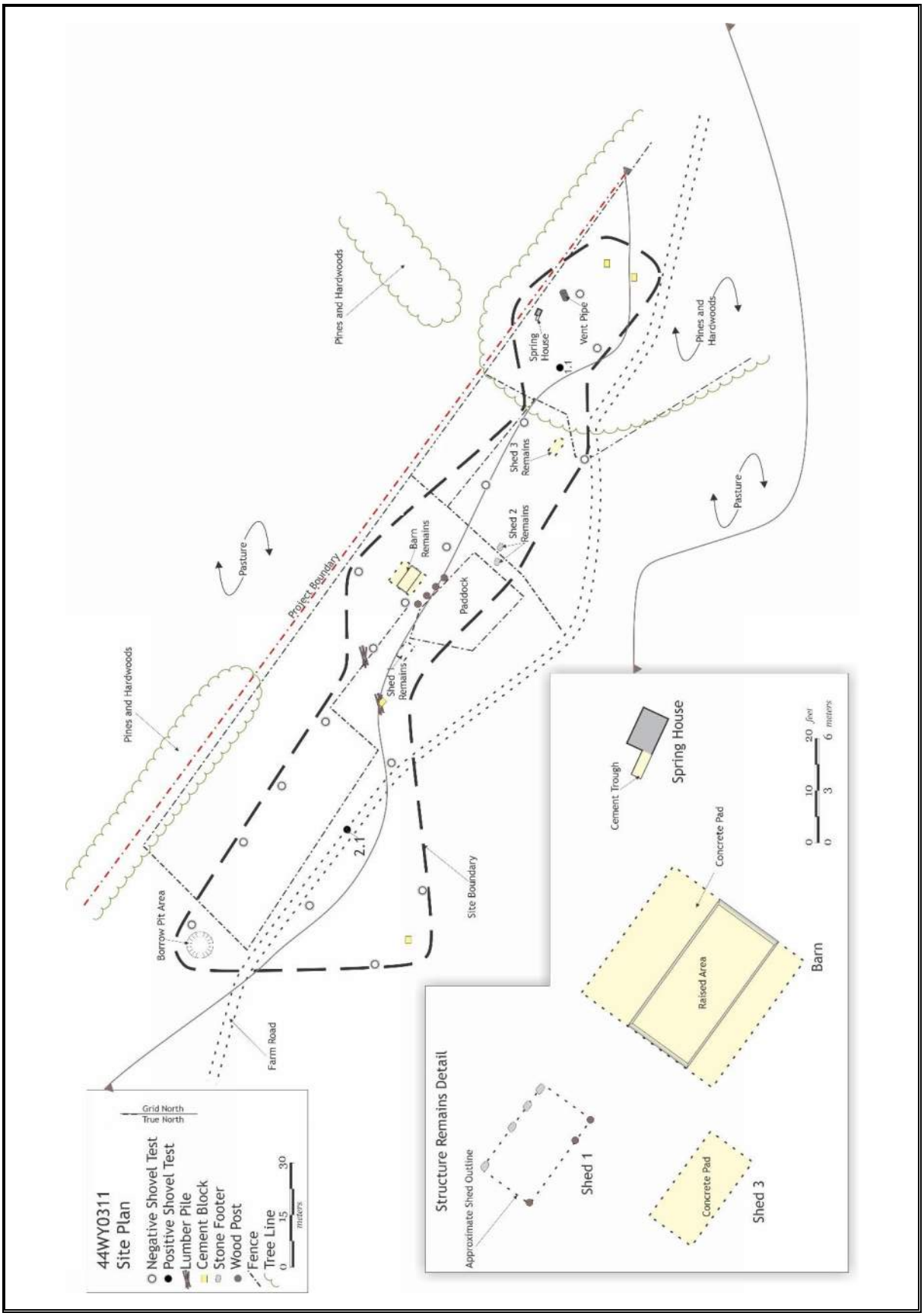


Figure 3.5. Plan map of site 44WY311.

Table 3.4. Summary of Artifacts Recovered from Site 44WY311.

Artifact	Comment	Count
Ceramic: Undecorated Ironstone Ceramic	Post 1820 Aultman et al. 2016	1
Glass: Clear Bottle Glass	1 base (machine made post mold, post 1910)[2], 1 finish fragment, machine made with threads (dominant post 1915); 1 thumbscrew lid embossed with "Atlas-", dominant 1860s to 1880s)[2]; 1 pepsi bottle (with ACC, crown finish, an embossed swirl, 16 fl. Oz, stippling on base, base embossed with "LS70/93",machine made circa 1958)[3]	8
Light Green Flat Glass	Mirror fragments, Window glass	4
Other: Other Historic	Black rubber curry comb.	1
Plastic	White polyethelene	2
Coal		
	Total	**7**

1. Aultman et al. 2016, 2. Lindsey 2019, 3. Stoddard 2003

Overall, the remains of the farm complex were minimal with only one of the original structures still standing at the time of the survey. It was noted by the present landowner that after he had purchased the property in 2016, he had deliberately razed the structures by dismantling them, burning the lumber, and then burying most of the remains (Anonymous, personal communication 2019). Below, the primary resource and its associated secondary resources are discussed and presented in order by their designations as listed on the VDHR 098-5063 architectural survey form (Figure 3.6).

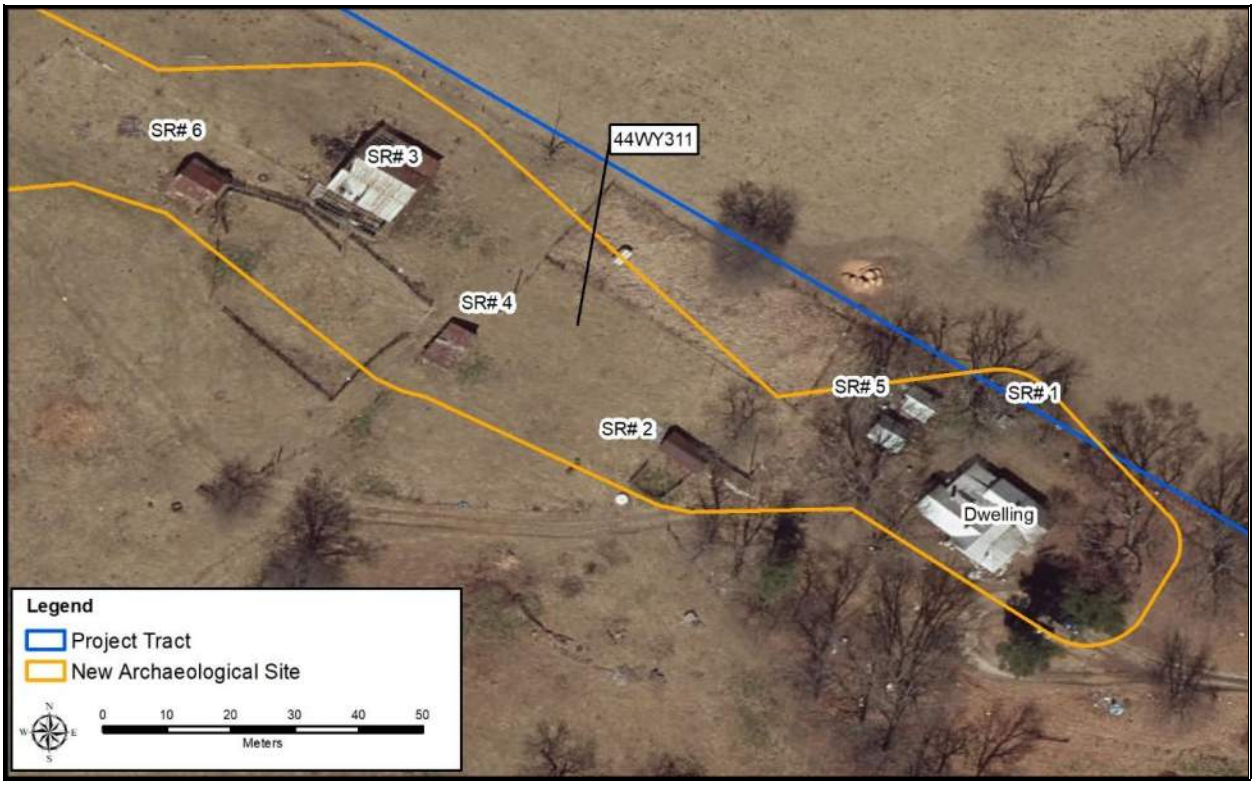


Figure 3.6. Circa 2016 aerial view of 44WY311 with VDHR structure designations.

During this survey only a clay push pile mound/burn pile was identified at the center of the former location of the dwelling. Shovel testing in the dwelling area did not identify any structural remains. Visual inspection of the area identified two concentrations of cement blocks within 15 meters of the former dwelling location. The dwelling was described by Lautzenheiser (2002):

> The one-story, frame house was built by Claude Spraker. It has a poured concrete foundation, 3/1 windows, storm windows, and a three paneled wooden door with four windows. The front porch has square posts and sits on brick piers. There is a wheelchair ramp which covers the original front steps of the porch. The central-interior chimney is composed of common bond brick with a corbelled cap. The house is uniformly covered in vinyl.

Merritt (2016) noted that the only change to the dwelling was the removal of the wheelchair ramp.

Secondary Resource #1, the spring /spring house, was intact during this survey (see Figure 3.5). The structure has a corrugated shed roof and is set on cement block foundation with its walls constructed

with cement block on its lower half and vertical board cladding on its upper half (Figure 3.7). Inspection of its interior identified that the structure functions as a well pump house.

Secondary Resource #2, the chicken house/poultry house, recorded as "Shed 3," was no longer standing at the time of this survey (see Figure 3.5). Its remains include its northwestern and southwestern corner stone footers and a scatter of cement block (Figure 3.8). Lautenhesier (2002) noted that it had a shed roof and was enclosed by a fence, and Merritt (2016) noted vertical board siding and that the shed roof had exposed rafter tails.

Secondary Resource #3, the barn, was no longer standing at the time of this survey (see Figure 3.5). Its remains include its poured concrete foundation, overhang posts, and fence enclosure (Figure 3.9). Lautenheiser (2002) notes that barn original barn footprint was constructed circa 1930s, had a poured concrete foundation, was framed with vertical boards, has a gable roof, and is flanked by two fairly newly shed additions. Merritt (2016) noted no changes since the 2001 survey. This survey identified the remains of the poured concrete foundation and the structural posts for one of the shed roof additions at the structures southwestern end.

Secondary Resource #4, a shed, recorded as "Shed 2," was no longer standing at the time of this survey (see Figure 3.5). Its remains include cut stone and mortared foundation (Figure 3.10). Lautenheiser 2002 notes that the shed had a gable roof with a shed-roof addition at one gable end and included a fence enclosure. Merritt (2016) noted that the shed had a front end gable roof with vertical plank siding and a centered, single-leaf plank door.

Secondary Resource #5, two sheds, was no longer standing at the time of this survey. No remains were identified that could have been attributed to it. Lautenheiser (2002) notes that "Shed A" had a metal roof, vertical board siding, and a gable-roof section connected by a flat roof section, as well as one of the sheds having an interior chimney. Merritt (2016) describes Shed A as a one-story frame structure that has a front gable metal roof, vertical board siding, an interior concrete block chimney, and a centered single-leaf plank door. Shed B was described with the same characteristics as Shed A. It was also noted that the flat roof was no longer extant and that only a horizontal beam had remained.

Figure 3.7. Secondary resource #1, spring house.

Figure 3.8. Secondary resource #2, poultry house.

Figure 3.9. Secondary resource #3, barn.

Figure 3.10. Secondary resource #4, shed.

Secondary Resource #6, a shed, recorded as "Shed 1," was no longer standing at the time of this survey (see Figure 3.5. Its remains included four cut stone footers, three wood posts, and a scatter of cement block (Figure 3.11). Lautenheiser (2002) noted that the shed had a gable roof and coursed rubble foundation. Merritt (2016) noted that the shed is a one-story frame structure that sits on a masonry foundation with a metal gable roof, vertical board siding, and a large bay opening.

Figure 3.11. Secondary resource #6, shed.

Site 44WY311 is the razed remains of historic resource 098-5063, a circa 1930 to 2016 farm complex. The only standing structure was secondary resource #1, the spring/spring house. The remains of the farm complex included some in situ foundational remains, fences, and a scatter of surface artifacts, including architectural debris (metal roof material, brick, glass, nails, cement block, lumber). Merritt (2016) recommended that historic resource 098-5093 was not eligible for NRHP under all criterion and it was determined not eligible by the VDHR in 2016. The archaeological component of this resource has no further research potential and lacks integrity due to its deliberate razing. The historic resource was sufficiently recorded during its initial visit in 2002, and revisit in 2015, and due to the deliberate razing of the complex, the archaeological component lacks integrity and has no further research potential. Therefore, site 44WY311 is recommended not eligible for the NRHP.

