



NELSON COUNTY PLANNING COMMISSION

Meeting Agenda

June 26th, 2024

General District Courtroom, 3rd Floor, Nelson County Courthouse, Lovingston

- **7:00 – Meeting Convenes / Call to Order**
- **Review of Meeting Minutes:**
 - **May 22nd, 2024 – Planning Commission**
- **Public Hearings**
 - **SUP 24-0014 – Large Solar Energy System – Wild Rose**
- **Other Business**
- **Board of Supervisors Report**
- **Next Regularly Scheduled Meeting: July 24th, 2024**



Nelson County Planning Commission Meeting Minutes May 22, 2024

Present: Vice Chair Robin Hauschner and Commissioners Mike Harman, Phil Proulx, Chuck Amante.
Board of Supervisors Representative Ernie Reed

Staff Present: Dylan Bishop, Director

Call to Order: Vice Chair Hauschner called the meeting to order at 7:00 PM in the General District Courtroom, County Courthouse, Lovingston.

Review of Meeting Minutes:

February 28th, 2024

Ms. Proulx made a motion to approve the minutes from the February 28th, 2024 Planning Commission meeting. Mr. Harman seconded the motion.

Yes:

Phil Proulx

Chuck Amante

Mike Harman

Robin Hauschner

Ernie Reed

Discussion of Land Use Policy Diagnostic

Ms. Bishop noted that the Board of Supervisors had adopted the 2042 Comprehensive Plan in April of 2024. She added that the Berkley Group had provided the Land Use Diagnostic as part of their existing contract. She explained that the Land Use Diagnostic was a review of the Zoning and Subdivision Ordinances for compliance with VA State Code and to identify opportunities to include strategies from the Comprehensive Plan. She noted that some of the key findings were to recommend:

- combining the Zoning and Subdivision Ordinances into a single document,
- incorporating low-impact design and landscaping standards,
- greater conservation regulations,
- alternative residential uses and increased density where appropriate,

- compliance with VA State Code,
 - Ms. Bishop showed Page 4 of the Land Use Policy Diagnostic and explained that the pie charts showed compliance with VA State Code. She noted that the Zoning Ordinance was about 50-70% compliant and the Subdivision Ordinance was about 50-80% compliant.
- including graphics,
 - She explained that staff had indicated that the county likely did not want a graphics-heavy ordinance but would want to include them where they are most useful.
- updating uses and definitions while implementing the Comprehensive Plan Glossary, and
 - Ms. Bishop noted that they would need to add modern uses, such as Accessory Dwelling Units, and remove antiquated uses, such as Blacksmith Shops. She added that they would be updating and combining like uses to create a more cohesive ordinance.
- annual review.
 - Ms. Bishop noted that staff could include this review in their annual report by cross-referencing with Comprehensive Plan strategies. She added that the Planning Commission could initiate updates at any time.

Recommended Ordinance Structure:

1. *General Provisions*
2. *Administration*
3. *Permits and Applications*
4. *Primary Districts*
5. *Overlay Districts*
6. *Use Matrix*
7. *Use Performance Standards*
8. *Community Design Standards*
9. *Nonconformities*
10. *Subdivision*
11. *Definitions*

Ms. Bishop showed the Recommended Ordinance Structure on Page 6. She noted that the current Zoning Ordinance had separate articles for each zoning district. She explained that this structure would put commonly approved Special Use Permits as a by right use but with customary conditions as performance standards. She provided the example of a one-site campground that could be permitted if the owner lives on the property and has a certain amount of acreage, etc. She added that they would need to address short-term rentals and accessory dwelling units. Mr. Reed asked where enforcement would be included in the new ordinance structure. Ms. Bishop noted that it would be included under 'Administration'. Ms. Bishop added that they would also be addressing green infrastructure principles, signs, design standards for different development types, connectivity and recreation, overlay zoning districts (mountain ridge, tourism, Route 151, etc.)

Ms. Bishop noted that Appendix A of the Land Use Policy Diagnostic addresses every strategy from the Comprehensive Plan with a recommended action for the ordinance update. She explained that VA Code section 15.2 governs everything that they do.

Ms. Bishop asked the Planning Commission to provide her with their initial thoughts on the document. She explained that they would be submitting a work order amendment with the Berkley Group to develop a scope of work to update the Zoning and Subdivision Ordinances. She noted that this work order amendment would be presented to the Board in June. She explained that the process would be very similar to the one used for the Comprehensive Plan update. She added that there would be some public engagement and existing public engagement could be utilized. She explained that there would be joint work sessions, a kick-off public workshop, focus groups, topic-specific work sessions, regular Planning Commission meetings, and an open house. She noted that it is anticipated to take about 18 months. Mr. Amante asked if the zoning map would be included in the Zoning Ordinance. Ms. Bishop noted that it would not be, adding that any potential rezoning would happen after the update. She explained that rezoning would involve the landowners.

Mr. Amante asked if she anticipated much rezoning occurring. Ms. Bishop noted that the process would include reviewing the current zoning, uses, landscape, infrastructure, etc. She noted that there were other options including a new mixed-use district and overlays. Ms. Proulx asked if overlay districts would be looked at during the update. Ms. Bishop noted that while updating the ordinances they should have those potential rezoning areas in mind but they would not be mapping out boundaries at that point.

Mr. Hauschner asked if there would be any form of moratorium on development for properties that were to be rezoned. Ms. Bishop noted that she is not familiar with the process of county-initiated zoning map updates. She added that any changes in zoning would not be in effect until after adoption. She explained that there would be public hearings where the landowners would be able to provide input. Mr. Reed asked if the Berkley Group would provide recommendations for that process. Ms. Bishop noted that she believed there was language included in the new scope of work to address it.

Mr. Amante noted that no updates would be made in the next 18 months and they would still be bound to the Zoning Ordinance as it was. Ms. Bishop noted that they did have the new Comprehensive Plan to use for guidance when making recommendations. She noted that the Board of Supervisors had a year to vote on Special Use Permits. It was her understanding that the Board was likely to hold off on making decisions for applications, such as short-term rentals in residential zoning, until the updates.

Mr. Amante asked about recommendations in the Land Use Policy Diagnostic that were necessary for compliance with VA State Code. Ms. Proulx noted that with the criteria that they review Special Use Permits, they can use the new Comprehensive Plan to make decisions.

Mr. Harman asked if any new applications were coming up. Ms. Bishop noted that since the Comprehensive Plan adoption, staff had been advising people with the new ordinance update timeline in mind. She noted that some applicants might be waiting for the ordinance update to decide what to do with their vacant property.

Mr. Harman asked how the Site Plan for the cabins in Montebello was progressing. Ms. Bishop noted that the first site plan had been approved around the end of 2022 where they were approved for 9 cabins. She added that they had about 4-5 built at that point. She explained that they had submitted a

second site plan for more cabins in the same area. She noted that it was under review by other agencies at the time and would then be proceeding to the Planning Commission. Mr. Harman noted that it was a by right use so they couldn't do anything about it. Ms. Proulx noted that they would need to ensure the site plan met the requirements in the ordinance.

Ms. Bishop noted that in the current ordinance, by right administrative site plans and subdivision plats over certain thresholds required Planning Commission review. She added that this can be looked at in the ordinance update. She noted that these things could be reviewed administratively but having them go to the Planning Commission gets them more into the public eye.

Mr. Harman asked if they were compliant with VA state code under the current ordinance. Ms. Bishop noted that they were 50-70% compliant. She added that the bulk of the non-compliant cases seemed to be with enforcement.

Ms. Proulx asked if they would be reviewing the ordinance update section by section. Ms. Bishop confirmed that they would. She added that the review would follow the proposed format of the new ordinance.

Mr. Harman asked how other localities were handling these updates. Ms. Bishop noted that Albemarle County was updating on a constant revolving schedule. Mr. Amante noted that Albemarle County had a lot more staff.

Mr. Harman asked about the scope of work for the ordinance update. Ms. Bishop explained that they had been working with the Berkley Group on the scope of work that would go to the Board in June. If approved, the plan was to start the process in July. Mr. Harman added that he was excited to start the process.

Mr. Hauschner asked if removing specific land uses (ex. Blacksmith) from the ordinance would be restrictive to diversifying tourism. Ms. Bishop noted that in removing the definition for something like a blacksmith shop, they would be simultaneously grouping it in with a broader use (ex. Artisan Industry). She added that anything in place at the time of the ordinance update would be a legally vested nonconforming use. She noted it would stay existing nonconforming as long as the use did not cease for a period of two years or more.

Mr. Hauschner asked if they would need to remove anything from the ordinance to come into compliance with VA State Code. Ms. Bishop noted that there were cases in which things might be removed, such as the sign ordinance. She further explained that in some cases the VA State Code gives localities more leeway.

Ms. Bishop provided the example that cell phone towers could now only be denied on the basis of essentially view shed via VA State Code. She added that some believe this might occur with solar. She explained that if projects keep getting denied by localities, the state could apply different regulations. She added that the Wild Rose Solar Special Use Permit application should go to the June Planning Commission meeting. Mr. Amante asked if they could ask the applicant to recycle all the panels. Mr. Reed noted that they were always required to recycle. Mr. Amante noted that most solar panels end up in the dump because it costs too much to recycle. Ms. Bishop noted that she would review the decommissioning plan submitted by the applicant.

Mr. Harman noted that solar farms were not in compliance with the Comprehensive Plan. He explained that the Comprehensive Plan recommends the protection of prime agricultural land in many sections. Ms. Proulx noted that the proposed application was not on prime agricultural land. Mr. Amante noted that Afton had already developed much of the prime agricultural land. Ms. Bishop noted that the proposed solar project was to be within a timber tract owned by Weyerhaeuser Company. She added that the applicant was proposing a 40-year lease with the property owners. Ms. Bishop explained that the ordinance requires that they return the land to its previous state. She noted that they are proposing to put the solar panels on the areas already timbered. These areas are surrounded by untimbered land that the Weyerhaeuser Company will continue to timber. She explained that this would create a natural buffer. She added that she would address the map showing prime agricultural land in the updated Comprehensive Plan.

Mr. Harman noted that Amherst County turned down a recent solar farm application. He explained that the Amherst application was to be built on property unsuitable for agriculture but was still denied. Ms. Bishop noted that these projects require local approval before going through the intensive assessments and studies for DEQ.

Ms. Bishop referenced § 15.2-2232 of the VA State Code requires the solar project to be substantially in accord with the Comprehensive Plan. She explained that the Planning Commission would need to make two votes, one for the application and the other for its accordance with the Comprehensive Plan. Mr. Harman asked what substantially meant in this context. Ms. Bishop explained that it would mean the Comprehensive Plan supported solar in that capacity and location. Ms. Proulx noted that she would like to see a project involving solar panels over a parking lot.

Mr. Hauschner asked if they would be able to condition how the power produced was utilized. He asked if there would be any benefit to the local community aside from the tax revenue. Ms. Bishop noted that the project would be taxed under machinery and tools but not higher than the property rate. She added that the SEC assessed the project at \$1.8 million. She noted that the Board would be reviewing a potential siting agreement that would include the financial aspect. She explained that this allowed the applicants to make a voluntary contribution to the county on top of the tax payment. She added that this money can be used by the county for anything it chooses.

Ms. Proulx asked if the property was in Land Use. Ms. Bishop explained that any property taken out of Land Use would have rollback taxes for 5 years. She added that the applicants would be working with another organization to provide local training for approximately 250 jobs over the duration of the project. She noted that anyone in the community near the project would be offered free rooftop solar.

Mr. Harman asked if there was support for the project from the Gladstone community. Ms. Bishop noted that there had been some concern. She added that staff would be over advertising the public hearing by sending letters to everyone within a radius of the project and not just the immediate adjoiners.

Board of Supervisors Report

Mr. Reed noted that the budget public hearing would be coming up in June. He asked that they please let the Board know if they have any comments for the budget. He noted that there was a Department of

Historic Resources public hearing for the designation of Warminster as a rural historic district. He explained that it should be designated in June if everything goes according to plan. Mr. Amante asked what establishing a historic district did. Mr. Reed explained that it would not put any regulations or restrictions on the area. He noted that it allowed for historic buildings within the area to get tax abatement for restoration. Ms. Bishop noted that they could look into regulations for historic districts in the Zoning Ordinance update.

Mr. Reed noted that there had been some progress on the Sturt Nature Park. He explained that they had a management plan from the Department of Forestry. He added that they would most likely be proceeding with surveying the property.

Mr. Reed noted that the Broadband Authority had been officially liquidated with its assets going to the county. He explained that 98% of the county now has access.

Ms. Bishop announced that there would be a community meeting for Move Safely Blue Ridge at the Nelson Center on June 12th from 6-8 PM. She added that in June, the Board would be looking at a resolution of support for that year's SMART Scale applications. She noted that they were proposing projects at Rockfish School Ln/Route 151 (turn lanes) and Tanbark Dr/Route 151 (roundabout).

Ms. Proulx asked about the timeline for the roundabout at Routes 6 and 151. Ms. Bishop noted that construction should begin in 2026 or 2027. Mr. Reed noted that the two roundabouts on Route 151 should significantly reduce traffic speed along the corridor. Mr. Reed added that a few more by right agricultural uses making entrances on Route 151 could provide justification for a speed limit decrease. Mr. Amante asked if they would widen Route 151. Mr. Reed noted that widening Route 151 was not on the table. Ms. Proulx added that she was glad it would not likely be widened. She explained that widening Route 151 would invite more traffic. Ms. Bishop noted that there was a possibility to widen Route 151 for interconnectivity purposes such as bike/pedestrian traffic. She added that the county could have the authority to change the speed limit in a specific area.

Mr. Amante asked what the term 'locality' referenced in the Land Use Planning Diagnostic. Ms. Bishop explained that 'locality' referred to counties, cities, or towns.

Ms. Proulx made a motion to adjourn at 8:07 PM. Mr. Amante seconded the motion.

Yes:

Phil Proulx

Chuck Amante

Mike Harman

Robin Hauschner

Ernie Reed

Respectfully submitted,

A handwritten signature in black ink that reads "Emily Hjulstrom". The signature is written in a cursive style with a long horizontal flourish at the end.

Emily Hjulstrom

Planner/Secretary, Planning & Zoning

DRAFT

Nelson County Planning Commission

To: Planning Commission
From: Dylan M. Bishop, Director of Planning & Zoning *DMB*
Date: June 26, 2024
Re: SUP #24-0014 – Wild Rose Solar Project, LLC – Gladstone

BACKGROUND: This is a request for a special use permit for a large solar energy system on property zoned A-1 Agriculture.

Public Hearings Scheduled: PC – June 26; BOS – August 13 (tentative)

Location / Election District: Gladstone / South District

Owners / Tax Map Numbers / Acreage:

Weyerhaeuser Company	4646.8 acres	#97-1-9
Joe & Bobby Hickey	47.4 acres	#97-A-29
Total of Subject Parcels	4694.2 acres	
Area Under Site Control	2470 acres	
Construction Area	550 acres	
Area Under Panels	470 acres	

Applicant Contact Information: Wild Rose Solar Project, LLC, a subsidiary of Savion, LLC
Attn: Jeannine Johnson
422 Admiral Blvd, Kansas City, MO 64106
(816) 421-9599
jjohnson@savionenergy.com

Comments: This request is Nelson County’s first application for a large solar energy system, governed by Article 22A of the Zoning Ordinance and defined as, “an energy conversion system, operating as a principal land use, consisting of photovoltaic panels, support structures, and associated control, conversion, and transmission hardware occupying one (1) acre or more of total land area. Also known as solar energy arrays or solar energy farms.”

The applicant is proposing to install a 90 megawatt (utility scale) solar energy farm on land in active timber use. The remaining land is planned to remain in silvicultural use during the life of the project, which is proposed at a length of 35-40 years. The electricity generated by the panels is sent to inverters, which converts it to a current where collection lines can then transfer it to the project substation. From there, it is transferred by overhead transmission line to the Gladstone substation, then fed into AEP’s power grid for distribution. The application indicates that above ground lines are necessary for connection into the power grid.

The applicants facilitated public outreach, including two meetings at the Nelson Heritage Center (one for property owners adjacent to the project boundaries, and one for those within a one-mile radius). The County then hosted the applicant for a Community Open House at the Gladstone Fire Department where mailers were sent out to almost 300 residents. The applicant has also presented the proposed project to both the Planning Commission and Board of Supervisors.

To ensure adequate notification, County staff send adjoining owner notices for the special use permit public hearings to those within a one-mile radius of the project site.

Local zoning approval is one of the first steps in a lengthy review process for utility scale solar projects. Should the special use permit be ultimately approved, the applicants are then required to proceed with DEQ's Permit By Rule process (PBR) which requires that any impacts be avoided, minimized, or mitigated. This includes the submittal of studies, and review and approval by agencies such as Department of Historic Resources (DHR), Department of Wildlife Resources (DWR), and Department of Conservation and Recreation (DCR). If applicable, permits will be required from the Army Corps of Engineers (USACE), Virginia Water Protection (VWP), and Virginia Marine Resources Commission (VMRC). The applicants hired a third party consulting firm (Stantec Consulting Services, Inc.) to complete historical and cultural resources studies, wildlife and endangered species studies, topographical, wetlands, and soils surveys, glare hazard study, traffic study, and decommissioning plan, copies of which were submitted with the application. Should the special use permit be approved, a Major Site Plan will be required, and to accommodate for the additional review time the applicants are requesting a period of 5 years to secure building permits from the date of approval. The current expected commercial operation date is 2027. A table of contents of the application is provided below for clarity. Those items in **bold** should be closely reviewed.

Project Narrative

Appendix A: Project Location Map

Appendix B: Special Use Permit

- **Proposed Conditions**

Appendix C: Minor Site Plan

Appendix D: Site Plan Associated Mapping

Appendix E: Comprehensive Plan Review

Appendix F: Conceptual Landscaping Planting Plan

Appendix G: Photo Renderings

Appendix H: Decommissioning Plan

Appendix I: Context Map

Appendix J: Cultural Resources Desktop Analysis

Appendix K: Desktop Wetland Review

Appendix L: Desktop Threatened and Endangered Species Review

Appendix M: Glare Hazard Analysis

Appendix N: Preliminary Equipment Specifications Sheet

Appendix O: Traffic Study

The applicant has indicated a partnership with Shine, the Solar Hands-on Instructional Network of Excellence, which provides a mobile lab to facilitate local workforce job training. The construction is proposed to generate up to 250 temporary jobs and 2-5 permanent positions. The machinery and tools tax over the life of the project is expected to generate an estimated \$5 million, and the acreage being removed from Land Use taxation relief will require rollback taxes. The applicant has also submitted a siting agreement, which proposes additional funds above tax obligations to be utilized by the County. This item is reviewed by the Board of Supervisors only.

DISCUSSION:

Land Use / Floodplain: This area is primarily silvicultural and residential in nature. Zoning in the vicinity is A-1 Agriculture. This property is located close to the Amherst County border, northwest of the Gladstone community along Route 60 and bisected by Tye River Road. There are no floodplains located on the property.

Access / Traffic / Parking: The site is proposed to be served by a network of access roads, utilizing existing logging roads where feasible. Entrances will be located on Tye River Road, Twin Oaks Lane, Route 60, and Buck Mountain Lane. A traffic study has been submitted and requires approval from VDOT.


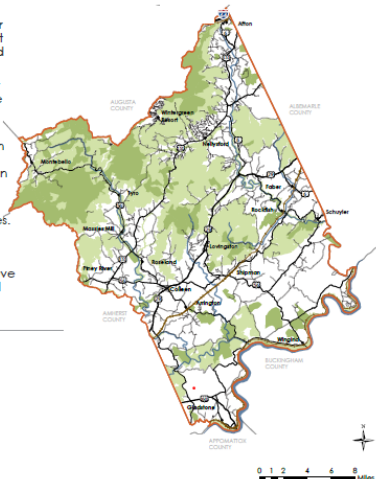
Erosion & Sediment Control / Stormwater: Per DEQ, all areas under panels are considered impermeable, and factor into the calculation for land disturbance. As such, both an Erosion and Sediment Control Plan and Stormwater Management Plan will be required to be approved by the Building Inspections Department and DEQ, respectively.

Visual / Environmental Impacts: The project is proposed to be screened utilizing existing vegetation as much as possible. Where plantings are required, native, pollinator-friendly species will be utilized. The applicant has proposed at least a 125' buffer zone, and 200' in areas adjacent to residential structures. Wetlands buffers are proposed as well as wildlife crossing corridors. Approximately 7,500 acres of surrounding land will continue to remain active timber. Photo renderings from various locations along adjacent roadways were submitted with the application as well (Appendix G). The height of the panels shall not exceed 15' when at maximum tilt. Additionally, the panels will be anti-glare with anti-reflective coating, and are considered not hazardous to air, soil, or water per the Environmental Protection Agency's standards

Decommissioning: Appendix H contains the proposed Decommissioning Plan and associated bond for the project.

Comprehensive Plan: This property is located in a Rural Area on the County's Future Land Use Map, which should ensure the protection of the County's rural landscape and economy by maintaining open space, scenic views, and agricultural uses with compatible low density residential uses. One of the Rural Area's primary land use types is solar installations (contingent on site conditions), and a planning guideline is that solar development should be sited to have minimal impacts to scenic viewsheds and natural resources. It is the duty of all localities in Virginia to plan for alternative energy sources, and Nelson must work with developers to help accommodate alternative energy sources as much as is feasible. According to Comprehensive Plan maps, the subject properties are not located within areas of steep slopes (over 20%) or areas of high conservation value.

Rural Areas	
Description	<p>The aspect of Nelson County valued most by the people who live and visit here is its rural character. Rural Areas comprise the majority of the County, aiming to protect rural character by maintaining natural areas and agricultural uses while allowing low density residential development that fits into the landscape. Rural Areas typify the historic and natural landscape of Nelson County that includes prime agricultural areas, forested mountains, and rural homesteads. The area also currently includes some low-density single-family subdivisions. Alterations and retrofits to these developments to enhance resiliency and conform to current health, environmental, zoning and subdivision standards is appropriate and encouraged; however, expanded, or new subdivisions is not the primary intent of this planning area. Any new residential development must be carefully planned for, taking into account slope, soil, and septic suitability, viewshed protection, resource impact, and other factors.</p>
Core Concept	<p>Ensure the protection of the County's rural landscape and economy by maintaining open space, scenic views, and agricultural uses with compatible low density residential uses.</p>
Primary Land Use Types	<ul style="list-style-type: none"> • Farms, agriculture, forestry • Agritourism uses • Institutional uses • Solar installations (contingent on-site conditions) • Single-family detached residential • Single-family attached residential • Manufactured homes • Accessory dwelling units • Parks, recreation, and trails
Planning Guidelines	<ul style="list-style-type: none"> • Incorporate cluster and/or conservation development principles in areas within or adjacent to this planning area to protect open space, productive land, views, and sensitive resources. • Setback, screen, or locate development located along primary routes to minimize impact to views from these corridors. • Improve and mitigate negative environmental impacts with conservation design, alternative wastewater systems, and low impact development for filtration or runoff protection. • Buffer residences from more intense farming, forestry, or extraction-based uses. • Discourage development of areas with prime agricultural soils. • Solar development should be sited to have minimal impact to scenic viewsheds and natural resources.

Substantially In Accordance Provision: VA Code 15.2-2232 requires that the Planning Commission review solar facilities for substantial accord with the Comprehensive Plan.

All applications for Special Use Permits shall be reviewed using the following criteria:

- a. The use shall not tend to change the character and established pattern of development of the area or community in which it proposes to locate;
- b. The use shall be in harmony with the uses permitted by right in the zoning district and shall not affect adversely the use of neighboring property;
- c. The proposed use shall be adequately served by essential public or private services such as streets, drainage facilities, fire protection and public or private water and sewer facilities; and
- d. The proposed use shall not result in the destruction, loss or damage of any feature determined to be of significant ecological, scenic or historic importance.

Motions:

1. I make a motion that proposed SUP #24-0014, Wild Rose Solar Project, LLC large solar energy system ***is / is not*** deemed to be in substantial accord with the Nelson 2042 Comprehensive Plan per Section 15.2-2232 of the Code of Virginia.
2. I make a motion that the Planning Commission recommend ***approval / denial*** of proposed SUP #24-0014, Wild Rose Solar Project, LLC large solar energy system to the Board of Supervisors, with the conditions submitted by the applicant in Appendix B: Special Use Permit, dated December 20, 2023.

Attachments:

Application Package
Public Comment

WILD ROSE SOLAR PROJECT

December 20, 2023

Dylan Bishop
Director, Nelson County Planning and Zoning Department
80 Front Street
P.O. Box 558
Lovingston, VA

**Re: Wild Rose Solar Project
Nelson County, Virginia**

Dear Ms. Bishop,

Wild Rose Solar Project, LLC is proposing to develop the Wild Rose Solar Project, a 90-megawatt large solar energy system and associated facilities in Nelson County, Virginia. In accordance with Article 12-3-4(a) of the Nelson County Zoning Ordinance, Wild Rose Solar Project, LLC is an authorized applicant and submits the enclosed application and supporting documents for a Special Use Permit for the Project.

The \$200 Special Use Permit filing fee has been paid to Nelson County via credit card. 10 hard copies of the application have been provided, along with four copies of full-size plans. If additional copies are needed, please let me know. Representatives of the Project can be available at your convenience to discuss any questions during your review.

If you have any questions, please feel free to contact the following Project contacts:

Jeannine Johnson
Development Manager
Email: jjohnson@savionenergy.com
Phone: (816) 509-4953

Lauren Devine
Permitting & Environmental Manager
Email: ldevine@savionenergy.com
Phone: (816) 421-9599

Thank you in advance for your cooperation.

Sincerely,



Jeannine Johnson
Development Manager
Savion, LLC



**WILD ROSE SOLAR PROJECT
NELSON COUNTY, VA**

Special Use Permit Application

December 20, 2023

Prepared for:
County of Nelson, Virginia
Department of Planning and Zoning
80 Front Street
P.O. Box 558
Lovingson, VA 22949

Prepared by:
Stantec Consulting Services Inc.
5209 Center Street
Williamsburg, VA 23188

On behalf of:
Wild Rose Solar Project, LLC

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LIST OF APPENDICES

- Appendix A: Project Location Map
- Appendix B: Special Use Permit Application and Proposed Conditions
- Appendix C: Minor Site Plan
- Appendix D: Site Plan Associated Mapping
- Appendix E: Comprehensive Plan Review
- Appendix F: Conceptual Landscape Planting Plan
- Appendix G: Photo Renderings



Appendix H: Decommissioning Plan
 Appendix I: Context Map
 Appendix J: Cultural Resources Desktop Analysis
 Appendix K: Desktop Wetland Review
 Appendix L: Desktop Threatened and Endangered Species Review
 Appendix M: Glare Hazard Analysis
 Appendix N: Preliminary Equipment Specification Sheets
 Appendix O: Traffic Study

Acronyms / Abbreviations

A-1	Agricultural District
AC	Alternating Current
AEP	Appalachian Electric Power
Applicant	Wild Rose Solar Project, LLC
SUP	Special Use Permit
DC	Direct Current
DCR	Virginia Department of Conservation and Recreation
DEQ	Virginia Department of Environmental Quality
DHR	Virginia Department of Historic Resources
DWR	Virginia Department of Wildlife Resources
ESC	Erosion and Sediment Control
ESD	Environmental Site Design
FAA	Federal Aviation Administration
Gen-tie	Generation tie line
Module	Solar Panel
MET	meteorological
MV	Medium Voltage
MW	Megawatt
MW _{ac}	Megawatts Alternating Current
NHD	National Hydrographic Dataset
NWI	National Wetlands Inventory
PBR	Permit by Rule
Project	Wild Rose Solar Project
PV	Photovoltaic
Savion	Savion, LLC
SUP	Special Use Permit
SWM	Stormwater Management
TMDLs	Total Maximum Daily Loads
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
VCRIS	Virginia Cultural Resources Information System



VDOT
VGIN
VMRC
VSMP
VWP

Virginia Department of Transportation
Virginia Geographic Information Network
Virginia Marine Resources Commission
Virginia Stormwater Management Program
Virginia Water Protection



1 Project Narrative

1.1 Project Introduction

Wild Rose Solar Project, LLC (“Applicant”) seeks a Special Use Permit (“SUP”) to build and operate a 90-megawatt alternating current (“MW_{ac}”) large solar energy system and associated facilities (“Wild Rose Solar Project” or “the Project”) in Nelson County, Virginia, approximately 2 miles northwest of the community of Gladstone. The Project is located west of Norwood Road (Route 626), north of Piedmont Road (Route 601) and Buck Mountain Lane (Route 791) and is bisected by Tye River Road (Route 657), Twin Oaks Lane (Route 820), and Richmond Highway (Route 60) (a location map is included in **Appendix A**). Construction of the Project is scheduled to begin in the second quarter of 2026, with a projected Commercial Operation Date in early 2027. Once operational, the project is anticipated to operate for 35-40 years.

1.2 The Applicant

The Applicant is a wholly owned subsidiary of Savion, LLC (“Savion”). Savion, a Shell Group portfolio company operating on a stand-alone basis, is an industry-leading solar and energy storage organization built on a foundation of specialized experience and mastery in the craft of development. With a growing portfolio of more than 36.5 gigawatts, Savion is currently one of the country’s largest and most technologically advanced utility-scale solar and energy storage project development companies. Savion is committed to helping decarbonize the energy grid by replacing electric power generation with renewable sources and delivering cost-competitive electricity to the marketplace. Savion is a U.S. based company headquartered in Kansas City, Missouri, with projects in various phases of development, construction, and operation across 33 states.

1.3 Description of the Project

The six (6) Subject Parcels¹ included in this SUP application total 4,647 acres². The Project is sited on a portion of the Subject Parcels that totals approximately 2,470 acres (the “Project Limits”) (Figure D-1). Within the Project Limits, the footprint of the proposed infrastructure or “Project Footprint” will cover approximately 550 acres. A Minor Site Plan showing the overall location and components of the Project is included in **Appendix C**. The Applicant will be restricted to developing the Project within the approximately 2,470-acre Project Limits as depicted in this SUP application. Portions of the Subject Parcels that fall outside of the Project Footprint will largely remain under the control of the current landowner and are expected to continue to be utilized for silviculture. In compliance with Section 22A-6(1)(b) of the Nelson County Zoning Ordinance, the Applicant will be required to submit a Major Site Plan for approval prior to the issuance any building permit or other County issued permits required for the construction of the Project. The design depicted in the Minor Site Plan included in this SUP application is preliminary in nature and is expected to evolve as project due diligence continues. Any updates to project design will meet or exceed the commitments made throughout this SUP application and will be subject to review as part of the Site Development Plan approval.

The Project will utilize photovoltaic (“PV”) solar panels (“modules”) mounted on a single-axis tracking rack to maximize solar energy capture and electric generation of the Project. Per Section 22A-6(2)(b) of the Nelson County Zoning Ordinance, the modules shall not exceed fifteen (15) feet in height when oriented at maximum tilt. Electricity generated by the modules will be sent to inverters located throughout the array that will convert the electricity from direct current (“DC”) to alternating current (“AC”). A series of medium voltage (“MV”) collection lines will transfer the electricity from the inverters to the Project substation. From the Project substation, an overhead generation tie-line (“gen-tie”) will deliver electricity to the existing Gladstone substation, which will serve as the connection point between the Project and Appalachian Power’s (“AEP”) power grid. The preliminary design includes twelve distinct and separate module array areas that will be surrounded by chain link fence and appropriately screened to minimize

¹ Portions of parcels 97-1-9 and 97-A-29.

² Acreage of the Subject Parcels is based on surveys completed by the landowner which align with the Nelson County GIS database. This information does not correspond with information included in the Nelson County ProVal system, but the Applicant and the County discussed the discrepancy and the County approved using the 4,647 acres as described in the surveys and the County’s GIS database as the Subject Parcels for this SUP application.



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visual impacts. The array areas will be connected throughout the Project Limits by a network of access roads, which will utilize and improve existing logging roads, to the extent possible. The arrays will be accessed via entrances located along Tye River Road, Twin Oaks Lane, Route 60, and Buck Mountain Lane.

AEP is part of PJM, the Regional Transmission Operator that coordinates the movement of wholesale electricity throughout 13 states and the District of Columbia in the Midwest and Mid-Atlantic, including Virginia. The Applicant submitted a transmission filing with PJM for the Project with a total capability of 90-MW_{ac} under Wild Rose Solar Project, LLC. At this time, the Project has received Feasibility Study and System Impact Study Reports. The Facilities Study is expected in Summer 2024 and an Interconnection Service Agreement is anticipated to be executed as soon as Q4 2024.

1.4 Impact Minimization

The Applicant has determined the Project Limits to be suitable for a large solar energy system based on the following factors: proximity to available transmission capacity, landowner interest, and evaluation of site suitability. The Project is also in line with Virginia's Clean Economy Act, which was passed in 2020, and increased the Commonwealth's Renewable Portfolio Standard from 15% by 2025 to 100% by 2045.

The Project has been intentionally sited to minimize impacts on the surrounding area. As described previously, the Project Footprint (550 ac) will utilize only a small portion of the total acreage of the Subject Parcels (4,647 ac) and the Project Limits (2,470 ac), which are predominantly used for silviculture. The general area surrounding the Project consists of approximately 7,500 acres of active timber land. The Project is unique in that it will be screened almost entirely by existing vegetation from the outset of construction, meaning with very limited exceptions, it will be obscured from view of adjacent property owners and the motoring public for its full operational lifetime. The Applicant has committed to maintaining a 125-foot buffer of existing vegetation in areas adjacent to any residential property line or roadway, which exceeds the 20-foot-wide requirement included in the Nelson County Zoning Ordinance (Section 22A-6(2)(e)). There are no residentially zoned properties adjacent to the Project, but the Applicant took a conservative approach and will maintain a buffer in areas adjacent to any parcel zoned A-1 that is believed to include a residential structure. In areas that are adjacent to properties with a residential structure or public roadways where the existing vegetation is insufficient, enhancement screening will be installed to ensure visual impacts are mitigated. The Applicant will retain site control of these buffer yard areas to ensure the vegetative buffer is maintained for the life of the Project. The current landowner will not be permitted to clear these buffer yard areas. Additional information regarding the Project's approach to screening is provided in **Section 5.1**. The Conceptual Landscape Planting Plan (**Appendix F**) denotes where the Applicant is meeting and exceeding the buffering requirements with existing vegetation and proposed enhancement screening. A Final Landscaping Plan will be submitted prior to or concurrent with the Final Site Plan (see **Appendix B** – Proposed Permit Conditions). This will ensure that the vegetative buffer has been updated to accommodate any changes in the status of existing vegetation (i.e., tree clearing by the landowner) and shifts in the Project design.

As demonstrated in the Conceptual Landscape Planting Plan, the Applicant has focused on ensuring the Project is adequately screened along Norwood Road, Route 60, Tye River Road, and Twin Oaks Lane. Additional existing vegetation will be maintained on the west side of the Project to eliminate visual impacts to the cluster of residential structures that are located off Route 60 and Twin Oaks Lane. A buffer will also be maintained around the module array that is south of Route 60.

The Applicant developed photo renderings (**Appendix G**) to demonstrate how the visual impact of the Project has been minimized through intentional siting and the utilization of existing vegetation. Photographs were taken at five (5) locations along roads adjacent to the Project, which were then rendered to produce visualizations of how the views would look in five (5) and 10 years. The photo renderings include the proposed buffers and show that from the five (5) locations, there will either be no view of the proposed Project under the current conditions or there are filtered views of the proposed Project under current conditions, which will quickly be screened by regenerative growth.

The Applicant has contracted Stantec Consulting Services, Inc. (an independent consulting firm) to perform desktop studies of the land with respect to historical and cultural resources, wildlife and endangered species, topography, wetlands, and soils. These studies are included as appendices in this SUP application and have been used to guide



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site development plans. As depicted in the Minor Site Plan, the Project has been sited to minimize impacts to natural resources identified within the Project Limits. The Applicant also took a proactive approach to incorporating stormwater management (“SWM”) and erosion and sediment control (“ESC”) into the Project design, which is explained in more detail in **Section 10** of this application.

As a renewable energy project of 150 MW or less, the Project is subject to Virginia Department of Environmental Quality’s (“DEQ”) Permit by Rule (“PBR”) process. Through the PBR, DEQ coordinates reviews from the Department of Historic Resources (“DHR”), the Department of Wildlife Resources (“DWR”), and the Department of Conservation and Recreation (“DCR”) to ensure potential impacts to cultural or threatened and endangered species are avoided or mitigated. In preparation for submitting a PBR application, the Applicant will complete field surveys for cultural and biological resources and develop mitigation plans, if necessary. Field surveys for the Project have been initiated and are anticipated to be completed in Q1 2024. State and federal wildlife agencies, including the United States Fish and Wildlife Service (“USFWS”), the DCR, and DWR, will be consulted to identify concerns about the Project’s potential impacts to wildlife resources. The Applicant will also complete a wetland delineation of the Project Limits and pursue a jurisdictional determination from the United States Army Corps of Engineers (“USACE”). Although it is not anticipated, if impacts to wetland or waterbody features are necessary based on the Project’s final design, the appropriate permits and approvals will be obtained from the USACE, the DEQ Virginia Water Protection (“VWP”) Program, and Virginia Marine Resources Commission (“VMRC”), as applicable.

The Applicant is committed to developing the Project with minimal impacts to both natural resources and the surrounding community. This process started with the responsible siting of the Project and will continue with thorough due diligence to identify potential impacts to be avoided or minimized as design is finalized. Best management practices during construction and operation will further minimize the Project’s impact. Once operational, the Project will quietly generate clean, local energy and tax revenue for Nelson County, and preserve the land for future generations.

1.5 Development Sequence

Construction of the Project is scheduled to begin in Q2 2026, with a projected Commercial Operation Date in early 2027. Construction will take place in several phases over the nine (9) to 12-month period.

Construction will begin after the necessary stormwater and building permits are received and the interconnection process is finalized with PJM. Project construction will begin with workforce mobilization and the initial site preparation work including grading, placement of erosion control measures, and any necessary vegetation and tree removal. The current property owners (a timber and paper company) are expected to remove harvestable timber within the Project Footprint prior to the commencement of ground disturbance. ESC measures implemented will be defined in the Erosion and Sediment Control Plan. The plan will include design elements that filter sedimentation and manage surface runoff created by ground disturbance during construction. Several measures may also be implemented after ground disturbance begins – including temporary seeding immediately following grading to stabilize topsoil. SWM measures will also be defined as part of the stormwater management plan as necessary for the DEQ stormwater permit. Stormwater design considerations reduce the volume of runoff and related sedimentation following heavy rainfall during and after construction.

Next, general site improvements will be made such as access improvements and preparation of the construction laydown area. The Project components (racking system, modules, inverters, meteorological (“MET”) towers, and collection system) will be installed next, along with access roads. The Project substation and associated gen-tie will be installed concurrently with the module arrays. More detail on each major Project component is provided below:

- PV modules: The modules are an assembly of connected solar cells that absorb sunlight as an energy source to generate electricity. The Project will utilize modules with anti-glare technology and anti-reflective coatings. The current Project design includes approximately 234,012 modules.
- Racking system: The modules will be installed on a tracking system with a tilting movement from a horizontal position. This tilting movement (+/-60 degrees from horizontal) enables a greater exposure of the module to the sun throughout the day. The trackers are installed on steel piles that are typically 10 to 15 feet long and would be driven approximately 8 to 10 feet below grade, depending on soil conditions. Piles are



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primarily installed by pile drivers. Modules are supported on the posts with the help of a racking mechanism. Forklifts are used to deliver the steel frame required for the racking structures. Once the piles are driven into the ground, racking mechanisms are installed primarily by hand and modules are then bolted to the frame.

- MET towers: The Project is proposing to include three (3) to seven (7) permanent MET towers in the design. At a minimum, the quantity of the measurements at the Project will meet or exceed the Class A system requirements in IEC 61724-1.² The MET towers will be approximately 14 feet tall and installed on a concrete base adjacent to inverters. MET stations consist of a pyranometer to measure the solar irradiance, an anemometer to measure the wind speed and direction, and a thermometer. The location of the MET towers will be determined during development of the Project's final design.
- Collection system: There are two types of collection systems (also called collection lines) for a solar project: AC collection and DC collection. The current Project design includes approximately 69,500 feet of collection cable.
 - DC collection lines connect the modules to the inverter electrically. Modules are connected at the end of each row. Collection lines are trenched underground or hung over the racking systems by using a cable system which feeds to the combiner box. The DC collection from the combiner boxes to the inverters is typically run underground. DC collection cables are often congregated into common trenches and run adjacent to one another within and adjacent to the array areas to connect to the inverters.
 - AC collection lines will connect the inverters to the Project substation. The number and loading of circuits are determined by electrical, geotechnical, and equipment parameters. The AC collection system will be installed underground via open cut trench or plowed methods. Horizontal directional drilling may be utilized to minimize impacts to environmental features.
- Inverters: As DC electrical output is generated, it is transmitted via the DC collection lines to central inverters to undergo the DC-to-AC conversion process. The current Project design includes 28 inverters. The number of inverters is subject to change as Project design evolves and is finalized. Operational sound at the Project will result from the inverters (only during hours of sunlight) so they have intentionally been sited internally within the arrays. The Applicant will maintain a minimum of 300 feet between inverters and the neighboring property lines.
- Project substation/gen-tie: The Project will require a Project substation to step up incoming MV electricity to match the 138kV high-voltage AEP network. The substation will have a footprint of approximately two (2) acres. A common control enclosure will be installed at the Project substation that will house the protection, communication, and supervisory control and data acquisition (SCADA) equipment necessary to safely operate the substation. The Project substation will be fenced and protected according to the National Electrical Safety Code. One over-head 138kV gen-tie line will be constructed by the Applicant to deliver electricity from the Project substation to the existing AEP Gladstone substation. The gen-tie is located entirely on the Subject Parcels included in this SUP application. The gen-tie line will be hung on steel monopole structures that will be approximately 90- to 110-feet above the ground.
- Access Roads: The Project will be accessed via entrances located along Tye River Road, Twin Oaks Lane, Route 60, and Buck Mountain Lane. The array areas will be connected throughout the Project Limits by approximately 41,875 feet of access roads, which have been sited on existing logging roads to the extent possible. Gravel roads will be constructed or enhanced with all-weather gravel and will range between 12 and 16 feet in width, except for the road to the Project substation, which is expected to be 20 to 24 feet. Access roads will be designed to have the appropriate turning radii and will be constructed to support the weight of vehicle traffic on site. The access roads will also be designed to be sufficient for use by emergency vehicles.

² International Electrotechnical Commission. "IEC 61724-1 – International Standard," IEC 2021.



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Commissioning of electrical equipment will be conducted prior to the placement of the Project in service. As portions of the Project near completion, disturbed areas will be reseeded and re-vegetated consistent with the Erosion and Sediment Control Plan and Stormwater Pollution Prevention Plan. A ground cover consisting of native, herbaceous vegetation – including pollinator friendly species – will be established. This cover, in combination with ESC measures implemented during and post-construction, will prevent additional runoff and protect the wetland and stream resources which currently run through the Project, as well as improve wildlife habitat and encourage an increased population of pollinator species at the site. Once construction is complete, the access roads will be dressed as necessary to ensure their long-term function. Erosion control methods during and after construction will depend on the contours of the land, as well as requirements of relevant permits.

1.6 Beneficial Community Impact

The Project will benefit the community directly and indirectly. On a macro level, solar energy systems provide clean, reliable, emission-free energy to Virginians. Once the Project is built and operating, there are no ‘fuel costs’ associated with electricity generation as seen in other types of power generation. Because of no fuel costs and low operational expenses, solar energy systems stabilize energy rates in the region as they are not prone to fluctuation with changing market conditions.

Additionally, construction of the Project will create approximately 250 temporary jobs. The Applicant will prioritize local labor and contractors for the construction of the Project to maximize local benefits. This labor force will be a combination of skilled and unskilled labor, allowing all people the potential to gain experience in a rapidly growing industry. The Project intends to partner with a local technical college and/or high school to initiate a job training and solar education program to support the labor needs during the construction of the Project. Additionally, the Applicant will host at least two local job fairs to recruit the local labor force. The limited amount of labor force that comes in from outside of the immediate area will still stay in local hotels, eat at local restaurants, and patronize local businesses. During the operational phase, it is anticipated that the Project will provide the equivalent of two (2) to five (5) full-time jobs for members of Nelson County and adjoining communities.

Most directly, the Project will contribute significant tax revenue to Nelson County, without demands for public services or infrastructure associated with other types of development. The Project will pay Machinery and Tool Taxes on the Project’s equipment, assessed pursuant to local ordinance and state code. The estimated lifetime Machinery and Tool Tax Payments applicable to the Project are \$5 Million. The real estate within Project Footprint will be reassessed by Nelson County to account for the new use, and based on other reassessments of similarly situated projects, the reassessment should be between \$10,000 and \$15,000 per acre. At Nelson County’s current real estate tax rate, that will generate an additional approximately \$40,000 per year. The real estate tax revenue will increase approximately 13x compared to the current land use. Additionally, the Applicant has proposed a Siting Agreement which will provide for additional funds above and beyond the Project’s statutory tax obligation. These funds can be used for a wide variety of County and community needs.

1.7 Proposed Permit Conditions

The Applicant acknowledges that although utility-scale solar development has become increasing popular in the Commonwealth of Virginia over the past 7 to 8 years, this is the first SUP application submitted to Nelson County for a large solar energy system. Taking this into consideration, the Applicant is proactively offering a number of commitments above and beyond what is required by the Nelson County Zoning Ordinance to ensure the impacts to the surrounding area are minimized, the Project implements “best practices” learned from other projects in Virginia, and the community can reap the benefits of the Project’s successful development. The Applicant has memorialized these voluntary initiatives in the Proposed Permit Conditions included in this SUP application (**Appendix B**). The commitments in the proposed conditions include, but are not limited to:

- Providing the following studies and plans prior to or concurrent with the Final Site Plan:
 - Construction Management Plan
 - Construction Traffic Management Plan/Road Repair Plan
 - Final Landscaping Plan



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- Emergency Management Plan
- Updated Ocular Impact Study
- Providing a Payment for Third Party Expert and Consultant Review of Final Site Plan and supplemental studies and plans
- Designating a Project Liaison for the County during construction

The Applicant also commits to responsible procurement of equipment for the Project. The modules utilized for the Project will be procured from a Tier 1 module supplier. Tier I modules are from well-respected manufacturers and are understood to be of high quality, predictable performance, durability, and content. The Tier 1 designation comes from BloombergNEF and indicates a supplier that a bank is likely to offer debt financing for.⁴ Modules will also have passed the U.S. Environmental Protection Agency's toxicity characteristic leaching procedure ("TCLP") test. Modules that pass the TCLP test are considered not hazardous to air, soil, or water.⁵ U.S. law (and Uighur Forced Labor Prevention Act) prohibits the importation of goods made using forced labor. The Applicant will continue to comply with the law. Equipment for the Project has not yet been procured, but preliminary equipment specification sheets for modules, trackers, and inverters representative of what will be utilized for the Project have been provided as **Appendix N**.

1.8 Public Outreach

The Applicant has worked to engage landowners, local officials, the community, and other stakeholders to socialize the Project and collect feedback. Two in-person meetings were held at the Nelson Heritage Center on September 6, 2023 and November 9, 2023. The neighborhood meeting held on September 6th was intended for landowners directly adjacent to the Project. Landowners within 1 mile of the Project were mailed directly for the community meeting held on November 9th and it was advertised on the Project's Facebook page in an effort to engage a larger audience. The Applicant also helped support a Community Open House that was hosted by Nelson County on February 27, 2024. The meeting was held at the Gladstone Fire Department and landowners within 1 mile of the Project were invited to attend via a direct mailer.

1.9 Applicant Requests

The Applicant respectfully requests that the Nelson County Planning Commission and Board of Supervisors:

- (1) Approve the Special Use Permit for the Project as proposed herein, sited on the Subject Parcels as identified in Figure D-1; subject to the specific conditions with this Application, including those set forth in **Appendix B – Proposed Conditions**.
- (2) Find the Project to be "Substantially in Accord" with the Nelson County Comprehensive Plan pursuant to Va. Code 15.2-2232.
- (3) Once negotiations are complete, the Board of Supervisors approve the Siting Agreement proposed by the Applicant.

2 Special Use Permit Application

Pursuant to the Nelson County Code of Ordinances Article 22A-6, large solar energy systems are permitted in districts zoned A-1 Agricultural, C-1 Conservation District, M-1 Limited Industrial, B-1 Business District, and B-2 Business District with a SUP. A SUP application form has been completed for the Wild Rose Solar Project and is included in **Appendix B**.

⁴ BloombergNEF, "BloombergNEF PV Module Tier 1 List Methodology," Bloomberg, 2020, Accessed December 2023, Available at: <https://data.bloomberglp.com/professional/sites/24/BNEF-PV-Module-Tier-1-List-Methodology.pdf>.

⁵ U.S. Environmental Protection Agency (U.S. EPA), "Solar Panel Frequent Questions" U.S. EPA, 2023, Accessed December 2023, Available at: <https://www.epa.gov/hw/solar-panel-frequent-questions>.



Per Section 12-3 of the Nelson County Zoning Ordinance, the following SUP application requirements have been addressed⁵ for the Project:

12-3-2 General Standards and Criteria for Special Use Permit Review. All applications for Special Use Permits shall be reviewed using the following criteria:

- a. The use shall not tend to change the character and established pattern of development of the area or community in which it proposes to locate;**

All adjacent parcels are zoned A-1 Agricultural ("A-1"). Surrounding land uses immediately around the Project include silviculture and pastureland with very low development intensity. The Project will not disrupt the rural character or established pattern of development in the surrounding area. The Applicant will be limited to developing the Project within the Project Limits as depicted in this SUP application and the portions of the Subject Parcels that fall outside of the Project Footprint will likely remain in silviculture. The Project has been sited intentionally to minimize impacts to the surrounding community. Existing vegetation will be utilized to screen the Project from the start of construction, and enhancement screening will be installed where necessary to ensure visual impacts are mitigated. Installation of large solar energy systems encourages open space retention by placing a hold on additional development within the Project Limits, which prevents permanent changes to the land and promotes the rural character of the County.

- b. The use shall be in harmony with the uses permitted by right in the zoning district and shall not affect adversely the use of neighboring property;**

The A-1 district is designed to accommodate farming, forestry, and limited residential use. The Project will have little to no impact on farming, forestry, or residential uses at nearby properties. Similarly, the uses permitted by right on the neighboring properties will not have a negative impact on the Project. The Applicant will be limited to developing the Project within the Project Limits as depicted in this SUP application and the portions of the Subject Parcels that fall outside of the Project Footprint will likely remain in silviculture. The Project is a low-impact and passive use of land that will not cause permanent soil degradation, as is typical with most other development that often converts agricultural land to residential or industrial. The Project will meet all applicable noise requirements for the zoning district, is designed to minimize the potential for glare, meets and often exceeds setback requirements, and provides for buffering and screening to increase compatibility with adjacent land uses and minimize the potential for incompatibility with offsite uses. The Project is designed to avoid impacts to natural resources and mitigate the community impacts to the surrounding area. The low visual profile and quiet operations preserve the rural character of the area, while at the end of the Project's life, the land may be returned to agricultural and silvicultural use.

- c. The proposed use shall be adequately served by essential public or private services such as streets, drainage facilities, fire protection and public or private water and sewer facilities; and**

The Project requires very few public or private services and has been sited so that there is adequate access from public roads. As an unmanned Project that generates electricity, it will not place new pressure on other public services during operations, such as water, sewer, or gas infrastructure. The Applicant has committed to coordinating with the County on an Emergency Management Plan, as memorialized in the Proposed Permit Conditions (**Appendix B**).

- d. The proposed use shall not result in the destruction, loss or damage of any feature determined to be of significant ecological, scenic, or historic importance.**

⁵ Each requirement is listed in **bold**, and the Applicant's response is listed below each requirement.



The Project will be required to obtain a PBR from the DEQ. Through the PBR, the DEQ coordinates reviews from the DHR, the DWR, and the DCR to ensure potential significant impacts to cultural or threatened and endangered species are avoided or mitigated. The Project is not expected to have any impact on scenic features, as detailed in **Section 6.1** of this application.

- 12-3-3 Special Conditions. The Board of Supervisors may grant or deny the application either in part or in full and may impose such modifications, regulations, or restrictions, including a limitation of the time for which the permit shall be valid, which such Board in its discretion may determine necessary or requisite in order that the general objectives and purpose of this ordinance shall be complied with.**

The Applicant has provided Proposed Permit Conditions as part of **Appendix B** of this SUP application. These conditions correspond to the Nelson County Zoning Ordinance and are supplemental to it. They reflect industry best practices and provide for responsible development and operation of the Project.

12-3-4 Application Requirements for Special Use Permits.

- a. An Application for a Special Use Permit shall be made by all property owners, a contract purchaser with the owners' written consent, or the owners' agent. The application shall be submitted to the Planning and Zoning Director, and shall be accompanied by the required filing fee.**

The SUP application form has been completed for the Project and is included in **Appendix B**. The Applicant has obtained Real Property Option Agreements for the parcels of land which will be leased or purchased for the development of the Project. These documents have been provided in **Appendix B**. The Applicant has also provided agent authorization forms, which authorize the Applicant to submit the SUP application on behalf of the property owners (**Appendix B**). The filing fee for the SUP application has been paid to Nelson County via credit card.

- b. If the request for a Special Use Permit has been denied by the Board of Supervisors, a request in substantially the same form shall not be resubmitted within one (1) year of the date of denial.**

The Applicant acknowledges this restriction for reapplication.

- c. The Application shall include the following information:**
1. A Minor Site Plan in accordance with Article 13 of the Nelson County Zoning Ordinance;

A Minor Site Plan is included in **Appendix C**. The Minor site plan has been provided at a scale of one (1) inch equals 200 feet, which is an appropriate scale to depict the Project. It should be noted that this site plan is preliminary in nature, and a Final Site Plan will be produced and approved by the County prior to construction. The Final Site Plan will adhere to the requirements found in Article 13 of the Nelson County Zoning Ordinance.

- 2. A description of the proposed use and, where applicable, the hours of operation and the proposed number of employees or patrons;**

A full description of the Project is included in **Section 1**.

- 3. A written statement of proposed project compatibility with the following:**
i. The Comprehensive Plan.

Evidence that the proposed Project is compatible with the goals and principles of Nelson County's Comprehensive Plan is included in **Appendix E**.



ii. **The applicable zoning district;**

Large solar energy systems can be approved as a SUP on land zoned A-1. A “large solar energy system” is defined in the zoning ordinance as an “energy conversion system, operating as a principal land use, consisting of photovoltaic panels, support structures, and associated control, conversion, and transmission hardware occupying one (1) acre or more of total land area.”⁶ The Project meets the large solar energy system definition because the Project will be a solar energy conversation system that will operate as the principal land use and consist of photovoltaic panels, support structures, and associated control, conversion, and transmission hardware that occupies more than one acre of land. Additionally, the Project’s primary use is electrical generation to be sold to the wholesale electricity markets.⁷ The Applicant’s SUP form is provided in **Appendix B** and all necessary documentation is provided within this application.

iii. **The surrounding properties.**

All adjacent parcels are zoned A-1. Surrounding land uses immediately around the Project include silviculture and pastureland with very low development intensity. The Applicant will be limited to developing the Project within the Project Limits as depicted in this SUP application and the portions of the Subject Parcels that fall outside of the Project Footprint will likely remain in silviculture. This allows the Project to be intentionally sited to utilize existing vegetation to screen the Project from surrounding properties. According to the Nelson County GIS, there are very few building footprints surrounding the Project. Although there are no residentially zoned properties adjacent to the Project, the Applicant will implement a 200-foot setback where structures are present. The operation of the Project will meet all applicable noise requirements for the zoning district, is designed to minimize the potential for glare, meets and often exceeds setback requirements, and provides for buffering and screening above and beyond what is required in the Nelson County Zoning Ordinance in an effort to increase compatibility with adjacent land uses and minimize the potential for incompatibility with offsite uses.

iv. **Current and future neighborhood conditions.**

According to the Nelson County Comprehensive Plan and Nelson County GIS, the Four Forks, Five Forks, and Gladstone neighborhoods have low-to-moderate density development. As of 2002, the Comprehensive Plan did not show Gladstone, Five Forks, or Four Forks as falling within an existing water sewer service area. The absence of existing water and sewer service areas limits high density development. The proposed Project is compatible with existing low-density land use in the vicinity.

The Gladstone, Four Forks, and Five Forks neighborhoods were not designated as future land use areas in the Comprehensive Plan and are intended to stay rural. Future neighborhood conditions can be expected to follow the same pattern of development experienced in the past. A large solar energy system should be considered a temporary land use that does not degrade the future resources of the site. After decommissioning, long-term goals to develop the property for other uses, such as agriculture, can still be achieved. As noted above, landscape screening will be used where existing vegetation is not adequate to provide a buffer between the Project and the surrounding area. With intentional placement of enhancement screening, the rural character and heritage unique to Nelson County can be preserved during the lifetime of the Project.

v. **Traffic patterns, on-site and off-site;**

A traffic study is included in **Appendix O** and summarized in **Section 7**. Once operational, traffic resulting from the Project will be less than that of one single family home.

⁶ Nelson County Zoning Ordinance § 22A-3.

⁷ Nelson County Zoning Ordinance § 22A-6(1).



4. When requested by the Planning and Zoning Director, the Commission, or the Board of Supervisors, the following information shall be provided by the applicant:

i. The architectural elevations and floor plans of proposed buildings.

The Applicant is not proposing to construct any buildings as part of the Project. An accessory operations and maintenance trailer may be utilized. The Applicant will obtain the necessary permits for the operations and maintenance trailer from Nelson County prior to installation.

ii. Traffic impact analysis.

A traffic study is included in **Appendix O**. Once construction is complete, operation of the Project will not negatively impact or burden the transportation network in Nelson County. Traffic resulting from the operation of the Project will be less than that of one single family home. Access to the Project will be coordinated with the VDOT and Nelson County. The Applicant has proposed to develop a Construction Traffic Management Plan/Traffic Mitigation Plan, as memorialized in the Proposed Permit Conditions (**Appendix B**).

iii. Fiscal impact analysis.

The Project will have a positive economic benefit on the local community during both construction and operation. During construction the economic benefit will be in the form of approximately 250 temporary jobs that will be sourced locally to the extent practical and increased business to hotels, restaurants, gas stations, grocery stores, print shops, supply stores, and other local businesses. During operations, it is anticipated that the Project will provide the equivalent of two (2) to five (5) full-time jobs and increase the local tax base, which will provide additional funds that could be used to support local schools and infrastructure. If the land is used as a large solar energy system, it will generate tax revenue 13 times greater than the current land use. This revenue can be used to support core county services and local infrastructure improvements. Additional information pertaining to the economic benefits of the Project is included in **Section 1.6**.

iv. Parking and site circulation analysis.

Internal circulation will be limited to on-site personnel, but the roads will be adequate to facilitate any emergency access, if necessary. The only parking requirements would be associated with the accessory operations and maintenance trailer. Sufficient parking will be provided. During construction, the Project will require temporary construction parking that will be internal to the Project site.

v. Photographs of property and surrounding area.

Photographs of the property and the surrounding area are included in the visual impact analysis completed for the Project (**Appendix G**). Photographs were taken of the current condition from locations surrounding the Project. Those photographs were then rendered by graphic designers to produce visualizations of how the views would look in five (5) and 10 years. The renderings demonstrate that, as a result of maintaining existing vegetation and the implementation of enhancement screening, the Project will be properly screened. The setbacks are represented on the Minor Site Plan (**Appendix C**) and a Conceptual Landscape Planting Plan (**Appendix F**) has been provided to denote where buffer requirements are being met and voluntarily exceeded.

vi. Environmental Impact Statement.

Stantec Consulting Services, Inc. (an independent consulting firm) has performed studies of the land with respect to historical and cultural resources, wildlife and endangered species, topography, wetlands, and soils. A summary of the findings is included in **Section 6**.



12-3-7 Major Site Plan.

Upon approval of the application by the Board of Supervisors, a Preliminary and Final Site Plan, if required shall be filed with the Planning and Zoning Director and reviewed by the Planning Commission pursuant to Section 13-5 of this Chapter.

Prior to construction, the Applicant will submit a Major Site Plan for approval. The design depicted in the Minor Site Plan included in this SUP application is preliminary in nature and is expected to evolve as project due diligence continues. Any updates to project design will meet or exceed the commitments made throughout this SUP application and will be subject to review as part of the Site Development Plan approval.

12-3-8 Renewal of SUP with Time Limits, Expiration, Revocation.

b. Expiration.

- 1. Whenever a Special Use Permit is approved by the Board of Supervisors, the special use authorized shall be established, or any construction authorized shall be commenced and diligently pursued, within such time as the Board of Supervisors may have specified, or, if no such time has been specified, then within twelve (12) months from the approval date of such permit.**

In the Proposed Permit Conditions (**Appendix B**), the Applicant has requested that the duration of the SUP be extended to five (5) years from approval, unless extended by written agreement between the County and the Applicant. This will allow the Applicant to work through the utility interconnection process and required state permitting.

12-3-11 A Special Use Permit becomes void if the permit is not utilized within twelve (12) months after approval or in the event the use has been discontinued for a consecutive twelve-month period.

As noted above, the Applicant has requested that the duration of the SUP be extended to five (5) years from approval, unless extended by written agreement between the County and the Applicant (**Appendix B**).

3 Compliance with the Nelson County Solar Ordinance

Per Section 22A of the Nelson County Zoning Ordinance, the following provisions applicable to Solar Energy have been addressed:⁸

22A-4 General Provisions shall be addressed for all large solar energy systems, and for small solar energy systems as applicable.

1. Safety and Construction.

- a. Design. The applicant shall submit documentation that the design of any buildings and structures associated with or part of the solar energy project complies with applicable sections of the Virginia Uniform Statewide Building Code (USBC) (13VAC5-63). This requirement includes all electrical components of the solar energy project.**

The Project will be designed to comply with applicable sections of the Virginia Uniform Statewide Building Code (USBC)(13VAC5-63) as well as all federal and state statutes, codes, regulations, and ordinances.

⁸ Each requirement is listed in **bold**, and the Applicant's response is listed below each requirement.



- b. **Construction and installation. In the construction and installation of a large solar energy system, the owner or operator shall install all electrical wires associated with the large solar energy system underground unless the applicant can demonstrate the necessity for aboveground installations as determined by the Board of Supervisors.**

Aboveground electrical wires are necessary for the gen-tie and connection to the power grid, as depicted on the Minor Site Plan (**Appendix C**).

- c. **Noise. Solar energy systems shall comply with Chapter 8, Article II, Noise Control, of the Nelson County Code.**

The Project will comply with Chapter 8, Article II, Noise Control, of the Nelson County Code. Noise generated by the Project will not exceed 70 dBA (measured at the Project property line). Once operational, sound producing components only do so during the day when the sun is shining and the Project is generating electricity, and do not generate sound at night. Per Section 8-37 of the Nelson County Zoning Ordinance, sound generated by construction between the hours of 7:00 a.m. and 9:00 p.m. are exempt from coverage of this article.

- d. **Ocular impact study. When required by the FAA, an ocular impact study shall be performed for airports within five (5) miles of the project site, for public roads within sight of the system, and from scenic highways and overlooks. The analysis shall be performed using FAA Solar Glare Hazard Analysis Tool (SGHAT) to demonstrate compliance with FAA standards for measuring ocular impact.**

Based on the Federal Aviation Administration (“FAA”) Notice of Criteria Tool results, the Project does not exceed Notice Criteria. No conflicts with airport operations are anticipated. The Project will utilize solar panels that have anti-glare properties (anti-reflective coatings) to reduce potential glare that may come from the Project. Based on a glare hazard analysis performed by Stantec Consulting Services Inc., glare is not predicted for roadways, structures, or pilots approaching nearby airstrips. The full analysis is included in **Appendix M**. The Applicant has evaluated the potential impact to the scenic vistas included in the County’s Comprehensive Plan. Based on the distance and topography between the proposed Project and the scenic vistas, no impact is expected.

- 2. **Bonding. Prior to the issuance of a Building Permit for a solar energy system, the applicant shall:**
 - a. **Submit to the Planning and Zoning Director an itemized cost estimate of the work to be done to completely remove the entire solar energy system plus twenty-five (25) percent of said estimated costs as a reasonable allowance for administrative costs, inflation, and potential damage to existing roads or utilities.**
 - b. **Submit a bond, irrevocable Letter of Credit, or other appropriate surety acceptable to the County in the amount of the estimate plus twenty-five (25) percent as approved by the Planning and Zoning Director which shall:**
 - 1. **Secure the cost of removing the system and restoring the site to its original condition to the extent reasonably possible; and**
 - 2. **Include a mechanism for a Cost of Living Adjustment after ten (10) and fifteen (15) years.**
 - c. **The applicant will ensure the bond, irrevocable Letter of Credit, or other surety shall remain in full force and effect until the Planning and Zoning Department has inspected the site and verified that the solar energy system has been removed. At which time, the Planning and Zoning Department shall promptly release the bond, irrevocable Letter of Credit, or other surety.**

The Applicant will comply with Nelson County’s bonding requirements. In the Proposed Permit Conditions (**Appendix B**), the Applicant is proposing to update the decommissioning plan and bond every five years from the original Commercial Operation Date as the cost adjustment mechanism.



3. Decommissioning.

- a. Decommissioning plan.** As part of the project application, the applicant shall submit a decommissioning plan, which shall include the following: (1) the anticipated life of the project; (2) the estimated decommissioning cost in current dollars; (3) how said estimate was determined; (4) the method of ensuring that funds will be available for decommissioning and restoration; (5) the method that the decommissioning cost will be kept current; and (6) the manner in which the project will be decommissioned and the site restored.

The Applicant has included a Decommissioning Plan as part of this SUP Application (see **Section 8** and **Appendix H**).

b. Discontinuation, Abandonment, or Expiration of the Project.

- 1. Thirty (30) days** prior to such time that a solar energy system is scheduled to be abandoned or discontinued, the owner or operator shall notify the Director of Planning and Zoning by certified U.S. mail of the proposed date of abandonment or discontinuation of operations. Any solar project that has been inoperable or unutilized for a period of twelve (12) consecutive months shall be deemed abandoned and subject to the requirements of this section.
- 2. Within three hundred sixty-five (365) days** of the date of abandonment or discontinuation, the owner or operator shall complete the physical removal of the solar energy project and site restoration. This period may be extended once (up to twelve (12) months) at the request of the owner or operator, upon approval of the Board of Supervisors.
- 3. Decommissioning of discontinued or abandoned solar energy systems shall include the following:**
- A. Physical removal of all solar energy equipment and above-ground appurtenant structures** from the subject property including, but not limited to, buildings, machinery, equipment, cabling and connections to transmission lines, equipment shelters, security barriers, electrical components, roads, unless such roads need to remain to access buildings retrofitted for another purpose, or the landowner submits a request to the Board of Supervisors that such roads remain.
- B. Below-grade structures, such as foundations, underground collection cabling, mounting beams, footers, and all other equipment installed with the system shall be completely removed:** however, these structures may be allowed to remain if a written request is submitted by the landowners and a waiver is granted by the Board of Supervisors.
- C. Compacted soils shall be decompacted as agreed to by the landowner.**
- D. Restoration of the topography of the project site to its pre-existing condition using non-invasive plant species and pollinator-friendly and wild-life friendly native plants, except that any landscaping or grading may remain in the after-condition if a written request is submitted by the landowner and a waiver is granted by the Board of Supervisors.**
- E. Proper disposal of all solid or hazardous materials and wastes from the site in accordance with local, state, and federal solid waste disposal regulations.**

The Applicant will comply with the County's decommissioning requirements. Supplemental conditions pertaining to decommissioning and the decommissioning plan are included in the Proposed Permit Conditions (**Appendix B**).

- 4. A zoning permit issued pursuant to this article shall expire if the solar energy system is not installed and functioning within twenty-four months from the date this permit is issued.**

The Applicant acknowledges the timing restriction associated with the zoning permit. The Applicant has coordinated with County Staff and has confirmed that a zoning permit would not be obtained until building permits are issued.

- 5. The Planning and Zoning Director may issue a Notice of Abandonment to the owner of a small solar energy system that is deemed to have been abandoned. The owner shall have**



the right to respond to the Notice of Abandonment within thirty (30) days from notice receipt date. The Planning and Zoning Director shall withdraw the Notice of Abandonment and notify the owner that the notice has been withdrawn if the owner provides information that demonstrates the solar energy system has not been abandoned.

The Applicant acknowledges this process for curing a Notice of Abandonment.

22A-6 Large Solar Energy Systems.

1. **Use.** A large solar energy system shall be permitted by a Special Use Permit in A-1, C-1, M-1, B-1, and B-2, and by-right in M-2, provided that:

The primary use of the system is electrical generation to be sold to the wholesale electricity markets and not used primarily for the onsite consumption of energy by a dwelling or commercial building.

In addition to the requirements of a Major Site Plan in Article 13, "Site Development Plan," and Article 12, "General Provisions," applications for a large solar energy system shall include the following information:

- a. **Project description.** A narrative identifying the applicant and describing the proposed solar energy system, including an overview of the project and its location; approximate rated capacity of the solar energy system; the approximate number, representative types and expected footprint of solar equipment to be constructed; and a description of ancillary facilities, if applicable.

A full description of the Project is included in **Section 1**.

- b. **Site plan.** The site plan shall conform to the preparation and submittal requirements of Article 13, "Site Development Plan," including supplemental plans and submissions, and shall include the following information:
 1. **Property lines and setbacks.**
 2. **Existing and proposed buildings and structures, including location(s) of the proposed solar equipment.**
 3. **Existing and proposed access roads, drives, turnout locations, and parking.**
 4. **Locations of substations, electrical cabling from the solar systems to the substations, accessory equipment, buildings, and structures, including those within any applicable setbacks.**
 5. **Additional information may be required, as determined by the Zoning Administrator, such as a scaled elevation view and other supporting drawings, photographs of the proposed site, photo or other realistic simulations or modeling of the proposed solar energy project from potentially sensitive locations as deemed necessary by the Zoning Administrator to assess the visual impact of the project, landscaping and screening plan, coverage map, and additional information that may be necessary for a technical review of the proposal.**

The Applicant has provided a site plan that meets the Minor Site Plan requirements established in Article 12 and Article 13 of the Nelson County Zoning Ordinance (see **Appendix C**).

6. **Documentation shall include proof of control over the land or possession of the right to use the land in the manner requested. The applicant may redact sensitive financial or confidential information.**

The Applicant has obtained Real Property Option Agreements for the parcels of land which will be leased or purchased for the development of the Project. These documents have been provided as **Appendix B**. The Applicant has also provided agent authorization forms, which authorize the Applicant to submit the SUP application on behalf of the property owners (**Appendix B**).



7. **The application shall include a decommissioning plan and other documents required by Section 22A-4 of this article.**

The Applicant has included a Decommissioning Plan as part of this SUP Application (see **Section 8** and **Appendix H**). See above for demonstrated compliance with Section 22A-4 of the ordinance.

2. **Location, Appearance and Operation of a Project Site.**
 - a. **Visual impacts. The applicant shall demonstrate through project siting and proposed mitigation, if necessary, that the project minimizes impacts on the visual character of a scenic landscape, vista, or scenic corridor.**

The Applicant has implemented the appropriate setbacks and vegetative buffers to mitigate visual impacts on the local community from the Project. A visual impact analysis was completed for the Project using photo renderings from locations along roads adjacent to the Project. The renderings demonstrate that as a result of maintaining existing vegetation and, where necessary, implementing enhancement buffer, the Project will be properly screened. The setbacks are represented on the Minor Site Plan (**Appendix C**) and a Conceptual Landscape Planting Plan (**Appendix F**) has been provided to denote where buffer requirements are being met and voluntarily exceeded. The Applicant has evaluated the potential impact to the scenic vistas included in the County's Comprehensive Plan. Based on the distance and topography between the proposed Project and the scenic vistas, no impact is expected.

- b. **Ground-mounted systems shall not exceed fifteen (15) feet in height when oriented at maximum tilt.**

The height of structures and arrays (except for poles and aboveground electrical lines associated with the gen-tie and connection to the power grid) will be ground mounted and not exceed 15 feet in height as measured from grade at the base of the structure to the apex of the structure.

- c. **Signage. Warning signage shall be placed on solar equipment to the extent appropriate. Solar equipment shall not be used for displaying any advertising except for reasonable identification of the manufacturer or operator of the solar energy project. All signs, flags, streamers or similar items, both temporary and permanent, are prohibited on solar equipment except as follows: (a) manufacturer's or installer's identification; (b) appropriate warning signs and placards; (c) signs that may be required by a state or federal agency; and (d) signs that provide a twenty-four-hour emergency contact phone number.**

The Applicant will comply with the requirements for signage at the Project.

- d. **Setbacks. All equipment, accessory structures and operations associated with a large solar energy system shall be setback at least one hundred (100) feet from all property lines and at least two hundred (200) feet from any residentially zoned properties; unless the Board of Supervisors is satisfied that different setbacks are adequate to protect neighboring properties.**
 1. **Setbacks shall be kept free of all structures and parking lots.**
 2. **Setbacks shall not be required along property lines adjacent to other parcels which are part of the solar energy system; however, should properties be removed from the system, setbacks must be installed along all property lines of those properties remaining within the project and which are adjacent to a parcel which has been removed.**

The Applicant has incorporated a setback of 125 feet from all property lines and at least two hundred feet from any residentially zoned properties into the Project design (**Appendix C**). Although no properties are zoned residential, the Project will implement a 200-foot setback where residential structures are present. All setbacks will be kept free of all structures and parking lots.



- e. **Buffering.** A twenty-foot-wide vegetative buffer yard for the purpose of screening shall be provided and maintained adjacent to any residential property line or roadway. If able to demonstrate that existing vegetation can meet this requirement, existing vegetation can be used to satisfy buffer requirements. The buffer location must be indicated on the site plan.
1. **Visual impacts.** This buffer should be made up of plant materials at least three (3) feet tall at the time of planting and that are reasonably expected to grow to a minimum height of eight (8) feet within three (3) years.
2. **Non-invasive plant species and pollinator-friendly and wildlife-friendly native plants, shrubs, trees, grasses, forbs and wildflowers must be used in the vegetative buffer.**
3. **The buffer must be maintained for the life of the facility.**

The Applicant is proposing to exceed the buffering requirements for the Project. The Applicant will be limited to developing the Project within the Project Limits as depicted in this SUP application and the portions of the Subject Parcels that fall outside of the Project Footprint will likely remain in silviculture. This allows the Project to be intentionally sited to utilize existing vegetation to screen the Project from surrounding properties. The Project is unique in that it will be screened almost entirely by existing vegetation from the outset of construction, meaning with very limited exceptions, it will be obscured from view of adjacent property owners and the motoring public for its full operational lifetime. The Applicant has committed to maintaining a 125-foot buffer of existing vegetation in areas adjacent to any residential property line or roadway, which exceeds the 20-foot-wide requirement included in this section of the zoning ordinance. There are no residentially zoned properties adjacent to the Project, but the Applicant took a conservative approach and will maintain a buffer in areas adjacent to any parcel zoned A-1 that is believed to include a residential structure. In areas that are adjacent to properties with a residential structure or public roadways where the existing vegetation is insufficient, enhancement screening will be installed to ensure visual impacts are mitigated. The enhancement screening will be made up of plant materials at least three to four feet tall at the time of planting and maximum mature height of 25-feet. The vegetative buffer will be maintained for the life of the Project. Additional information regarding the Project's approach to screening is provided in **Section 5.1**.