Site 44WY312/098-5062

Site Type: Farm Complex	**UTM Coord. (NAD83):** E 496463 N 4090576
Component: Ca. 1930 - 2016	**USGS Quad:** Wytheville, VA
NRHP Eligibility: Not Eligible	**Soil Type:** Frederick Silt Loam

Historic Resource 098-5063 (Sparker Farm #1) at 1161 Lovers Lane (Route 647) was initially recorded in 2002 and revisited in 2015 (Lautenheiser 2002; Merritt 2016). The resource was described as a

circa 1930 farm complex comprised of a dwelling and seven associated secondary resources/outbuildings. The outbuildings include two barns, four sheds, and an unspecified outbuilding. Merritt (2016) recommended the resource not eligible for the NRHP stating:

> It is in the opinion of the surveyor that this single dwelling, built ca. 1930s, does not possess architectural and historical significance and is not eligible for inclusion in the National Register. The dwelling is a typical bungalow form and does not possess characteristics of demonstrable significance with respect to design, construction or use of materials (Criterion C). The dwelling does not appear to be associated with significant broad patterns, events, or persons (Criteria A and B). It has not yielded, nor is likely to yield, information to history or prehistory (Criterion D).

The resource was determined not eligible by the VDHR in 2016.

Site 44WY312 (Historic Resource 098-5062) is the remains of historic resource 098-5062. Its remains were located in the eastern end of the project tract (see Figure 3.4). The site sits on a ridge nose that slopes towards the southwest. The area around the forming dwelling is wooded with light to moderate overgrowth. The complex stretches southwest down the sideslope onto a graded flat with moderate to high overgrowth. General surface visibility around the site was less than 50 percent, but overgrowth did not impede the visibility of structural debris.

The site was delineated with visual inspection, selective surface collection, and supplemental shovel testing. A total of 20 shovel tests were excavated. The architectural debris of the resource was scattered all across its former location. Site dimensions of 100 by 30 meters were defined from the surface debris (Figure 3.12). Soil profiles on site consisted of 0 to 25 centimeters of brown (10YR 4/4) silt loam overlying a brownish yellow (10YR 6/8) silty clay subsoil with upwards of 25 percent angular chert gravel.

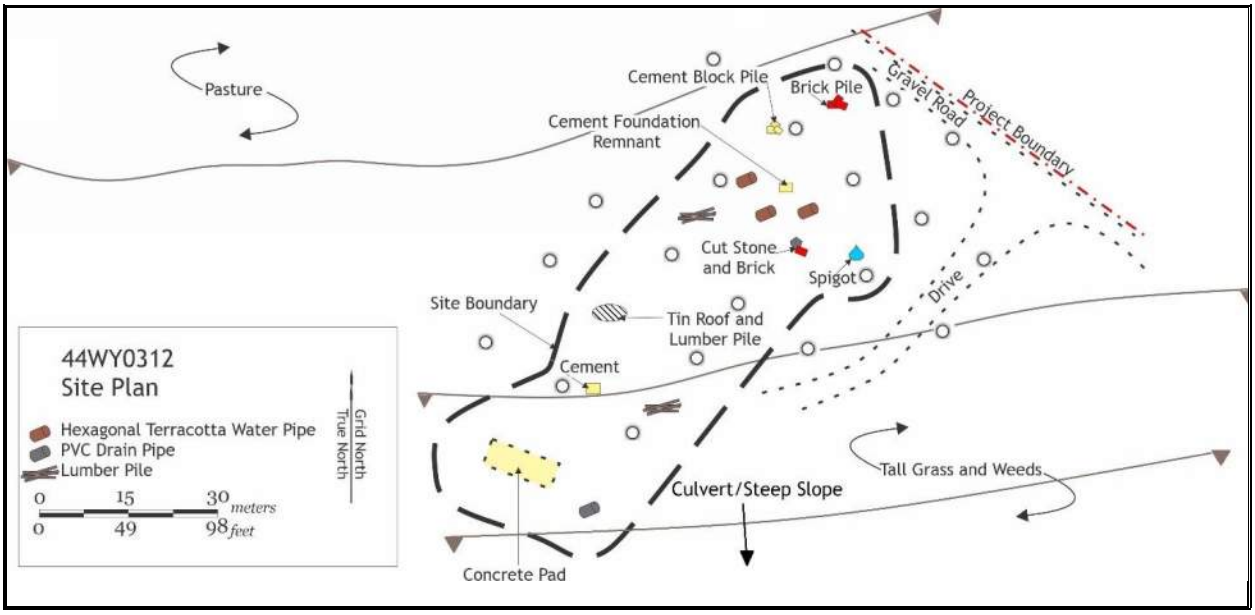


Figure 3.12. Plan view of 44WY312.

A total of seven artifacts were recovered from the site. The artifacts included 6 clear bottle glass fragments, and one cobalt bottle glass fragment. All artifacts were recovered from the surface. Temporally diagnostic material including a clear bottle glass base fragment with stippling (post 1940), and a clear bottle

glass base fragment with maker's mark indicating a manufacturing range from circa 1905 to 1982 (Lindsey 2019.

Overall, the remains of the farm complex were minimal. None of the original structures were standing at the time of the survey. As with site 44WY311 (098-5062), the present landowner had razed the structures by dismantling them, burning the lumber, and burying most of the remains (Anonymous, personal communication 2019). Below, the primary resource and its associated secondary resources are discussed and presented in order by their designations as listed on the VDHR 098-5063 architectural survey form (Figure 3.13).

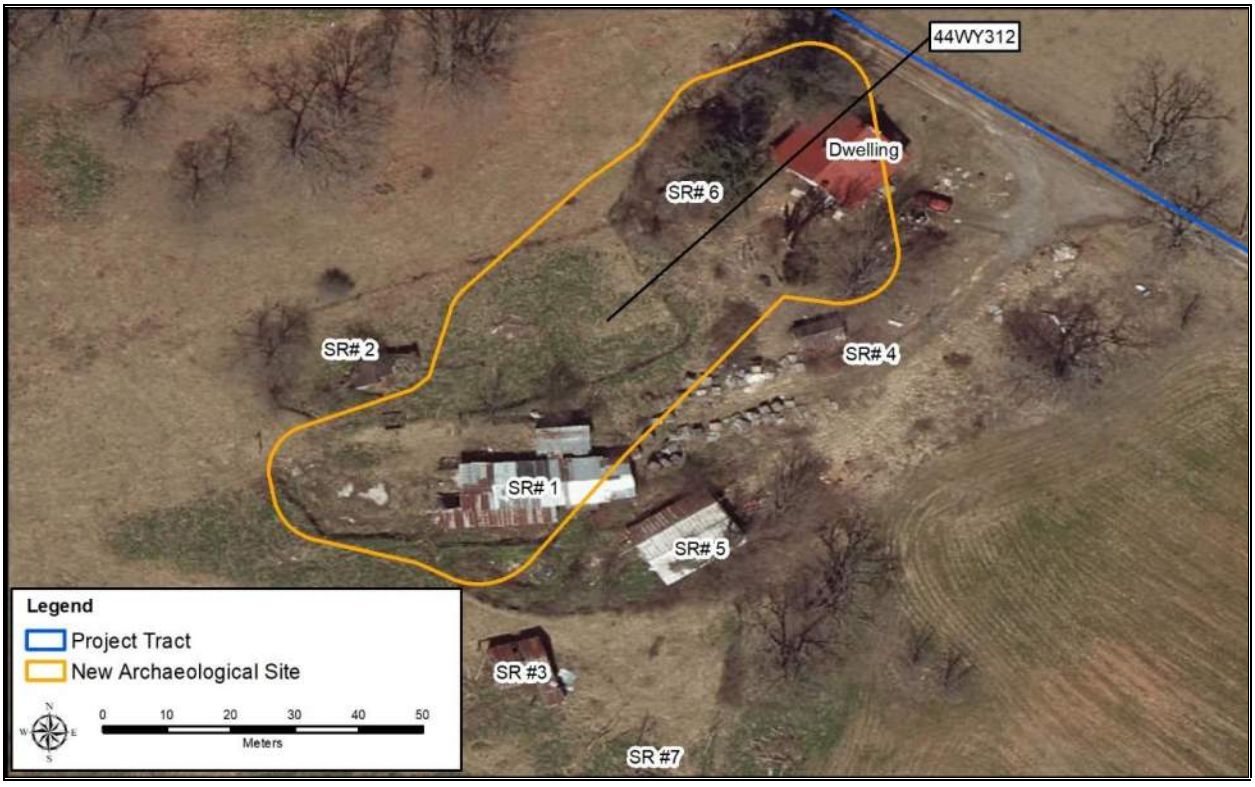


Figure 3.13. Circa 2016 aerial view of 44WY312 with VDHR structure designations.

The primary resource, a dwelling, was no longer standing at the time of this survey. The area around the dwelling shows evidence of having been bulldozed. Architectural debris related to the dwelling spread as far as 30 meters from its original center. These materials included brick, cement block, lumber, and terracotta water pipes. A water spicket appears to be the only thing intact from the original dwelling. The dwelling was described by Lautzenheiser (2002):

> The house was built from rough hewn lumber in the 1930s by Claude Spraker, who was the grandfather or the current owner, Edward Spraker. According to the owner, the interior still has the original plaster on the walls and tongue and groove hardwood floors. The two story, frame house has a shed roof dormer, a basement, storm windows, an exterior-end chimney, and an interior-end chimney.

Merritt (2015) revisit of the resource described it as:

> …a one and one-half story, three bay frame bungalow with a side gabled standing seam metal roof with a centered shed dormer. It has a one-story full width front porch with square

piers topped with tapered columns, which is maintained under the primary roof with a slight break in the slope. There is a brick exterior end chimney. The exterior is clad with vinyl siding.

Secondary Resource #1, a barn, was no longer standing at the time of this survey. No remains were identified that could be attributed to the resource. Lautzenheiser (2002) recorded that the barn had "vertical-board siding, a metal roof, and a shed roof addition that has horizontal-board siding on one side." Merritt (2015) noted no changes since the 2002 survey.

Secondary Resource #2, a shed, was no longer standing at the time of this survey. A scatter of metal roof material, cement block, and lumber was identified around the general vicinity of its original location. Lautzenheiser (2002) described the shed with a metal gable roof and modern. Merritt (2015) noted no changes since the 2002 survey.

Secondary Resource #3, a barn, was no longer standing at the time of this survey. The resource was described by Lautzenheiser (2002) as having a "gable roof [with] vertical board siding and a metal roof." Merritt (2015) noted no changes since the 2002 survey. Only mounds/push piles of clay were identified in its original location. No material was identified in its vicinity that could be associated with its remains.

Secondary Resource #4, a shed, was no longer standing at the time of this survey. The resource was described by Lautzenheiser (2002) having a "gable roof, vertical wood siding, a metal roof, a shed roof lean-to on one side, and a shed roof addition with brick chimney flue on the opposite side. Merritt (2015) noted no changes since the 2002 survey.

Secondary Resource #5, a shed, was no longer standing at the time of this survey. Lautzenheiser (2002) described the shed with a "gable roof, vertical board siding, a metal roof, and a concrete block foundation." Merritt (2015) noted no changes since the 2002 survey.

Secondary Resource #6, a shed, was no longer standing at the time of this survey. Lautzenheiser (2002) noted that the shed had a gable roof and vertical board siding. Merritt (2016) notes that the shed is not visible from the road or currently aerials and that it was located behind the dwelling in an area covered by heavy tree cover. The northeastern corner of this sheds poured concrete foundation was identified during this survey (Figure 3.14). Architectural debris around the resource included terracotta water pipes, lumber piles, and cement blocks.

Secondary Resource #7, an outbuilding, was no longer standing at the time of this survey. This resource was identified by Merritt (2015) and described as a circa 1940 "one story outbuilding" with "plywood siding and an asphalt shingle gable roof" in poor condition.

The remains of a poured concrete slab foundation, measuring 50 by 20 feet, were identified to the west of where Secondary Resource #1 would have been located (Figure 3.15). This foundation belongs to an outbuilding that was no longer extant by the time of the 2002 architectural survey. Based on historical aerials, this barn was standing as early as 1963 and was razed and replaced by Secondary Resource #2 by 2001.