4 Comprehensive Plan Review

The Comprehensive Plan for Nelson County is intended to serve as a blueprint for how the County will deal with change and future growth. The Applicant has provided an Analysis of the Project's conformity with the Nelson County Comprehensive Plan as part of this SUP Application (**Appendix E**).

5 Visual Impact Analysis

5.1 Project Screening Plan

The Applicant has implemented a comprehensive approach to minimizing the visual impact of the Project on the surrounding community. The Project has been located within Project Limits that lie within a larger subject parcel area that is largely utilized for silviculture. This allows the Project to be intentionally sited to utilize existing vegetation and favorable topography to screen the Project from surrounding properties. The Applicant has committed to maintaining a 125-foot buffer of existing vegetation in areas adjacent to any residential property line or roadway, which exceeds the 20-foot-wide requirement included in the zoning ordinance (Section 22A-6(2)(e)). In areas that are adjacent to properties with a residential structure or public roadways where the existing vegetation is insufficient, enhancement screening will be installed to ensure visual impacts are mitigated.



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The Applicant has focused on ensuring the Project is adequately screened along Norwood Road, Route 60, Tye River Road, and Twin Oaks Lane. Additional existing vegetation will be maintained on the west side of the Project to eliminate visual impacts to the cluster of residential structures that are located off Route 60 and Twin Oaks Lane. A buffer will also be maintained around the module array that is south of Route 60.

The gen-tie associated with the Project is sited entirely on Subject Parcels included in this SUP application, and the Applicant will be purchasing the Parcel where the gen-tie crosses over Bluck Mountain Lane. The Applicant is proposing that the gen-tie is comparable to other electrical infrastructure in the surrounding area and does not require screening similar to the rest of the Project. A representative photo of the proposed gen-tie is included in **Appendix G**.

The Conceptual Landscape Planting Plan (**Appendix F**) depicts where existing vegetation will be utilized to screen the Project and where enhancement screening will be installed.

Where existing vegetation will be maintained, these natural areas will be left intact with the exception of the possible removal of any dead, dying, or diseased specimens that are deemed to pose a hazard to people or property. The Applicant also reserves the right to selectively remove any trees that are determined to be negatively affecting the production of the Project based upon shading, so long as such management does not compromise the effective visual screen for the Project. Standing dead trees that do not present a threat to the Project or adjoining roads and properties will be left in place to provide roosting opportunities for avian species.

In areas where enhancement screening is proposed, at a minimum, a double row of evergreen trees/shrubs capable of achieving a height of at least eight feet within five to eight years will be planted. Occasional native dogwood trees will be incorporated into the planting to help blend the new plantings into the existing natural areas. It is anticipated that these plants will be installed on approximately 15-foot centers, but the final layout will be determined by the selected plants' growth capabilities. Similarly, the installed size of the plant material will be determined based on the growth rate of the selected plant material. It is anticipated that the minimum height for initial installation will be three to four feet. These planted buffers will be allowed to naturally flourish, so minimal maintenance is anticipated. Should, at any point during the life of the Project, mortality of the planted woody material cause gaps in the buffer that negatively affects the views from adjacent properties or roadways, the Applicant will replace those trees with plantings that comply with the Nelson County Zoning Ordinance. A plant list containing potential plant material choices for the enhancement screening is provided in **Appendix F**. The plant list contains plant materials native to Nelson County, although landscape cultivars may be substituted for some of the true native species to obtain the desired screening effect.

The Conceptual Landscape Planting Plan is located in **Appendix F**. The Applicant is proposing to provide a Final Landscaping Plan prior to or concurrent with the submission of the Final Site Plan, as memorialized in the Proposed Permit Conditions (**Appendix B**). The Landscaping Plan will show where the Project will be screened with existing or proposed vegetation. This iterative approach to developing the screening plan for the Project ensures that the vegetative buffer has been updated to accommodate any changes in the status of existing vegetation (i.e., tree clearing by the landowner) and shifts in the Project design.

5.2 Photo Renderings

The Applicant has prepared a visual impact analysis for the Project (**Appendix G**). The visual impact analysis was completed using photo renderings for five (5) locations along roads adjacent to the Project Limits. Photographs were taken of the current condition at each of the chosen locations. Those photographs were then rendered by graphic designers to produce visualizations of how the views would look in 5 and 10 years. Location 1 and 3 showed no views of the proposed Project under current conditions and as the current vegetation matures, the screening will become denser. Locations 2 and 4 would provide filtered views of the Project under current conditions, however regenerative growth will quickly screen Project components. One of the selected views (Location 5) would not change. The photographs are included in **Appendix G**.



5.3 Glare Hazard Analysis

The Applicant performed a glare hazard analysis for the Project (see **Appendix M**). Based on the current design, glare is not predicted for pilots approaching nearby airstrips or residents. Additionally, glare is not predicted for drivers on Tye River Road, Twin Oaks Lane, Route 60, Norwood Road, or Buck Mountain Lane.

Based on the FAA Notice of Criteria Tool results, the Project does not exceed Notice Criteria. FAA identified the closest airport as Falwell Airport. It is located approximately 18 miles southwest of the Project. No conflicts with airport operations are anticipated. Although the FAA Circle Search for Airports Tool did not identify any airports within 5-miles of the Project, AirNav suggests there are two private use turf airstrips within 5-miles of the Project. Both private use turf airstrips were included in the glare hazard analysis.

6 Environmental and Cultural Impacts

The Applicant has evaluated the Project's potential impacts on environmental and cultural resources, and sensitive resources in close proximity to the Project.

6.1 Sensitive Resources

The Project is not located within five miles of a designated national scenic byway, Virginia Byway, or any of the five scenic vistas addressed in the Nelson County Comprehensive Plan. Additionally, the Project is not near the section of Route 29 from Woods Mill, Virginia to the Albemarle County line or Route 664. These roads were addressed as prospective scenic designations in the Comprehensive Plan. Based on the distance and topography between any of these scenic resources and the Project, it has been determined that the Project will not be visible. The nearest state designated scenic river, Tye River, is approximately two miles north of the Project Limits. The James River is approximately one mile east of the Project Limits, and this section of the James River is considered to have potential to become a state scenic river. The Project will not be visible from the Tye River or the James River. There are no national parks or forests located within 5-miles of the Project Limits. There are five conservation areas associated with James River State Park and six Virginia Outdoor Foundation conservation easements within a five-mile radius of the Project Limits, but they are all located outside of the Subject Parcels. There is one Virginia Department of Forestry conservation easement located approximately four miles northwest of the Project Limits and a Land Trust of Virginia conservation easement located approximately five miles away to the north. Route 60 bisects the southern portion of the Project. According to the Nelson County GIS, there are very few building footprints surrounding the Project that would have views of the Project Limits boundary. The nearest sensitive receptor, Second Mineral Baptist Church, is approximately 300-feet away from the eastern edge of the Project Limits and approximately 800-feet away from the nearest solar array. The nearest densely populated residential area is Amherst.

A desktop database review was conducted to determine if any national or state forests, national or state parks, wildlife management areas or conservation easements were identified within five (5) miles of the Project Limits. Searches of the DCR inventory of managed conservation lands (Federal Wildlife Management Areas, Reservoirs, State Parks, and Conservation Easements), National Park Service inventory of National Parks, Virginia Geographic Information Network (VGIN) inventory of Virginia Town/City Limits, Ventyx, ESRI USA institutions, Virginia Cultural Resources Information System (VCRIS) historic resources, National Hydrologic Dataset and National Wetlands Inventory of wetlands and waterways were conducted. The location and identification of the resources in the vicinity of the proposed Project are shown on the context map included in **Appendix I**.

6.2 Cultural Resources

An analysis of cultural resources in the vicinity of the Project is provided in **Appendix J**. The analysis identified one previously recorded archaeological site and one previously identified architectural resource within the Project Limits. Neither resource has been formally evaluated for potential National Register of Historic Places eligibility. As part of the PBR process, the Applicant is required to complete Phase I Cultural Resource surveys in coordination with the DHR. Any impacts to cultural resources will be avoided, minimized, or mitigated.



6.3 Wetlands and Water of the U.S.

An analysis of Wetlands and Waters of the U.S. is included in **Appendix K**. As part of the PBR process, a wetland delineation will be required of the Project Limits to determine the extent of jurisdictional waters present on site.

The Project intends to avoid impacts to wetland and waterbody features to the maximum extent practicable during the design and construction of the Project. Any potential impacts to jurisdictional waters that cannot be avoided will be permitted through the appropriate regulatory agencies, including the USACE, the DEQ VMP, and the VMRC, as necessary.

6.4 Wildlife

A desktop analysis of potential threatened & endangered species habitat is included in **Appendix L**. Based on the database searches, the federally endangered and state threatened northern long-eared bat (*Myotis septentrionalis*), federally proposed and state endangered tricolored bat (*Perimyotis subflavus*), and monarch butterfly (*Danaus plexippus*), which is a candidate species, have the potential to occur within the Project Limits. The nearest bald eagle nest is greater than 10-miles away. Additionally, the federally and state endangered James spiny mussel (*Parvaspina collina*), state threatened green floater (*Lasmigona subviridis*) and state endangered little brown bat (*Myotis lucifugus*) as having potential to occur in the vicinity of the Project.

The Project will be designed and operated in ways that help protect wildlife and promote biodiversity. Here are some ways in which the Project can contribute to wildlife protection:

1. **Wildlife Corridors:** Wildlife corridors are pathways that allow animals to move freely between habitats, aiding in their migration, breeding, and overall survival. Several wildlife corridors have been implemented in the Project design and are shown on the Minor Site Plan (**Appendix C**).
2. **Project Vegetation and Screening:** Native grasses, pollinators, and wildflowers will be incorporated in the seed mixes to be installed in and around the solar arrays (see **Section 9**). Native vegetation supports local wildlife by providing food sources, shelter, and habitat for various species. Utilizing native plants also helps maintain ecosystem balance and supports pollinator populations, such as bees and butterflies, crucial for plant reproduction. Additionally, existing and planted vegetative screening can provide habitat for wildlife and nesting sites for birds.
3. **Wetland Buffers:** A 50-foot setback will be established between the Project Footprint and all wetlands and jurisdictional waters to protect the sensitive ecosystems in these areas and provide space for wildlife to thrive. These setbacks will also help to reduce runoff pollution, prevent erosion, and safeguard water quality. Additionally, these areas will provide an opportunity to establish wildlife corridors for larger mammals (deer, fox, etc.) to travel through the site.

Field surveys for the Project have been initiated and are anticipated to be completed in Q1 2024. The Applicant will complete a threatened & endangered species habitat assessment to evaluate the likelihood that the above listed species are present within the Project Limits. State and federal wildlife agencies, including the USFWS, the DCR, and DWR, will be consulted, and impacts will be avoided, minimized, or mitigated.

7 Traffic Study

A traffic study is included as **Appendix O**. The traffic study estimated that heavy truck traffic generated by the site development and construction will average 25 trucks a day during site preparation, 17 trucks a day during panel and electrical installation, and would decrease to 15 trucks a day during site clean-up and commissioning. Total truck traffic is expected to be less than 100 trucks per day. The key roadways identified in the study can accommodate the increased traffic due to construction and no geometric improvements are anticipated. Once operational, traffic resulting from the Project will be less than that of one single family home.



8 Decommissioning Plan and Surety

The Applicant has prepared a preliminary decommissioning plan for the Project (see **Appendix H**). This decommissioning plan provides a description of the decommissioning and restoration phase of the Project. The Applicant will remove the Project after the end of its useful life and restore the Project for agricultural and silvicultural uses or other permitted uses as desired by the landowner. The decommissioning phase is assumed to include the removal of Project facilities as depicted in the Minor Site Plan (**Appendix C**).

This Plan includes an overview of the primary decommissioning activities, including the dismantling and removal of facilities, and subsequent restoration of land. A summary of estimated costs and revenues associated with decommissioning the Project are included in **Appendix H**. The summary statistics and estimates provided are based on a 90-MW_{ac} Project design.

The Applicant will provide an updated decommissioning plan and detailed surety information at Final Site Plan approval, as described in this SUP Application and the Proposed Permit Conditions (**Appendix B**). The surety will remain in place for the life of the Project to ensure the County is protected from any default by the Applicant.

9 Vegetation Maintenance Plan

The vegetative cover at the Project currently consists of uneven aged stands of managed pine forest. The forest land is in active silvicultural management and predominantly consists of Loblolly Pine with some volunteer forest species typically found in and around the Project such as Sweetgum, Red Maple, and Tulip Poplar.

In order to construct the proposed Project, some clearing of existing forest will be necessary; however, wherever possible, portions of the existing forest will be preserved on the perimeter of the site as well as in sensitive areas such as wetlands. These untouched natural areas will provide valuable wildlife habitat. The mature hardwood trees located in the site's riparian corridors will provide mast (hard seeds such as acorns) for food, while the pines and other evergreens will provide winter cover. They will also provide travel corridors to allow animals to safely move from area to area.

All cleared areas on the interior of the Project will be seeded with a native grass, wildflower, and non-invasive turf grass mix. The seed mix will stabilize the site and prevent erosion and sediment transport as well as create habitat for small mammals and ground nesting birds. The inclusion of wildflowers will also establish pollinator habitat which has been determined to be rapidly disappearing. The use of native plant material will reduce the watering and fertilizer requirements because the plants are well adapted to the environment they will be in. Repairs to the modules may dictate the timing of some mowing to provide access; however, the intention is to mow the site no more than two to three times a year to promote the establishment, self-seeding and spread of the native grasses and pollinators. This should be sufficient to maintain the grasses and discourage woody species from becoming established within the array areas. To avoid rutting, erosion, and soil compaction, weather forecasts will be consulted, and on-site field inspections will be conducted prior to mowing to ensure that the site is able to withstand the activity.

The Project's final seed mix will be determined closer to the start of construction, prior to the submission of the Final Site Plan. However, the list below contains some possible species native to Nelson County that will likely be used in the Project's seed mix.

- Common Yarrow (*Achillea millefolium*)
- Autumn Bentgrass (*Agrostis perennans*)
- Butterfly Milkweed (*Asclepias tuberosa*)
- Partridge Pea (*Chamaecrista fasciculata*)
- Virginia Wild Rye (*Elymus virginicus*)
- Smooth Panic Grass (*Panicum dichotomiflorum*)
- Blackeyed Susan (*Rudbeckia hirta*)



Nelson County, VA

- Little Bluestem (*Schizachyrium scoparium*)
- Wild Senna (*Senna hebecarpa*)
- Early Goldenrod (*Solidago juncea*)

Prior to construction, the Applicant will develop a Vegetation Management Plan that details vegetative management protocols during construction and operation of the Project.

10 Stormwater Management and Erosion and Sediment Control

The Project is implementing an integrated environmental site design (“ESD”) and SWM approach. The Project is being developed with a focus on early identification and avoidance of key environmental features, which will lead to a more streamlined design development process and benefit local water quality, while reducing the upfront impact of the development.

The ESD planning approach is core to the integrated stormwater strategy, which includes the following key components:

1. Maintaining forested wetland/stream buffers to the greatest extent practicable.
2. Limiting the disturbance footprint where at all practicable. Disturbance shall be limited where practicable to maintenance access paths and solar array foundation footprints, as well as temporary and permanent stormwater management conveyances intended to protect downstream resources.
3. Use of noninvasive turfgrasses incorporated with native grasses and wildflowers, as applicable for limited maintenance and the overall improvement of site hydrology to the extent practicable.

As the Project’s final design is developed, a comprehensive stormwater management plan will be prepared, with detailed routings and calculations demonstrating consistency with the Virginia Stormwater Management Program (“VSMP”) Regulations Part IIB Technical Criteria and associated requirements for water quality and water quantity. To date, the Applicant has performed a preliminary SWM concept assessment of the proposed Project Footprint, which includes cursory location and foot-printing of likely dry detention basins to address VSMP water quantity control requirements.

The Applicant has also taken a proactive approach of incorporating ESC planning and design into early-stage Project development.

The ESC strategy for the site will be integrated into the general ESD and SWM approach. Principally, this will focus on the following:

1. The initial identification of key resources (wetlands/waters, soils, slopes, etc) that may be vulnerable, and that may require additional protection / management strategies, during construction. This strategy includes the buffering of certain key resources during and post-construction.
2. The paramount phasing of the initial installation of and conversion of temporary sediment basins to dry detention basin structures to be utilized as permanent stormwater features during post-construction., This phasing includes ensuring that the basins themselves and the conveyances to these basins are constructed as a first step in land-disturbing activity and are made functional prior to upslope land disturbance.
3. Phasing of the installation of key perimeter controls prior to upslope land disturbance.
4. Early site stabilization measures, particularly on downstream grading / slopes. Establishing stabilization on earthen structures such as dams, dikes and diversions immediately after installation.
5. Utilizing clean water diversions, where feasible, to limit construction site “run on” from offsite areas, seeking to discharge these clean water diversions as sheet flow, as applicable.
6. Providing micro phasing (facility level) steps for these temporary ESC measures, as needed, for successful transition to permanent controls post-construction, limiting contamination and erosion/sedimentation risk with



Nelson County, VA

successive reworking / regrading of features. Where applicable this phasing of permanent features will be tied to the postconstruction SWM record drawings to provide additional field contractor / quality control.

7. Daily management techniques to ensure continued functionality of ESC measures. As part of the management approach, specific maintenance of individual ESC components will be required. This strategy includes the documentation and completion of corrective actions.
8. Optimizing soil balance on site by minimizing and targeting site grading.
9. The stockpiling and reapplication of topsoil following necessary grading.
10. Utilizing construction techniques and practices that avoid compaction of soils except as required to meet engineering specifications (i.e. berms and sub-compaction of fill material).

The Applicant's implementation of an integrated ESD and SWM approach throughout early-stage development will ensure that the Project adequately addresses stormwater runoff and erosion control and will be prepared to obtain the associated state-level permits that will be necessary to construct the Project.



Appendix A: Project Location Map



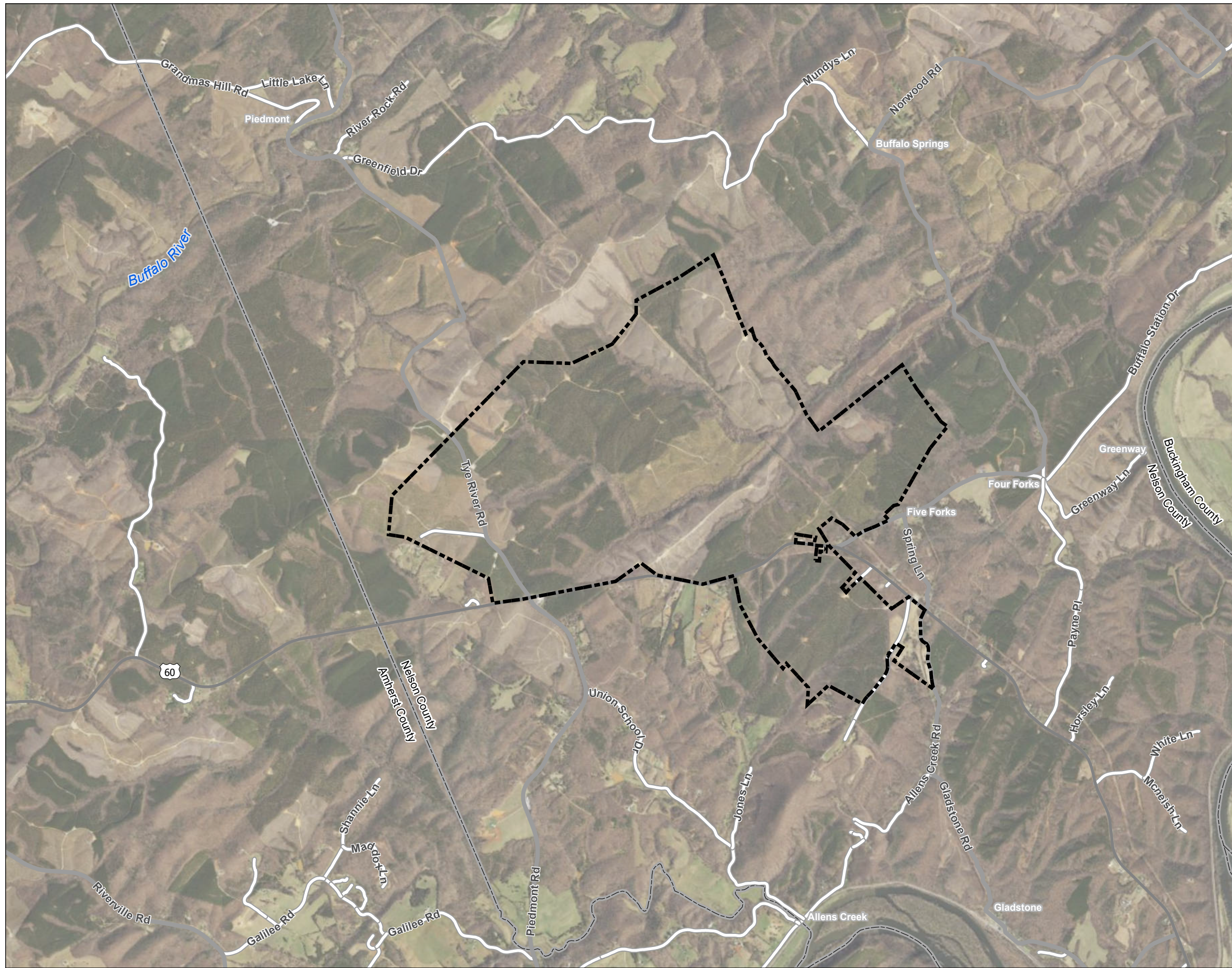


Figure No.

1

Title

Location Map

Client/Project
 Wild Rose Solar Project, LLC
 Wild Rose Solar Project

203402299

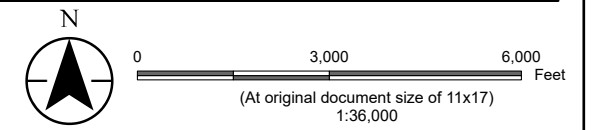
Project Location

Nelson County, Virginia

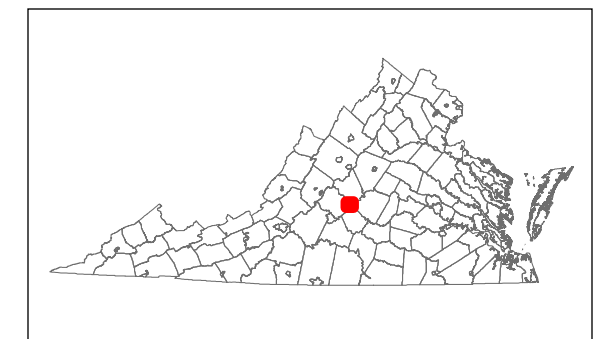
Prepared by MER on 2023-10-23

TR by BJW on 2023-11-06

IR by KHP on 2023-11-06



Project Limits



- Notes**
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar Project, LLC, VGIN, U.S. Census Bureau, Geographic Names Information System (GNIS), USGS National Hydrography Dataset (NHD)
 3. Orthoimagery © Virginia Geographic Information Network (VGIN)



Appendix B: Special Use Permit Application and Proposed Conditions





PERMIT APPLICATION:

Nelson County Department of Planning & Zoning

TO THE ZONING ADMINISTRATOR: _____ # _____
application type *application number*

1. The undersigned hereby petitions the Planning Commission and/or Board of Supervisors for approval of the following (check appropriate box):

- Special Use Permit
- Rezoning from _____ to _____
- Conditional Rezoning from _____ to _____
- Other: _____
- Subdivision
- Site Plan – Minor
- Site Plan – Major

Reason(s) for request:

Wild Rose Solar Project, LLC ("the Applicant"), seeks a Special Use Permit to build and operate a 90-megawatt alternating current large solar energy system and associated facilities ("Wild Rose Solar Project" or "the Project") in Nelson County, Virginia, approximately 2 miles northwest of the community of Gladstone. The Project is located west of Norwood Road (Route 626), north of Piedmont Road (Route 601) and Buck Mountain Lane (Route 791), and is bisected by Tye River Road (Route 657), Twin Oaks Lane (Route 820), and Richmond Highway (Route 60). The two (2) subject parcels included in this Special Use Permit application total 4,647 acres. The Project is sited on a portion of the subject parcels that totals approximately 2,470 acres ("Project Limits"). Within the Project Limits, the footprint of the proposed infrastructure or "Project Footprint" will cover approximately 550 acres. Construction of the Project is scheduled to begin in the second quarter of 2026, with a projected Commercial Operation Date in early 2027. A full description of the Project including location maps and a detailed site plan is provided as part of this Special Use Permit application.

(Please use reverse or attach additional sheet if more space is needed.)

2. Applicant(s) and Property Owner(s):

(Please provide names of applicants and property owners and indicate applicable title; if applicant is not the property owner, please show relationship, i.e. lessee, contract purchaser, etc.)

Applicant Property Owner Name: Wild Rose Solar Project, LLC
Attn: Jeannine Johnson

Mailing Address: 422 Admiral Blvd, Kansas City, MO 64106

Telephone #: (816) 421-9599 Email Address: jjohnson@savionenergy.com

Relationship (if applicable): Authorized Agent

Applicant Property Owner Name: Weyerhaeuser Company

Mailing Address: 205 Perry Lane Road, Brunswick, GA 31525

Telephone #: (206) 539-4406 Email Address: N/A

Relationship (if applicable): Property Owner

(Please attach additional sheet if more space is needed for applicant(s) / property owner(s) info.)

3. Location and Characteristics of Subject Property:

a. Address of Property (specific location, route numbers, street names, voting district, etc.):
Please see attached Table 1

b. Official tax map number: Please see attached Table 1

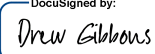
c. Acreage of property: Please see attached Table 1

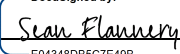
d. Present use: Please see attached Table 1

e. Present zoning classification: Please see attached Table 1

f. Zoning classification of surrounding properties: A-1

4. Affidavit: The undersigned applicant(s) and/or property owner(s) certifies that this application and the foregoing answers, statements, and other information herewith submitted are, in all respects, true and correct to the best of their knowledge and belief. Also, the applicant(s) and/or property owner(s) gives permission for members of the Planning Commission, Board of Supervisors, and County Staff to visit and view the subject property.

Signature:  Printed Name: Drew Gibbons

Signature:  Printed Name: Sean Flannery

(Please attach additional sheet if more space is needed for applicant(s) / property owner(s) signatures.)

5. Additional information: *(Please attach separate sheet for additional details, explanations, etc.)*

6. Please note: In the event of cancellation or postponement at your request after the initial newspaper advertisement for this application, an additional fee will apply for re-advertisement (determined by the actual cost of the ad). This fee will not apply in cases of Planning Commission or Board of Supervisors deferment.

-----TO BE COMPLETED BY PLANNING & ZONING STAFF-----

Pursuant to Article _____, Section _____ of the Nelson County Zoning Ordinance.
Pursuant to Section _____, Subsection _____ of the Nelson County Subdivision Ordinance.

- Completed application and fee (\$ _____) received on _____
- Hearing Notice published on _____
- Planning Commission action: Date of Meeting / Hearing: _____
Recommendation: _____
- Board of Supervisors action: Date of Hearing: _____ Date of Decision: _____
Action: _____

Nelson County Planning & Zoning Department

(Mailing Address) P.O. Box 558, Lovingsston, Virginia 22949 | *(Physical Address)* 80 Front Street, Lovingsston, Virginia 22949
(Telephone Number) 434 263-7090 or Toll Free 888 662-9400, selections 4 & 1 | *(Fax Number)* 434 263-7086
<http://www.nelsoncounty-va.gov/departments/planning-zoning/>

2. Applicant(s) and Property Owner(s): Cont'd.

Applicant



Property Owner

Name: Georgiana and Bobby Hickey

Mailing Address: 2111 Cortland Street, Waynesboro, VA 22980

Telephone #: (540) 233-2152

Email Address: gmillerhickey@yahoo.com

Relationship (if applicable): Property Owner

3. Location and Characteristics of Subject Property:

Table 1 Property Details						
Mailing Address	Parcel ID	Acres	Owner	Present Use	Zone	Zoning of Surrounding Properties
205 PERRY LAND ROAD, BRUNSWICK, GA 31525	97 1 9	4599.4	WEYERHAEUSER COMPANY	Silviculture	Agricultural District A-1	Agricultural District A-1
171 BUCK MOUNTAIN LN, GLADSTONE, VA 24553	97 A 29	47.4	HICKEY BOBBY JOE &	Silviculture	Agricultural District A-1	Agricultural District A-1

WILD ROSE SOLAR PROJECT, LLC
PROPOSED CONDITIONS

SUP #

Proposed December 20, 2023

Wild Rose Solar Project, LLC (the “Applicant”) has applied (the “Application”) for a Special Use Permit (“SUP”) from Nelson County, Virginia (the “County”) to construct a large solar energy system as defined and permitted by Article 22A of the Zoning Ordinance for Nelson County, Virginia (the “Ordinance”).

Pursuant to the Application, the Applicant proposes the following Special Use Permit conditions (the “Conditions”) which are in concert with and supplementary to the Ordinance. Upon approval of the Special Use Permit, the Conditions shall be in full force and effect and binding on any successor or assign of (i) the Applicant and (ii) owners of the Subject Parcels (defined below). All terms and phrases used and not otherwise defined herein shall have the meanings ascribed to them in the Ordinance.

1. Limitation of Use of the Subject Parcels for the Project. The use of the Project Limits, as defined herein, shall be limited to up to a 90-megawatt alternating current (MWac) ground-mounted solar photovoltaic electric generating facility (the “Project”). The project limits (the “Project Limits”) shall consist of portions of two (2) parcels of land identified as Nelson County Tax Map Parcels 97-1-9 and 97-A-29 (the “Subject Parcels”) totaling approximately 2,470 acres which are zoned A-1 Agricultural, as will be depicted on the final site plan (the “Final Site Plan”). Areas of the Subject Parcels outside the Project Limits may continue to be used for agriculture, silviculture, and other uses permitted by the Ordinance. The Project will be developed in substantial conformity with the Minor Site Plan as revised and dated November 27, 2023 (the “Minor Site Plan”). The Project Limits shall include the areas shown on Minor Site Plan and as may be shown on the Final Site Plan containing racking, panels, inverters, transformers, cabling, substation, switchyard, and supporting infrastructure (collectively, the “Solar Facilities” or the “Solar Facility”), including all stormwater management areas.
2. Duration of Use and Permit. The Solar Facilities shall constitute the use approved pursuant to the SUP. The SUP shall run with the land and bind all owners of the Subject Parcels and their successors, heirs, and assigns. References to the Applicant in this SUP shall also include the owners of the Subject Parcels, and their successors, heirs, and assigns. The SUP shall expire if the Project fails to obtain building permits within five (5) years from the approval of this SUP unless extended by written agreement between the County and the Applicant.
3. Studies and Plans. Prior to or concurrent with the submission of the Final Site Plan, the Applicant will submit to the County the studies and plans as set forth in this Section 3, which shall be submitted in accordance with the requirements of the appropriate authority.

- a. Construction Management Plan (the “Construction Management Plan”). Applicant will submit the Construction Management Plan, including the following items:
 - i. Proposed construction schedule and hours of operation;
 - ii. Project access planning for each entry to the Project and any required road improvements;
 - iii. Project security measures to be implemented prior to the commencement of construction of the Solar Facilities;
 - iv. Dust mitigation and any burning operations; and
 - v. Handling of construction complaints via a project liaison (the “Liaison”).

- b. Construction Traffic Management Plan/Traffic Mitigation Plan (the “CTMP”) and Road Repair Plan (the “Road Repair Plan”). The Applicant shall:
 - i. Develop the CTMP in consultation with the County Planning Staff, the Virginia Department of Transportation (“VDOT”), the Nelson County Sheriff’s Office, and the Virginia State Police to identify and expeditiously resolve or mitigate traffic issues that arise during the construction or decommissioning of the Solar Facilities, including but not limited to (A) lane closures, (B) signage, and (C) flagging procedures. Employee and delivery traffic shall be scheduled and managed so as to minimize conflicts with local traffic. Permanent access roads and parking areas will be stabilized with gravel, asphalt or concrete to minimize dust and impacts to adjacent properties. Traffic control methods shall be coordinated with VDOT prior to initiation of construction. The CTMP will identify on-site areas suitable for parking for construction workers and for trucks to be unloaded and to turn around without having to back onto public roadways during construction and decommissioning.
 - ii. Develop the Road Repair Plan in consultation with VDOT to provide for repair of damage to public roads occurring within five hundred (500) feet of any entrance to the Project. The Road Repair Plan shall provide that such repair to the roads be at least comparable to their conditions before the commencement of construction or decommissioning.

- c. Landscaping Plan (the “Landscaping Plan”). The Applicant shall submit the Landscaping Plan showing the Solar Facilities and the Project, including the security fence, screened from public rights-of-way and adjacent residential properties with existing or proposed vegetation, including the vegetative buffer. The vegetative buffer provided in the Landscaping Plan shall conform to the following requirements:
 - i. Existing vegetation will be maintained where possible and supplemented, as necessary; The vegetative buffer will be regularly inspected and supplemented with additional plantings as necessary to replace dead trees and shrubs.

- ii. The Applicant shall submit renderings along with the Final Site Plan describing the buffer areas, specifically delineating the areas where existing vegetation is to be maintained or supplemented and areas where the vegetative buffer will be established;
 - d. Erosion and Sediment Control Plan. The Applicant shall construct, maintain and operate the Project in compliance with the approved plan, posting an Erosion and Sediment Control bond (or other security) for the construction portion of the Project as required by the County or DEQ, as applicable.
 - e. Stormwater Management Plan. The Applicant shall construct, maintain and operate the Project in compliance with the approved stormwater management plan as approved by DEQ.
 - f. Emergency Management Plan. Prior to final approval of the Final Site Plan, an Emergency Management Plan (the “EMP”) shall be prepared to address situations that may require response from Nelson County or local volunteer public safety personnel, including, without limitation, fire safety and emergency response personnel. The EMP shall:
 - i. Be developed in conjunction with and approved by the County Fire Chief and County Police Chief or their designees prior to final approval of any site plan;
 - ii. Provide a mutually agreed upon schedule of communication and training sessions for Nelson County and local volunteer public safety personnel relative to possible emergency response situations at the Project.
 - iii. Provide emergency contact information of the operators of the Project to County safety personnel; and
 - iv. Provide that all emergency contact information pursuant to (iii) will be posted on all Project access gates.
 - g. Ocular Impact Study. The Applicant shall submit an ocular impact study addressing the impact to public roads and structures within sight of the Project. The analysis shall be performed using FAA Solar Glare Hazard Analysis Tool (SGHAT) to demonstrate compliance with FAA standards for measuring ocular impact.
 - h. Payment for Third Party Experts and Consultants: Upon submission of an application for Final Site Plan Approval, Applicant agrees to pay the County Twenty-Five Thousand Dollars (\$25,000) to defray costs associated with the provision and/or employment of outside experts and consultants necessary to review specific technical issues related to the Project outside the County’s expertise or for which the County has inadequate full-time staff.
4. Limited Access to the Project. The Project will be accessed from public roads and rights of ways at those points shown may have the access as shown on the Final Site Plan. All access points from public roads will be reviewed and approved by VDOT pursuant to the CTMP.

5. Lighting. During construction of the Solar Facilities, any temporary construction lighting shall be positioned downward, inward, and shielded to minimize glare from all adjacent properties. Emergency and safety lighting shall be exempt from this construction lighting condition. Any onsite lighting provided for the operational phase of the Project shall be dark-sky compliant, shielded away from adjacent properties, and positioned downward to minimize light spillage onto adjacent properties.
6. Access and Inspections. The Applicant will allow designated County representatives or employees access to the facility at any time for inspection purposes, with at least forty-eight (48) hours advance notice to the Owner or Operator of the Project and subject to reasonable site safety and security requirements to ensure safe inspection by the County. The Project may be inspected by the County Building Official on an annual basis to ensure compliance with applicable State Building and Electrical Codes. Additional inspections shall be conducted if desired by County officials or as necessary in the event of complaints and shall not replace the inspections specified in this section.
7. Compliance. The Project shall be designed, constructed, and tested to meet all relevant local, state, and federal standards as applicable.
8. Project Components and Design. The Solar Facilities shall comply with generally accepted national environmental protection and product safety standards for the use of solar panels and associated technologies for solar photovoltaic projects. The solar panels shall be made of or coated with anti-reflective materials to prevent glare. The Project shall be constructed in compliance with the requirements of the most current Virginia Building and Electrical Codes in effect upon issuance of the building permit. The total height of the Solar Facilities shall not exceed 15 feet above the ground when orientated at maximum tilt. This height limitation shall not apply to the power poles, transformers, substation equipment and the connections to the existing transmission lines on the Property. In the construction and installation of a large solar energy system, the owner or operator shall install all electrical wires associated with the large solar energy system underground unless otherwise depicted in the Minor Site Plan attached as Appendix C, the approximate location of which is approved by issuance of this SUP.
9. Decommissioning and Decommissioning Plan. The Applicant has submitted a preliminary decommissioning plan (the "Preliminary Decommissioning Plan") to the County along with this SUP application, including a form of a written agreement that details the method, and estimated cost for the performance of decommissioning. The final decommissioning plan ("Final Decommissioning Plan"), prepared by a Virginia Licensed Professional Engineer shall be submitted with the Final Site Plan Application and must in the form of a written agreement acceptable to the County Attorney and in compliance with Virginia Code Section 15.2-2241.2, as amended, and the Zoning Ordinance, and shall set forth the joint and several responsibilities of the Applicant and all the successors and assigns of the Applicant. The purpose of the Decommissioning Plan is to specify the procedure by which the Applicant would remove the Solar Facility after the end of its useful life and restore the

property for agricultural and silvicultural uses or other permitted uses as desired by the landowner, except in no case shall any electrical components, support structures, poles, racking, panels, inverters, transformers, or collector stations of the Project remain on the Property. The Applicant shall update the Decommissioning Plan and associated estimate of cost of decommissioning every five (5) years from the original Commercial Operation Date.