Figure 3.14. Secondary resource #6, shed.

Figure 3.15. Concrete pad of former barn.

Site 44WY312 is the razed remains of historic resource 098-5062, a circa 1930 to 2016 farm complex. The remains of the farm complex include some in-situ foundational remains and a scatter of surface artifacts, including architectural debris (metal roof material, brick, glass, nails, cement block, lumber, terracotta water pipe, PVC). Merritt (2016) recommended that historic resource 098-5092 was not eligible for NRHP under all criterion and it was determined not eligible by the VDHR in 2016. The archaeological component of this resource has no further research potential and lacks integrity due to its deliberate razing. The historic resource was sufficiently recorded during its initial visit in 2002, and revisit in 2015, and due to the deliberate razing of the complex, the archaeological component lacks integrity and has no further research potential. Therefore, this site is recommended not eligible for the NRHP.

Site 44WY313

Site Type: Prehistoric Lithic Scatter	**UTM Coord. (NAD83):** E 495647 N 4091007
Component: Unknown Prehistoric	**USGS Quad:** Wytheville, VA
NRHP Eligibility: Not Eligible	**Soil Type:** Frederick Silt Loam

Site 44WY313 is a prehistoric lithic scatter located in the north-central of the project tract. The site is situated on a ridge top that slopes to the northwest and south to unnamed drainages. The area surrounding the site is an agricultural field growing corn. Surface visibility was between 0 and 50 percent.

The site was delineated from 26 shovel tests at 15-meter intervals. Site dimensions of 45 by 45 meters were established from four positive shovel tests (Figure 3.16). Soil profiles on site generally consisted of 10 to 30 centimeters of yellowish brown (10YR 5/4) silt loam overlying a brownish yellow (10YR 6/8) silty clay subsoil.

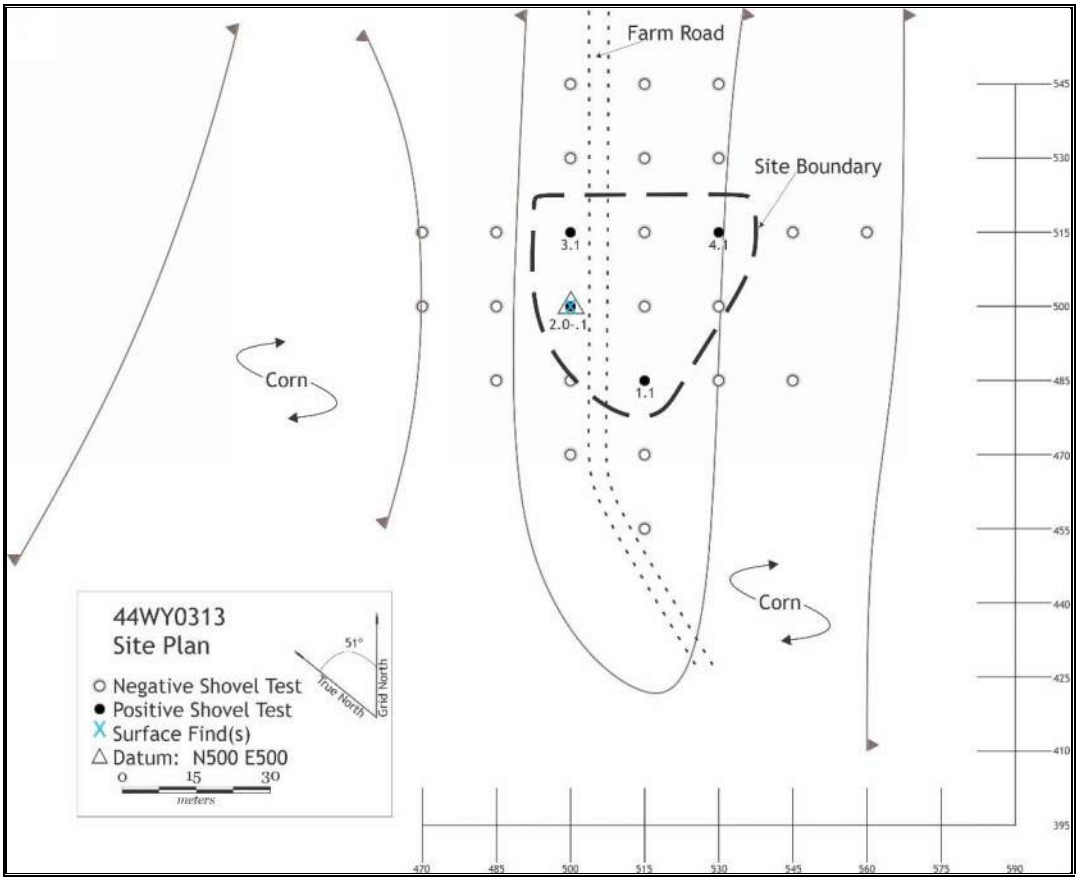


Figure 3.16. Plan view of 44WY313.

A total of 15 artifacts were recovered from the site. All of the artifacts recovered were chalcedony flake/flake fragments. Of these flake fragments, 13 had terrestrial cortex. No temporarily diagnostic materials were identified. With exception to two flakes recover from the surface, all artifacts were recovered between 0 and 30 centimeters below the ground surface.

Site 4 is an unknown prehistoric lithic scatter. The site yielded a low quantity of artifacts with no temporally diagnostic material. The site deposits were sparse with its context heavily disturbed by agricultural activity. In addition, no cultural features or organic remains were identified at the site. Site 4 has no further research potential and is recommended not eligible for the NRHP.

Site 44WY0308 is a prehistoric lithic scatter of unknown age. The site deposits are sparse and confined to the ground surface. No diagnostic artifacts, cultural features, or organic remains were identified at the site during this investigation. Site 44WY0308 has no further research potential and is recommended not eligible for the NRHP.

Isolated Finds

A total of two isolated finds were identified within the project area (see Figure 3.4 and Table 3.3). Isolated Find 3 is a single piece of blue hand-painted pearlware (1775-1830). No historic maps indicate any specific occupation in the vicinity of the isolate, and the area is known to have been farmland as early as 1890 (Boyd 1890). It was located at the edge of a cornfield southwest-center of the project tract.

Isolated Find 5 is a single Ridge and Valley chert flake recovered from a shovel test excavated in the southeastern portion of the project tract between 0 and 10 centimeters below the ground surface. No additional artifacts were recovered in shovel tests excavated around the original find.

Field Results: Architectural

A comprehensive architectural survey conducted in 2015 covered the entirety of the Wytheville solar facility tract visual APE (Groesbeck et al. 2016). This architectural survey sought to identify all buildings, structures, and non-archaeological districts (including historic landscapes) and sites, and objects over 50 years of age, either previously documented or unrecorded. The Wythe County Geographic Information System (GIS) was consulted to identify the parameters of the parcels in the indirect visual APE and identify properties that are over 50 years in age. Any previously recorded resources whose boundaries fell within or partially within the indirect visual APE were revisited unless their eligibility determination occurred within the last five years or if the resource was destroyed. No additional historic resources were identified within the indirect APE that had not been evaluated during the 2015 survey.

Summary and Recommendations

The archaeological survey resulted in the identification of five new archaeological resources, three new archaeological sites, and two isolated finds. All of these identified archaeological resources have been adversely impacted by agricultural activity and razing of the former buildings. All five archaeological resources are recommended not eligible for the NRHP, and no further work in the APE is recommended. The general level of disturbance in this tract is high.

The architectural survey did not identify any additional buildings, structures, and non-archaeological districts and sites, or objects over 50 years of age that were not already previously documented and evaluated. All 39 historic resources identified in a 2015 survey have been evaluated as not eligible. Therefore, no significant historic resources will visually impacted and no further work in the indirect APE is advocated.

In Wythe County, prehistoric sites tend to be focused along the larger waterways. In the case of this tract, the New River, the largest drainage in the county, is over 20 miles away, and Reed Creek, a significant tributary of the New River, is nearly 1.5 miles away. The project tract itself is drained by small unnamed tributaries of Reed Creek, and the only prehistoric site identified is located along one of these tributaries. A preliminary examination of prehistoric lithic sites in Wythe County indicates that prehistoric site density decreases with distance from the larger waterways. This trend is particularly evident from Barber et al.'s 1997 survey an industrial park tract total over 1100 acres approximately 1.0 mile east of this project tract. Most of the sites recorded by Barber et al. (1997) are clustered near Reed Creek and minor intermittent drainages. All village sites were near the creek. Only five of the 32 sites recorded were located over 1.0 mile from Reed Creek.

The presence of exploitable raw lithic material also appears to be a factor in prehistoric settlement. Outcrops of good quality chert both on Reed Creek and along the base of the Blue Ridge Mountains west of Wytheville attracted prehistoric peoples, resulting in more and larger archaeological sites. In the project tract, chert gravel was prevalent. However, it was blocky and poorly consolidated material that would not lend itself to tool production.

Based on the Barber et al (1997) survey, the Wytheville solar facility tract is not in a setting where we would expect to find many archaeological sites, and it is also a setting where we would not expect to find many (if any) significant sites. The tract is at a relatively high altitude and would be a cold and windswept during the winter. Based on the results of the Barber et al (1997) survey and discussions with Chris Egghart (Cultural Resources Specialist with the Virginia Department of Environmental Quality), anticipated preferred settings for prehistoric archaeological sites in the project tract would include:

- Landforms with southward trending slopes facing the sun;
- Protected landforms (benches, saddles, terraces, etc.), less exposed to the elements;
- Settings within 100 meters of drainages and spring heads;
- Good quality chert outcrops (quarry sites)

Historic settlement in Wythe County has focused on a number of settings and conditions. As with prehistoric settlement, historic settlement is frequently focused on the larger waterways, which functioned as transportation routes during the early settlement period. However, it is also largely focused on resource extraction locations. In the project vicinity, mining was a driving factor for much of the residential and commercial development dating back to the late seventeenth century. Settlers generally resided near their workplace, specifically along roads leading to them. This same trend can be extended to farmers. Eighteenth, nineteenth, and twentieth century house sites are most frequently located along roads. Both of the circa 1930 farmsteads recorded during this investigation are located immediately adjacent to a road that is reflected on an 1890 map (see Figure 3.1). Therefore, predicting historic site locations should focus closely on transportation routes. Historic maps should be utilized to identify old roads, whether still extant or not.

In summary, although this survey was relatively productive in that five resources were identified (1 resource:30 acres), the overall degree of disturbance throughout the tract was severe. This fact was illuminated during the Phase IA reconnaissance conducted prior to the formal Phase I survey, but even those portions of the tract defined as having high potential for archaeological deposits following the Phase 1A had undergone relatively severe disturbance. Whereas elsewhere, ridge tops would generally be considered to have high potential for the presence of archaeological deposits, in the project area such settings had undergone the most severe erosion. These variations in conditions should be noted during the Phase 1A stage of an investigation in order to allow for the most effective and efficient investigation of any project tract.

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1989 Paleoindian Settlement Patterns and Population Distribution in Virginia. In *Paleoindian Research in Virginia: A Synthesis,* edited by Theodore R. Reinhart and Mary Ellen N. Hodges, pp. 97-156. Special Publication No. 29. Archaeological Society of Virginia, Richmond.

United States Department of Agriculture (USDA)
2019 *Web Soil Survey*, Electronic Document. http://websoilsurvey.nrcs.usda.gov/app/.

United States Geological Service (USGS)
1968 *Wytheville, VA 7.5 minute* topographic quadrangle, photo revised 1991

Virginia Department of Historic Resources (VDHR)
2017 Guidelines for Conducting Historic Resources Survey in Virginia. Virginia Department of Historic Resources, Richmond.

Virginia Department of Mines, Minerals, and Energy (DMME)
2015 Sinkholes and Karst Terrain. Electronic Document, www.dmme.virginia.gov/dgmr/sinkholes.shtml.

Ward, H. Trawick
1983 A Review of Archaeology in the North Carolina Piedmont: A Study of Change. In *The Prehistory of North Carolina: An Archaeology Symposium*, edited by Mark A. Mathis and Jeffrey J. Crow, pp. 53-81. North Carolina Division of Archives and History, Raleigh.

Williams, Stephen and James B. Stoltman
1965 An Outline of the Southeastern United States Prehistory with Particular Emphasis on the Paleoindian Era. In *The Quaternary of the United States*, edited by H.E. Wright and D.G. Frey, pp. 669-683. Princeton University Press, Princeton, NJ.

Zokaites, Carol, editor
1997 Living on Karst: A Reference Guide for Landowners in Limestone Regions. Cave Conservancy of the Virginias, Glen Allen, VA.

Appendix A. Artifact Catalog

Artifact Catalog
Wytheville Solar Facility

Site Number 44WY0311

Provenience Number: 1.1 Site 1, N530 E650, 0-20 cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1		1	0.9	Undecorated Ironstone Ceramic	base, of small vessel
2		4	5.5	Clear Bottle Glass	4 body fragments
3		0	12.7	Coal	

Provenience Number: 2.1 Site 1, N500 E500, TR1 ST4, 0-15 cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1		2	4.9	Light Green Flat Glass	window glass

Provenience Number: 3.0 Site 1, N500 E500, general surface

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1		2	4.7	Light Green Flat Glass	mirror fragments
2		2	5.8	Plastic	flat white polyethylene fragments (post 1933, Winnington History 2006)
3		1	115.4	Other Historic	black rubber curry comb
4		4	455	Clear Bottle Glass	1 base (machine made post mold, post 1910, Lindsey 2019); 1 finish fragment, machine made with threads (dominant post 1915); 1 thumbscrew lid embossed with "Atlas-", dominant 1860s to 1880s, Lindsey 2019); 1 Pepsi bottle (with ACC, crown finish, an embossed swirl, 16 fl. Oz, stippling on base, base embossed with "LS70/93",machine made circa 1958, Stoddard 2003)

Site Number 44WY0312

Provenience Number: 1.0 Site 2, general surface

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1		6	275	Clear Bottle Glass	1 base with stippling (post 1940, Lindsey 2019); 1 base embossed with "One Pint" on heel, and "UID string of #/ATL-0-3/ 3 J55 72 encircled I/ L-9765" on base, Owens suction scar (circa 1905-1982, Lindsey 2019); 4 body fragments
2		1	0.7	Cobalt Bottle Glass	body fragment
3		0	48.8	Coal	

Site Number 44WY0313

Provenience Number: 1.1 Site 4, N485 E515, 0-15 cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1		2	2.1	Chalcedony Flake/Flake Fragment	

Provenience Number: 2.0 Site 4, N500 E500, surface

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1		2	5.2	Chalcedony Flake/Flake Fragment With Cortex	terrestrial cortex

Artifact Catalog

Provenience Number: 2.1 Site 4, N500 E500, 0-10 cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1		4	8.8	Chalcedony Flake/Flake Fragment With Cortex	one with cortex

Provenience Number: 3.1 Site 4, N515 E500, 0-30 cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1		5	5.6	Chalcedony Flake/Flake Fragment With Cortex	3 with terrestrial cortex

Provenience Number: 4.1 Site 4, N515 E530, 0-25 cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1		2	0.9	Chalcedony Flake/Flake Fragment With Cortex	1 with terrestrial cortex

Site Number Isolate 3

Provenience Number: 1.1 Isolate, N500 E500, TR5 ST1, 0-20 cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1		1	0.1	Blue Hand Painted Pearlware Ceramic	small fragment with decorated interior, too small to identify motif

Site Number Isolate 5

Provenience Number: 1.1 Isolate, N500 E455, TR5 ST9, 0-15 cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1		1	0.1	R&V Chert Flake/Flake Fragment	thinning flake

Provenience Number: 2.1 Isolate, N500 E500, TR5 ST12, 0-10 cm

Catalog Number	Specimen Number	Quantity	Weight (g)	Description	Comments
1		1	0.4	R&V Chert Flake/Flake Fragment	

Appendix B. Resume of Principal Investigator

BOBBY GERALD SOUTHERLIN

Archaeological Consultants of the Carolinas, Inc.
121 East First Street
Clayton, NC 27520
Office (919) 553-9007 Fax (919) 553-9077
Email: bobbysoutherlin@archcon.org

EDUCATION

M.A. in Anthropology, University of Georgia, 1993.
B.A. in Anthropology, University of South Carolina, 1988.

AREAS OF SPECIALIZATION

Archaeological Field Investigation Methods
Material Culture Replication (lithics and ceramics)
Vertebrate Faunal Analysis

PROFESSIONAL ORGANIZATION MEMBERSHIP

Society for American Archaeology
North Carolina Archaeological Society (Life Member)
Society for Georgia Archaeology (Life Member)
Archaeological Society of South Carolina (Life Member)
Southeastern Archaeological Conference
North Carolina Archaeological Council
Georgia Council of Professional Archaeologists

PROFESSIONAL POSITIONS

CEO**,** Archaeological Consultants of the Carolinas, Inc.
Senior Archaeologist, Principal Investigator, Field Director, Zooarchaeologist

Cultural Resource Surveys (Phase I) and Archaeological Site Testing (Phase II)

- **Utility Corridors** for ANR Pipeline Company (Detroit), Georgia Power Company (Atlanta), Duke Power Company (Charlotte), Oglethorpe Power Corporation, and Transco Pipeline Company (Houston).

- **Transportation Corridors** for Georgia Department of Transportation (Atlanta), South Carolina Department of Transportation (Columbia)

- **Development Tracts** for Consolidated Government of the City of Columbus/Muscogee County (Georgia), Macon County (North Carolina), U.S. Corps of Engineers (Savannah and Mobile Districts), U.S. Forest Service (South Carolina), South Carolina Electric and Gas Company (Columbia), and various private developers (Georgia and South Carolina)

Archaeological Data Recovery (Phase III) – Representative Examples

- Yemasee Indian occupations at the Chechessee Old Field sites (38BU1605 and 38BU1609) for the Chechessee Creek Club

- Three prehistoric sites (38HR243, 38HR254, and 38HR258) in Horry County, South Carolina for Tidewater Plantation and Golf Club (Myrtle Beach, S.C.)

- Two Prehistoric sites (38LX50 and 38LX141) in Lexington County, South Carolina for the South Carolina Department of Transportation

- The Callawassie Burial Mound and Village site (38BU19) in Beaufort County, South Carolina

- Two prehistoric sites (9FL203 and 9FL206) in Floyd County, Georgia for the Georgia Department of Transportation

Experience at Military Facilities

- Fort Jackson, SC; Camp Lejeune, NC; Robbins Air Force Base, GA; Fort Benning, GA; Hurlbert Field, FL; Coastal Systems Station Panama City, FL; Naval Air Station Pensacola, FL; Fort Buchanan, Puerto Rico; Milan Army Ammunition Plant, TN

Federal Energy Regulatory Commission Related Investigations

- **Georgia Power Company**: Flint River Hydroelectric Project

- **Duke Energy**: Shoreline Surveys at Lake James and Lake Norman North Carolina and Fishing Creek Lake, South Carolina

- **Crisp County Power Commission**: Lake Blackshear, Georgia

SELECTED PUBLICATIONS AND PAPERS PRESENTED*

Reid, Dawn and Bobby Southerlin

2015 *Archaeological Survey of the Tubbs Solar Farm Tract, Lenoir County, North Carolina*. Archaeological Consultants of the Carolinas, Clayton, NC.

Southerlin, Bobby

2014 *An Archaeological Assessment of the Piedmont Natural Gas Vulcan Quarry Relocation Lines, Mecklenberg County, North Carolina*. Archaeological Consultants of the Carolinas, Clayton, NC.

Southerlin, Bobby, Dawn Reid, Brooke Brilliant, and George Price

2013 *Cultural Resources Survey of the Locust Stake Timber Sale, Habersom and Stevens Counties, Georgia Chattahoochee- Oconee National Forests.* Archaeological Consultants of the Carolinas, Clayton, NC.

Southerlin, Bobby

2013 *Faunal Analysis of Remains from the Simkins House, Columbia, South Carolina.* Archaeological Consultants of the Carolinas, Clayton, NC.

Tibbetts, Rachel, Brooke Brilliant, Dawn Reid, and Bobby Southerlin

2012 *Archaeological Survey of Part One of the Macedonia II Analysis Area, Francis Marion National Forest* (prepared for USFS). Archaeological Consultants of the Carolinas, Clayton, NC.

Southerlin, Bobby

2011 *Archaeological Evaluation of the Original Site of the Rebecca Vaughan House, Southampton County, Virginia* (prepared for Southampton County Historical Society). Archaeological Consultants of the Carolinas, Clayton, NC.

Reid, Dawn, Michael K. O'Neal, Rachel Tibbetts, and Bobby Southerlin

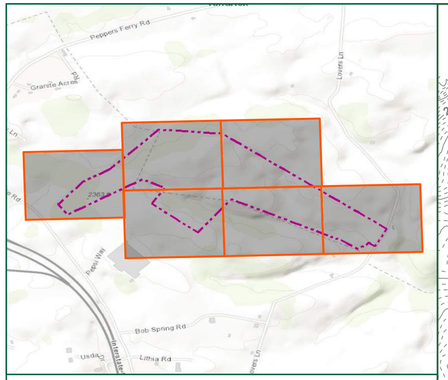
2010 *Phase II Archaeological Testing of Six Sites at the Northwest Regional Water Reclamation Facility Tract, Onslow County, North Carolina* (prepared for ARCADIS). Archaeological Consultants of the Carolinas, Clayton, NC.

Reid, Dawn, April Montgomery, Michael K. O'Neal, Rachel Tibbetts, and Bobby Southerlin

2009 *Cultural Resources Survey of the Proposed William States Lee III Nuclear Station 230 kV and 525 kV Transmission Lines, Cherokee and Union Counties, South Carolina* (prepared for Devine Tarbell Engineers, Inc.). Archaeological Consultants of the Carolinas, Clayton, NC.

*** A full listing of individual projects and publications is available upon request**

Attachment I – Wetland Delineation



Resource Identification	Confirmation								Resource Description Notes*
	PFO (sq ft)	PSS (sq ft)	PEM (sq ft)	POW (sq ft)	R3 (lf)	R4 (lf)	R6 (lf)	Ditch (lf)	
A		1,264							NT/V
B	10,436								NT/V
C				3,826					NT/NV
D	905	2,097	1,157	4,176					NT/V; NT/NV
E	8,263								NT/V
F			4,191	3,364					NT/V; NT/NV
G			1,051						NT/V
H	2,389		1,484						NT/V
I			4,485						NT/V
J			11,338						NT/V
K			11,621	13,854					NT/V
L					1,252				NT/NV
M							218		NT/NV
N					554	38			NT/NV
O						76			NT/NV
P						209			NT/NV
Total	**21,993**	**3,361**	**35,327**	**25,220**	**1,806**	**323**	**218**	**0**	
Total Wetland Area =			**85,901 sq ft**			**1.97 ac**			
Total Stream Length =			**2,347 lf**						