- a. Deactivation of Facility Due to Technical Failure. In the event any technical or physical failure of the Project or any component thereof causes the Project to cease commercial operation, Applicant shall notify the Zoning Administrator of such failure and provide a written report of available details on the Project's anticipated return to commercial operation. In the event that more than twelve (12) months are required to return the Project to commercial operation as required by the Zoning Ordinance, upon request of the Applicant, the Zoning Administrator shall approve an extension of the Applicant's obligation to decommission the Project. In no case shall such extension be granted for a period where the Project would be inoperable for greater than twenty-four (24) consecutive months.
 - b. Disposal of Project Components. All components of the Project which are removed from service due to damage during construction and operation will be collected and stored onsite in dry waste containers and either recycled or disposed of offsite in accordance with applicable manufacturer and the local, state and federal solid waste regulations.
 - c. Partial Decommissioning. If decommissioning is triggered for a portion of the Solar Facilities, then the Applicant or its successor or assigns shall commence and complete decommissioning, in accordance with the Decommissioning Plan, for the applicable portion of the Solar Facilities; the remaining portion of the Solar Facilities would continue to be subject to the Decommissioning Plan. In the event of a partial decommissioning, the Decommissioning Security shall be reduced in direct proportion to the proportion of the Project being decommissioned. Any reference to decommissioning the Solar Facilities shall include the obligation to decommission all or a portion of the Solar Facilities whichever is applicable with respect to a particular situation.
10. Project Liaison. The Applicant will designate at least one public liaison (the "Liaison"), will publicize a toll-free phone number and email address for communication with the Liaison during construction, and will post such information on a temporary sign at each major access point to the Solar Facilities and provide such contact information to the Zoning Administrator. The Liaison shall act as a point of contact between citizens and construction crews. The Liaison shall be available by phone and email during active construction hours and shall respond to any questions related to the Solar Facilities or the Project within 72 hours. The Liaison role shall commence at the start of construction.

11. Compliance with laws. All operations pursuant to this special use permit shall be conducted in compliance with the SUP and all applicable federal, state and local laws, regulations and ordinances. In the event of a conflict between the Nelson County Zoning Ordinance and the SUP Conditions, the SUP Conditions shall control.

12. Violations and Revocation.

- a. Stop Work Orders. A violation of any type of the Nelson County Zoning Ordinance, this SUP, any Studies or Plans required by this SUP or any Solar Facility Siting Agreement may result in a Stop Work Order. Stop Work Orders may be issued 72 hours after delivery of a written notice of violation (“Pending Stop Work Order Notice”) by the Zoning Administrator to Applicant via email or written notice to the Liaison. Upon issuance of a Stop Work Order or Pending Stop Work Order Notice, Applicant shall meet and/or communicate with the County and determine a process for remedying the violation. Implementation of the remedial process to the County’s satisfaction shall result in revocation of the Pending Stop Work Order Notice or the Stop Work Order, as applicable.
- b. Extended Violations, SUP Revocation. Any violation of any type of the Nelson County Zoning Ordinance, this SUP, any Studies or Plans required by this SUP or any Solar Facility Siting Agreement continuing for 60 days from the date a written notice of violation (“NOV”) is mailed to the Applicant’s point of contact, as set forth in the notice provision of the Siting Agreement, may result in revocation of this SUP if the Operator has (i) failed to correct the violation cited in the NOV; (ii) failed to meet with the Zoning Administrator and submit a plan to address the violations cited in the NOV; or (iii) has failed to comply with such a plan. With respect to any road repairs necessitated by the Operator’s use of the roads during construction, any such repairs shall be made within a reasonable period of time after obtaining approval from VDOT. Failure to comply with any and all conditions as approved by the Board of Supervisors may result in this SUP being revoked after a public hearing by the Board.

13. Successors and Assigns. The SUP and the Conditions shall apply to the Applicant and any successors or assigns of the Applicant. The County shall be noticed if Wild Rose Solar Project, LLC assigns its responsibilities under this SUP to any other entity.

AUTHORIZED AGENT

I, the undersigned property owner and/or attorney-in-fact, and trustee, hereby authorize Wild Rose Solar Project, LLC, their representatives, contractors, and assigns, to apply for a Conditional Use Permit, any other Wild Rose Solar Project, LLC construction and operations permits, and/or be my representatives either in person or by correspondence for the property described on Attachment A.

Georgiana Lynn Miller-Hickey / Bobby Joe Hickey
Name: Georgiana Lynn Miller-Hickey
Bobby Joe Hickey

Title:

Dated: 12/14/2023

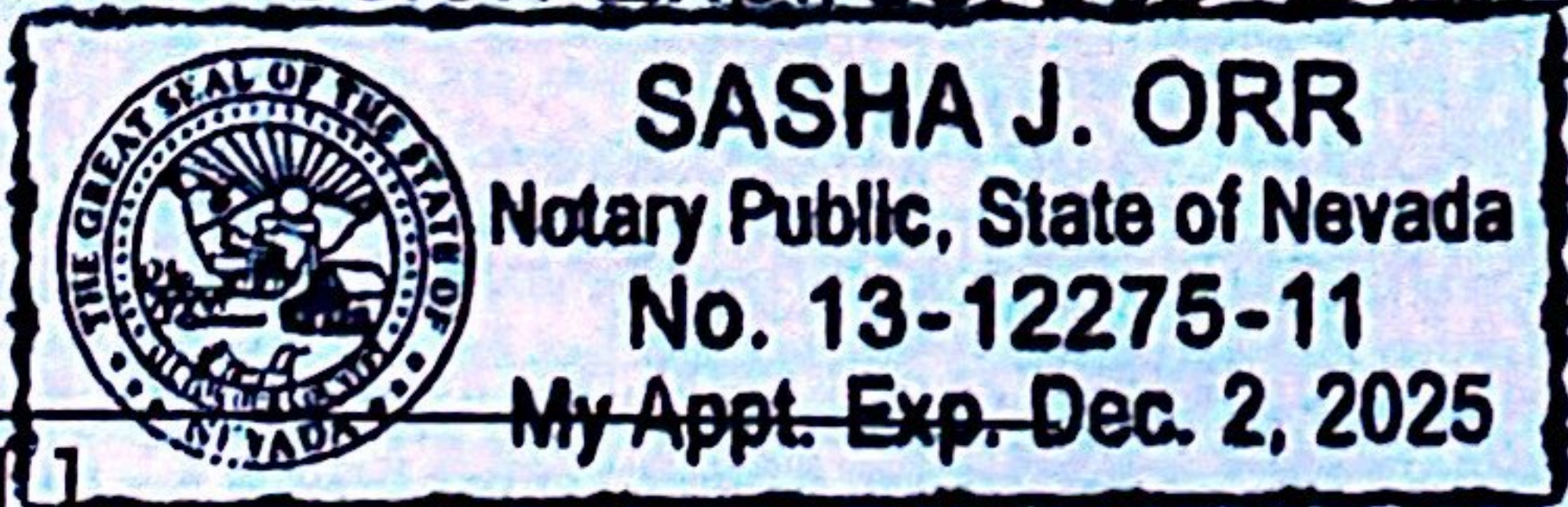
Address: 105 Cary Ave
North Pole, AK 99705

STATE OF Nevada)
) ss.
COUNTY OF Lincoln)

BE IT REMEMBERED, that on this 14 day of December, 2023, before me, the undersigned, a Notary Public in and for said County and State aforesaid, came Georgiana Miller Hickey and Bobby Hickey (name) to me known to be the person who executed the foregoing instrument, and acknowledged that he executed the same as his free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal in the date herein last above written.

My Commission Expires: Dec 2 2023



[SEAL]

Sasha Orr
Notary Public in and for said County and State

Print Name: Sasha J Orr

Attachment A

Parcel No(s):

97 A 29

MAILED
DEC 2 2025
RD 18-12278-11
SASHA L. ORR
Maine Public State of Maine

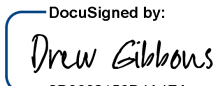
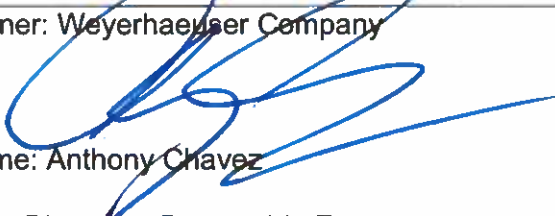
AUTHORIZED AGENT CONSENT

I, the undersigned property owner and/or attorney-in-fact, and/or trustee ("Owner"), hereby authorizes Wild Rose Solar Project, LLC, its representatives, contractors, and assigns ("Wild Rose"), to communicate with staff at Nelson County, Virginia (the "County") on Owner's behalf as such communications (including submittal of an Application(s), defined below) relate to solar energy development at the property described on Attachment A (the "Property") and limited to the following activities:

- Apply for a Conditional Use Permit (CUP) and/or any other Wild Rose Solar Project, LLC construction and operations permits (each an "Application"), including preparation and filing of an application and such other supporting information as required by the County;
- Agree to any and all terms and conditions as necessary for the use of the property as requested in an Application; and
- Act as Owner's representative in person, over the phone, or by correspondence.

Wild Rose agrees and acknowledges that the authority granted above is subject to the terms and conditions set forth in the lease agreement applicable to the Property between Owner and Wild Rose (the "Lease"), including without limitation its indemnification and release provisions, and it shall be Wild Rose's sole responsibility to ensure that all actions taken under this Consent comply with the terms, conditions and limitations of the Lease. Neither the County nor any representatives thereof shall have any responsibility therefor.

This Consent shall terminate on the earliest to occur of the following: (a) such solar facility is approved and constructed, as evidenced by the start of commercial operations (the first date on which solar electricity is generated at the Property and delivered for sale to a customer) or (b) the Lease is terminated. Wild Rose shall be responsible for providing a written notice of lease termination to the County in the event the Lease is terminated for any reason. The County may otherwise rely on this Consent.

<p>Wild Rose Solar Project, LLC</p> <p>DocuSigned by: By:  2D3602156D4A4EA...</p> <p>Name: Drew Gibbons</p> <p>Title: Authorized Person</p> <p>Dated: January 17, 2024</p> <p>Address: 422 Admiral Blvd, Kansas City, MO 64106</p>	<p>Owner: Weyerhaeuser Company</p> <p>By: </p> <p>Name: Anthony Chavez</p> <p>Title: Director – Renewable Energy</p> <p>Dated: January 17, 2024</p> <p>Address: 220 Occidental Ave S, Seattle, WA 98104</p>
---	---

Attachment A

Nelson County, Virginia

Parcel No(s):

96-A-1

97-1

97-1-9

97-A-28

97-A-2

**RECORDING REQUESTED BY
AND WHEN RECORDED MAIL TO:**

Wild Rose Solar Project, LLC
422 Admiral Boulevard
Kansas City, MO 644106

**AMENDMENT TO MEMORANDUM
OF SOLAR GROUND LEASE AGREEMENT**

THIS AMENDMENT TO MEMORANDUM OF SOLAR GROUND LEASE AGREEMENT (this "*Amendment*"), dated JULY 7th, 2023, is made by and between Weyerhaeuser Company, a Washington corporation, having an address of 220 Occidental Ave. S, Seattle, Washington 98104 ("*Lessor*"), and Wild Rose Solar Project, LLC, a Delaware limited liability company, having an address of 422 Admiral Boulevard, Kansas City, MO 64106 ("*Lessee*"). Lessor and Lessee being collectively referred to as the "*Parties*".

The Parties hereby certify:

A. Lessor owns that certain real property located in Nelson County, Virginia and described on Exhibit A attached hereto (the "*Leased Premises*").

B. Lessor and Lessee entered into that certain Solar Ground Lease dated August 18, 2020 (the "*Original Lease*"), as amended by that certain Amendment to Solar Ground Lease Agreement dated September 18, 2020 (the "*First Amended Lease*"), notice of which is imparted by that certain Memorandum of Solar Ground Lease Agreement dated August 18, 2020 and filed in the public records of Nelson County, Virginia on February 14, 2022, as Instrument No. 202200445 (the "*Original Memorandum*"), as further amended by that certain Second Amendment to Solar Ground Lease dated JULY 7th, 2023 (the "*Second Amended Lease*"), together with the Original Lease and the First Amended Lease, the "*Lease*"), wherein Lessor agreed to lease to Lessee the Leased Premises.

In consideration of the foregoing recitals and mutual covenants and agreements set forth herein, and for other good and valuable consideration, the receipt of which is hereby acknowledged, the Parties hereby agree as follows:


1. Exhibit A of the Original Memorandum is hereby deleted in its entirety and replaced with the Exhibit A attached hereto.

2. Section 5. a. of the Original Memorandum is hereby amended to be the following:

"an "Option Term" commencing on the Effective Date and continuing until August 18, 2026;"

IN WITNESS WHEREOF, the Parties have executed and delivered this Memorandum as of the date first set forth above.

LESSEE: WILD ROSE SOLAR PROJECT, LLC,
a Delaware limited liability company

By: 

Name: Aaron Lipscomb


Title: Authorized Person

STATE OF MISSOURI)
) ss.
COUNTY OF JACKSON)

Be it remembered that on this 7th day of JULY, 2023, before me, the undersigned, a Notary Public in and for the County and State aforesaid, came Aaron Lipscomb, to me personally known, who being by me duly sworn did say that he is an Authorized Person of Wild Rose Solar Project, LLC, a Delaware limited liability company, that the within instrument was signed and delivered on behalf of said Wild Rose Solar Project, LLC by authority thereof, and he acknowledged said instrument to be the free act and deed of said limited liability company for the purposes therein expressed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal in the date herein last above written.

My Commission Expires:

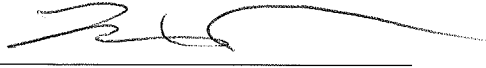

Notary Public in and for said County and State

[SEAL]

Print Name: Clifton Lee Nix II

CLIFTON LEE NIX II
Notary Public - Notary Seal
STATE OF MISSOURI
Jackson County
My Commission Expires: Jan. 10, 2025
Commission #21672121

LESSEE: WILD ROSE SOLAR PROJECT, LLC,
a Delaware limited liability company

By: 

Name: TRAVIS NARUM

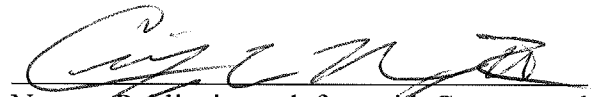
Title: Authorized Person

STATE OF MISSOURI)
) ss.
COUNTY OF JACKSON)

Be it remembered that on this 7th day of JULY, 2023, before me, the undersigned, a Notary Public in and for the County and State aforesaid, came TRAVIS NARUM, to me personally known, who being by me duly sworn did say that he/she is Authorized Person of Wild Rose Solar Project, LLC, a Delaware limited liability company, that the within instrument was signed and delivered on behalf of said Wild Rose Solar Project, LLC by authority thereof, and he acknowledged said instrument to be the free act and deed of said limited liability company for the purposes therein expressed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal in the date herein last above written.

My Commission Expires:


Notary Public in and for said County and State

[SEAL]

Print Name: Clifton Lee Nix II

CLIFTON LEE NIX II
Notary Public - Notary Seal
STATE OF MISSOURI
Jackson County
My Commission Expires: Jan. 10, 2025
Commission #21672121

LESSOR:

WEYERHAEUSER COMPANY, a
Washington corporation



By: DLM Meyers

Name: Diane M Meyers

Title: Vice President

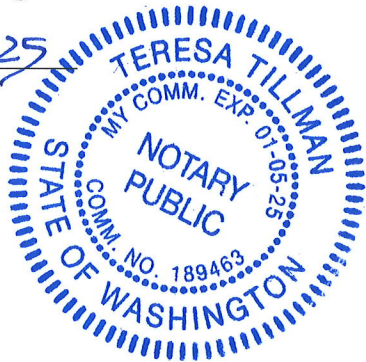
STATE OF WASHINGTON)
) ss.
COUNTY OF KING)

Be it remembered that on this 15th day of June, 2023, before me, the undersigned, a Notary Public in and for the County and State aforesaid, came Diane M Meyers, to me personally known, who being by me duly sworn did say that he/she is Vice President of Weyerhaeuser Company, a Washington corporation, that the within instrument was signed and delivered on behalf of said Weyerhaeuser Company by authority thereof, and he acknowledged said instrument to be the free act and deed of said corporation for the purposes therein expressed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year LAST above written.

My Commission Expires:

Jan. 05, 2025
[SEAL]



Teresa Tillman
Notary Public in and for said County and State

Print Name: Teresa Tillman

Exhibit A

Legal Description

THE FOLLOWING REAL PROPERTY LOCATED IN THE COUNTY OF NELSON, STATE OF VIRGINIA:

TWO THOUSAND FOUR HUNDRED (2,400) ACRES, MORE OR LESS, AS GENERALLY DEPICTED ON EXHIBIT A-1 AND LYING WITHIN THE FOLLOWING DESCRIBED REAL PROPERTY:

Parcel One: Parcel 1 of 3 parcels Breezy Bee 40431

All that tract of land containing 157.124 acres, lying in the Lovingson Magisterial District of Nelson County, Virginia, about 3 1/2 miles west of Caskie on both sides of Mulberry Creek on the Old Bent Creek Road and on the new Buck Mountain public road adjoining the lands of H. P. Pleasant, Verner C. Horsley,

B. W. Tyree, Ed Irvin, E. P. Taylor and J. Woody, being composed of the "Harding Tract", and the "Rich Branch Tract", and being more particularly described on a plat thereof made by Charles H. Kirkland from a survey of March 4, 1957, revised June 20, 1957, and recorded in the Clerk's Office of the Circuit Court of Nelson County, Virginia, in Plat Book 4, page 90, LESS AND EXCEPTING 0.791 acres, designated as Lot "A" on the aforementioned plat.

Parcel Two: Parcel 2 of 3 parcels Breezy Bee 40431

That certain tract or parcel of real estate, lying and being in Lovingson Magisterial District of Nelson County, Virginia, fronting on the South side of U. S. Highway 60, adjoining the lands of E. Christian, D. Johnson, Lucas, Taylor, and the other lands Westvaco Corporation, Willie Jones and others, containing 273.9 acres, and being the residue of Tracts 7, 8 and 9 shown on a plat of survey made by Ralph P. Hines, C.L.S., bearing dated of November 28, 1972, which plat is recorded in the Clerk's Office of the Circuit Court of Nelson County, Virginia in Plat Book 8, page 68, after off conveyances of one (1) acre fronting on Highway 60 to E. Christian by deed dated January 24, 1974 and recorded in the aforesaid Clerk's Office in Deed Book 134, page 588, and also off conveyance of one (1) acre on Highway 60 to D. Johnson by deed dated September 17, 1973 and recorded in the aforesaid Clerk's Office in Deed Book 132, page 451, both one acre off conveyances coming off of Tract 9; and more particularly described by metes and bounds in the deed to Westvaco Corporation, a Delaware corporation, from C. Douglas Branch and Janet G. Branch, his wife, dated July 15, 1980 and recorded July 28, 1980 in the aforesaid Clerk's Office in Deed Book 181, page 81.

Parcel Three: Parcel 3 of 3 parcels Breezy Bee 40431

All that certain tract or parcel of land together with its buildings and improvements thereon situated in the Lovingson Magisterial District of Nelson County, Virginia, about one mile from Mineral Springs Church containing 7.94 acres, more or less, and adjoining Westvaco's Breezy Bee Tract on the northwest and southwest (Deed Book 180, page 81) and the Mabel Harris Tract on the southeast (Deed Book 91, page 156) and Robert H. Ellis on the northeast and possibly others.

Parcel Four: Parcel 4 of 4 parcels Metajon 40312 and Raney 40423

That certain parcel or tract of land lying in Lovingston Magisterial District, Nelson County, Virginia, containing 500 acres; it being all of the property shown on plat of survey made by T. W. Saunders, Surveyor, in July, 1948, a copy of which plat is recorded in the Clerk's Office of the Circuit Court of Nelson County in Plat Book 2, page 50, except for three parcels as follows: (1) a parcel containing 1.5 acres which was conveyed by N. W. Rhodes and wife to the Trustees of Mineral Springs Baptist Church by deed dated December 20, 1950, and recorded on April 3, 1951, in the aforesaid Clerk's Office in Deed Book 83, page 116, and fully shown on plat of T. W. Saunders, Surveyor, dated October 29, 1950; (2) a parcel containing 4.8 acres and fully described on a plat of survey made by T. W. Saunders, Surveyor, July 17, 1951, and recorded in the aforesaid Clerk's Office in Deed Book 83, at page 288; (3) a parcel containing 2 acres and fully described by a plat of survey made by T. W. Saunders, Surveyor, on July 17, 1951, and recorded in the aforesaid Clerk's Office in Deed Book 83, page 287.

LESS AND EXCEPT All of that certain tract or parcel of real estate, lying and being in Lovingston District of Nelson County, Virginia, on the North side of Secondary Route 626 about one-tenth mile Northeast of U. S. Route 60, adjoining the lands of Mineral Springs Baptist Church, Secondary Road 626 and other lands of the Westvaco Corporation containing as shown by a plat of survey made by Fred C. Howell, Professional Land Surveyor, bearing dated of October 16, 1983 (revised December 5, 1983), 2.012 acres, and recorded in the aforesaid Clerk's Office in Deed Book 210, at page 799, and more particularly described by metes and bounds in the deed to Trustees of Mineral Springs Baptist Church of Nelson County, Virginia, from Westvaco Corporation, a Delaware corporation, dated January 3, 1984 and recorded March 5, 1984 in the aforesaid Clerk's Office in Deed Book 210, page 796.

Parcel Five: Parcel 2 of 4 parcels in Metajon 40312 and Raney 40423

1. All that certain tract of land, containing 193.15 acres, more or less, together with all buildings and improvements thereon and appurtenances thereunto belonging, lying in the Lovingston Magisterial District, Nelson County, Virginia, on both sides of State Highway No. 626, adjoining the Buffalo Spring, property, the real estate hereby conveyed being a part of the "Oakley" tract, designated as Parcel C, on the map of "Oakley", made by Adrian Overstreet, Surveyor, dated July, 1940, and recorded in the Office of the Clerk of the Circuit Court of Nelson County, Virginia, in Plat Book 5, page 68, a reference being hereby made to the said plat for a more particular description of the real estate hereby conveyed, all roads shown on said plat, lying within the tract of land hereby conveyed, being excluded from this conveyance.
2. All that certain tract of land containing 33-84/100 acres, more or less, on Sayre's Ridge, near the Village of Gladstone.
3. All that certain tract of land containing 42 acres, more or less, together with all buildings and improvements thereon and appurtenances thereunto belonging, lying in the Lovingston Magisterial District of Nelson County, Virginia, on both sides of State Highway No. 626 and subject to the right of way for said highway, about one-half mile from Buffalo Station, plat and survey of which tract of land is recorded in the aforesaid Clerk's Office in Deed Book 41, page 158, this conveyance being made subject to the outlet for the land of W. E. Carter.
4. All that certain tract of land containing 445.1 acres, more or less, together with all buildings and improvements thereon, and appurtenances thereunto belonging, lying in the Lovingston Magisterial District of Nelson County, Virginia, adjoining the Buffalo Springs property, fronting on the southerly side of State Highway No. 626, being a portion of the "Oakley" tract designated as Parcel No. B on the map of "Oakley" dated July 1940, made by Adrian Overstreet, Surveyor, recorded in said Clerk's

Office in Plat Book 5, page 68, reference being made to said plat for a more particular description of the real estate hereby conveyed, this property being conveyed subject to the right of way for State Highway No. 626, as shown on said plat.

Parcel Six: Parcel 3 of 4 parcels in Metajon 40312 and Raney 40423

All that certain tract or parcel of land, together with the improvements thereon, rights of way incident thereto, and appurtenances appertaining, containing approximately 440 acre by estimate but this conveyance being in gross and not by acre, said property hereby conveyed is a portion of that tract or parcel of land shown on Plat of record in the Clerk's Office of Nelson County, Virginia, in Deed Book 26, at Page 567, and more particularly described by metes and bounds in the deed to Westvaco Corporation, a Delaware corporation, from Mary R. Mathews, widow of H. B. Mathews, H. B. Mathews, Jr., Edward A. Mathews and Rosalind B. Mathews, his wife, being all of the heirs of H. B. Mathews, dated September 20, 1976 and recorded November 10, 1976 in the aforesaid Clerk's Office in Deed Book 151, page 384.

LESS AND EXCEPT All of that certain tract or parcel of real estate, lying and being in Lovingston Magisterial District, Nelson County, Virginia, near State Secondary Route 606, and being a part of the Betty Gay Farm, containing 13.57 acres, as shown on a plat of Fred C. Howell, R.L.S., a copy of which is recorded in the aforesaid Clerk's Office in Deed Book 158, at page 425, and more particularly described by metes and bounds in the deed to Martin Herman Weik, Jr., and Helen Harrison Weik, husband and wife, dated September 8, 1977 and recorded November 10, 1977 in the aforesaid Clerk's Office in Deed Book 158, page 432.

Being a part of the same real estate conveyed to MWV Community Development and Land Management, LLC (a Delaware corporation and wholly-owned subsidiary of MeadWestvaco Corporation), by Deed from MeadWestvaco Corporation, a Delaware corporation, successor by merger to Westvaco Corporation, which was formerly West Virginia Pulp and Paper Company, dated December 31, 2009 and recorded January 13, 2010 in the Clerk's Office of the Circuit Court of Nelson County, Virginia as Deed No. 100000087.

Parcel Seven: Parcel 4 of 4 parcels in Metajon 40312 and Raney 40423

All that certain tract or parcel of land, with improvements thereon and appurtenances thereunto belonging, situated in Courthouse Magisterial District of Amherst County, Virginia, and in Lovingston Magisterial District of Nelson County, Virginia, containing Four Thousand Two Hundred Fifty-Seven and Eight-Tenths (4,257.8) acres, more or less, and being more particularly described by the metes and bounds of a plat of survey by Carroll Gillispie, CLS/SBC, dated October, 1954, through December 1967, and recorded in the Clerk's Office of the Circuit Court of Nelson County in Plat Book 7, pages 71 and 72, and in the Clerk's Office of the Circuit Court of Amherst County, Virginia in Plat Cabinet 1, Slides 213 and 214, and under Parcel One in the deed to Westvaco Corporation, a Delaware corporation, from Gene Dixon, Jr., Executor and Trustee under the will of Gene Dixon and Mallie McKnight Dixon, widow, Gene Dixon, Jr., and Jeanie Dixon Colgate, dated January 29, 1979 and recorded January 29, 1979 in the Clerk's Office of the Circuit Court of Amherst County, Virginia in Deed Book 420, page 241, and in the Clerk's Office of the Circuit Court of Nelson County, Virginia, in Deed Book 168, page 631. It is to be noted that the lands hereby conveyed as described by the metes and bounds set forth in the aforesaid deed and plat do not include that certain parcel of land which, although lying totally within said metes and bounds and being surrounded by the lands hereby conveyed, is described by the metes and bounds of a plat of partition of the Robert Lee Goin estate of record in the aforesaid Clerk's Office of Nelson County in Plat Book 4, at page 129 (See deeds of record in Nelson County Clerk's Office in Deed Book 92, page

192 and Deed Book 100, page 625). SAVE AND EXCEPT seven off-conveyances as follows: (1) 2.85 acres to Garrett Johnson, Jr. by deed dated August 14, 1971, recorded in the Clerk's Office of the Circuit Court of Nelson County in Deed Book 124, page 399, et seq. with plat of survey attached; (2) 2.28 acres to the Commonwealth of Virginia as a right of way for Virginia Secondary Route 657 by deed of record in the aforesaid Clerk's Office in Deed Book 127, page 174, said land being described by plats of record in the aforesaid Clerk's Office in Highway Plat Book 5, pages 68, 69 and 70; (3) 8.88 acres to the Commonwealth of Virginia as right of way for U. S. Route 60 and Virginia Secondary Route 657 by deed of record in the aforesaid Clerk's Office in Deed Book 139, page 561, said lands being described by plat of record in the aforesaid Clerk's Office in Plat Book 5, pages 194 and 195; (4) 2 acres to Billy W. Hudson, et ux, by deed dated May 27, 1976, recorded in the aforesaid Clerk's Office in Deed Book 148, page 169, with plat of survey attached; (5) 3 acres to Percy Lee Showalter et ux by deed dated October 2, 1968, recorded in the Clerk's Office of the Circuit Court of Amherst County in Deed Book 273, page 49, with plat of survey attached; (6) 4.57 acres to Arthur Ray Showalter by deed dated August 10, 1970, recorded in the aforesaid Clerk's Office of Amherst County, in Deed Book 294, page 302, with plat of survey attached; (7) 5 acres to Leonard R. Tyree et ux by deed dated August 20, 1970, and recorded in the aforesaid Clerk's Office of Amherst County in Deed Book 295, page 37. The net acreage hereby conveyed under the description set forth hereinabove being 4,229.22 acres, more or less.

LESS AND EXCEPT that portion of the property dedicated to the Board of Supervisors of Amherst County, Virginia, for improvements to Route 60, dated January 29, 1974 and recorded February 26, 1974 in the Clerk's Office of the Circuit Court of Amherst County, Virginia in Deed Book 338, page 383.

LESS AND EXCEPT All of that certain tract or parcel of real estate, lying and being in Lovingston Magisterial District of Nelson County, Virginia, about four miles South of Piedmont, Virginia and approximately 0.6 mile South of U. S. Highway 60, fronting on State Secondary Road 657 and the old Route 657, going to the middle of said old road, adjoining the lands formerly owned by Burruss Land and Lumber., Inc., containing 0.968 Ac. as shown by plat of survey made by Berkley*Howell & Associates, P.C., bearing date of February 18, 1988 and recorded in the Clerk's Office of the Circuit Court of Nelson County, Virginia in Deed Book 267, at page 288, and conveyed to Donald E. Collier and Patricia L. Collier, husband and wife, by deed from Westvaco Corporation, a Delaware corporation, dated September 30, 1988 and recorded November 18, 1988 in the aforesaid Clerk's Office in Deed Book 267, page 286.

LESS AND EXCEPT All that certain tract or parcel of real estate, lying in and being in Lovingston Magisterial District of Nelson County, Virginia fronting on U.S. Route 60, containing 0.96 acres, by survey, with metes and bounds as shown on plat of survey made by Allen M. Hale, Land Surveyor, dated September 9, 1993, a copy of which plat is recorded in the Clerk's Office of the Circuit Court of Nelson County, Virginia, in Deed Book 344, at page 182, and conveyed to the Board of Supervisors of the County of Nelson, Virginia, by deed from Westvaco Corporation, formerly West Virginia Pulp and Paper Company, a Delaware corporation, dated December 14, 1993 and recorded December 2, 1993 in the aforesaid Clerk's Office in Deed Book 344, page 179.

Being a part of the same real estate conveyed to MWV Community Development and Land Management, LLC (a Delaware corporation and wholly-owned subsidiary of MeadWestvaco Corporation), by Deed from MeadWestvaco Corporation, a Delaware corporation, successor by merger to Westvaco Corporation, which was formerly West Virginia Pulp and Paper Company, dated December 31, 2009 and

recorded January 13, 2010 in the Clerk's Office of the Circuit Court of Nelson County, Virginia as Deed No. 100000087.

Being a part of the same real estate (as to Parcel 7, Raney Tract) conveyed to Westvaco Corporation, a Delaware corporation, by Deed from Gene Dixon, Jr., Executor and Trustee under the Will of Gene Dixon, and Mallie McKnight Dixon, widow, Gene Dixon, Jr. and Jeanie Dixon Colgate, dated January 29, 1979 and recorded January 29, 1979 in the Clerk's Office of the Circuit Court of Amherst County, Virginia in Deed Book 420, page 241.

It being the same property conveyed to Timberlands III, LLC, a Delaware limited liability company from MWV Community Development and Land Management, LLC successor by merger to MWV-Land Sales, Inc. by deed dated December 6, 2013 and recorded December 12, 2013 in the Clerk's Office of Nelson County as Instrument Number 130003881.

Being portions of Tax Map Nos. 96-A-1, 97-1, 97-1-9 and 97-A-28

Exhibit A-1
Map of Leased Premises

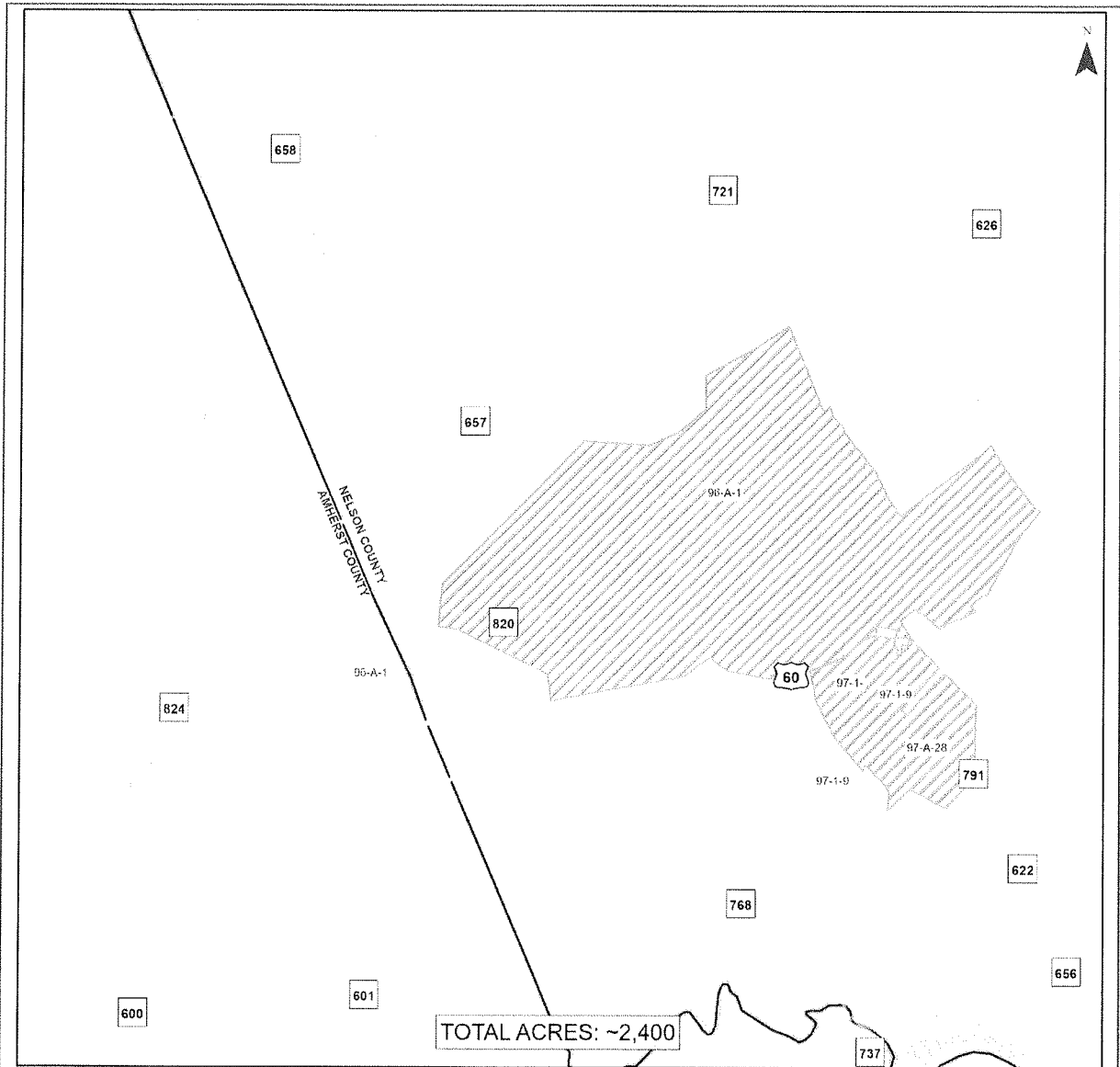
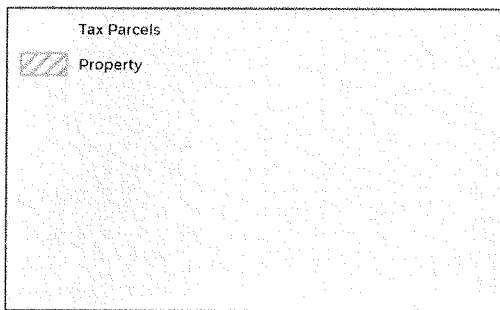


EXHIBIT A-1
Weyerhaeuser Company



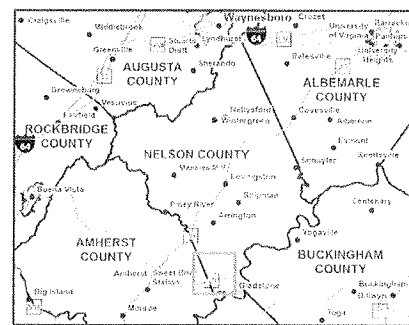
Scale: 1:45,000

Coordinate System: NAD 1983 StatePlane
Virginia South FIPS 4502 Feet

The following companies and organizations provided data that contributed to the production of this map:
 Cartage, Inc.
 Environmental Systems Research Institute (ESRI)
 North Carolina Technologies
 U.S. Department of Agriculture (USDA)
 U.S. Federal Aviation Administration (FAA)
 U.S. Geological Survey (USGS)
 Precision Corporation
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 Inquiry: 1-877-466-2262. Hexagons and data courtesy.