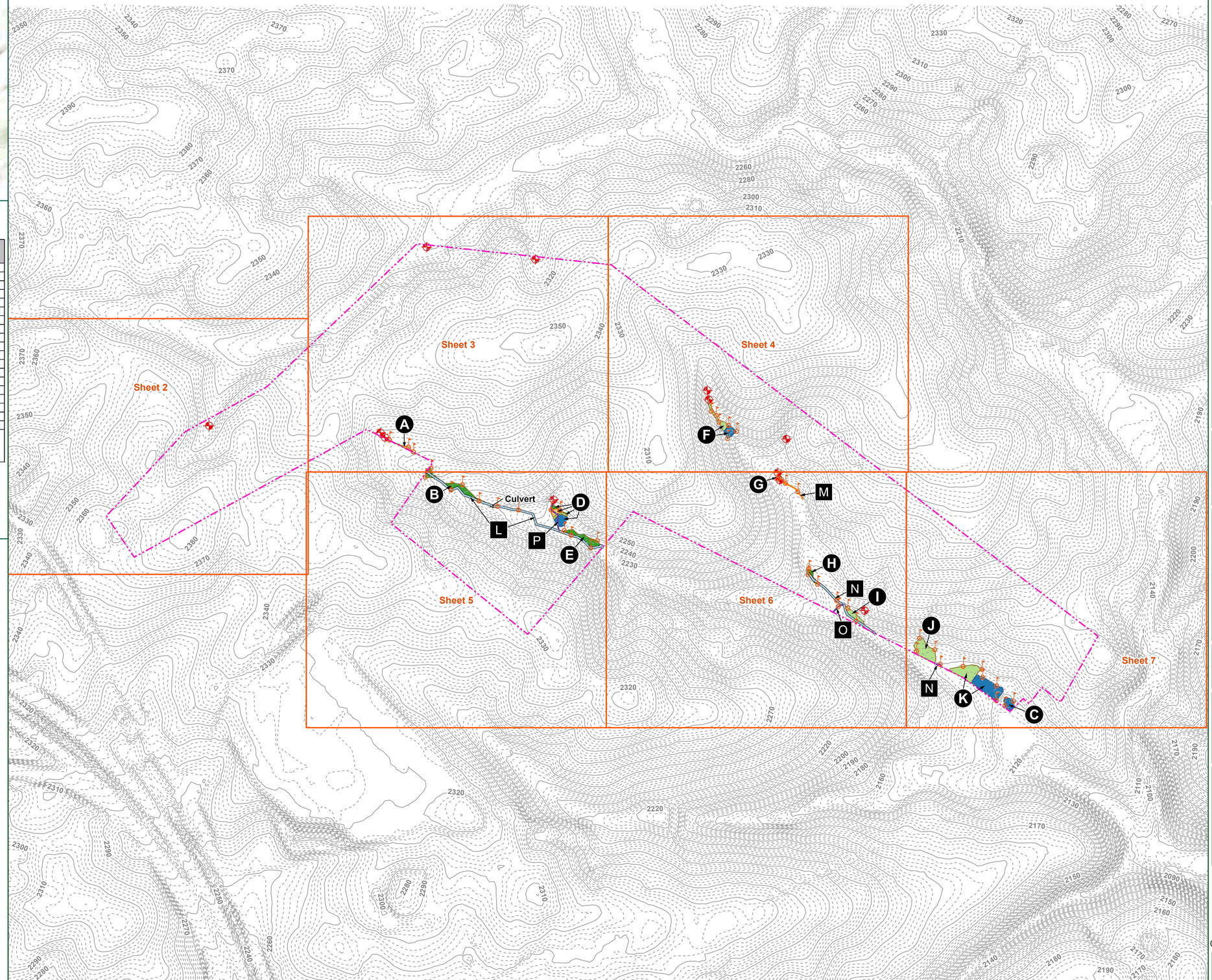
* T=Tidal; NT=Non-tidal; V=Vegetated; NV=Non-Vegetated; PFO=Palustrine Forested Wetland; PSS=Palustrine Scrub-Shrub Wetland; PEM=Palustrine Emergent Wetland; POW= Palustrine Open Water; EIW= Estuarine Intertidal Wetlands; R3= Upper Perennial Streams; R4=Intermittent Streams; R6 = Ephemeral Streams

Legend

- Project Study Limits - 154.4 Acres
- Stream Identifier
- Wetland Identifier
- Flag
- Field Data Station
- Culvert
- Perennial Stream (R3)
- Intermittent Stream (R4)
- Ephemeral Stream (R6)
- Palustrine Emergent (PEM) Wetlands
- Palustrine Forested (PFO) Wetlands
- Palustrine Scrub-Shrub (PSS) Wetlands
- Palustrine Open Water (POW)

Topographic Contours

- Major - 10 Feet
- Minor - 2 Feet



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PROJECT NAME & LOCATION

WYTHEVILLE SOLAR
WYTHE COUNTY, VIRGINIA

DATE 02/27/2020

PROJECT NUMBER 41069.014

PROJECT NAME WYTHEVILLE SOLAR

DESIGNED BY / DRAWN BY K. SCHMIDT

1. Waters of the U.S. within the project study limits have been located using submeter, Bluetooth GPS antennas by Timmons Group.
2.Waters of the U.S. have not been confirmed by the U.S. Army Corps of Engineers until stamped.
3. Project limits are approximate.
4. Topography based on USGS LIDAR.
5. Cowardin Stream Classifications are based solely on field observations. No formal Stream assessment methodology was completed to determine these Cowardin Classifications.

REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION

FIGURE 4:
WETLANDS AND WATERS OF THE U.S. DELINEATION MAP

SCALE (FEET)
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PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H:1 " = 300 '	1 of 7

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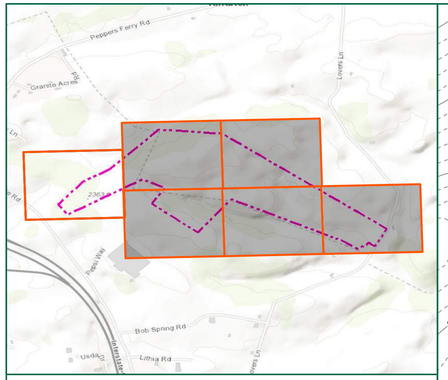

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Topographic Contours

- Major - 10 Feet
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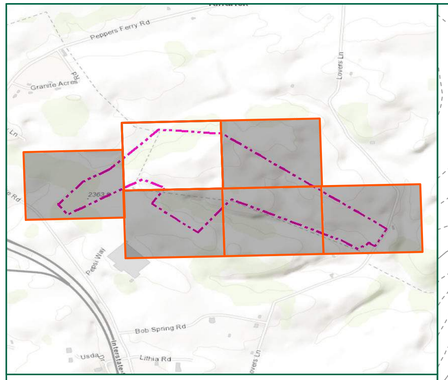

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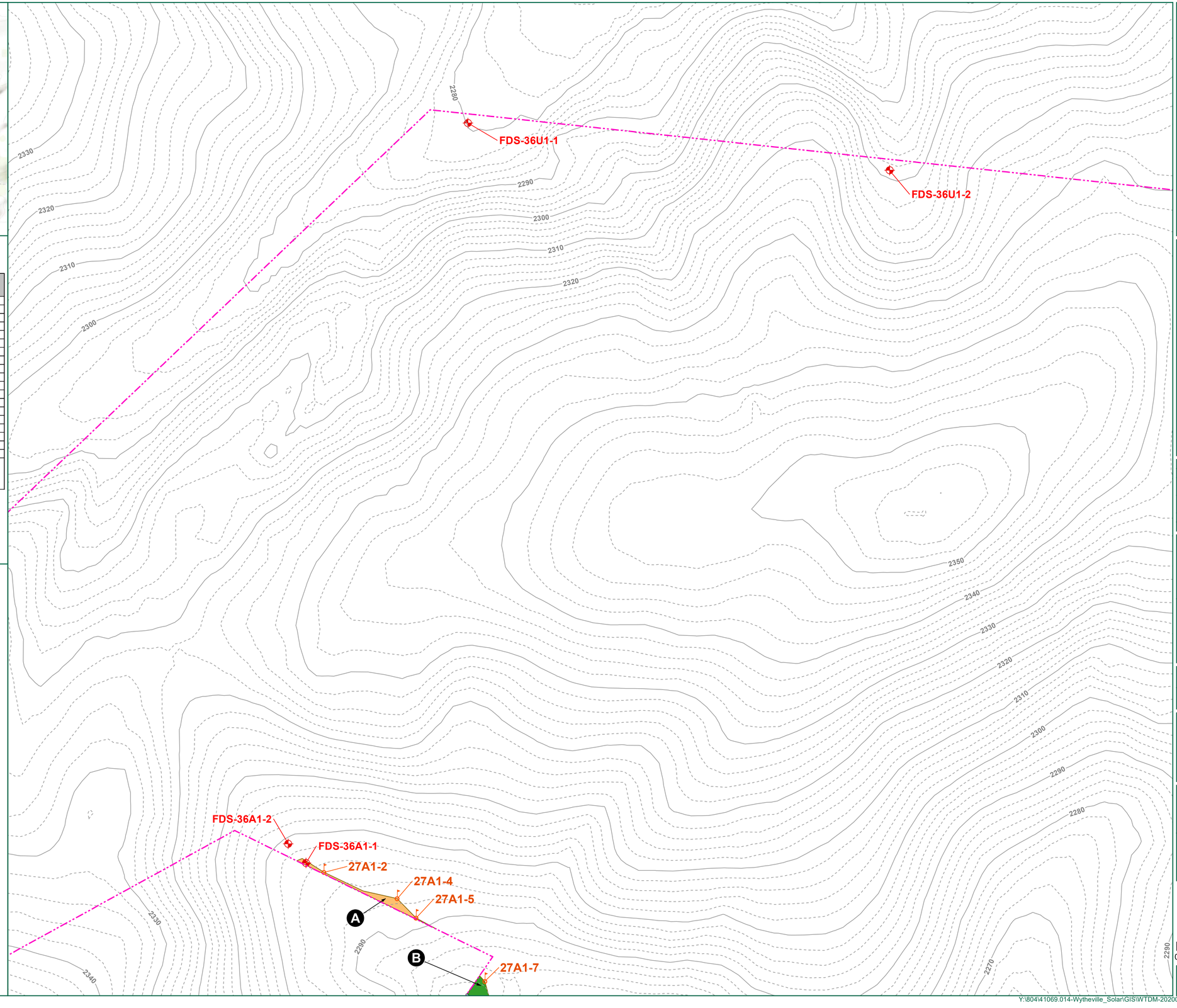

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SCALE	SHEET NUMBER
H:1 " = 75 '	3 of 7

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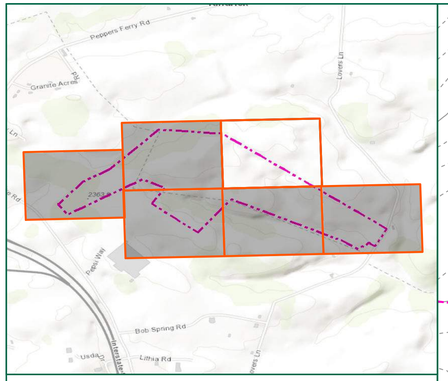

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Topographic Contours

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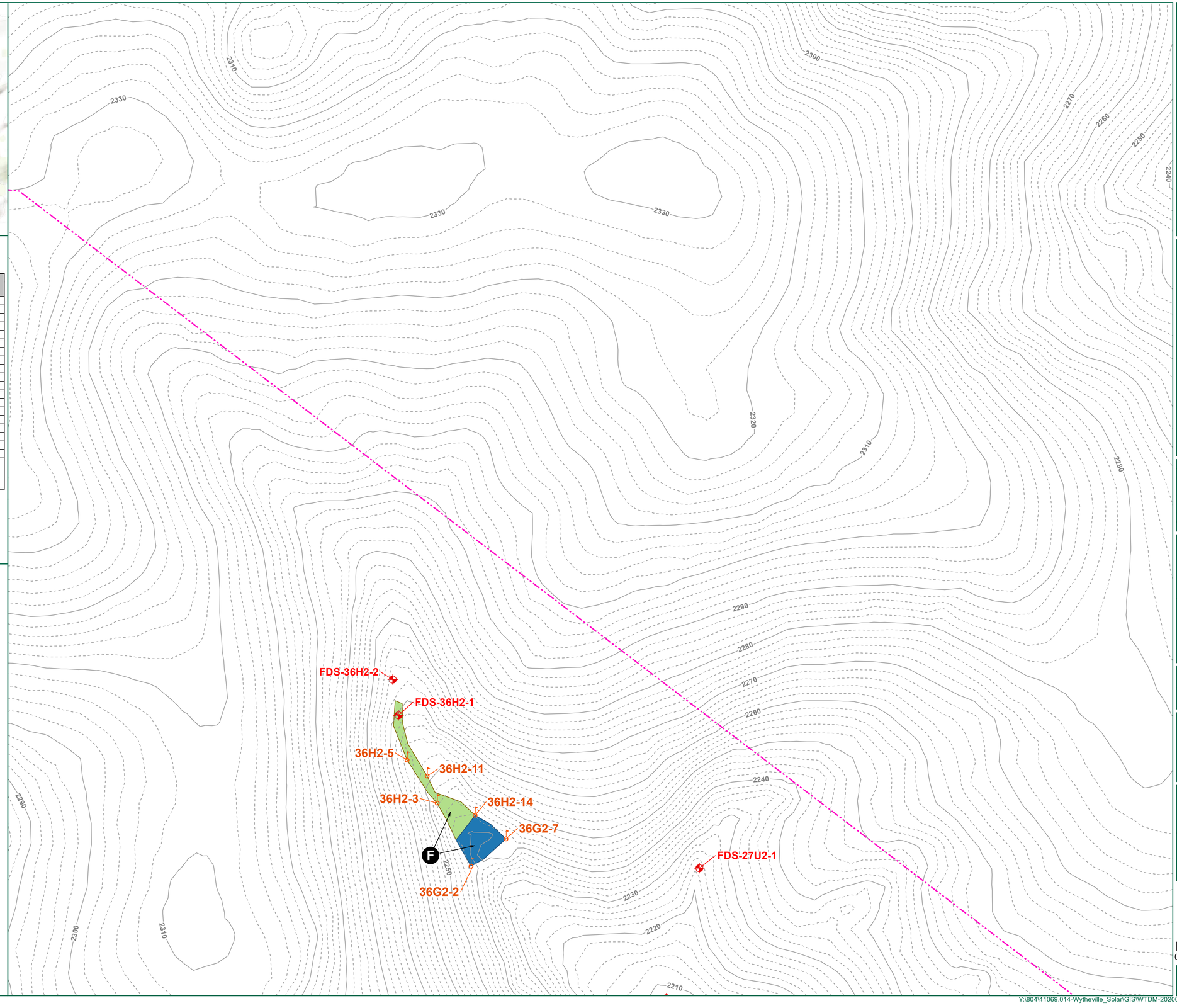

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SHEET NUMBER 4 of 7

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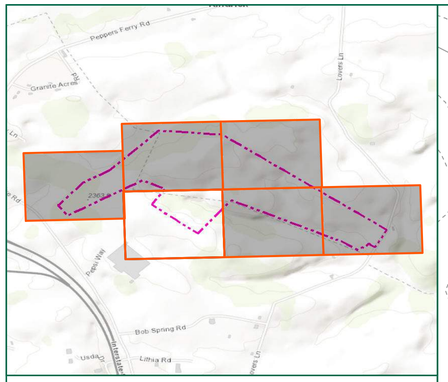


Resource Identification	Confirmation								Resource Description Notes*
	PFO (sq ft)	PSS (sq ft)	PEM (sq ft)	POW (sq ft)	R3 (lf)	R4 (lf)	R6 (lf)	Ditch (lf)	
A		1,264							NT/V
B	10,436								NT/V
C				3,826					NT/NV
D	905	2,097	1,157	4,176					NT/V; NT/NV
E	8,263								NT/V
F			4,191	3,364					NT/V; NT/NV
G			1,051						NT/V
H	2,389		1,484						NT/V
I			4,485						NT/V
J			11,338						NT/V
K			11,621	13,854					NT/V
L					1,252				NT/NV
M							218		NT/NV
N					554	38			NT/NV
O						76			NT/NV
P						209			NT/NV
Total	**21,993**	**3,361**	**35,327**	**25,220**	**1,806**	**323**	**218**	**0**	
Total Wetland Area =	**85,901 sq ft**				**1.97 ac**				
Total Stream Length =	**2,347 lf**								

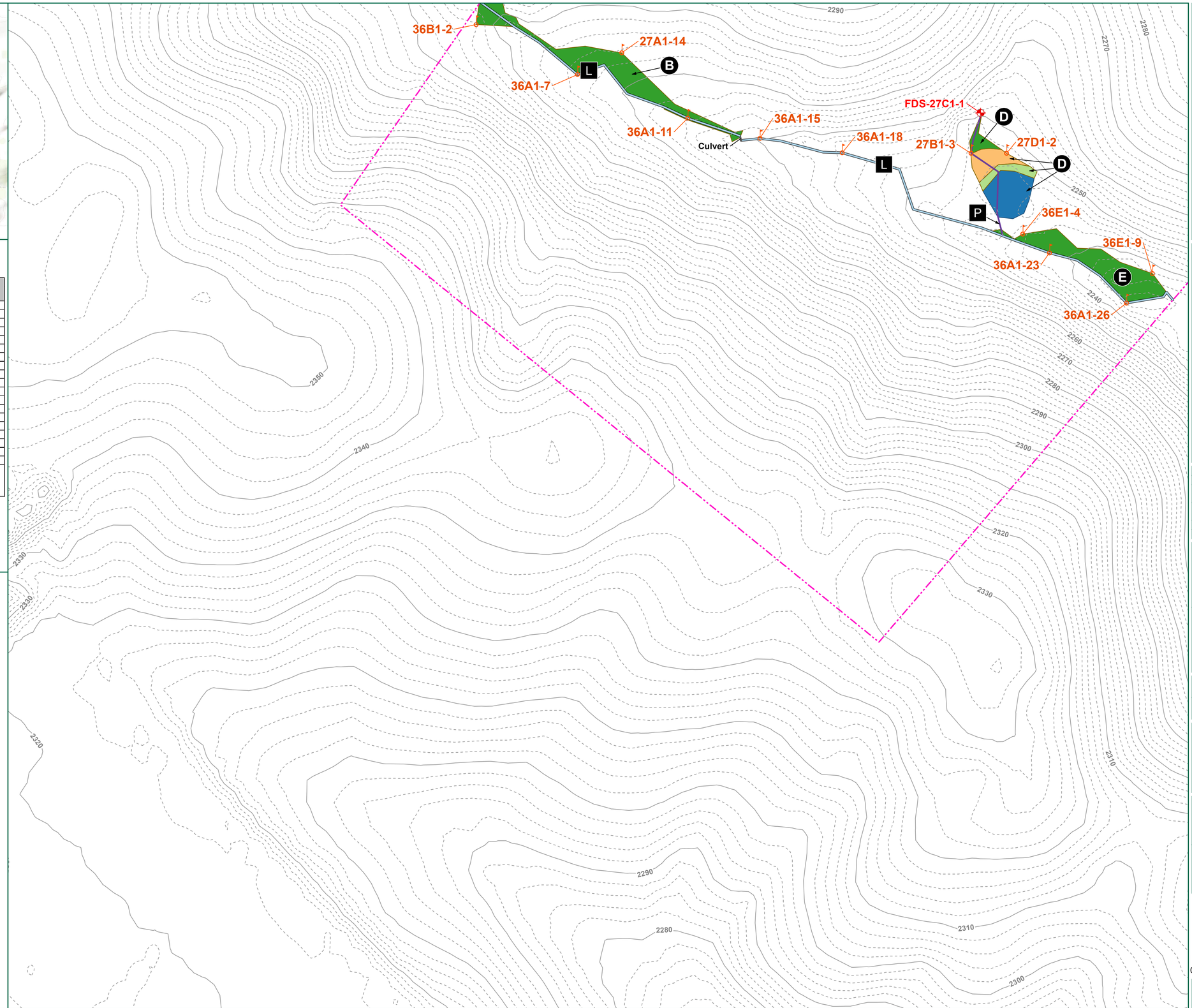
* T=Tidal; NT=Non-tidal; V=Vegetated; NV=Non-Vegetated; PFO=Palustrine Forested Wetland; PSS=Palustrine Scrub-Shrub Wetland; PEM=Palustrine Emergent Wetland; POW= Palustrine Open Water; EIW= Estuarine Intertidal Wetlands; R3= Upper Perennial Streams; R4=Intermittent Streams; R6 = Ephemeral Streams

Legend

- Project Study Limits - 154.4 Acres
- Stream Identifier
- Wetland Identifier
- Flag
- Field Data Station
- Culvert
- Perennial Stream (R3)
- Intermittent Stream (R4)
- Ephemeral Stream (R6)
- Palustrine Emergent (PEM) Wetlands
- Palustrine Forested (PFO) Wetlands
- Palustrine Scrub-Shrub (PSS) Wetlands
- Palustrine Open Water (POW)

Topographic Contours

- Major - 10 Feet
- Minor - 2 Feet



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PROJECT NAME & LOCATION

WYTHEVILLE SOLAR
WYTHE COUNTY, VIRGINIA

DATE 02/27/2020

PROJECT NUMBER 41069.014

PROJECT NAME WYTHEVILLE SOLAR

DESIGNED BY / DRAWN BY K. SCHMIDT

1. Waters of the U.S. within the project study limits have been located using submeter, Bluetooth GPS antennas by Timmons Group.
2.Waters of the U.S. have not been confirmed by the U.S. Army Corps of Engineers until stamped.
3. Project limits are approximate.
4. Topography based on USGS LiDAR.
5. Cowardin Stream Classifications are based solely on field observations. No formal Stream assessment methodology was completed to determine these Cowardin Classifications.

REVISIONS

#	MM/DD/YY	DESCRIPTION

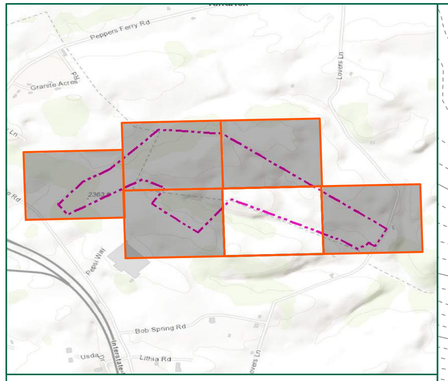
DRAWING DESCRIPTION

FIGURE 4:
WETLANDS AND WATERS OF THE U.S. DELINEATION MAP

SCALE (FEET)
0 75 150
PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H:1 " = 75 '	5 of 7

Y:\804\41069.014-Wytheville_Solar\GIS\WTDM-20200227\41069.014_JD-WTDM.mxd



Resource Identification	Confirmation								Resource Description Notes*
	PFO (sq ft)	PSS (sq ft)	PEM (sq ft)	POW (sq ft)	R3 (lf)	R4 (lf)	R6 (lf)	Ditch (lf)	
A		1,264							NT/V
B	10,436								NT/V
C				3,826					NT/NV
D	905	2,097	1,157	4,176					NT/V; NT/NV
E	8,263								NT/V
F			4,191	3,364					NT/V; NT/NV
G			1,051						NT/V
H	2,389		1,484						NT/V
I			4,485						NT/V
J			11,338						NT/V
K			11,621	13,854					NT/V
L					1,252				NT/NV
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Total Stream Length =	**2,347 lf**								

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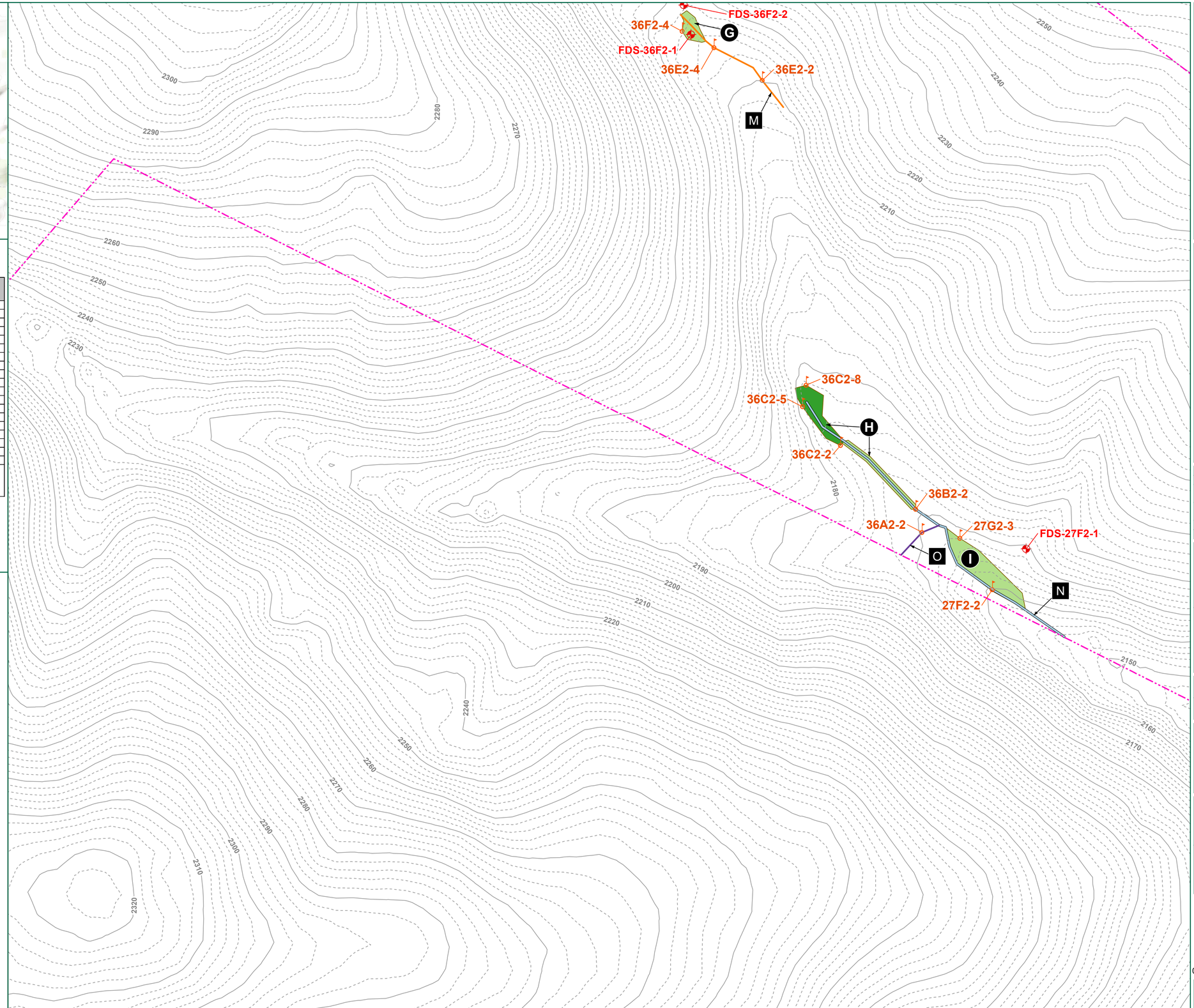
Legend