NELSON / AMHERST COUNTY, VA



□ Site Location

[Consideration][Assessed Value]:

Tax Map No.: 87A, 87-A-13, 79-A-54

Account No.:

RECORDING REQUESTED BY
AND WHEN RECORDED MAIL TO:

Wild Rose Solar Project, LLC
422 Admiral Blvd.
Kansas City, MO 64106

(Space Above For Recorder's Use)

Memorandum of Solar Ground Lease Agreement

1. Date of Lease: August 18, 2020 (the "Effective Date")
2. Name and Address of Lessor: Weyerhaeuser Company
220 Occidental Ave. S.
Seattle, WA 98104
3. Name and Address of Lessee: Wild Rose Solar Project, LLC
422 Admiral Blvd.
Kansas City, MO 64106
4. Description & Depiction of Leased Premises: See attached Exhibit A.
5. Term of Lease: The term of the Solar Ground Lease Agreement, as amended (the "Lease") consists of:
 - a. an "Option Term" of up to three (3) years after the Effective Date;
 - b. a "Development Term" of up to two (2) years, and
 - c. an "Operating Term" of up to thirty (30) years
 With respect to any of a, b, and c above, the terms set forth above are subject to any rights of termination as set forth in the Lease.

The Lease additionally provides for a decommissioning period following the Operating term.

6. Renewal Terms: The Operating Term of the Lease may be extended at Tenant's option by up to two (2) consecutive five (5) year renewal terms.
7. Purpose of Lease: Subject to the rights reserved to Lessor under the Lease and certain prior encumbrances as set forth in the Lease, during the term of the Lease, Lessee has, among other rights, the exclusive right to use the Leased Premises for solar energy purposes, as more particularly described in the Lease.
7. Easements, Insolation: Under the Lease, Landlord grants to Tenant certain easement rights regarding access, ingress, egress, and other rights related to Tenant's Use. Further, Landlord grants to Tenant, and through tenant, applicable utility providers, certain easement rights. Further, under the Lease Landlord grants to Tenant certain rights regarding access to sunlight.
8. Timber Removal: The Lease provides Landlord with certain rights regarding removal of Timber from the Leased Premises.
9. Ownership of Improvements: All improvements constructed or installed on the Leased Premises by Tenant are the property of Tenant and may be removed by Tenant as provided in the Lease.
10. Leasehold Mortgages: The Lease provides certain rights to parties with a mortgage, deed of trust or other security interest in the Lease or of Lessee's facilities, as set forth in the Lease.
11. Amendments: The Lease may be amended in writing by the Lessor and Lessee from time to time during the term of the Lease, or any extension thereof, and such amendment shall be deemed part of the original Lease.
12. Purpose of Memorandum: This Memorandum is executed and recorded for the purpose of providing record notice of the execution, delivery and existence of the Lease.

This Memorandum shall not supersede or in any way modify the terms or conditions of the Lease. In the event of any conflict between any term or provision of the Lease and this Memorandum, the applicable term or provision of the Lease shall control. All capitalized terms used herein and not otherwise defined shall have the meaning ascribed to such term in the Lease. This Memorandum may be executed in

counterparts, each of which shall be deemed an original but all of which together shall constitute one and the same instrument.

[Remainder of Page Intentionally Left Blank; Signature Pages Follows]

EXHIBIT A TO
MEMORANDUM OF LEASE

The Leased Premises

Nelson County, Virginia

Parcel 8.4 Hawkins Mt. 40406 and Heath Lease 40438 Parcel 5

1. All of those certain tracts of land most of them adjoining, lying in the Lovingson Magisterial District of Nelson County, Virginia, assess for taxation as containing 1,396.8 acres, but according to various deeds of record containing 1,426.3 acre, near Norwood, and on both sides of the public road leading from Norwood to Phoenix. The said property being shown on plat of survey made by R. H. Highland Certified Surveyor, drawn on May 20, 1953 and recorded in the Clerk's Office of the Circuit Court of Nelson County, Virginia in Plat Book 3, page 59.

LESS AND EXCEPT all of that certain parcel or tract or real estate, lying and being in Lovingson Magisterial District of Nelson County, Virginia, about four miles West of Norwood, a short distance South of State Secondary Road No. 654, lying on and adjoining Tye River, adjoining the other lands of Irvin C. Jones, Jr. and Mary W. Jones, the lands of Jack L. Wood, Harold O. Thomas and Henry J. Fitzgerald, containing 43.479 acres, as shown on a plat of survey made by Berkley-Howell and Associates, P.C. Engineers and Surveyors, plat bearing dated of April 24, 1987 and recorded in the aforesaid Clerk's Office in Plat Cabinet 1, Slide 230, and conveyed to Irvin C. Jones, Jr. and Mary W. Jones, husband and wife, by deed from Westvaco Corporation, a Delaware corporation, dated April 30, 1987 and recorded May 27 1987 in the aforesaid Clerk's Office in Deed Book 247 page 427.

LESS AND EXCEPT that portion of the property contained within 215.20 acres conveyed to Shannon J. Tillman and Katherine A. Tillman, husband and wife, by deed from MWV Community Development and Land Management, LLC (a Delaware limited liability company and wholly-owned subsidiary of MeadWestvaco Corporation, a Delaware corporation, successor by merger to Westvaco Corporation, which was formerly West Virginia Pulp and Paper Company), dated November 19, 2010 and recorded December 17, 2010 in the aforesaid Clerk's Office as Deed No. 10003432; the whole of the 215.20 acres more particularly shown on a plat of survey entitled "Boundary Line Adjustment Scale: 1in. = 400 ft. 215.20 acres surveyed for Shannon Janes and Katherine Ann Tillman Source of Title; MWV Community Development & Land Management, LLC Inst. No. 100000087, D.B 174 P. 526, D.B. 120 P. 474, and D.B. 98 P. 488 Lovingson District Nelson County Virginia", dated November 9, 2010, revised November 11, 2010, prepared by William W. Dickerson, Jr., Certified Land Surveyor, and recorded in the aforesaid Clerk's Office in Plat Cabinet 5, Slide 70B.

2. All that certain tract of land lying in the Lovingson Magisterial District of Nelson County, Virginia, in the vicinity known as "Phoenix", fronting on State Highway No. 722, near Gowen's Store, containing ninety-four and seven-tenths (94.7) acres, more or less, a shown on the plat dated October 27, 1955, recorded in the aforesaid Clerk's Office in Plat Book 4, page 11.

LESS AND EXCEPT from the above Parcels A and B: All that certain tract or parcel of real estate containing 146.478 acres, more or less, together with the improvements thereon, situate on the waters of the Tye River and on Virginia State Route 661 (Phoenix Road), near the intersection of said Virginia State Route 661 (Phoenix Road) and Virginia State Route 654 (Cedar Creek Road & Falling Rock Drive), in Lovingson District of Nelson County, Virginia, being more particularly shown and described on a plat of survey title "Plat showing a portion of the property of MeadWestvaco Corporation to be boundary adjusted to the property of RSB Timberlands, LLC, Lovingson District Nelson County, Virginia Comm. #25044 Date: February 14, 2007 File #2122-C" as prepared by P. Massie Saunders, Jr. Commonwealth of Virginia Land Surveyor No. 1636, Saunders' Surveys, Inc., and recorded in the aforesaid Clerk's Office in Plat Cabinet 4, Slides 97A and 97B, said property conveyed to RSB Timberlands, LLC by deed from MeadWestvaco Corporation, a Delaware corporation, dated March 21, 2007 and recorded March 27, 2007 in the aforesaid Clerk's Office as Deed No. 070001138.

3. All that certain tract or land, in Lovingson District, Nelson County, Virginia, containing 101-117/160 acres, more or less, lying in the vicinity known as "Pinch Neck", near Norwood, bounded on three sides by other lands now or formerly owned by The Chesapeake Corporation of Virginia, a plat of which tract is recorded in the Clerk's Office of Nelson County, Virginia, in Deed Book 58, page 195.

4. All of that tract of land situate, lying and being in Lovingson Magisterial District, Nelson County, Virginia, containing 196 acres, more or less in the gross and not by the acreage, about three miles from Arrington on the public road leading from Gulf Ford to Norwood, adjoining the lands now or formerly owned by W. A. Wright and others.

LESS AND EXCEPT all that certain lot or parcel of real estate with all improvements thereon and appurtenances thereunto appertaining, lying, situate and being in the Lovingson Magisterial District, Nelson County, Virginia fronting on State Secondary Road No. 661, containing 0.351 acres as shown by a plat of survey made by Hurt & Proffitt, Inc., Engineers and Surveyors, entitled "Plat Showing Part of the Property of Westvaco Corporation, a Delaware corporation, Surveyed for: Appalachian Power Company, Lovingson District, Nelson County, Virginia", bearing date of July 11, 1990, and revised July 19, 1990, a copy of which is recorded in the Clerk's Office of the Circuit Court of Nelson County, Virginia in Deed Book 293, at page 760; TOGETHER WITH an easement over and along the road and right of way which is shown on said plat leading unto the aforesaid Road No. 661 from the property herein conveyed, being twenty (20) feet in width, with the right of ingress, egress and regress over and along said road, and being conveyed to Appalachian Power Company, a Virginia corporation, by deed from Westvaco Corporation, a Delaware corporation, dated October 24, 1990 and recorded November 15, 1990 in the aforesaid Clerk's Office in Deed Book 293, page 758.

5. All that certain lot or parcel of land, together with all the buildings and improvements thereon and privileges and appurtenances thereunto belonging, situate lying and being in Lovingson Magisterial District of Nelson County, Virginia, adjoining the lands now or formerly of G. L. Mays, formerly the lands of Standard Soapstone Co., Inc. and near the Phoenix Soapstone Quarry, containing 78 acres, more or less.

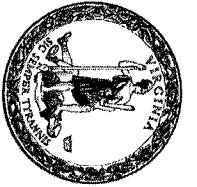
6. All that certain tract of land containing 45.5 acres, more or less, lying in the Lovingston Magisterial District of Nelson County, Virginia, about four miles east of Arrington, adjoining the land formerly owned by Percy Proffitt, which was conveyed by John Garland Pollard, Governor of the Commonwealth of Virginia, unto H. E. Evans by Grant dated April 21, 1931, recorded in said Clerk's Office in Deed Book 59, page 450, a written survey thereof recorded in the aforesaid Clerk's Office in Plat Book 1, page 4.

7. All of that certain tract or parcel of land lying in Lovingston Magisterial District of Nelson County, Virginia, containing one hundred eighty-three and six tenths (183.6) acres, more or less, bounded on the southeast by Virginia Secondary Route 654, lying approximately one and one-half miles northeast of the intersection of said Virginia Secondary Route 654 and Route 661 at Phoenix, bounded on the northeast, southeast and southwest by land now or formerly of The Chesapeake Corporation of Virginia and on the northwest by lands now or formerly of A. A. Lincoln.

LESS AND EXCEPT 9.42 acres, designated as Parcel 'A', and 0.29 acre, designated as Parcel 'B', on plat of survey made by Willard T. Sigler, bearing date of April 14, 1989, and recorded June 26, 1989 in Clerk's Office of the Circuit Court of Nelson County, Virginia, in Deed Book 275, at page 206, and conveyed to David Robert Glenn and Karen Lynn Glenn, husband and wife, by deed from Westvaco Corporation, formerly West Virginia Pulp and Paper Company, dated May 1, 1989 and recorded June 26, 1989 in the aforesaid Clerk's Office in Deed Book 275, page 204.

INSTRUMENT 202200445
RECORDED IN THE CLERK'S OFFICE OF
NELSON CIRCUIT COURT ON
FEBRUARY 14, 2022 AT 03:34 PM
LISA D. BRYANT, CLERK
RECORDED BY: KXT

HGT



OFFICIAL RECEIPT
NELSON CIRCUIT COURT
DEED RECEIPT

DATE : 02/14/2022 TIME : 15:35:02

RECEIPT # : 2200000930 TRANSACTION # : 22021400026

CASHIER : KXT REGISTER # : H465

INSTRUMENT : 202200445 BOOK :

PAGE :

FILING TYPE : AGL

RECORDED : 02/14/2022

PAYMENT : FULL PAYMENT

AT : 15:34

LOC : CO

PCT : 100%

GRANTOR : -WEYERHAEUSER COMPANY
GRANTEE : -WILD ROSE SOLAR PROJECT, LLC

RECEIVED OF : SAVION, LLC
ADDRESS : 422 ADMIRAL BLVD KANSAS CITY, MO 64106

DATE OF DEED : 08/18/2020

CHECK : \$26.00 CHECK NUMBER : 5538

DESCRIPTION 1 : SOLAR GROUND LEASE AGMT, LOVINGSTON DIST

2 : 1,426.3 AC; NEAR NORWOOD; PLAT @ PB 3 PG 59

CONSIDERATION : \$0.00 AVAIL : \$0.00

PAGES : 009

OP : 0

NAMES : 0

PIN OR MAP : 87-A-13

ACCOUNT CODE	DESCRIPTION	PAID
035	VIRGINIA OUTDOOR FOUNDATION	\$3.00
106	TECHNOLOGY TRST FND	\$5.00

ACCOUNT CODE	DESCRIPTION	PAID
145	VSLE	\$3.50
301	CLERK RECORDING/INDEXING FEE	\$14.50

TENDERED : \$ 26.00
AMOUNT PAID : \$ 26.00

AFTER RECORDING, RETURN TO:

**Wild Rose Solar Project, LLC
422 Admiral Boulevard
Kansas City, Missouri 64106**

MEMORANDUM OF OPTION

THIS MEMORANDUM OF OPTION (“**Memorandum**”) dated for reference purposes January 5th, 2023 is by and between Georgiana Lynn Miller-Hickey and Bobby Joe Hickey, wife and husband, whose address is 171 Buck Mountain Lane, Gladstone, Virginia 24553 (“**Grantor**”) and Wild Rose Solar Project, LLC, a Delaware limited liability company, its successors and assigns, whose address is 422 Admiral Boulevard, Kansas City, Missouri 64106 (“**Grantee**”).

Grantor is the owner of that certain real property located in Nelson County, State of Virginia more particularly described in the attached Exhibit A attached hereto and as generally depicted on the map attached hereto as Exhibit A-1 (the “**Property**”).

Pursuant to that certain Real Estate Option Agreement dated January 5th, 2023 (the “**Agreement**”), Grantee holds an option to purchase all of the Property on the terms therein stated (the “**Option**”). The term of the Option commenced on January 5th, 2023 and shall expire January 5th, 2025.

Grantor and Grantee have executed and recorded this Memorandum to provide record notice of the existence of the Option. This Memorandum of Option may be executed in counterparts.

[Signature Pages Follow]

IN WITNESS WHEREOF, the parties have executed this Memorandum as of the date first written above.

WILD ROSE SOLAR PROJECT, LLC,
a Delaware limited liability company

By: *[Signature]*
Aaron Lipscomb, Authorized Person

STATE OF MISSOURI)
) ss.
COUNTY OF JACKSON)

BE IT REMEMBERED, that on this 5th day of January, 2023, before me, the undersigned, a Notary Public in and for the County and State aforesaid, came Aaron Lipscomb, to me personally known, who being by me duly sworn did say that he is an Authorized Person of Wild Rose Solar Project, LLC, a Delaware limited liability company, and that the within instrument was signed and delivered on behalf of said limited liability company by authority thereof, and acknowledged said instrument to be the free act and deed of said limited liability company for the purposes therein expressed.

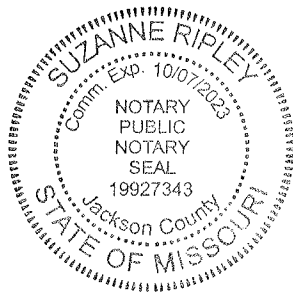
IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial seal in the date herein last above written.

My Commission Expires:

10/07/2023
[SEAL]

Suzanne Ripley
Notary Public in and for said County and State

Print Name: Suzanne Ripley



GRANTEE: WILD ROSE SOLAR PROJECT, LLC,
a Delaware limited liability company

By: *Scott Zelnetz*

Name: Scott Zelnetz

Title: Authorized Person

STATE OF MISSOURI)
) ss.
COUNTY OF JACKSON)

BE IT REMEMBERED, that on this 5th day of January, 2023, before me, the undersigned, a Notary Public in and for the County and State aforesaid, came Scott Zelnetz, to me personally known, who being by me duly sworn did say that he/she is an Authorized Person of Wild Rose Solar Project, LLC, a Delaware limited liability company, and that the within instrument was signed and delivered on behalf of said limited liability company by authority thereof, and acknowledged said instrument to be the free act and deed of said limited liability company for the purposes therein expressed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial seal in the date herein last above written.

My Commission Expires:

10/07/2023
[SEAL]

Suzanne Ripley
Notary Public in and for said County and State

Print Name: Suzanne Ripley

GRANTOR:

Georgiana Lynn Miller Hickey
Georgiana Lynn Miller-Hickey
Bobby Joe Hickey
Bobby Joe Hickey

STATE OF VA)
) ss.
COUNTY OF Amherst)

BE IT REMEMBERED, that on this 17th day of Dec, 2022, before me, the undersigned, a Notary Public in and for said County and State aforesaid, came Georgiana Lynn Miller-Hickey and Bobby Joe Hickey, wife and husband, to me known to be the persons who executed the foregoing instrument, and acknowledged that they executed the same as their free act and deed and for the purposes therein stated.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial Seal in the date herein last above written.

My Commission Expires:

07/31/2026 Brigitte Tyree Wilson

Notary Public in and for said County and State

Print Name: Brigitte Tyree Wilson

[SEAL

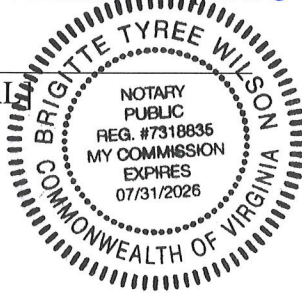


EXHIBIT "A"

Legal Description

THE FOLLOWING REAL PROPERTY LOCATED IN THE COUNTY OF NELSON,
STATE OF VIRGINIA:

All that certain lot or parcel of land, together with the buildings and improvements thereon, situate, lying and being in the Lovington District of Nelson County, Virginia, containing 50.109 acres, as more particularly shown and described on plat of survey made by Phil P. Lotspeich, Land Surveyor, of James C. May and Associates, P.C., dated March 19, 2021 said survey being attached to and recorded along with a deed recorded in the public records of the Clerk's Office in Nelson County, Virginia as Instrument Number: 202101569.

This being the same identical real estate conveyed unto Jacqueline Horsley and Janet H. Applin by the Last Will and Testament of Verner Clyde Horsley and a portion of the same real estate conveyed unto Janet H. Applin and Frank A. Applin, husband and wife by deed recorded in the aforesaid Clerk's Office as Instrument Number: 02000290.

EXHIBIT "A-1"

Depiction of the Property

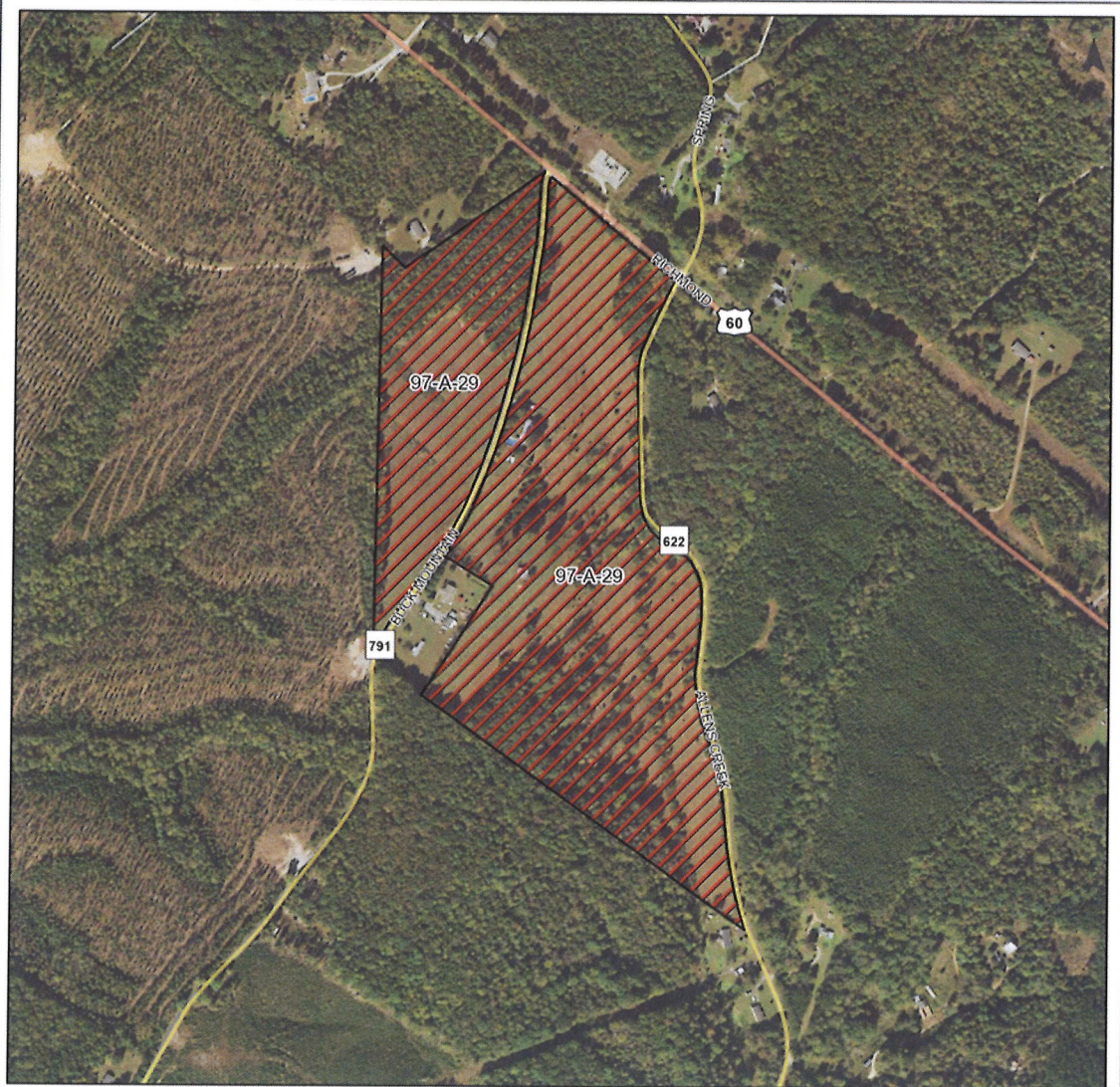
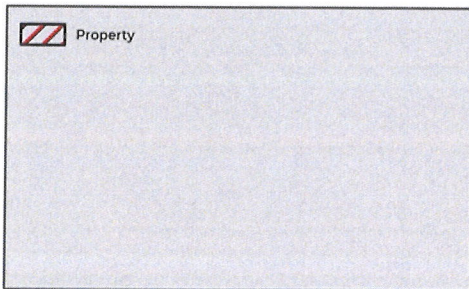


EXHIBIT A-1
Georgianna Hickey



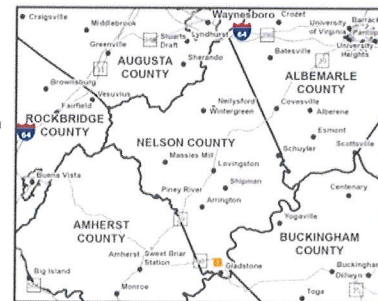
US Feet
0 250 500
Scale: 1:6,000
Coordinate System: NAD 1983 StatePlane
Virginia South FIPS 4502 Feet

The following companies and organizations provided data that contributed to the production of this map:

- CoreLogic, Inc.
- Environmental Systems Research Institute (ESRI)
- GeoCloud, Loveland Technologies
- U.S. Department of Agriculture (USDA)
- U.S. Federal Aviation Administration (FAA)
- U.S. Geological Survey (USGS)
- WhiteStar Corporation
- Verity, Inc. - An ABB Company
- Imagery © 2022 Hexagon and data partners



NELSON COUNTY, VIRGINIA



Site Location

Appendix C: Minor Site Plan



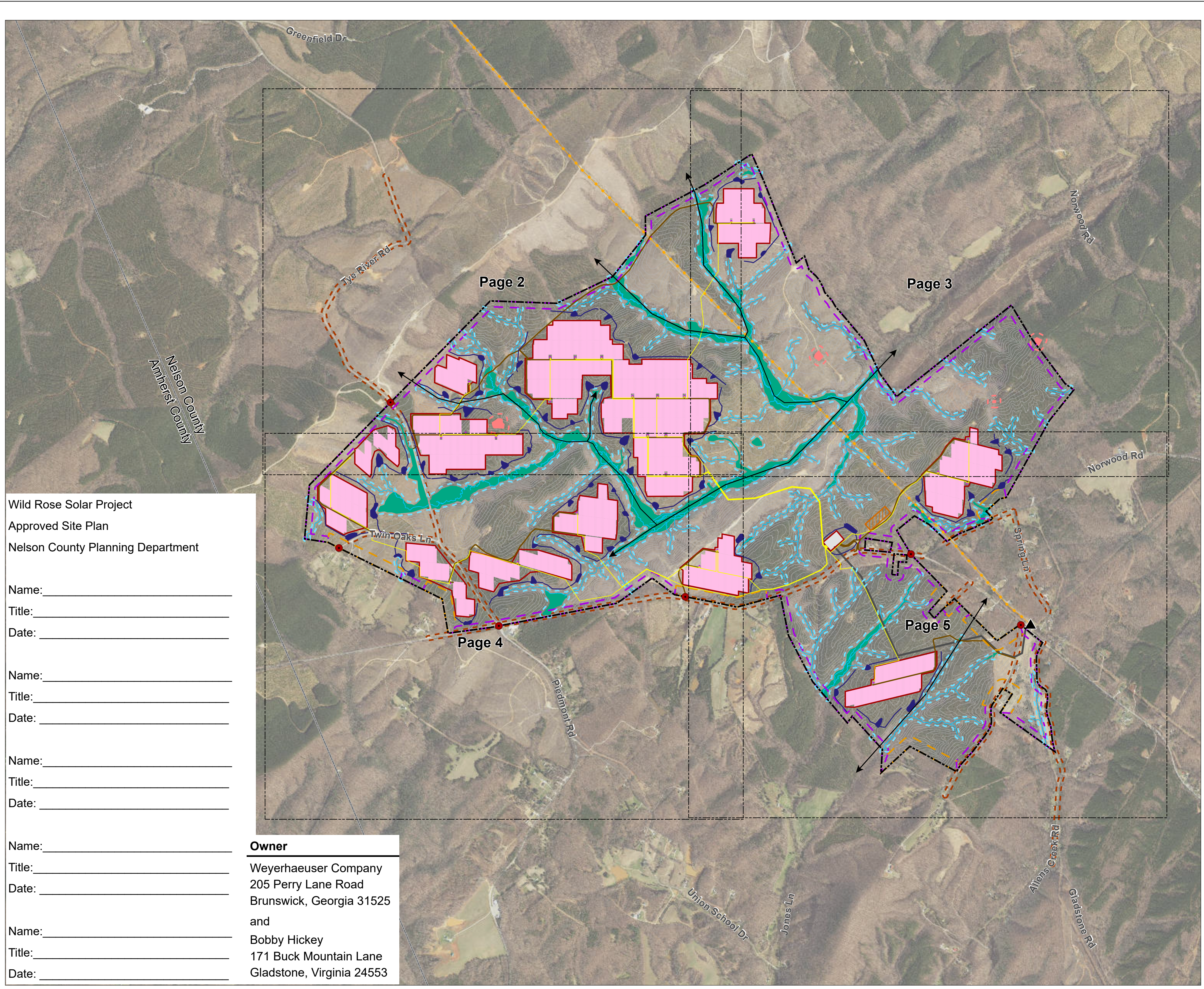
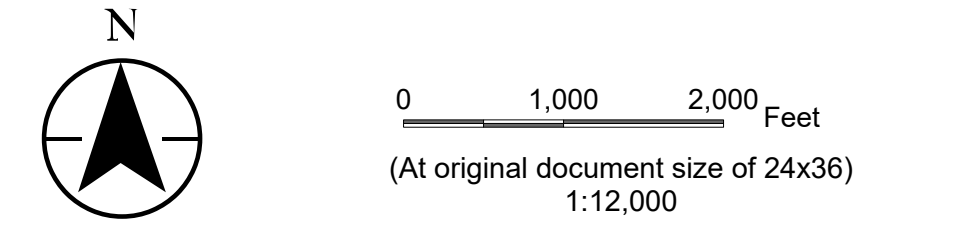


Figure No. **C-1**
 Title **Preliminary Site Plan**

Client/Project **Wild Rose Solar Project, LLC** 203402299
Wild Rose Solar Project

Project Location **Nelson County, Virginia** Prepared by MER on 2023-11-27
 TR by MGS on 2023-11-27
 IR by JLO on 2023-11-27



- Project Access
- ▲ Existing Substation
- ▭ Project Limits
- ▭ Page Index
- ▭ Fence Line
- ▭ 125-Foot Project Setback
- ▭ 200-Foot Project Setback
- ▭ 100-Foot Road Setback
- ▭ Panel Array
- ▭ Inverter
- ▭ Substation
- ▭ Cemetery
- ▭ 100-Foot Cemetery Buffer
- ▭ Desktop Stream
- ▭ Desktop Wetland
- ▭ 50-Foot Wetland Buffer
- ▭ Floodplain (Not Present within Project Boundary)
- ▭ Proposed Laydown Yard
- ▭ Preliminary Stormwater Basin
- ▭ Stormwater Ditch
- ▭ Project Road
- ▭ Collection Line
- ▭ Gen-Tie Line
- ▭ Existing Transmission Line
- ▭ 10-Foot Contour
- ▭ Wildlife Corridor

Wild Rose Solar Project
 Approved Site Plan
 Nelson County Planning Department

Name: _____
 Title: _____
 Date: _____

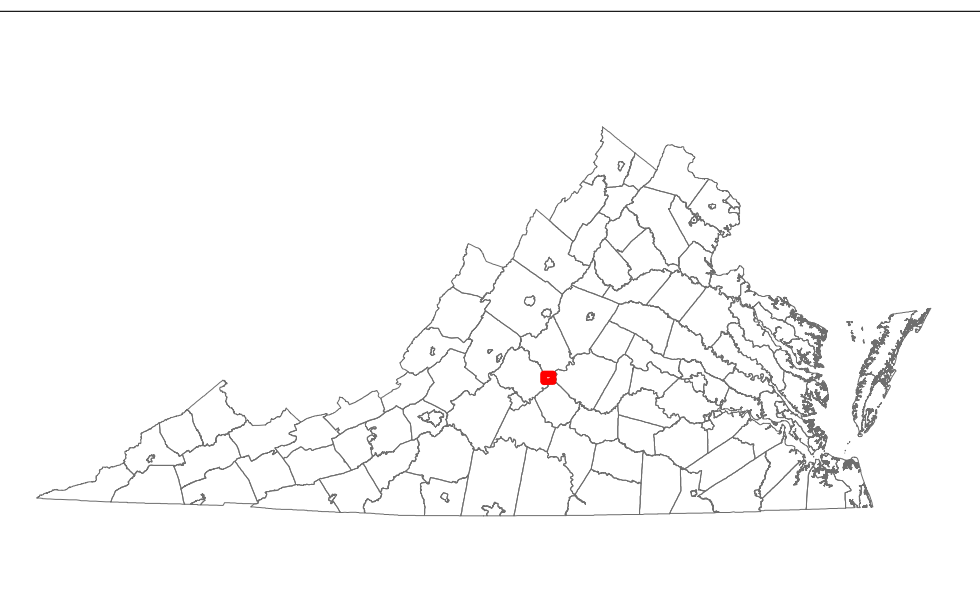
Name: _____
 Title: _____
 Date: _____

Name: _____
 Title: _____
 Date: _____

Owner
 Weyerhaeuser Company
 205 Perry Lane Road
 Brunswick, Georgia 31525
 and
 Bobby Hickey
 171 Buck Mountain Lane
 Gladstone, Virginia 24553

Site Data

Project Area 2,471.30 Acres ±
 Limit of Disturbance (LOD) 550.00 Acres ±



Notes
 1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar Project, LLC, Stantec, HIFLD, U.S. Census Bureau, VGIN
 3. Orthoimagery © Virginia Geographic Information Network (VGIN)
 4. The wetlands and other surface waters shown on this map have been predicted based upon the application of desktop mapping techniques and have not been field verified. Therefore, these potential resources should be used for preliminary planning only.



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Figure No.

C-1

Title

Preliminary Site Plan

Client/Project
 Wild Rose Solar Project, LLC
 Wild Rose Solar Project

203402299

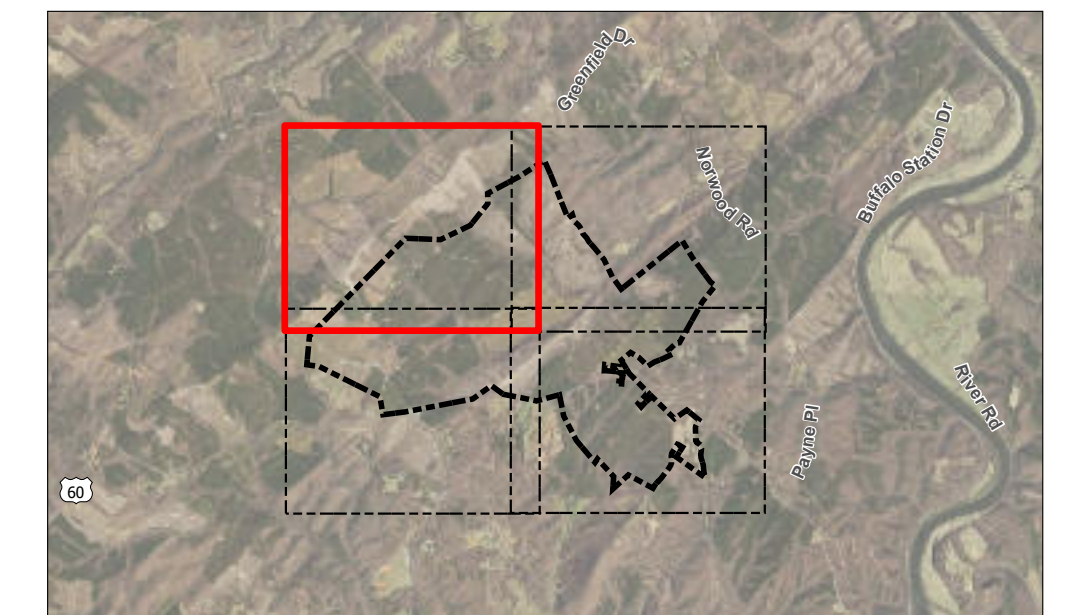
Project Location
 Nelson County, Virginia

Prepared by MER on 2023-11-27
 TR by MGS on 2023-11-27
 IR by JLO on 2023-11-27



0 400 800 Feet
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- Project Access
- ▲ Existing Substation
- ⬜ Project Limits
- ⬜ Fence Line
- ⬜ 125-Foot Project Setback
- ⬜ 200-Foot Project Setback
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- ⬜ Stormwater Ditch
- ⬜ Project Road
- ⬜ Collection Line
- ⬜ Gen-Tie Line
- ⬜ Existing Transmission Line
- ⬜ 10-Foot Contour
- ⬜ Wildlife Corridor



Notes
 1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar Project, LLC, Stantec, HIFLD, U.S. Census Bureau, VGIN
 3. Orthoimagery © Virginia Geographic Information Network (VGIN)
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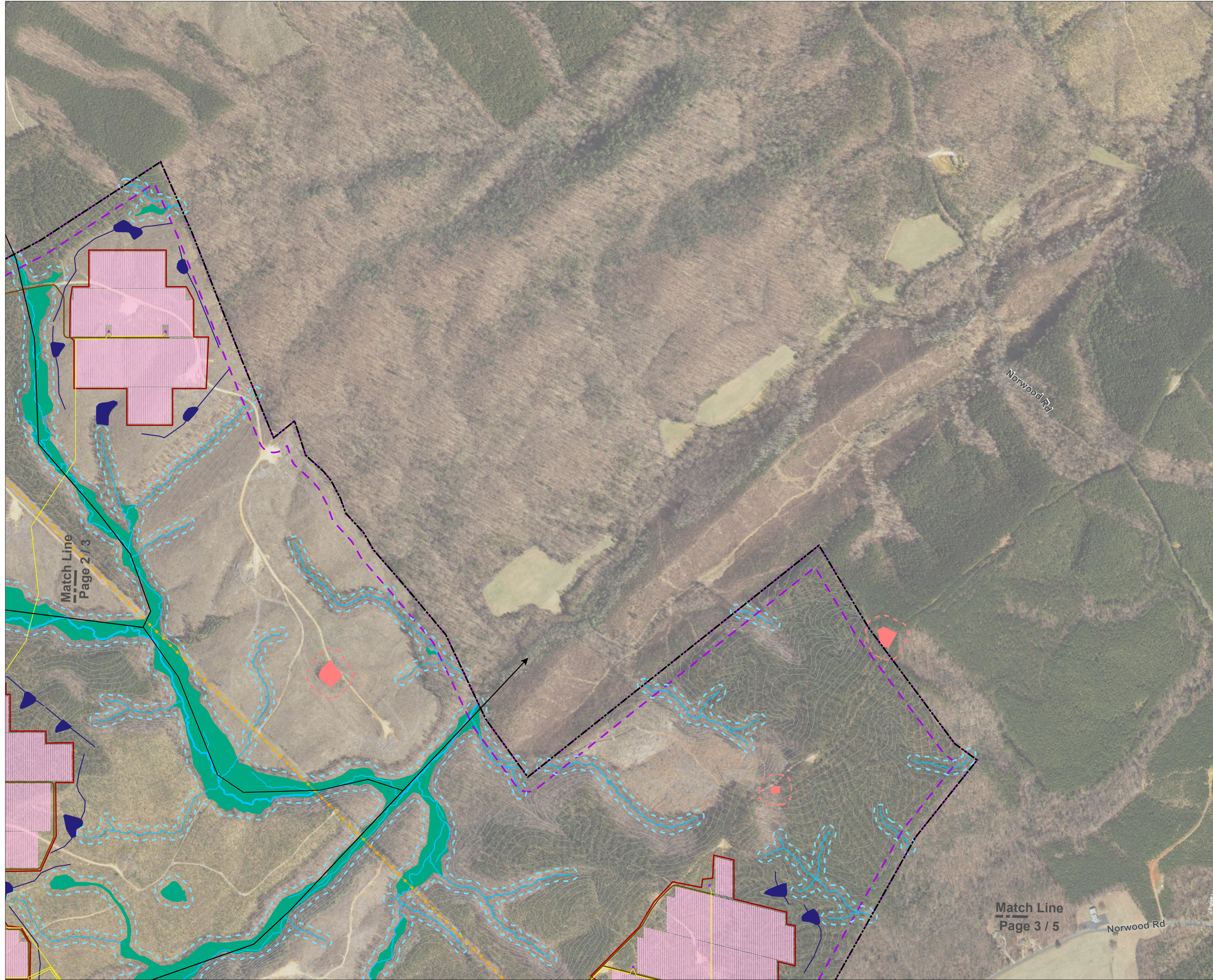


Figure No.