- Project Study Limits - 154.4 Acres
- Stream Identifier
- Wetland Identifier
- Flag
- Field Data Station
- Culvert
- Perennial Stream (R3)
- Intermittent Stream (R4)
- Ephemeral Stream (R6)
- Palustrine Emergent (PEM) Wetlands
- Palustrine Forested (PFO) Wetlands
- Palustrine Scrub-Shrub (PSS) Wetlands
- Palustrine Open Water (POW)

Topographic Contours

- Major - 10 Feet
- Minor - 2 Feet



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TEL 804.200.6500
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PROJECT NAME & LOCATION

WYTHEVILLE SOLAR
WYTHE COUNTY, VIRGINIA

DATE 02/27/2020

PROJECT NUMBER 41069.014

PROJECT NAME WYTHEVILLE SOLAR

DESIGNED BY / DRAWN BY K. SCHMIDT

1. Waters of the U.S. within the project study limits have been located using submeter, Bluetooth GPS antennas by Timmons Group.
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3. Project limits are approximate.
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REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION

FIGURE 4:
WETLANDS AND WATERS OF THE U.S. DELINEATION MAP

SCALE (FEET)
0 75 150

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE H:1 " = 75 '

SHEET NUMBER 6 of 7

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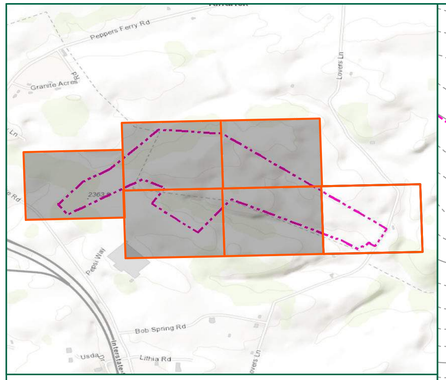

Resource Identification	Confirmation								Resource Description Notes*
	PFO (sq ft)	PSS (sq ft)	PEM (sq ft)	POW (sq ft)	R3 (lf)	R4 (lf)	R6 (lf)	Ditch (lf)	
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Total	**21,993**	**3,361**	**35,327**	**25,220**	**1,806**	**323**	**218**	**0**	
Total Wetland Area =			**85,901 sq ft**		**1.97 ac**				
Total Stream Length =			**2,347 lf**						

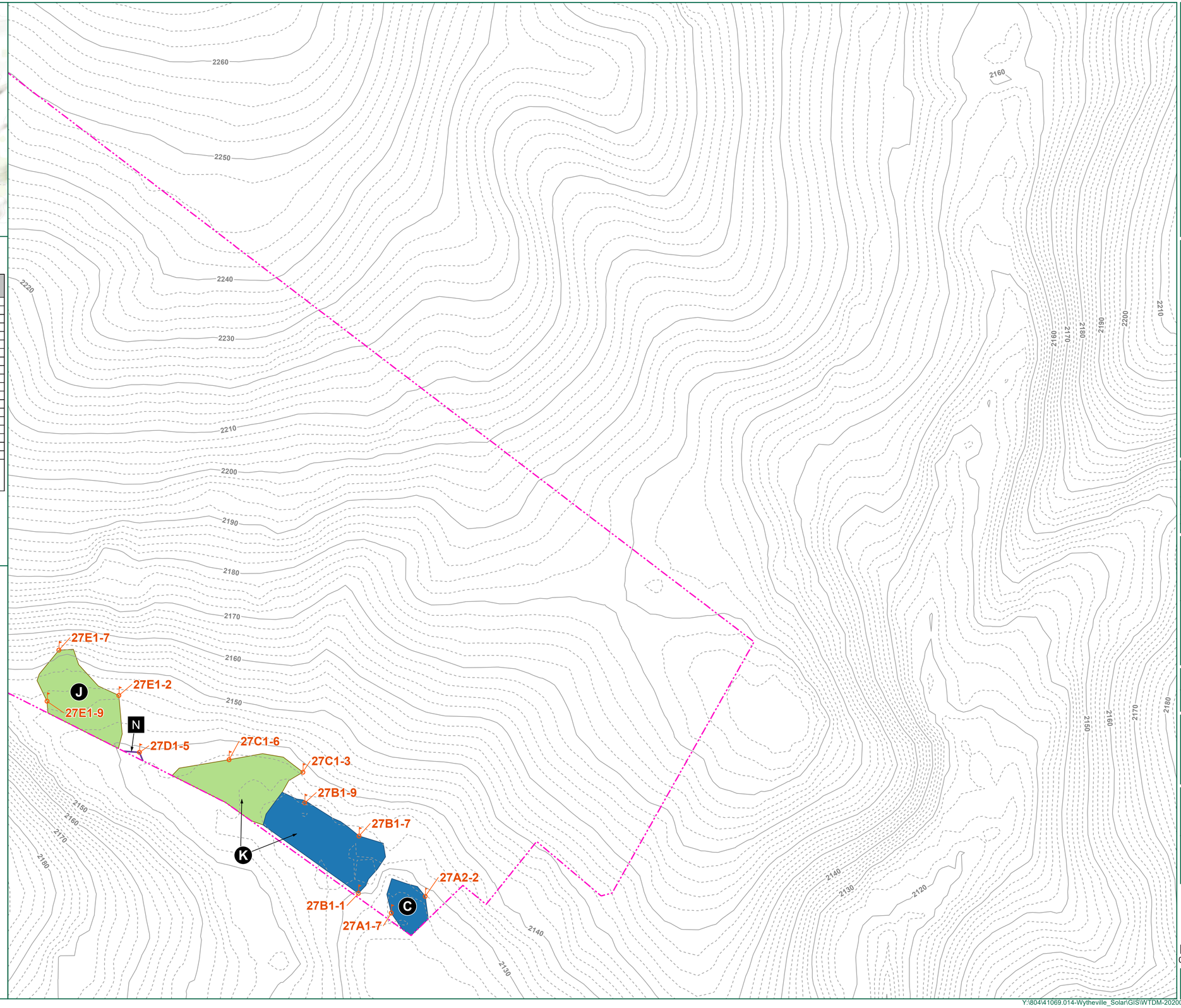
* T=Tidal; NT=Non-tidal; V=Vegetated; NV=Non-Vegetated; PFO=Palustrine Forested Wetland; PSS=Palustrine Scrub-Shrub Wetland; PEM=Palustrine Emergent Wetland; POW= Palustrine Open Water; EIW= Estuarine Intertidal Wetlands; R3= Upper Perennial Streams; R4=Intermittent Streams; R6 = Ephemeral Streams

Legend

- Project Study Limits - 154.4 Acres
- Stream Identifier
- Wetland Identifier
- Flag
- Field Data Station
- Culvert
- Perennial Stream (R3)
- Intermittent Stream (R4)
- Ephemeral Stream (R6)
- Palustrine Emergent (PEM) Wetlands
- Palustrine Forested (PFO) Wetlands
- Palustrine Scrub-Shrub (PSS) Wetlands
- Palustrine Open Water (POW)

Topographic Contours

- Major - 10 Feet
- Minor - 2 Feet



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PROJECT NAME & LOCATION

WYTHEVILLE SOLAR
WYTHE COUNTY, VIRGINIA

DATE 02/27/2020

PROJECT NUMBER 41069.014

PROJECT NAME WYTHEVILLE SOLAR

DESIGNED BY / DRAWN BY K. SCHMIDT

1. Waters of the U.S. within the project study limits have been located using submeter, Bluetooth GPS antennas by Timmons Group.
2.Waters of the U.S. have not been confirmed by the U.S. Army Corps of Engineers until stamped.
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REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION

FIGURE 4:
WETLANDS AND WATERS OF THE U.S. DELINEATION MAP

SCALE (FEET)

0 75 150

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE H:1 " = 75 '

SHEET NUMBER 7 of 7

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Attachment J – Certification of Design Form

Virginia Department of Department of Environmental Quality
Small Renewable Energy Projects

Certification of Design

Facility Name and Location

Name: Caden Energix Wytheville LLC

Location: Wythe County, Virginia

Applicant's Name: Caden Energix Wytheville LLC

Applicant's Mailing Address:	Telephone Number and Email Address:
2311 Wilson Blvd. Suite 640 Arlington, VA 22201	(703) 801-0412 ken@cadenenergix.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.

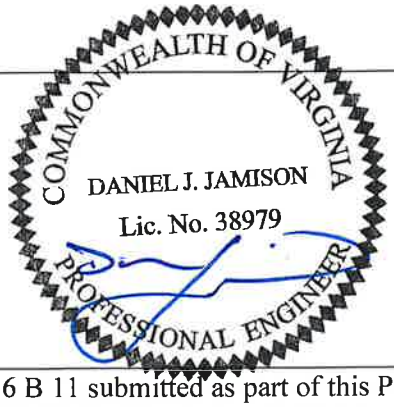
Professional Engineer Licensed in Virginia

Name: Dan Jamison, P.E.

License Number: 38979

Phone: 804-200-6538

Email: dan.jamison@timmons.com



I hereby certify that the site plan furnished to comply with §10.1-1197.6 B 11 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, P.E.
Name

3/6/20
Date

Attachment K – Operating Plan

Caden Energix Wytheville Solar Facility

Operations Plan

This document details the operations for the Caden Energix Wytheville solar facility located on a single parcel totaling 154 acres on Nye Road, approximately two miles northeast of Wytheville, in Wythe County, Virginia. Included herein is basic information about facility operations.

Grounds Maintenance

Vegetation around the solar panel modules and other electrical infrastructure will be maintained to appropriate height. As necessary, the presence of invasive herbaceous species will be managed with approved herbicides.

Outside of the fenced array, ground will not be maintained to mimic natural conditions. If necessary, tree management will be conducted via trimming and branch/tree removal. While minimal, this will occur if areas within the array are shaded, or if trees present a hazard to the solar array and electrical equipment.

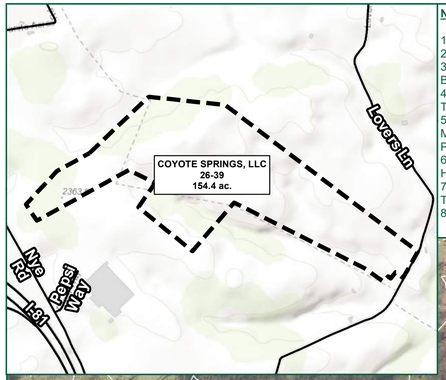
Site Access

Access to the array will be restricted to protect solar equipment and those accessing the site. The solar array and inverters will be surrounded by fencing, and no trespassing signs with appropriate contact information will be posted along the fence for security.

Solar Equipment

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

Attachment L – Site Plan, Context Map



NOTES:

1. PROJECT LIMITS ARE APPROXIMATE.
2. PARCEL DATA FROM WYTHEVILLE COUNTY GIS.
3. WATERS OF THE U.S. WITHIN THE PROJECT LIMITS HAVE BEEN LOCATED BY TIMMONS GROUP.
4. WATERS OF THE U.S. HAVE NOT BEEN CONFIRMED BY THE U.S. ARMY CORPS OF ENGINEERS.
5. A MINIMUM FIFTY (50) FOOT SETBACK SHALL BE MAINTAINED FROM SOLAR EQUIPMENT TO ANY ADJACENT PROPERTIES AND TO ANY PUBLIC RIGHTS OF WAY.
6. THE SECURITY FENCE WILL BE A MINIMUM SIX (6) FEET IN HEIGHT.
7. NO ASPECT OF THE SOLAR FARM SHALL EXCEED TWENTY FIVE (25) FEET IN HEIGHT.
8. TOPOGRAPHIC CONTOURS BASED ON USGS LIDAR.