C-1

Title

Preliminary Site Plan

Client/Project
 Wild Rose Solar Project, LLC
 Wild Rose Solar Project

203402299

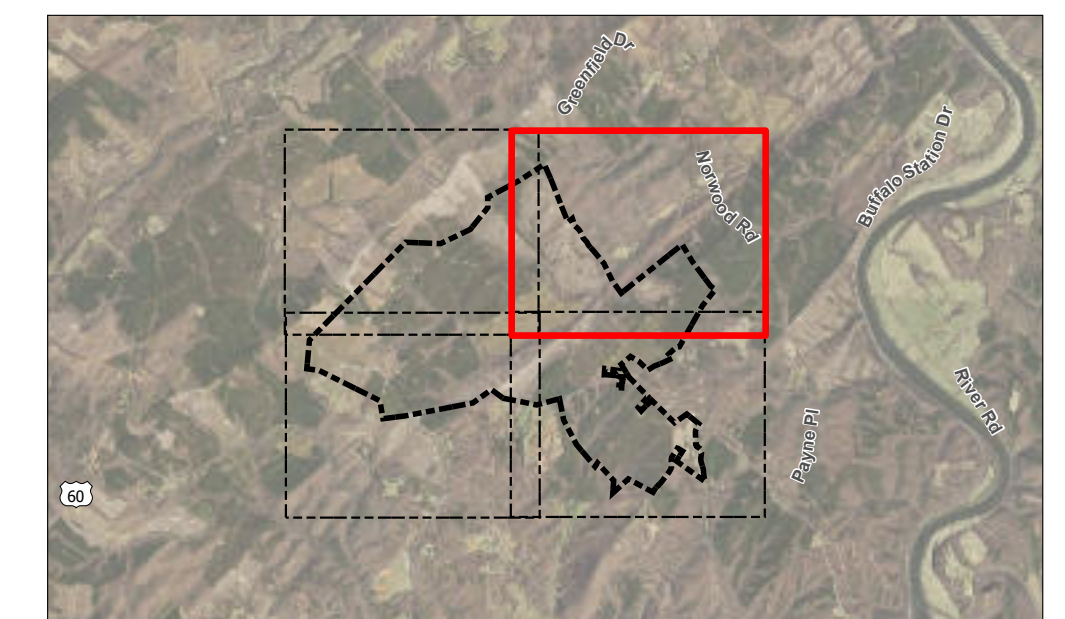
Project Location
 Nelson County, Virginia

Prepared by MER on 2023-11-27
 TR by MGS on 2023-11-27
 IR by JLO on 2023-11-27



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Page 2 / 4

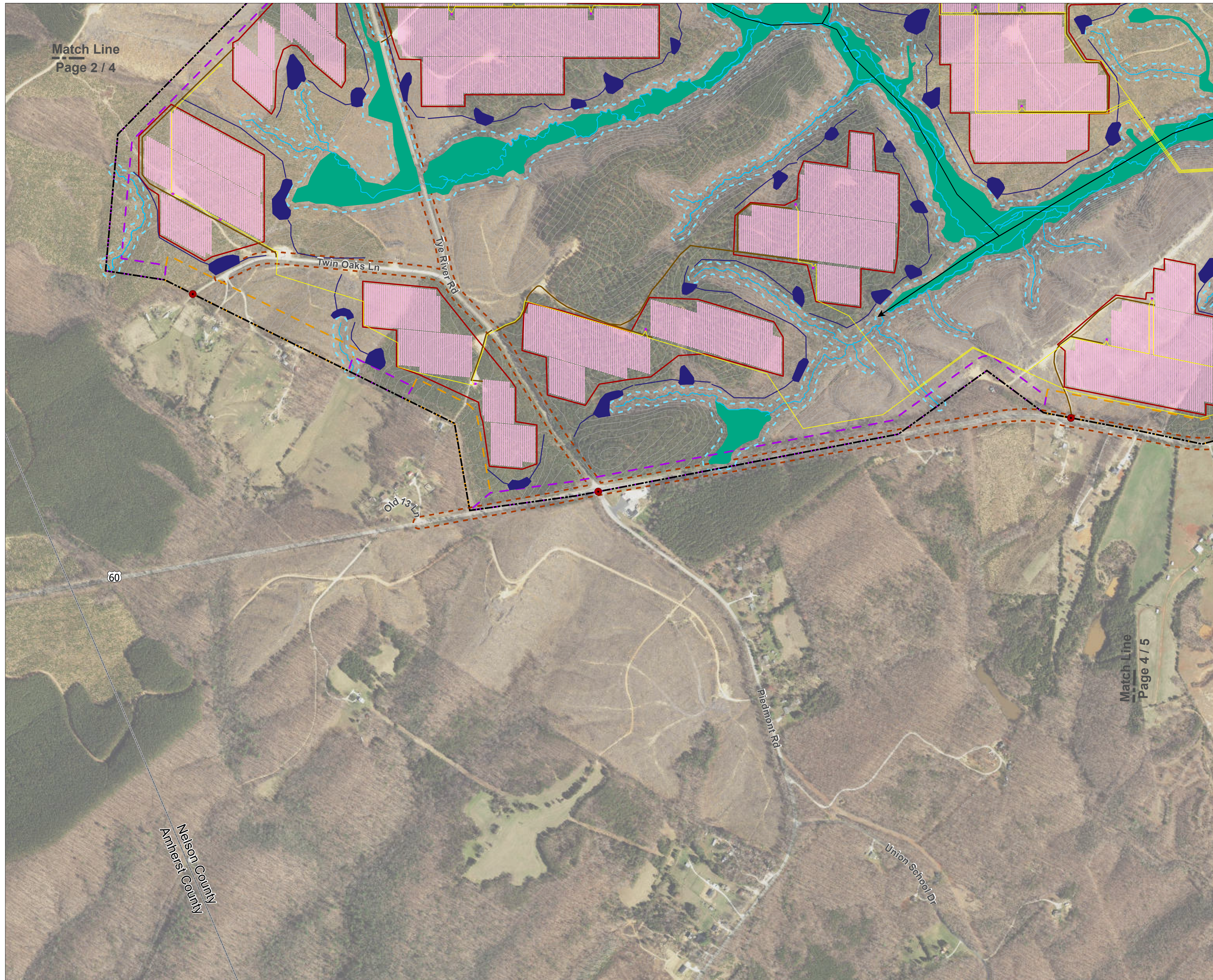


Figure No.

C-1

Title

Preliminary Site Plan

Client/Project
Wild Rose Solar Project, LLC
Wild Rose Solar Project

203402299

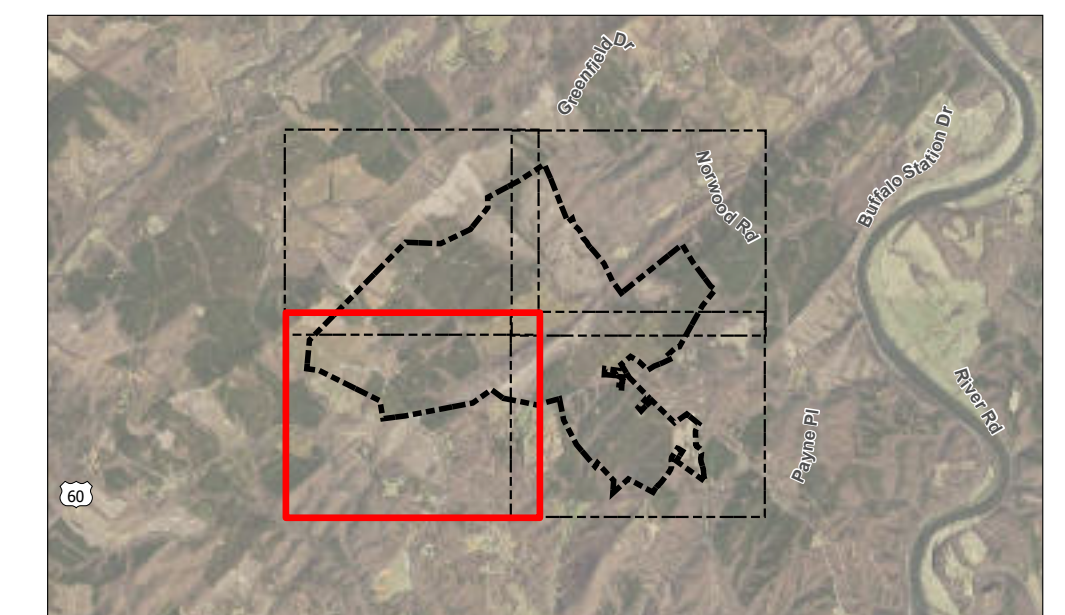
Project Location
Nelson County, Virginia

Prepared by MER on 2023-11-27
TR by MGS on 2023-11-27
IR by JLO on 2023-11-27



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Notes

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2. Data Sources: Wild Rose Solar Project, LLC, Stantec, HIFLD, U.S. Census Bureau, VGIN
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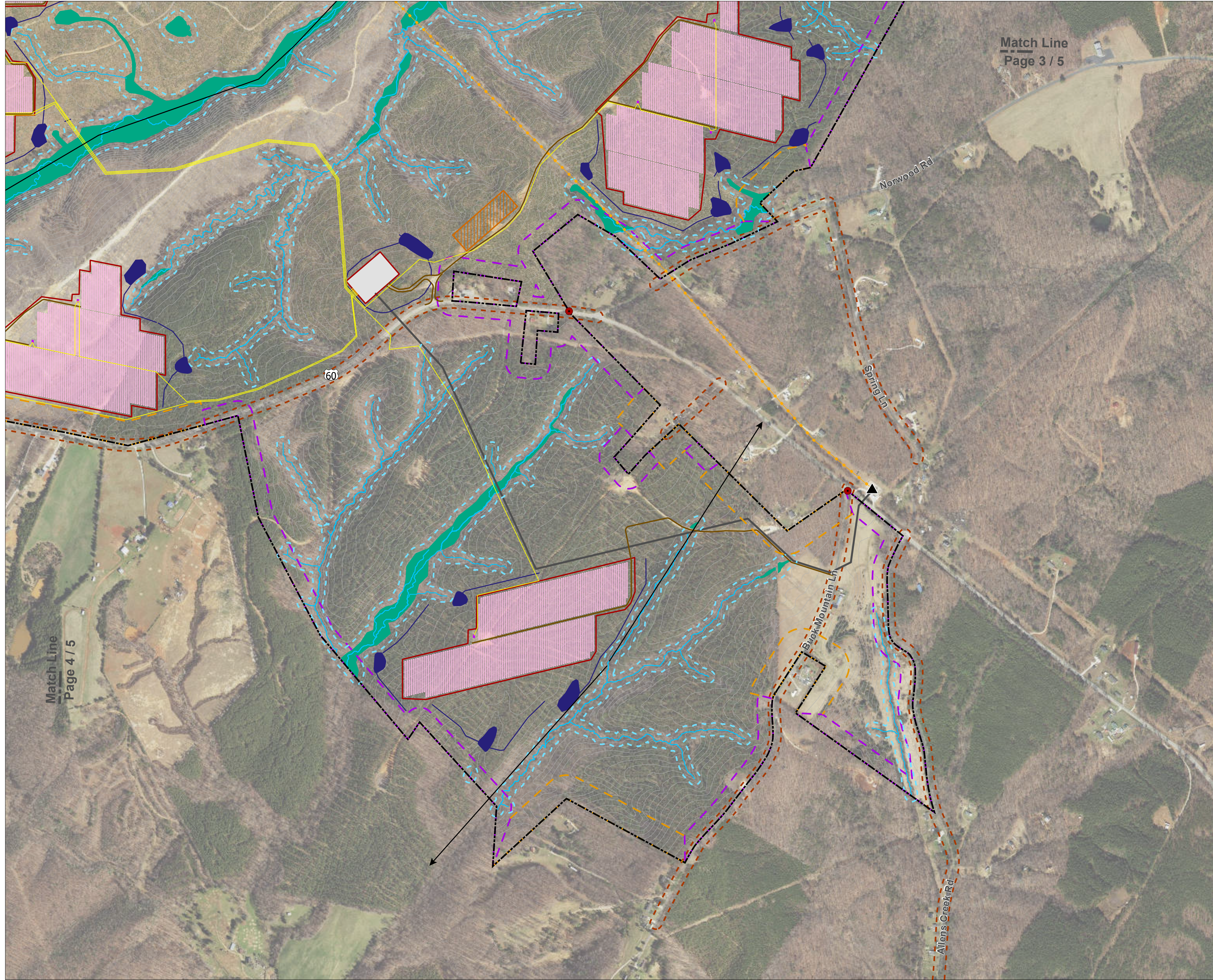


Figure No.

C-1

Title

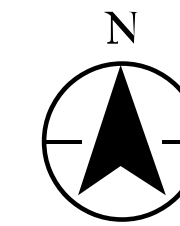
Preliminary Site Plan

Client/Project
 Wild Rose Solar Project, LLC
 Wild Rose Solar Project

203402299

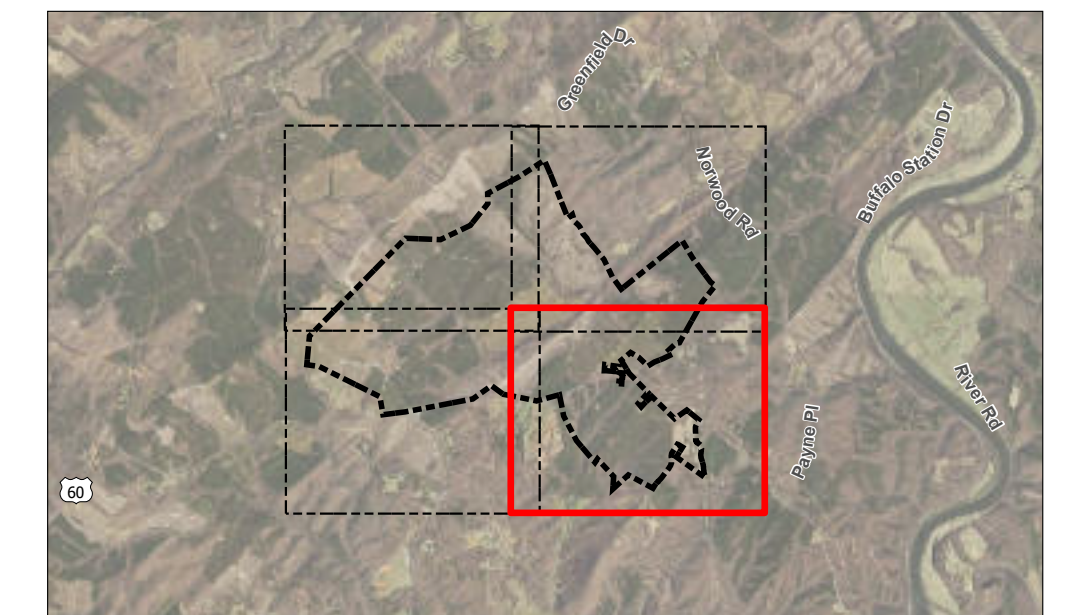
Project Location
 Nelson County, Virginia

Prepared by MER on 2023-11-27
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Appendix D: Site Plan Associated Mapping



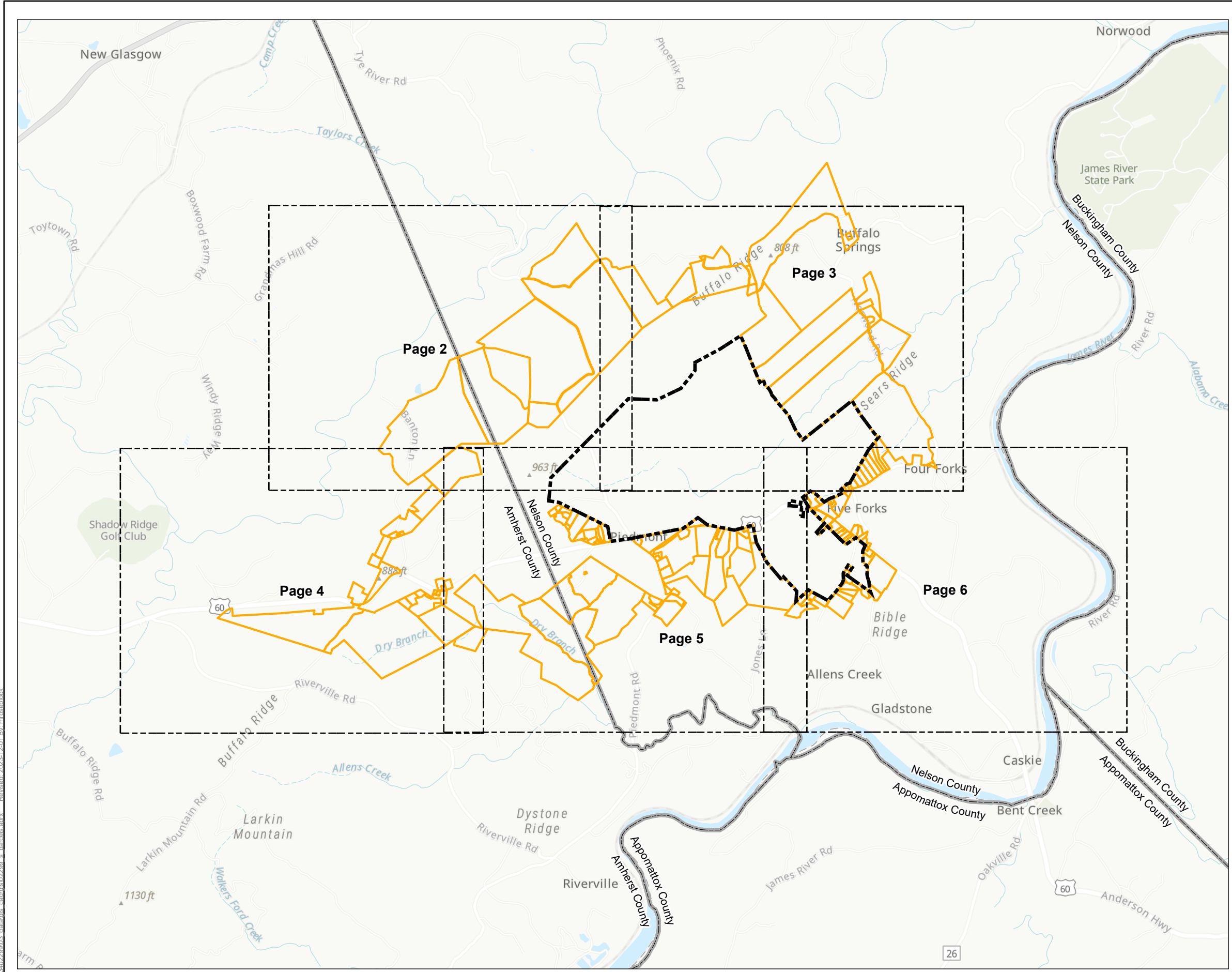
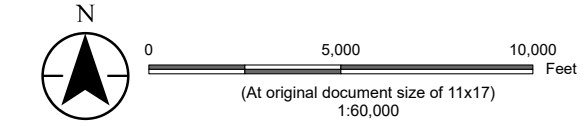


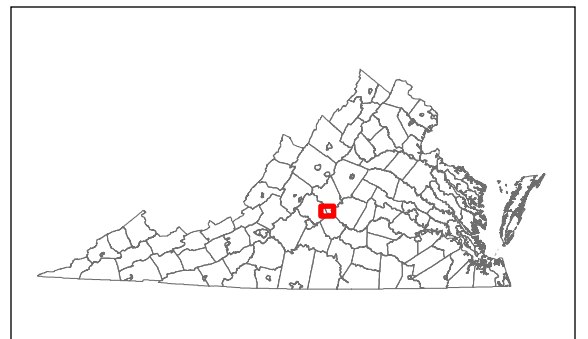
Figure No. **D-2**
 Title **Adjacent Parcel Map**

Client/Project **Wild Rose Solar Project, LLC**
 Wild Rose Solar Project

Project Location **Nelson County, Virginia**
 Prepared by MER on 2023-10-17
 TR by MGS on 2023-11-17
 IR by JLO on 2023-11-29



- Page Index
- Project Limits
- Adjacent Parcel Boundary



Notes
 1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Stantec, Wild Rose Solar Project, LLC, Nelson County GIS, Amherst County GIS, VGIN, USGS National Hydrography Dataset (NHD), U.S. Census Bureau
 3. Basemap © ESRI



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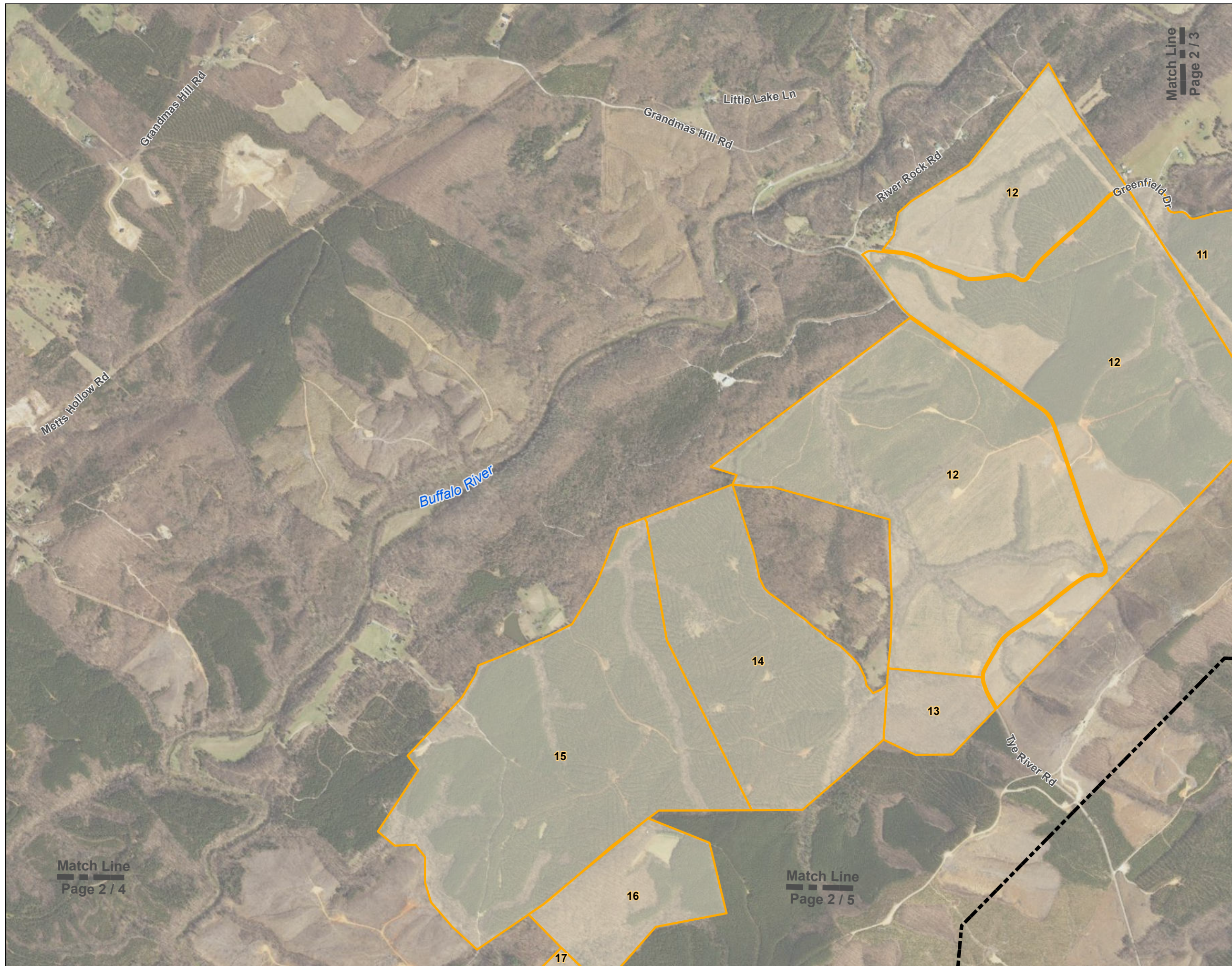


Figure No.

D-2

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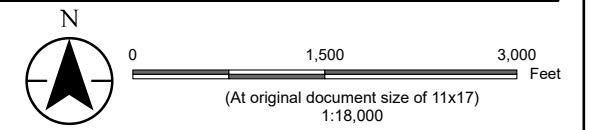
Adjacent Parcel Map

Client/Project
 Wild Rose Solar Project, LLC
 Wild Rose Solar Project

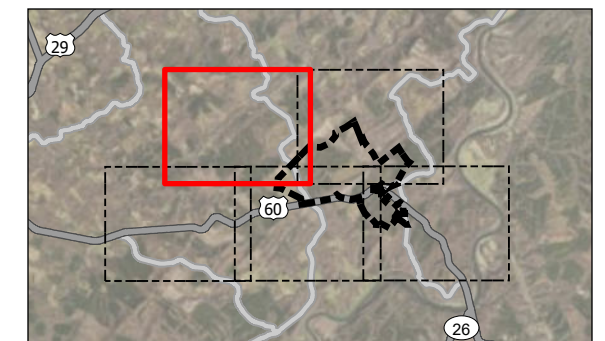
203402299

Project Location
 Nelson County, Virginia

Prepared by MER on 2023-10-17
 TR by MGS on 2023-11-17
 IR by JLO on 2023-11-29



- Project Limits
- Adjacent Parcel Boundary
- Zone A-1 Agricultural

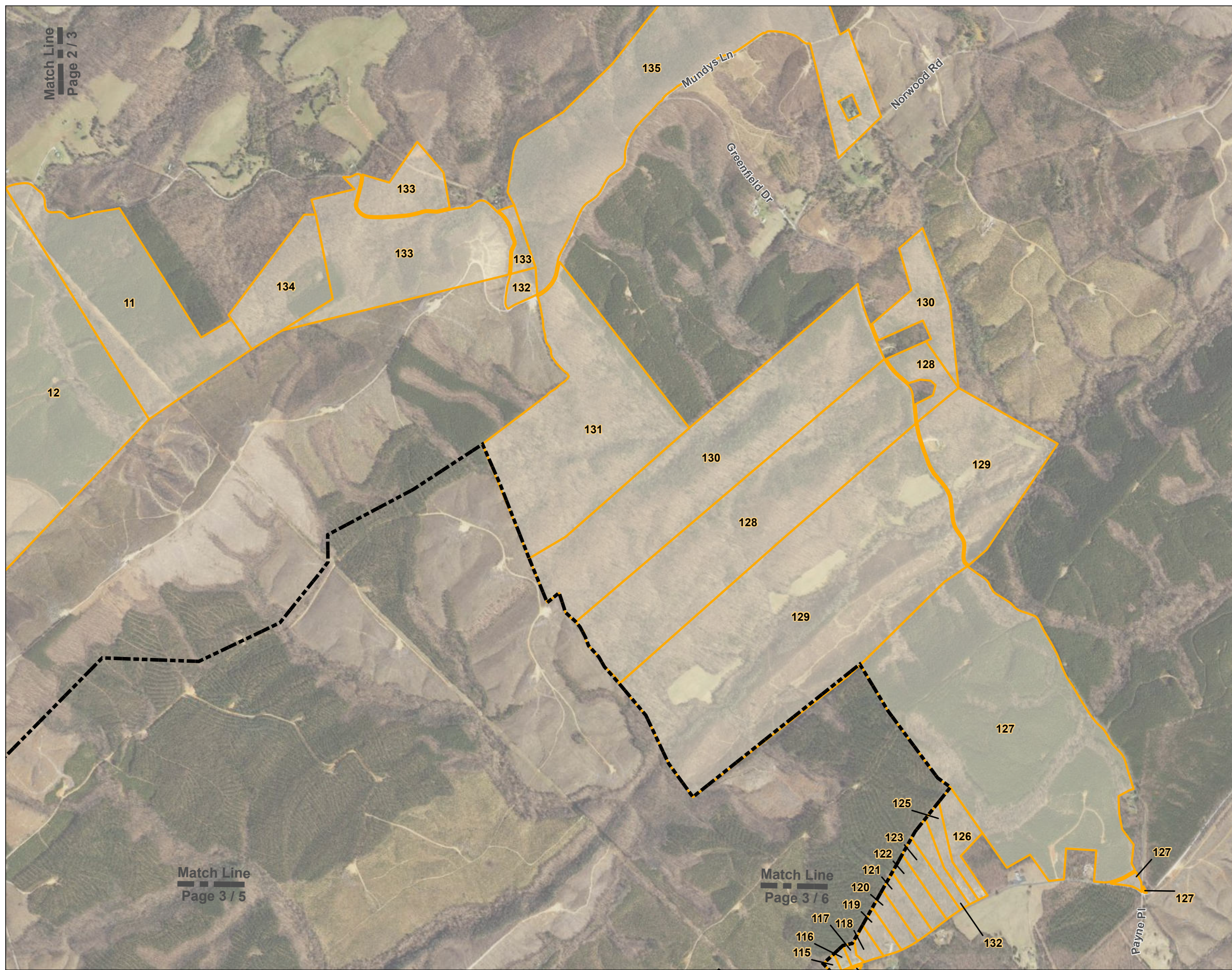


- Notes**
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Stantec, Wild Rose Solar Project, LLC, Nelson County GIS, Amherst County GIS, VGIN, USGS National Hydrography Dataset (NHD), U.S. Census Bureau
 3. Orthoimagery © Virginia Geographic Information Network (VGIN)



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Figure No.

D-2

Title

Adjacent Parcel Map

Client/Project

Wild Rose Solar Project, LLC
Wild Rose Solar Project

203402299

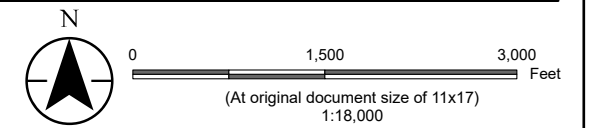
Project Location




Nelson County, Virginia

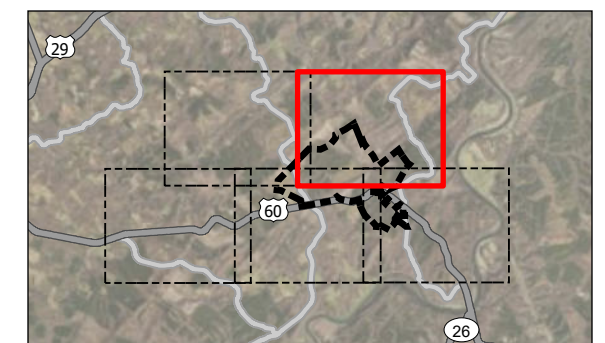
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TR by MGS on 2023-11-17

IR by JLO on 2023-11-29



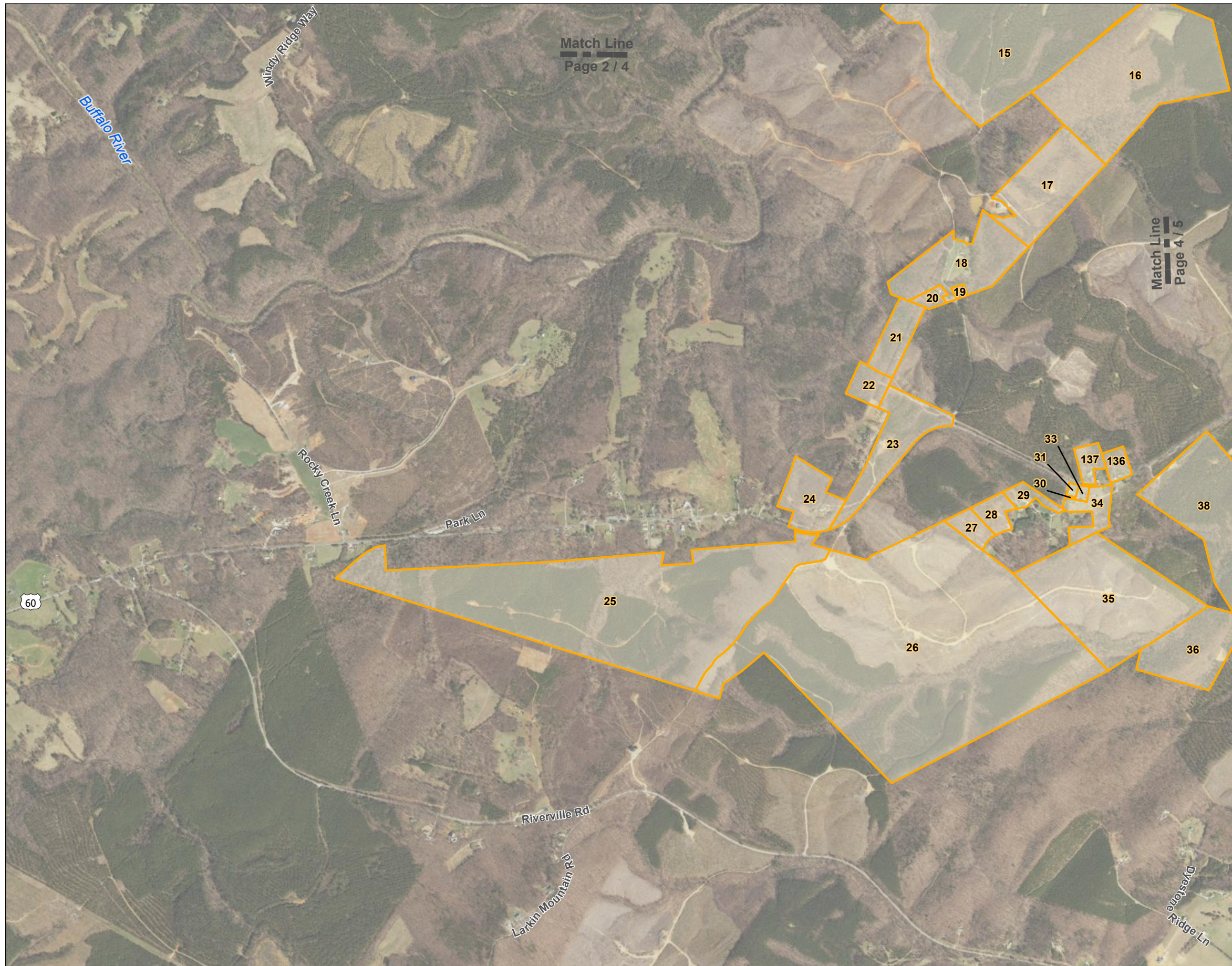
-  Project Limits
-  Adjacent Parcel Boundary
-  Zone A-1 Agricultural



- Notes**
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 3. Orthoimagery © Virginia Geographic Information Network (VGIN)



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Figure No.

D-2

Title

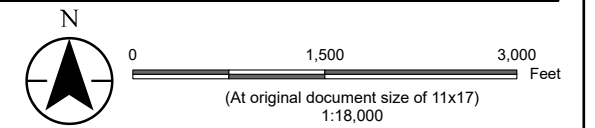
Adjacent Parcel Map

Client/Project
Wild Rose Solar Project, LLC
Wild Rose Solar Project

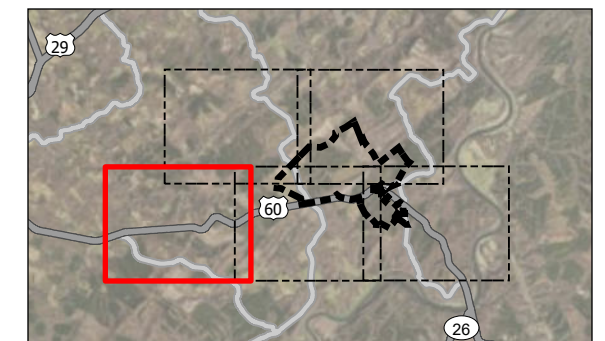
203402299

Project Location
Nelson County, Virginia

Prepared by MER on 2023-10-17
TR by MGS on 2023-11-17
IR by JLO on 2023-11-29



- Adjacent Parcel Boundary
- 1 Zone A-1 Agricultural



- Notes**
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 3. Orthoimagery © Virginia Geographic Information Network (VGIN)



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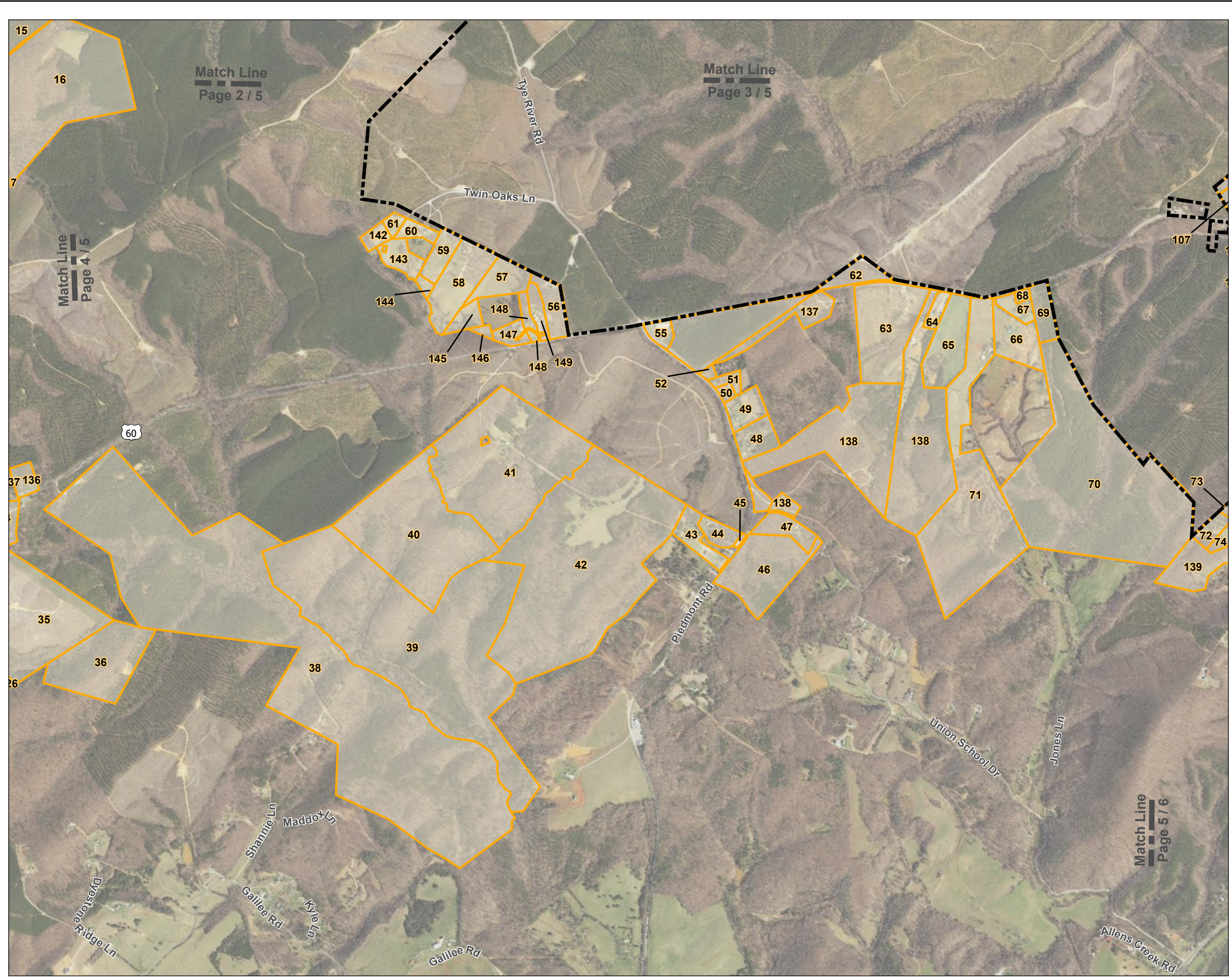


Figure No.
D-2

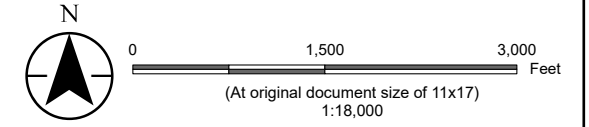
Title
Adjacent Parcel Map

Client/Project
Wild Rose Solar Project, LLC
Wild Rose Solar Project

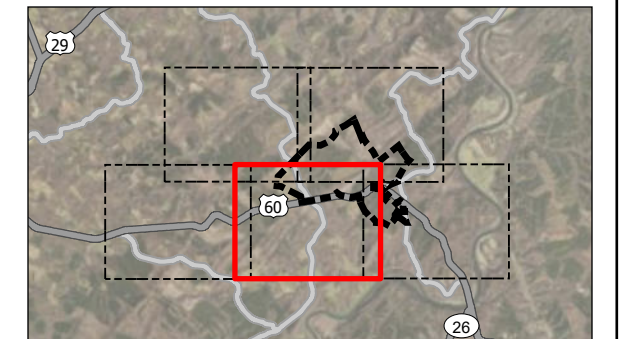
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Project Location
Nelson County, Virginia

Prepared by MER on 2023-10-17
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IR by JLO on 2023-11-29



- Project Limits
- Adjacent Parcel Boundary
- Zone A-1 Agricultural



- Notes**
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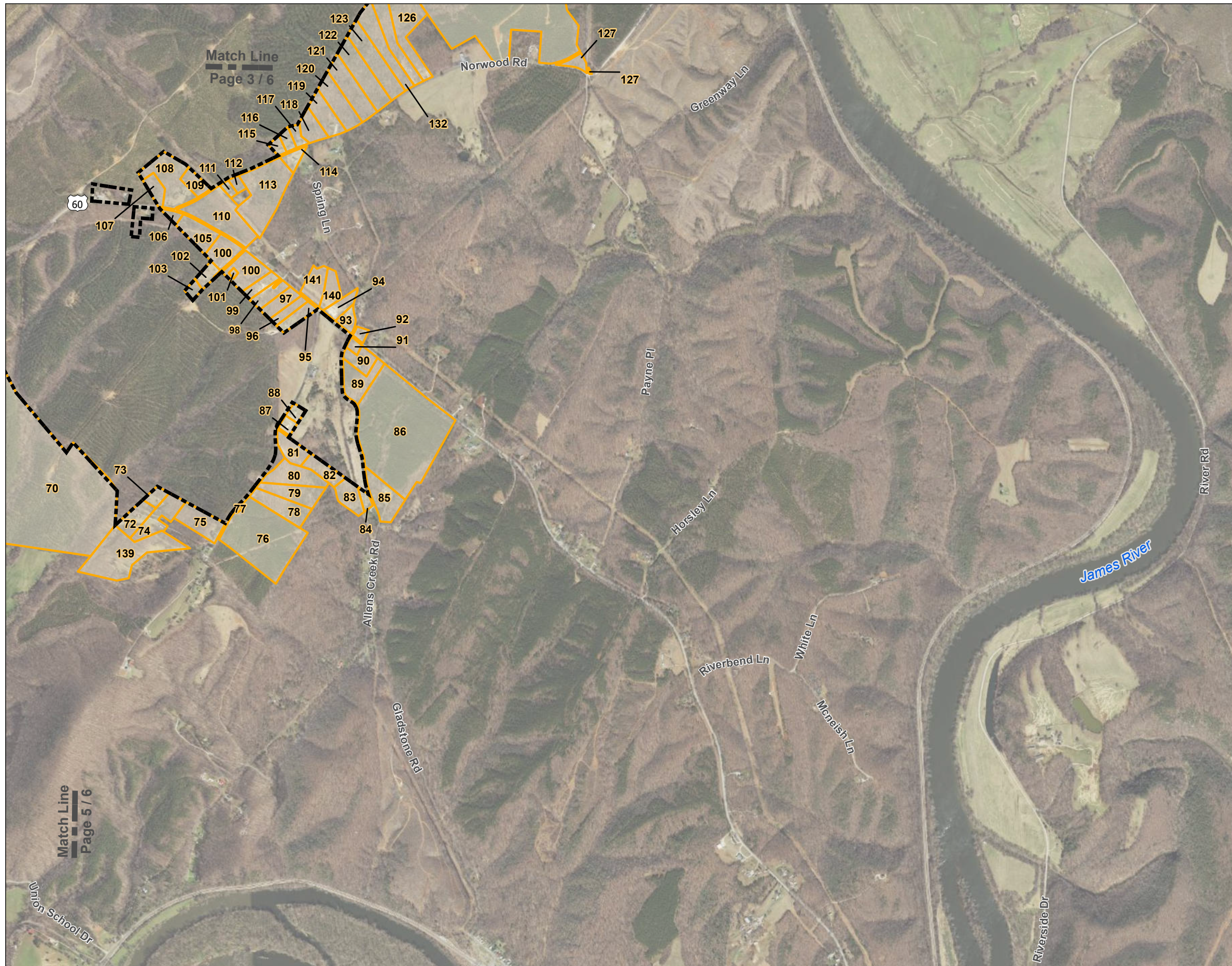


Figure No.

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Title

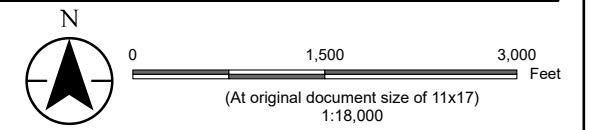
Adjacent Parcel Map

Client/Project
 Wild Rose Solar Project, LLC
 Wild Rose Solar Project

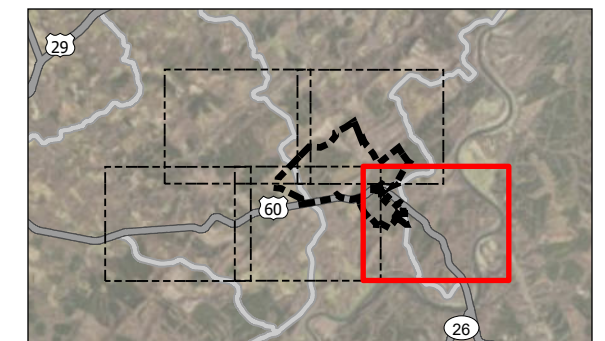
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Project Location
 Nelson County, Virginia

Prepared by MER on 2023-10-17
 TR by MGS on 2023-11-17
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- Project Limits
- 1 Adjacent Parcel Boundary
- Zone A-1 Agricultural



- Notes**
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 3. Orthoimagery © Virginia Geographic Information Network (VGIN)



Key Number	Parcel ID	Adjacent Property Owner	Mailing Address	Key Number	Parcel ID	Adjacent Property Owner	Mailing Address
11	92 A 8D	CARROLL H KENNETH	11211 RABBIT RIDGE, CHESTERFIELD, VA, 23838	83	97 A	NO DATA	NO DATA
12	92 A 6C	TYE RIVER VENTURES LLC	1555 INGLESIDE DR, CHARLOTTESVILLE, VA, 22901	84	97 A 30A	MOSLEY GREGORY DANIEL	3105 ALLENS CREEK RD, GLADSTONE, VA, 24553
13	92 A 6B	SHOWALTER ARTHUR R & ALICE	3135 RICHMOND HWY, GLADSTONE, VA, 24553	85	97 A 97	MAWYER MELANDY B	3074 ALLENS CREEK RD, GLADSTONE, VA, 24553
14	91 A 16	VIKING DEVELOPMENT RVA LLC	3109 SUNSET AVE, RICHMOND, VA, 23221	86	97 A 96	WEYERHAEUSER COMPANY	205 PERRY LANE ROAD, BRUNSWICK, GA, 31525
15	99 A 2	VIKING DEVELOPMENT RVA LLC	3109 SUNSET AVE, RICHMOND, VA, 23221	87	97 A 29B	STEPHENS ROBERT C JR	P O BOX 713, APPOMATTOX, VA, 24522
16	99 A 10	HOLT GREGORY W	9302 WATERFALL COVE DR, CHESTERFIELD, VA 23832	88	97 A 29A	BRYANT STEVEN A	297 BUCK MOUNTAIN LANE, GLADSTONE, VA, 24553
17	99 A 5C	FORE LAVONIA L & PETER P	12851 CHINQUAPIN WAY, JACKSONVILLE, FL 32246	89	97 A 97B	APPLIN JANET H & FRANK A	171 BUCK MTN LANE, GLADSTONE, VA, 24553
18	99 A 5	FORE KELVIE G & ALLISON H	272 BANTON LN, GLADSTONE, VA 24553	90	97 A 98	NO DATA	NO DATA
19	99 A 8	TYREE WILLIAM FITCH	250 BANTON LN, GLADSTONE, VA 24553	91	97 A 99	NO DATA	NO DATA
20	99 A 6	TYREE VIRGINIA M	255 BANTON LN, GLADSTONE, VA 24553	92	97 A 101	WARDLAW EDITH N	43 NAPIER LOOP, ARRINGTON, VA, 22922
21	99 1 9	WOODROFF CHARLES W	7728 PETER DRIVER LN, SINGERS GLEN, VA 22850	93	97 A 16	REVELY JAKE	79 SPRING LN, GLADSTONE, VA, 24553
22	99 1 1	HOLCOMB DAVID L	4924 PENNY LN, GUM SPRING, VA 23065	94	97 A 17	NO DATA	NO DATA
23	114 A 9B	ZWIRBLIA THOMAS G & FRANKIE M	303 KAY DEE ST, GOLDSBORO, NC 27534	95	97 3 11	BANTON GEORGE D JR & CARY F	6 BUCK MOUNTAIN LANE, GLADSTONE, VA, 24553
24	114 A 9A	ZWIRBLIA THOMAS G & FRANKIE M	303 KAY DEE ST, GOLDSBORO, NC 27534	96	97 3 10	BANTON GEORGE D JR & CAREY F	6 BUCK MOUNTAIN LANE, GLADSTONE, VA, 24553
25	113 A 29	WEYERHAEUSER COMPANY	205 PERRY LANE RD, BRUNSWICK, GA 31525	97	97 3 9	GUNTER WILLIAM L	847 BUCK MOUNTAIN LANE, GLADSTONE, VA, 24553
26	114 A 10	WEYERHAEUSER COMPANY	205 PERRY LANE RD, BRUNSWICK, GA 31525	98	97 3 8	GUNTER WILLIAM L	847 BUCK MOUNTAIN LANE, GLADSTONE, VA, 24553
27	114 2 3	TYREE WILLIAM C & CAROLYN	175 MCKINLEY LN, GLADSTONE, VA 24553	99	97 3 7	GUNTER WILLIAM L	30 DARCY CT, GLADSTONE, VA, 24553
28	114 2 1A	TYREE WILLIAM C & CAROLYN G	175 MCKINLEY LN, GLADSTONE, VA 24553	100	97 A 14	WRIGHT EDNA L OTHERS	1469 COTTINGHAM COURT EAST, COLUMBUS, OH, 43209
29	114 2 1	TYREE WILLIAM C & CAROLYN G	175 MCKINLEY LN, GLADSTONE, VA 24553	101	97 A 26	CEMETERY	NO DATA
30	114 A 55A	TYREE SHELBY T B	3116 RICHMOND HWY, GLADSTONE, VA 24553	102	97 A 2A	ROBINSON BARBARA M	PO BOX 562, APPOMATTOX, VA, 24522
31	114 A 55	TYREE DONNIE R & SHELBY B	3116 RICHMOND HWY, GLADSTONE, VA 24553	103	97 A 2B	G SPOT RANCH LLC	2002 RIDGE STONE COURT, RICHMOND, VA, 23288
33	114 A 54	TYREE ROY L	3120 RICHMOND HWY, GLADSTONE, VA 24553	105	97 A 25	LUCAS GEORGE	4423 19TH ST NE, WASHINGTON, DC, 20018-3305
34	114 A 57	GILES PATRICIA T REVOCABLE LIVING	NO DATA	106	97 A 24	OAM PROPERTIES LLC	917 GLADSTONE RD, GLADSTONE, VA, 24553
35	114 A 59	WEYERHAEUSER COMPANY	205 PERRY LANE RD, BRUNSWICK, GA 31525	107	97 A 22A	TAYLOR ARCSHEL J	6255 64TH AVE APT 2, RIVERDALE, MD, 20737
36	114 A 48	VEST CHARLES H	3401 BELL TOWN RD, BEDFORD, VA 24523	108	97 A 22	WARD HIGGINBOTHAM LAVERNE	9104 CLAUDINE LANE, FORT WASHINGTON, MD, 20744
38	115 A 1	ROGERS DOUGLAS C	BROOKNEAL, VA 24528	109	97 A 22B	MORSE J DERRICK	P O BOX 290, AMHERST, VA, 24521
39	96 A 18	LOVE EDWARD LEE BEVIN H & OTHERS	2021 MARSH CT, CLAYTON, NC, 27520	110	97 A 21	LUCAS MARY B	108 FORT WALKER LANE, BLUFFTON, SC, 29909
40	96 A 17	GOWEN WESLEY TREVER & HEATHER	241 REDBIRD DRIVE, GLADSTONE, VA, 24553	111	97 A 12C	GIBSON HATTIE J &	146 NORWOOD ROAD, GLADSTONE, VA, 24553
41	96 A 15	WINGFIELD RICHARD F & PATRICIA C	P O BOX 3, GLADSTONE, VA, 24553	112	97 A 12A	SPENCER TAESHA Y	442 MANOR RD APT 7, NEWPORT NEWS, VA, 23608
42	96 A 13	PITSENBARGER MICHAEL S	NO DATA	113	97 A 13	JEFFRIES JOHN	146 NORWOOD RD, GLADSTONE, VA, 24553
43	96 A 12C	MCFADDEN RICKY A JR & FELICIA J	1657 PIEDMONT RD, GLADSTONE, VIRGINIA 24553	114	97 A 4	SECOND MINERAL SPRINGS CHURCH	NO DATA
44	96 A 11	JONES RILEY HERMAN SR	1715 PIEDMONT ROAD, GLADSTONE, VA 24553	115	97 A 3C	PATTERSON DELORES ANN	345 NORWOOD RD, GLADSTONE, VA, 24553
45	96 A 10	JONES RILEY HERMAN	1715 PIEDMONT ROAD, GLADSTONE, VA 24553	116	97 A 3B	JOHNSON DENISE S	379 NORWOOD RD, GLADSTONE, VA, 24553
46	96 A 25	SCRUGGS LARRY S & CHRISTINE C	344 UNION SCHOOL DRIVE, GLADSTONE, VA 24553	117	97 A 3A	JOHNSON ALEX JR & NANCY ANN	409 NORWOOD ROAD, GLADSTONE, VA, 24553
47	96 A 25D	SCRUGGS SAMUEL D & LISA D	118 UNION SCHOOL RD	118	97 4 1	FOLSOM STEVEN S & BETTY G	132 LEAGUE LN, MANSFIELD, VA, 30055
48	96 A 8A	MULLENS COLUMBUS D JR &	2014 PIEDMONT ROAD, GLADSTONE, VA 24553	119	97 4 2	FOLSOM STEVEN S & BETTY J GIBSON	501 NORWOOD RD, GLADSTONE, VA, 24553
49	96 A 7	WOOLDRIDGE DAVID B	2096 PIEDMONT RD, GLADSTONE, VA 24553	120	97 4 3	ELHAFI BILAL	1099 14TH ST NW #455, WASHINGTON, DC, 20005
50	96 4 D	PETERS GEORGE E JR & BRENDA H	2194 PIEDMONT RD, GLADSTONE, VA 24553	121	97 4 4	ELHAFI BILAL	1099 14TH ST NW #455, WASHINGTON, DC, 20005
51	96 4 A	WRIGHT WILLIAM R & PEARL C	159 POPLAR GROVE CIRCLE, AMHERST, VA 24501	122	97 4 5	STRODE BRIAN	1085 MADISON VIEW DR APT 101, FOREST, VA, 24551
52	96 4 B	LIPPARD SHARON A	6732 RUNNING FOX RD, HOPE MILLS, NC 28348	123	97 4 6	COUNTRYSIDE LAND COMPANY LLC	28 IMPERIAL DRIVE, STAUNTON, VA, 24401
55	96 A 1A	CROSSROADS 60 LLC	2416 PIEDMONT ROAD, GLADSTONE, VA, 24553	125	97 4 8	FRAZIER SHERRIE L	781 NORWOOD ROAD, GLADSTONE, VA, 24553
56	96 1 1A	ANGUS SAMUEL P & MICHELLE	2837 RICHMOND HWY, GLADSTONE, VA, 24553	126	97 4 9	ALGER STEPHEN P & JANE L	7 WEBSTER STREET, DOUGLAS, MA, 01516
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59	96 1	NO DATA	NO DATA	129	93 A 3C	MORSE JOHN BROOKS	4816 EAST SEMINARY AVE, RICHMOND, VA, 23227
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61	96 3 1	CLEMENTS WAYNE P & GENEVIEVE M	328 NEW GLASGOW, AMHERST, VA, 24521	131	87 A 28	COMMONWEALTH OF VIRGINIA	7870 VILLA PARK DRIVE, RICHMOND, VA, 23228
62	96 5 A	HONAKER KARRI A	62 OLD THIRTEEN LANE, GLADSTONE, VA, 24553	132	97 4 7	COUNTRYSIDE LAND COMPANY LC	28 IMPERIAL DRIVE, STAUNTON, VA, 24401
63	96 5 2	GOWEN WESLEY	241 REDBIRD DRIVE, GLADSTONE, VA, 24553	133	92 A 20	SPENCER LUCILLE IRENE &	5319 TAYLOR ST, BLADENSBURG, MD, 20710
64	96 5 3A	GENTRY DOUGLAS A JR & LISA BELL	P O BOX 40, RUCKERSVILLE, VA, 22968	134	92 A 20A	TYE BUFFALO LLC	201 OXFORD CIRCLE W, RICHMOND, VA, 23221
65	96 5 4	TYREE BRADLEY CLAYTON & FAYE T	357 TWIN OAKS LANE, GLADSTONE, VA, 24553	135	90 A 3	Cyrus Willie B & Virginia M	3745 NORWOOD ROAD, Gladstone, VA 24553
66	96 5 6C	HARTLESS JOHN M SR & DAWN M	5520 RICHMOND HWY, GLADSTONE, VA, 24553	136	114 A 52	Showalter Percy L & Ruth T	3161 GLADSTONE, VA 24553
67	96 5 6	HONAKER KARRI ANN	PO BOX 832, AMHERST, VA, 24521	137	114 A 53A	SHOWALTER ARTHUR R & ALICE M	3135 RICHMOND HWY, GLADSTONE, VA 24553
68	96 5 6A	HONAKER KARRI A	62 OLD THIRTEEN LANE, GLADSTONE, VA, 24553	137	96 5 1A	PROFFITT KYLE O	4998 RICHMOND HWY, GLADSTONE, VA 24553
69	96 5 7	NO DATA	NO DATA	138	96 5 3	GENTRY DOUGLAS A SR &	929 TOMS ROAD, BARBOURSVILLE, VA 22923
70	97 1 9	WEYERHAEUSER COMPANY	205 PERRY LANE ROAD, BRUNSWICK, GA, 31525	138	96 5	NO DATA	NO DATA
71	96 5 5	GILLIAM JOHNATHON EDWARD	5510 RICHMOND HWY, GLADSTONE, VA, 24553	138	96 A 9	STEELE RANDALL SCOTT & MELISSA S	6400 BETHANY ROAD, RUSTBURG, VA 24588
72	97 A 50	O'BRIEN COLEMAN H	738 BUCK MOUNTAIN LANE, GLADSTONE, VA, 24553	139	97 A 51	BANTON DEBORAH ANN GUNTER	716 BUCK MTN LANE, GLADSTONE, VA 24553
73	97 A 50A	O'BRIEN COLEMAN HYLTON	728 BUCK MTN LANE, GLADSTONE, VA, 24553	140	97 3 5	APPALACHIAN POWER COMPANY	PO BOX 16428, COLUMBUS, OH 43216
74	97 A 49	O'BRIEN COLEMAN H	738 BUCK MTN LANE, GLADSTONE, VA, 24553	141	97 3 4	APPALACHIAN POWER COMPANY	PO BOX 16428, COLUMBUS, OH 43216
75	97 A 48A	BANTON DEBORAH GUNTER	716 BUCK MT LANE, GLADSTONE, VA, 24553	142	96 3 2N	NO DATA	NO DATA
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77	97 A 33	CEMETERY	NO DATA	144	96 1 4A	TYREE BRADLEY	357 TWIN OAKS LANE, GLADSTONE, VA 24553
78	97 A 32B	BUTLER AMARI & COREY	448 2ND STREET SW, MASSILLON, OH, 44646	145	96 3	NO DATA	NO DATA
79	97 A 32A	FITZGERALD CHAZ	321 40TH ST CT NW, BRADENTON, FL, 34209	146	96 1 2C	ANGUS SAMUEL P & MICHELLE L	2837 RICHMOND HWY, GLADSTONE, VA 24553
80	97 A 32	TAYLOR CHAD A &	7021 BROOKING WAY, MECHANICSVILLE, VA, 23111	147	96 1 2B	HONAKER KARRI A	62 OLD THIRTEEN LANE, GLADSTONE, VA 24553
81	97 A 30B	BAILEY JOYCE E	110 JERSEY LANE, CONCORD, VA, 24538	148	96 1 B	HONAKER KARRI A	HONAKER KARRI A
82	97 A 30	BAILEY AARON N	10461 BRYNMORE DR, NORTH CHESTERFIELD, VA, 23237	149	96 1 1	FUNK ELLIE B	16 OLD THIRTEEN LANE, GLADSTONE, VA 24553

Figure No.

D-2

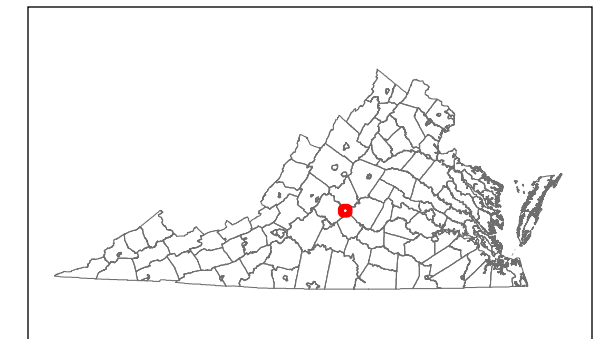
Title

Adjacent Parcel Map

Client/Project 203402299

Wild Rose Solar Project, LLC
Wild Rose Solar Project

Project Location Nelson County, Virginia Prepared by MER on 2023-10-17
TR by MGS on 2023-11-17
IR by JLO on 2023-11-29



Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
2. Data Sources: Nelson County GIS, Amherst County GIS, U.S. Census Bureau



Appendix E: Comprehensive Plan Review



MEMORANDUM

TO: Nelson County Planning Commission

FROM: Scott Foster, Jr., Esq., Gentry Locke Attorneys
Lindsey Rhoten, Esq., Gentry Locke Attorneys

DATE: December 15, 2023

SUBJECT: Analysis of Wild Rose Solar’s Conformity with the Nelson County 2002 Comprehensive Plan

Members of the Planning Commission,

Attached is a memorandum in support of Wild Rose Solar’s request for a determination that their proposed project is “substantially in accord” with the Nelson County 2002 Comprehensive Plan pursuant to Va. Code § 15.2-2232.

I. Summary

Wild Rose Solar Project, LLC (“Applicant”) requests that the Nelson County (the “County”) Planning Commission review Wild Rose Solar (the “Project”) for conformity with the Nelson County 2002 Comprehensive Plan (the “Plan”) pursuant to Va. Code § 15.2-2232. This request provides information needed for the County determination that the Project is “substantially in accord” with the Plan.

The Project is a solar electric generation facility with the capacity to deliver up to 90 megawatts (“MW”) of electricity to the electric transmission system that serves the County and surrounding area. The Project parcel identification numbers are 97-1-9 and 97-A-29. The total parcel area is approximately 2,470 acres, while the limit of construction is approximately 550 acres. The total area under the solar panels would be approximately 470 acres.

construction is approximately 550 acres. The total area under the solar panels would be approximately 470 acres.

II. Va. Code §15.2-2232 “Substantially in Accord” Determination

Va. Code §15.2-2232 provides that the County’s Comprehensive Plan controls “the general or approximate location, character, and extent of each feature shown on the plan.” For any “public utility facility” that is proposed after the adoption of the Comprehensive Plan, the County’s Planning Commission is tasked with determining whether the “*general location or approximate location, character, and extent thereof [of the public utility facility] . . . is substantially in accord with the adopted comprehensive plan or part thereof.*” (emphasis added). Because the Project is considered a public utility facility pursuant to Va. Code § 56-232, the Planning Commission is called upon to determine if the proposed “general location or approximate location, character, and extent” of the Project is “substantially in accord” with the Plan. In this context, “substantially in accord” is interpreted to mean “largely, but not wholly.”¹

III. The Project’s Location is in Conformity with the Plan

The Project Complies with the Zoning Ordinance

The Nelson County Zoning Ordinance (the “Ordinance”) is one of the primary tools used to implement the Plan.² As a result, when evaluating a solar facility for conformity with the Plan, a foundational question to consider is how and whether the facility is permitted within the zoning district where it is proposed. The Ordinance defines a “large solar energy system” as an “energy conversion system, operating as a principal land use, consisting of photovoltaic panels, support

¹ The Albemarle County Land Use Law Handbook Kamptner/March 2022, p. E-2.

² Nelson County Comprehensive Plan, viii [hereinafter “Plan”].

structures, and associated control, conversion, and transmission hardware occupying one (1) acre or more of total land area.”³ Importantly, the Ordinance permits large solar energy systems on land zoned in the Agricultural District (“A-1”) with a Special Use Permit (“SUP”).⁴

Here, the Project meets the large solar energy system definition because the Project will be a solar energy conversation system that will operate as the principal land use and consist of photovoltaic panels, support structures, and associated control, conversion, and transmission hardware that occupies more than one acre of land. Additionally, the Project’s primary use is electrical generation to be sold to the wholesale electricity markets.⁵ Moreover, all of the Project parcels are zoned A-1. Consequently, pursuant to the negotiated terms of a SUP, the construction and utilization of a large solar energy system is an acceptable use of the parcels within the A-1 zoning district and therefore, conforms to the Ordinance and, by extension, the Plan.

The Project is Not Located in a Development Area

The Plan states that future development should be concentrated in “development areas” to ensure the efficient investment in transportation, schools, and other public services, such as sewer and water, and should be based upon the five development models specified on the Future Land Use Plan Map.⁶ The concentration of new development to “development areas” is to safeguard the County’s ability to provide public services and vital infrastructure.⁷

By locating the Project outside of the “development areas,” the Project assists the County in concentrating future growth that may be dependent on the public services and infrastructure into these development areas and also prevents any strain on the public utilities or services because

³ Nelson County Zoning Ordinance § 22A-3.

⁴ Ord. § 22A-6(1).

⁵ *Id.*

⁶ Plan at iv, 13, 40.

⁷ *Id.* at 13.

these services are not necessary for this type of development. The construction and utilization of a solar facility is an acceptable use of the parcels outside of the development areas, and thus conforms with the Plan.

The Project is a Compatible Agricultural Use

The Plan also provides a separate Land Use Plan for Rural Areas and includes two rural districts, the Rural Residential District and the Rural and Farming District.⁸ The Rural and Farming District is intended for agricultural and agricultural compatible uses and further discourages significant residential and commercial development that conflict with agricultural uses.⁹ This District allows small scale industrial and service uses that complement agriculture.¹⁰

The Project is located within the Rural and Farming District and complements the goals of this District. Solar facilities are impermanent uses that preserve land use flexibility for the future. Unlike a residential subdivision or industrial facility, at the conclusion of the operational life of the solar project, the facility will be decommissioned, and the land may again be suitable for agricultural or other uses. This impermanence effectively holds the land in trust for the life of the project. This time allows the soil, and the microbes within it, to replenish, which ultimately improves the soil quality.

The Project Will Not Adversely Affect the County's Natural or Historic Resources

The Plan lists a number of natural and historic resource protection goals that this Project achieves, such as the preservation of ground and surface water and air quality; requirement of erosion and sediment control best management practices; protection of viewsheds and environmental features that contribute to the County's natural aesthetic; and identification and

⁸ *Id.* at 38-39.

⁹ *Id.* at 39.

¹⁰ *Id.*

protection of cultural and historic sites.¹¹ Similarly, the County outlines certain principles for development in rural areas that are geared towards protecting the County's natural resources, such as the limited development on critical slopes; the protection of scenic views by implementing height restrictions and buffering from the roadways with existing or planted vegetative buffering; and the protection of rural roadways with limited access points.¹²

Renewable energy projects like Wild Rose Solar are a key part of protecting and preserving water and air resources. Distinct from most sources of energy, solar does not utilize water resources or release pollutants into the environment and creates zero emissions. Importantly, the Project will not introduce any hazardous wastes into the atmosphere or water. Except for secondhand vehicle air emissions created during the construction phase of the Project, the Project will not create any airborne emissions nor will it utilize any ground or surface water.

This Project will be located on land that is well suited for solar development, and in accordance with the Steep Slopes map in the Plan, will not be located in an area with steep slopes.¹³ The Project will also utilize the planting of native grasses and pollinator habitat under the panels and within the Project area to help improve rainwater absorption rates and improve local water quality. The Project will have a stormwater management plan that includes low impact development techniques to equate pre- and post- development runoff and an erosion and sediment control plan that implements best management practices.

Solar energy systems can also contribute to the preservation of rural and agricultural areas. This Project will protect the rural character of the land because none of the solar panels or supporting infrastructure will be over fifteen (15) feet in height when positioned at maximum tilt.

¹¹ *Id.* at 10, 11, App. 6.

¹² *Id.* at 38.

¹³ Plan, at 21-22.

Additionally, the Project will have at least 100 feet setbacks around all exterior property boundaries and at least 200 feet from any property zoned residential. The Applicant will guarantee the preservation of existing vegetation around areas of the Project to ensure that it is properly screened from view throughout the life of the Project.¹⁴ In areas with insufficient existing vegetation, non-invasive shrubs and trees will be planted to enhance visual screening. The Project maintains the County's rural character by ensuring that solar panels are screened from view with adequate buffering, maintenance of existing vegetation and topographical features, and setbacks. As shown on the Project's Site Plan, the Project will be accessible within the Projects internal boundaries and avoid rural road use.

Lastly, the Project will undergo a thorough resource inventory as part of its Virginia Department of Environmental Quality (DEQ) Permit-By-Rule process and undergo consultation with the Department Historic Resources (DHR) to ensure proper protection of any potential cultural or historic resources. The Project aligns with the Plan, which underscores the importance of the County's rich environmental and historical resources, particularly as it relates to the opportunities for the tourism sector.¹⁵

IV. The Project's Character, and Extent are in Conformity with the Plan.

The Project will Provide Economic Opportunities to the County

The County strives to enhance quality of life for residents by encouraging a diverse and vibrant local economy with various types of businesses and industries.¹⁶ The Plan states that a

¹⁴ *Id.* at 5.

¹⁵ *Id.* at 6.

¹⁶ *Id.* at 5.

strong local economy generates tax revenues that support the public services needed by county residents.¹⁷

This Project will support local workers through construction jobs and ongoing operations and maintenance jobs. Additionally, employers are increasingly looking to operate in localities that can provide access to carbon-free energy. The Project has the potential to attract future businesses and employers that are seeking to set up shop in areas that support green energy. The Project will provide a significant addition to the local tax base by generating reliable tax revenue that allows for increased investment in County services and infrastructure without the costs associated with increased demand for public utilities, solid waste disposal, human services, or public education that may be associated with other types of development. If the land is used as a solar generation facility, it will generate tax revenue 13 times greater than the current land use. This revenue can be used to support core county services and local infrastructure improvements identified in the Plan.¹⁸

V. Compliance with Nelson County Comprehensive Plan Draft 2042

Nelson County is in the process of amending its Comprehensive Plan, and it is important to state that the Project is also “substantially in accord” with the Nelson County Comprehensive Plan 2042 (“Draft Plan”). The Draft Plan states that “[i]t is the duty of all localities across the Commonwealth to plan for alternative energy sources, such as solar . . . and Nelson County is no exception.”¹⁹ The Draft Plan requires the County to “work with developers to help accommodate the generation of energy through alternative sources as much as feasible.”²⁰

¹⁷ *Id.* at App. 6.

¹⁸ Plan, at ii-iii, 9-10.

¹⁹ Nelson County Comprehensive Plan, Public Review Draft July 31, 2023, 33 [hereinafter “Draft Plan”].

²⁰ *Id.*

This Project balances the County’s goals of renewable energy generation and protection of the environment and natural landscape. The Project will be located in a “rural area” on the Future Land Use Map and one of the primary land use types is “solar installations.”²¹ The planning guidelines for solar development in rural areas is for the development to have minimal impact to scenic viewsheds and natural resources.²² As stated in Section III of this analysis, this Project will be adequately screened from the surrounding landscape and implement best management practices to ensure that the natural landscape and environment is protected.