Legend

- Property Limits - 154.4
- Property Setback - 50'
- Fence - 132.6 Acres
- Point of Interconnection
- Project Entrance
- Overhead Power
- Overhead Power Easement
- Inverter Pad
- Internal Road
- Solar Panel

Delineated Stream

- Culvert
- Perennial Stream (R3)
- Intermittent Stream (R4)
- Ephemeral Stream (R6)

Delineated Wetland

- Palustrine Emergent (PEM) Wetlands
- Palustrine Forested (PFO) Wetlands
- Palustrine Scrub-Shrub (PSS) Wetlands
- Palustrine Open Water (POW)
- Wythe County Tax Parcels

5' Topographic Contours

- Major
- Minor

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CADENENERGIX

PROJECT NAME & LOCATION

CADEN ENERGIX WYTHEVILLE LLC

WYTHE COUNTY, VIRGINIA

DATE	02/26/2020
PROJECT NUMBER	41069.015
PROJECT NAME	CADEN ENERGIX WYTHEVILLE
DESIGNED BY / DRAWN BY	L. WHEELER

REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION

PRELIMINARY SITE PLAN

SCALE (FEET)

0 250 500

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE	SHEET NUMBER
H:1 " = 250 '	1

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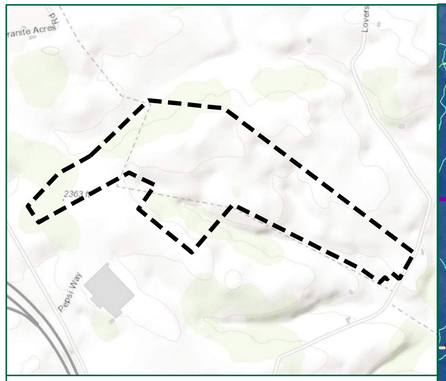


Legend

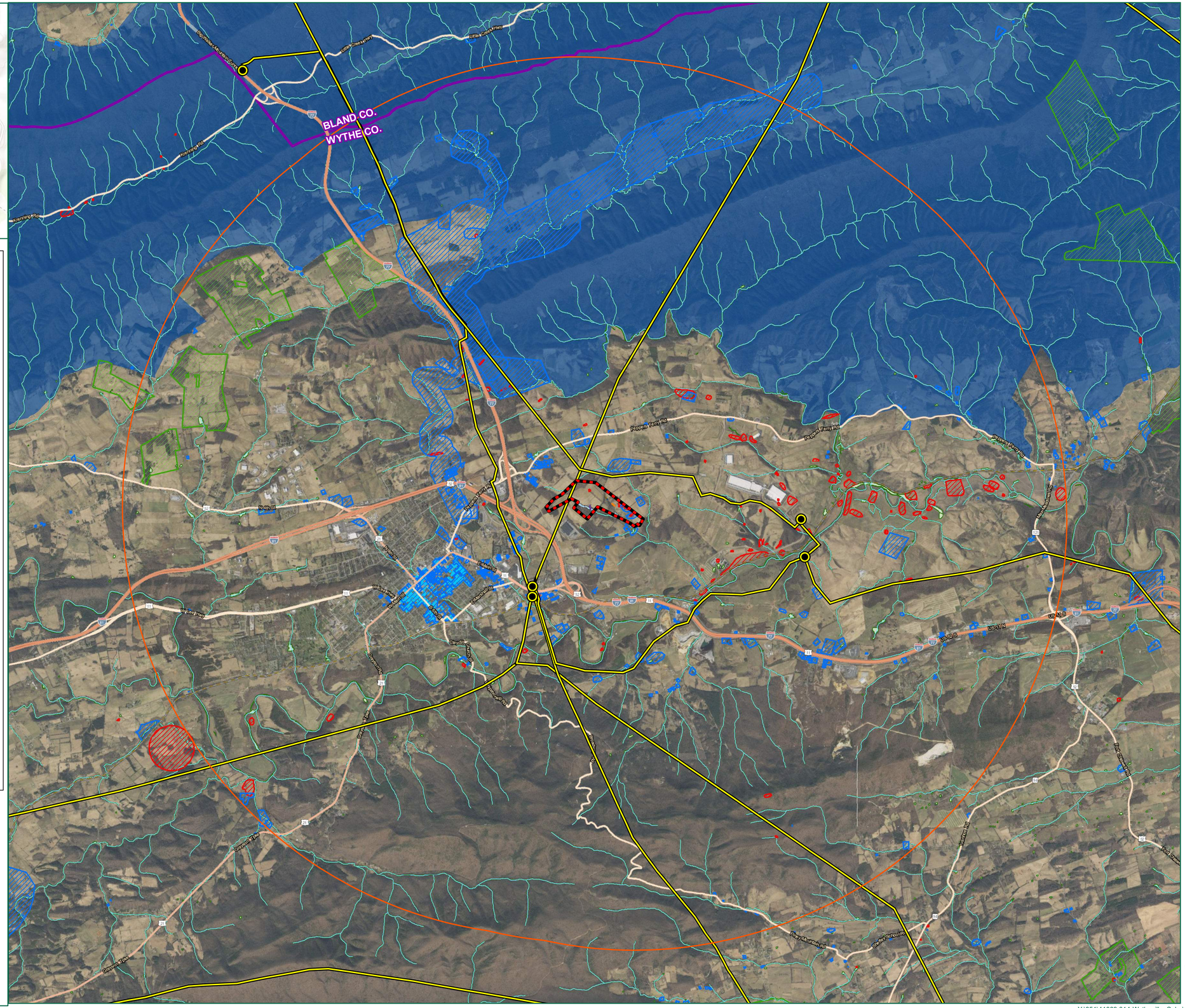
- Project Study Limits- 154.4 Acres
- Five Mile Project Buffer
- Electric Substations
- Electric Transmission Line
- Streams (NHD)
- Wetlands (NWI)
- Architecture Resources
- Individual Historic District Properties
- Archaeological Resources
- DHR Easements - Not Present
- National Park Service (NPS) - Not Present
- Bureau of Land Management (BLM) - Not Present
- US Forest Service (USFS)
- US Fish and Wildlife (USFW) - Not Present
- Coastal Avian Protection Zones - Not Present
- State Natural Area Preserve - Not Present
- State Park - Not Present
- Local Park - Not Present
- Reservoir - Not Present
- Virginia Outdoor Foundation Easements
- County Boundary

Delineated Stream

- Culvert
- Perennial Stream (R3)
- Intermittent Stream (R4)
- Ephemeral Stream (R6)

Delineated Wetland

- Palustrine Emergent (PEM) Wetlands
- Palustrine Forested (PFO) Wetlands
- Palustrine Scrub-Shrub (PSS) Wetlands
- Palustrine Open Water (POW)



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Richmond, VA 23225
TEL 804.200.6500
www.timmons.com

PROJECT NAME & LOCATION

CADEN ENERGIX WYTHEVILLE LLC

WYTHE COUNTY, VIRGINIA

DATE: 02/24/2020

PROJECT NUMBER: 41069.014

PROJECT NAME: CADEN ENERGIX WYTHEVILLE SOLAR

DESIGNED BY / DRAWN BY: L. WHEELER

Project limits are approximate.
Protected land and streams from USGS.
NWI wetland from USFWS.
Land agency data from Bureau of Land Management.
Architectural, archaeological, DHR easements, and historic districts data from VCRIS.
Waters of the U.S. within the project limits have been delineated by Timmons Group.
Aerial imagery from VGIN.

REVISIONS

#	MM/DD/YY	DESCRIPTION

DRAWING DESCRIPTION: CONTEXT MAP

SCALE (FEET)

0 3,000 6,000

PLANS PRINTED AS 11X17 ARE HALF SCALE

SCALE: 1 " = 3,000 '

SHEET NUMBER: 1

Y:\851\41069.014-Wytheville_Solar\GIS\41069.014-Context Map.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: Caden Energix Wytheville LLC
Wythe County, Virginia

Applicant's Name & Title: Caden Energix Wytheville LLC

Applicant's Mailing Address:	Telephone Number and Email Address:
2311 Wilson Blvd. Suite 640 Arlington, VA 22201	(XXX)XXX-XXXX 703-373-7345 ken@cadenenergix.com XXXXXXXXXXXXXXX itamar@energix-us.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 Activites	Heather McAlister Office of Stormwater Management DEQ 1111 East Main St Richmond VA 23219	Contact with Heather McAlister 3/6/20	

***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:
Kennenth Niemann	March 6, 2020

Attachment N – Non-Utility Certification Form

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

Facility Name and Location: Wytheville Solar
Wythe County, Virginia

Applicant's Name: Caden Energix Wytheville, LLC

Applicant's Mailing Address:	Telephone Number and Email Address:
2311 Wilson Blvd. Suite 640 Arlington, VA 22201	(703)801-0412 ken@cadenenergix.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:
Ken Niemann	February 7, 2020

Attachment O – Public Review Documents

Order Confirmation

Order# 0001081357

Client:	ENERGIX GROUP	**Payor :**	ENERGIX GROUP
Phone:	7033737345	**Phone:**	7033737345
Account:	6118911	**Account:**	6118911
Address:	2311 WILSON BLVD. STE 640 ARLINGTON VA 22201	**Address:**	2311 WILSON BLVD. STE 640 ARLINGTON VA 22201

Sales Rep	Accnt Rep	Ordered By	Fax:	
aperrone_tri	aperrone	David Richards	**EMail:**	david@energix-us.com

Total Amount	**$278.60**
Payment Amount	**$0.00**
Amount Due	**$278.60**
Tax Amount:	0.00
Payment Meth:	Invoice - Statement

Tear Sheets	Proofs	Affidavits	PO Number:
0	0	1	

Ad Number	Ad Type	Ad Size	Color
0001081357-01	CLS Legal Liner	2 X 36 li	$0.00

Production Method
AdBooker (liner)

Production Notes

Product and Zone	Placement	Position	# Inserts
SWV Wytheville Enterprise	C-Legal Ads	Legal Notices	2

Run Schedule Invoice Text: Caden Energix Wytheville PBR Due to Virginia Executive

Run Dates 4/ 4/2020, 4/11/2020

Product and Zone	Placement	Position	# Inserts
SWV swvatoday.com	C-Legal Ads	Legal Notices	17

Run Schedule Invoice Text: Caden Energix Wytheville PBR Due to Virginia Executive

Run Dates 4/ 4/2020, 4/ 5/2020, 4/ 6/2020, 4/ 7/2020, 4/ 8/2020, 4/ 9/2020, 4/10/2020, 4/11/2020, 4/12/2020, 4/13/2020, 4/14/2020, 4/15/2020, 4/16/2020, 4/17/2020, 4/18/2020, 4/19/2020, 4/20/2020

TagLine: CADENENERGIXWYTHEVILLEPBRDUETOVIRGINIAEXECUTIVEORDER55DIRECTINGVIRGINIARESIDENTSTOSTAYATHOMETHEPUBLICMEETINGORIGINALLYSCHEDULEDFORTUESD

Order Confirmation

Order# 0001081357

Ad Content Proof

Note: Ad size does not reflect actual ad

Caden Energix Wytheville PBR

Due to Virginia Executive Order 55 directing Virginia residents to "stay at home", the public meeting originally scheduled for Tuesday, April 9, 2020 to discuss the proposed 20MWac solar electric farm located approximately 2 miles northeast of Wytheville has been cancelled. The public meeting will be conducted as follows:

Caden Energix Wytheville LLC intends to construct and operate a 20MWac solar electric farm project that is eligible for a Permit-By-Rule (PBR) from the Virginia Department of Environmental Quality. The project is located in Wythe County, on a single parcel totaling 154 acres on Nye Road, approximately two miles northeast of Wytheville, Virginia. The solar farm will utilize approximately 50,000 photovoltaic panels mounted on single-axis tracking system with galvanized steel frames up to approximately 8-9 feet above ground. The panels are estimated to cover approximately 128 of the 154 acres. There will be associated equipment including electric inverters and misc. control and instrument panels. The solar farm will connect to existing overhead electric lines that traverse the property. A public meeting will be held via telephone and webinar conference on Tuesday, May 5, 2020 from 5:30 to 6:30 PM. The meeting can be accessed by phone at 301-715-8592, Meeting ID 622-470-925 or video conference at https://timmons.zoom.us/j/622470925. If Executive Order 55 is cancelled prior to the meeting, the meeting will also take place at 213 West Main Street, Wytheville, VA 24382. The purpose of the public meeting is to acquaint the public with the technical aspects of the project and the standards and requirement of the PBR, identify any areas of concern, facilitate communications, and maintain a dialog between Caden Energix Wytheville LLC and any persons who may be affected by the project. A copy of the PBR application is available for inspection at https://www.cadenenergix.com/wythevill e-pbr or by requesting a copy via mail to 2311 Wilson Blvd., STE 640, Arlington, VA 22201 from April 20 to May 20, 2020 to allow for a 30-day public comment period. If you have any questions or comments, please contact David Richards at 703.373.7427, or david@energix-us.com.