VI. Conclusion

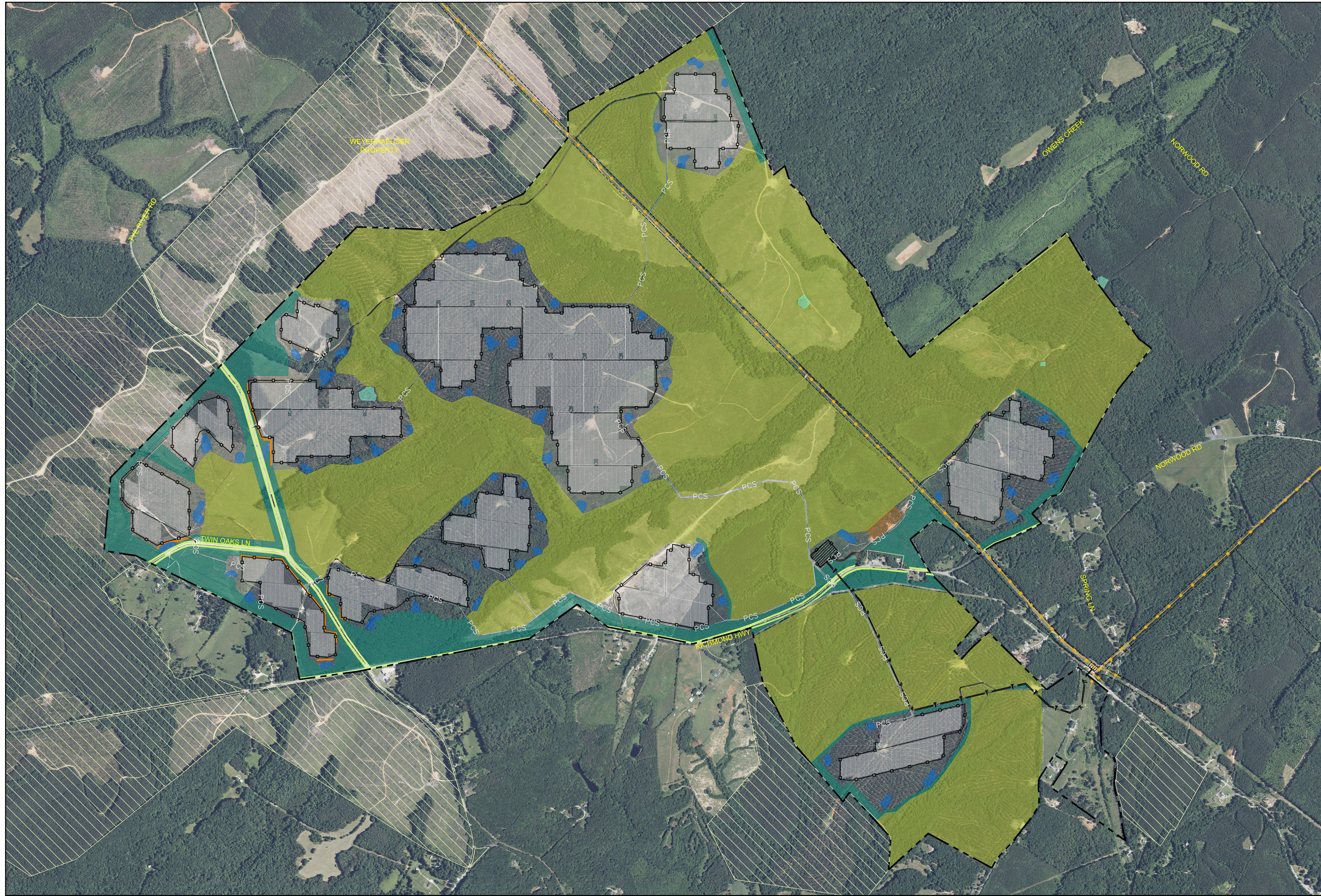
Pursuant to the requirement of Va. State Code §15.2-2232, the Applicant asks that the Planning Commission confirm that the Project is substantially in accord with the Plan. As detailed above, this project is in significant agreement with the Plan.

²¹ *Id.* at 39.

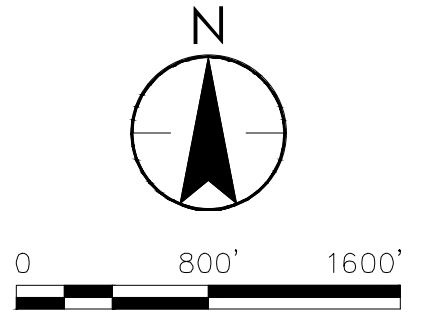
²² *Id.*

Appendix F: Conceptual Landscape Planting Plan





LEGEND - LANDSCAPE PLAN	
DESCRIPTION	
	ENHANCEMENT SCREENING
	EXISTING VEGETATION MAINTAINED (REQUIRED SCREENING)
	EXISTING VEGETATION MAINTAINED (VOLUNTARY BUFFER)
	MANAGED PINE PLANTATION
LEGEND - GENERAL	
	SITE BOUNDARY
	SECURITY FENCE
	SOLAR ARRAYS
	EXISTING CEMETERY
	SITE ACCESS
	OVERHEAD TRANSMISSION LINE
	PROPOSED INVERTER
	UTILITY EASEMENT
	AC FEEDER LINE
	AREA FOR SUBSTATION
	PROPOSED STORMWATER FACILITY
	PROPOSED LAYDOWN YARD
	WEYERHAEUSER PROPERTY



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Revision	By	Appd.	YY.MM.DD	Issued	By	Appd.	YY.MM.DD

Consultants



5209 Center Street
Williamsburg, VA
www.stantec.com

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Client/Project

WILD ROSE SOLAR PROJECT, LLC
WILD ROSE SOLAR PROJECT

NELSON COUNTY, VIRGINIA

File Name: WILD ROSE PLANTING PLANNING SMS JLO DLM 23.12.13
Dwn. Chkd. Dsgn. YY.MM.DD

Title

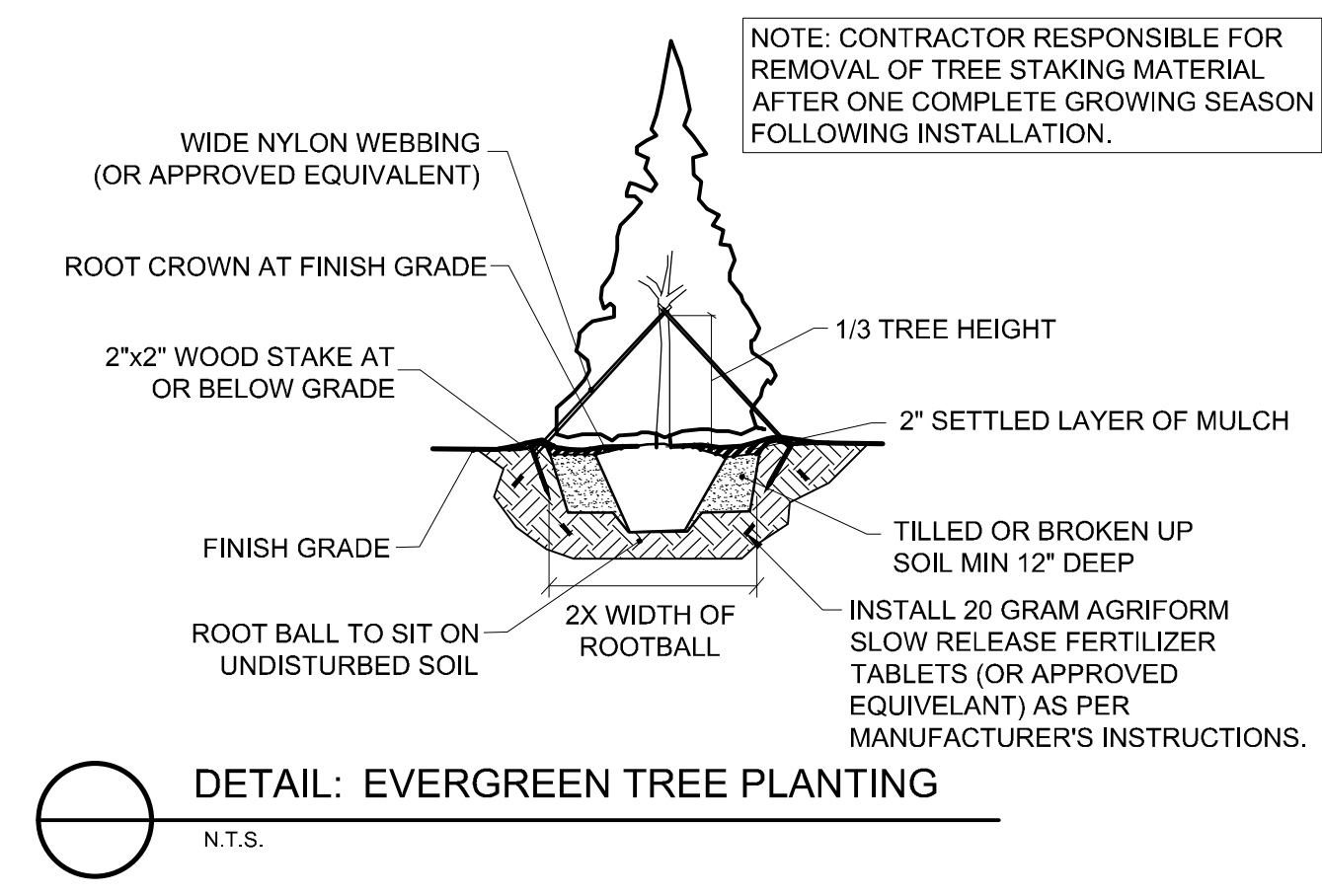
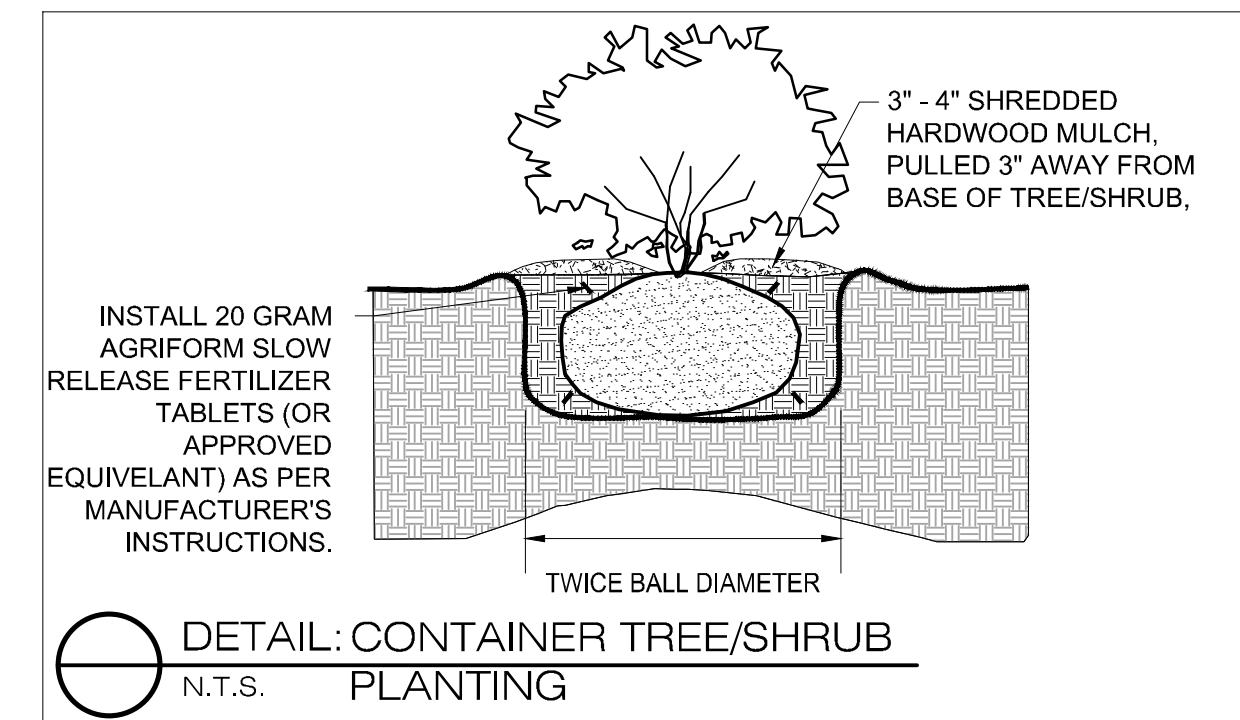
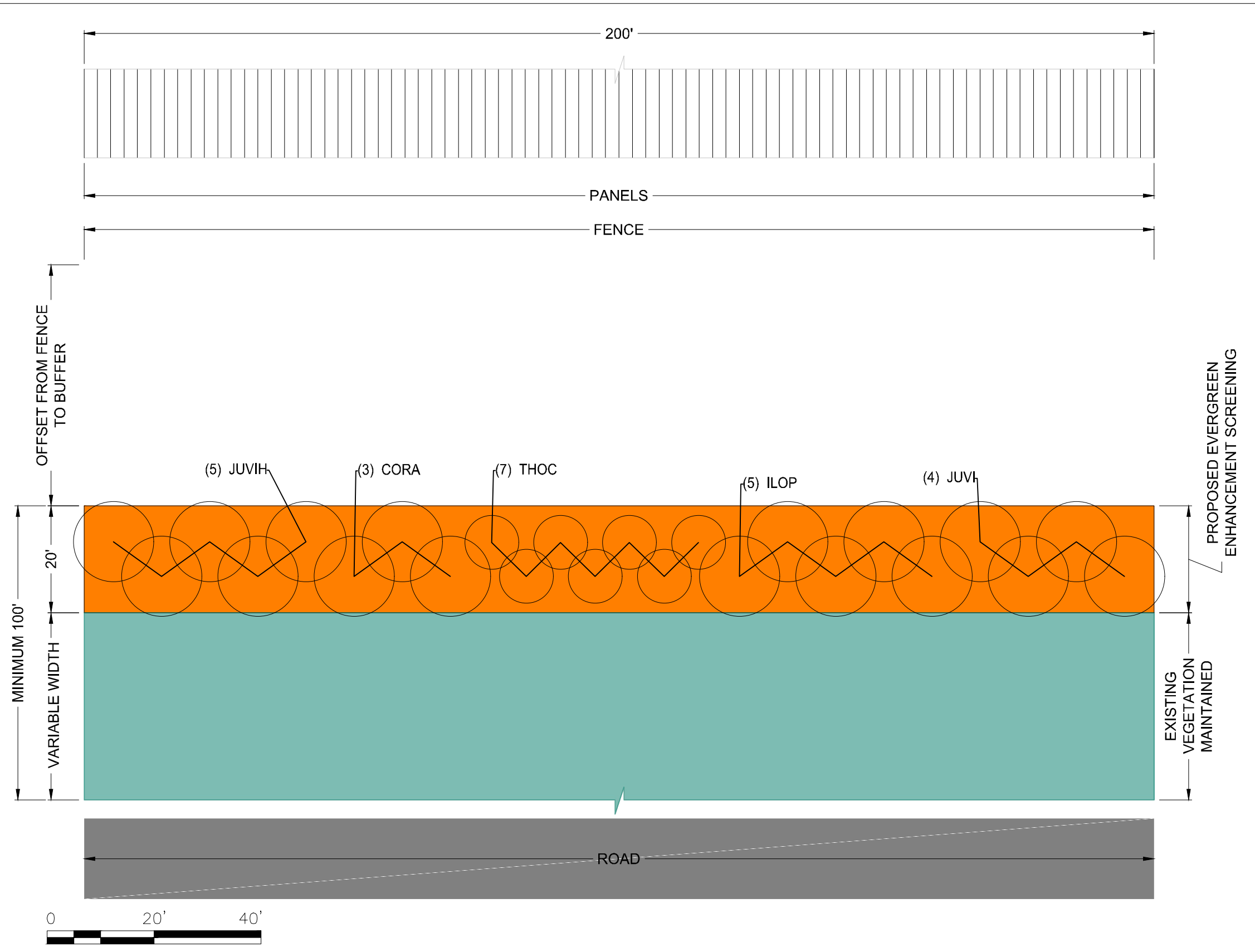
CONCEPTUAL LANDSCAPE
SCREENING LAYOUT PLAN

Project No. Scale
203402299 1"=800'

DRAWING NO. Sheet Revision

1 of 2 0

PLAN OF TYPICAL 200' SECTION OF SCREENING ENHANCEMENT PLANTING



WILD ROSE SOLAR SITE: CONCEPTUAL PLANT PALETTE

ENHANCEMENT SCREENING: +/- 5130 LF									
SYMBOL	BOTANICAL NAME	COMMON NAME	APPROXIMATE MATURE HEIGHT	APPROXIMATE MATURE SPREAD	CONTAINER TYPE	SPECIFICATION	QUANTITY PER 200' SEGMENT	ESTIMATED TOTAL QUANTITY	NOTES
CORA	CORNUS RACEMOSA	GRAY DOGWOOD	15'	15'	CONTAINER/B&B	MINIMUM 3'	3	78	-SPACE PLANTS IN DOUBLE STAGGERED ROW AS SHOWN. -INTENT IS TO LET THE CANOPIES GROW TOGETHER AND ENHANCE EXISTING VEGETATION SCREEN.
ILOP	ILEX OPACA 'GREENLEAF'	GREENLEAF AMERICAN HOLLY	25'	15'	CONTAINER/B&B	MINIMUM 4'	5	130	
JUVI	JUNIPERUS VIRGINIANA 'BRODIE'	BRODIE EASTERN RED CEDAR	15'	15'	CONTAINER/B&B	MINIMUM 4'	9	234	
THOC	THUJA OCCIDENTALIS 'TECHNY'	TECHNY ARBORVITAE	15'	10'	CONTAINER/B&B	MINIMUM 4'	7	182	
							TOTAL QUANTITY	624	

VEGETATIVE SCREENING NOTES:
SHRUB AND TREE INSTALLATION

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LAYOUT OF ALL WORK COVERED UNDER THESE PLANS.
2. ALL PLANT MATERIAL, UNLESS OTHERWISE SPECIFIED, SHALL BE UNIFORMLY BRANCHED AND HAVE A VIGOROUS ROOT SYSTEM. PLANT MATERIAL SHALL BE HEALTHY, VIGOROUS, AND FREE FROM DEFECTS, DECAY, DISEASES, INSECT PEST EGGS, AND ALL FORMS OF INFESTATION. ALL PLANT MATERIAL SHALL BE FRESH, FREE FROM TRANSPLANT SHOCK OR VISIBLE WILT. PLANTS DEEMED UNHEALTHY SHALL BE REJECTED.
3. ALL PLANT MATERIAL SHALL MEET THE MINIMUM SPECIFICATIONS AND STANDARDS DESCRIBED IN THE CURRENT ISSUE OF "THE AMERICAN STANDARD FOR NURSERY STOCK," PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, 1250 I STREET, N.W., SUITE 500, WASHINGTON, D.C. 20005.
4. ALL CONTAINER STOCK SHALL HAVE BEEN PROPAGATED IN A CONTAINER LONG ENOUGH FOR THE ROOT SYSTEM TO HAVE DEVELOPED SUFFICIENTLY TO HOLD ITS SOIL. CONTAINER STOCK WITH POORLY DEVELOPED ROOT SYSTEMS SHALL NOT BE ACCEPTED.
5. PLANTS SHALL BE PREPARED FOR SHIPMENT IN A MANNER THAT SHALL NOT CAUSE DAMAGE TO THE BARK, BUDS, BRANCHES, STEMS, OR OVERALL SHAPE OF THE STOCK. CONTAINER GROWN PLANTS SHALL BE TRANSPORTED IN THE CONTAINERS IN WHICH THEY HAVE BEEN GROWN.
6. PLANTS NOT INSTALLED ON THE DAY OF ARRIVAL AT THE SITE SHALL BE STORED AND PROTECTED BY THE CONTRACTOR. OUTSIDE STORAGE AREAS SHALL BE SHADED AND PROTECTED FROM THE WIND AND SUN. PLANTS STORED ON SITE SHALL BE PROTECTED FROM ANY DRYING AT ALL TIMES BY COVERING THE BALLS OR ROOTS WITH MOIST SAWDUST, WET BURLAP, WOOD CHIPS, SHREDDED BARK, PEAT MOSS, OR OTHER SIMILAR MULCHING MATERIAL.
7. PLANT SUBSTITUTIONS MAY BE MADE BASED ON AVAILABILITY BUT MUST BE OF SIMILAR SIZE AND LANDSCAPE (SCREENING) VALUE. ALL SUBSTITUTIONS MUST BE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE.
8. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD.
9. NO PLANTING SHALL OCCUR WHEN THE SOIL IS FROZEN.
10. IN AREAS OF WETLANDS, CONTRACTOR SHALL USE CORNUS RACEMOSA. GAPS SHALL BE LEFT FREE OF PLANTS WHERE SCREENING BUFFERS CROSS SWALES OR STREAM CHANNELS.

PLANTING SEQUENCE

1. DIG THE PLANTING HOLE A MINIMUM OF 2x WIDTH OF ROOTBALL FOR AT LEAST THE FIRST 12 INCHES OF DEPTH. BELOW 12 INCHES, DIG HOLE WIDE ENOUGH TO PERMIT ADJUSTING. DO NOT DIG THE HOLE DEEPER THAN ROOT BALL DEPTH.
2. HOLES FOR INDIVIDUAL PLANTINGS SHALL BE EXCAVATED TO PRODUCE VERTICAL SIDES AND FLAT BOTTOMS. ALL PLANTING HOLES SHALL HAVE ROUGHED, SCARIFIED SIDES AND BOTTOMS.
3. THE CONTRACTOR SHALL APPLY AGRIFORM FOREST STARTER TABLETS, OR EQUIVALENT PRODUCT, TO EACH PLANT AS PER MANUFACTURER'S DIRECTIONS ON LABEL AT TIME OF PLANTING.
4. LIFT AND SET THE TREE BY ROOT BALL ONLY. DO NOT LIFT USING THE TREE TRUNK AND DO NOT USE TREE TRUNK AS A LEVER.
5. SET THE TOP OF THE ROOT BALL LEVEL WITH THE SOIL SURFACE OR SLIGHTLY HIGHER IF THE SOIL IS PRONE TO SETTLING.
6. BACKFILL WITH EXISTING SOIL THAT HAS BEEN WELL-TILLED OR BROKEN UP.
7. PRUNING SHALL BE LIMITED TO DEAD, DISEASED, OR BROKEN LIMBS ONLY AND SHALL BE IN ACCORDANCE WITH ANSI A300 SPECIFICATIONS.
8. REMOVE ANY TRUNK WRAP REMAINING AT TIME OF PLANTING. NO WRAPS SHALL BE PLACED ON TRUNK.
9. THE CONTRACTOR SHALL RESTORE AREAS DISTURBED BY THE INSTALLATION OF SHRUBS AND TREES.

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Appendix G: Photo Renderings



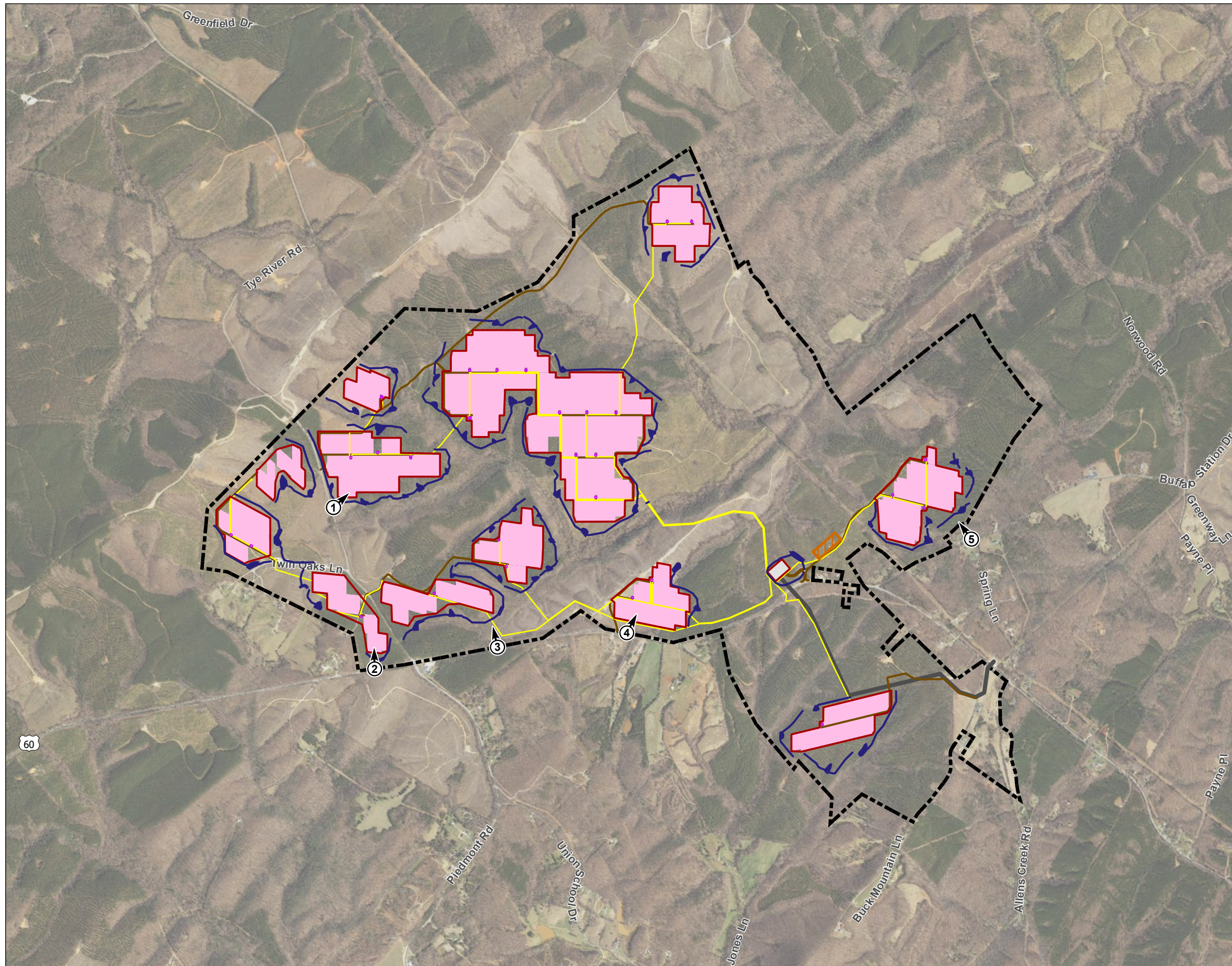


Figure No.

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Title

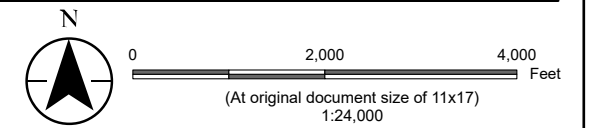
Photo Location Map

Client/Project
 Wild Rose Solar Project, LLC
 Wild Rose Solar Project

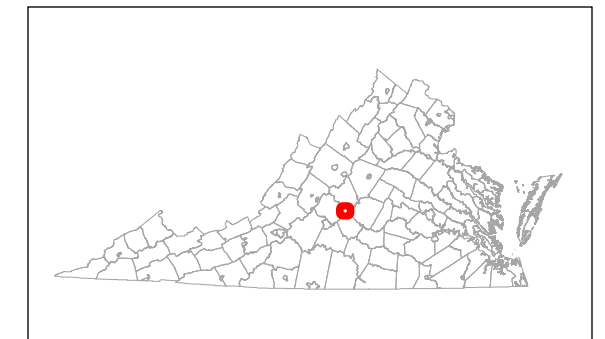
203402299

Project Location
 Nelson County, Virginia

Prepared by MER on 2023-11-29
 TR by MGS on 2023-11-29
 IR by JLO on 2023-11-30



- ① Photo Location
- Project Limits
- Panel Array
- ▨ Proposed Laydown Yard
- Substation
- ▭ Fence Line
- Inverter
- Preliminary Stormwater Basin
- Project Road
- Gen-Tie Line
- Collection Line



Notes
 1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Stantec, Wild Rose Solar Project, LLC, VGIN, U.S. Census Bureau
 3. Orthoimagery © Virginia Geographic Information Network (VGIN)



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Photo Location 1

Proposed screen will consist of evergreen enhancement and maintenance of existing vegetation.



Before



After 5 Years



After 10 Years

Photo Location 2

Proposed screen will consist of evergreen enhancement and maintenance of existing vegetation.



Before



After 5 Years



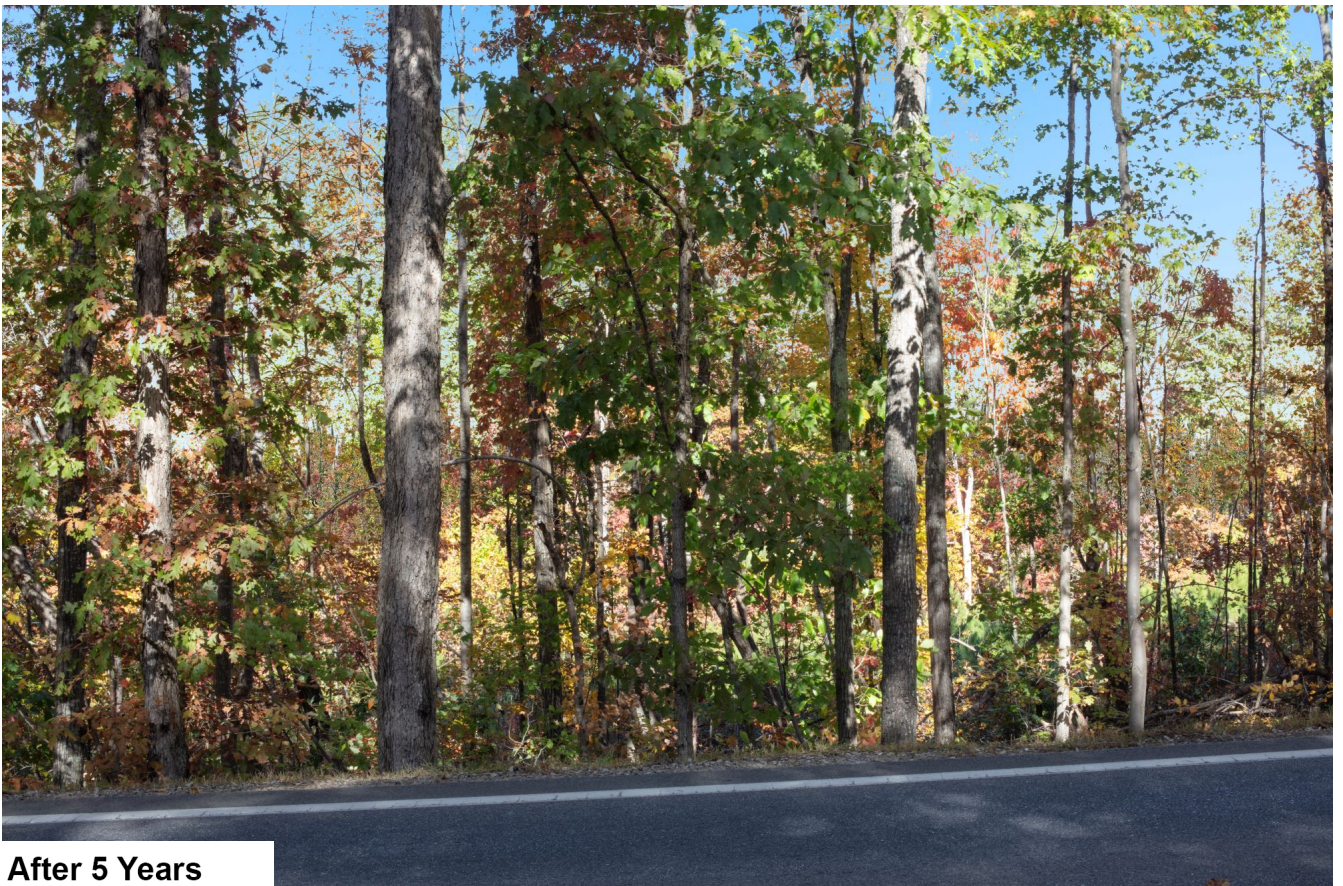
After 10 Years

Photo Location 3

Existing vegetation will be maintained.



Before



After 5 Years



After 10 Years

Photo Location 4

Existing vegetation will be maintained.



Before



After 5 Years



After 10 Years

Photo Location 5

Existing vegetation will be maintained.



Before



After 10 Years

Representative Photo of Gen-Tie

This is a representative photo of the gen-tie and is not a photo taken at the project. The gen-tie will be hung on steel monopole structures that will be approximately 90- to 110-feet above the ground.



Appendix H: Decommissioning Plan



**Decommissioning Plan
Wild Rose Solar Project
Nelson County, Virginia**



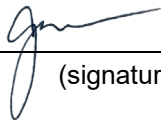
Prepared for:
Wild Rose Solar, LLC
422 Admiral Blvd
Kansas City, MO 64106

Prepared by:
Stantec Consulting Services Inc.
1165 Scheuring Road
De Pere, Wisconsin 54115

Project No: 203402299
December 11, 2023

**DECOMMISSIONING PLAN
WILD ROSE SOLAR PROJECT, NELSON COUNTY, VIRGINIA**

This document entitled Decommissioning Plan – Wild Rose Solar Project, Nelson County, Virginia, was prepared by Stantec Consulting Services Inc. (“Stantec”) for the use of Wild Rose Solar LLC (the “Client”). The material in this document reflects Stantec’s professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in this document are based on conditions and information existing at the time this document was published and do not take into account any subsequent changes.



(signature)

**Christiana Jansen
Environmental Scientist**



(signature)

**JoAnne J. Blank
Senior Associate**



(signature)

**Matthew A. Clementi, PE
Senior Project Manager**

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1.0 INTRODUCTION

Wild Rose Solar, LLC (Wild Rose Solar) is proposing to construct the Wild Rose Solar Project (the “Project”) in Nelson County, Virginia. Major components of the Project include bi-facial solar modules, a tracking system, inverter/transformer stations, access roads, and a Project substation. The Project facilities will occupy approximately 550 acres of disturbed land within the perimeter fencing. The Project will have a maximum nameplate generating capacity of 90 megawatts (MW) alternating current (AC).

This Decommissioning Plan (Plan) provides a description of the decommissioning and restoration phase of the Project. Start-of-construction is planned for April 2026, with an anticipated Commercial Operation Date in early 2027. The decommissioning phase is assumed to include the removal of Project facilities as listed in Section 1.1 and shown in Figure 1.

This Plan includes an overview of the primary decommissioning Project activities, including the dismantling and removal of facilities, and subsequent restoration of land. A summary of estimated costs and revenues associated with decommissioning the Project are included in Section 4.0. The summary statistics and estimates provided are based on a 90-MW_[AC] Project array design.

1.1 SOLAR FARM COMPONENTS

The main components of the Project include:

- Solar modules and associated above ground cabling
- Tracking system and steel piles
- Inverter/transformer stations
- Site access and internal roads
- Perimeter fencing
- Below ground electrical cabling and conduits
- Project substation and associated generation transmission tie-in line

1.2 TRIGGERING EVENTS AND EXPECTED LIFETIME OF PROJECT

Project decommissioning may be triggered by events such as the end of a power purchase agreement or when the Project reaches the end of its operational life. Per the requirements of Nelson County Ordinance (Number O2021-01 March 9, 2021), Article 22A – Solar Energy, Section 22A-4, 3.B.2., “within three hundred sixty-five (365) days of the date of abandonment or discontinuation, the owner or operator shall complete the physical removal of the solar energy project and site restoration.” Reasonable extensions of time may be granted, as described within the Ordinance.

If properly maintained, the expected lifetime of a utility-scale solar panel is approximately 30 to 40 years. Depending on market conditions and project viability, solar arrays may be retrofitted with updated components (e.g., modules, tracking system, etc.) to extend the life of a project. In the event that the modules are not retrofitted, or at the end of the Project’s useful life, the modules and associated components will be decommissioned and removed from the Project site.

DECOMMISSIONING PLAN
WILD ROSE SOLAR PROJECT, NELSON COUNTY, VIRGINIA

The value of the individual components of the solar facility will vary with time. In general, the highest component value would be expected at the time of construction with declining value over the life of the Project. Over most of the life of the Project, components such as the solar panels could be sold in the wholesale market for reuse or refurbishment. As efficiency and power production of the panels decrease due to aging and/or weathering, the resale value will decline accordingly. Secondary markets for used solar components include other utility scale solar facilities with similar designs that may require replacement equipment due to damage or normal wear over time; or other buyers (e.g., developers, consumers) that are willing to accept a slightly lower power output in return for a significantly lower price point when compared to new equipment.

Components of the solar facility that have resale value may be sold in the wholesale market. Components with no wholesale value will be salvaged and sold as scrap for recycling or disposed of at an approved offsite licensed solid waste disposal facility (landfill). Decommissioning activities will include removal of the arrays and associated components as listed in Section 1.1 and described in Section 2.

1.3 DECOMMISSIONING SEQUENCE

Decommissioning activities typically begin within 6 months of the Project ceasing operation and will be completed within 12 months from the date of abandonment or discontinuation. Monitoring and site restoration may extend beyond this period to ensure successful revegetation and rehabilitation. The anticipated sequence of decommissioning and removal is described below; however, overlap of activities is expected.

- Reinforce access roads, if needed, and prepare site for component removal
- Install temporary fencing and erosion control best management practices (BMPs) to protect sensitive resources
- De-energize solar arrays
- Dismantle panels and above ground cabling
- Remove trackers and piles
- Remove inverter/transformer stations, along with support concrete pads
- Remove below-ground electrical cables and conduit
- Remove access and internal roads and grade site to restore original contours, as necessary
- Remove substation, if decommissioned
- Remove above ground generation tie-in transmission line and poles
- De-compact subsoils (if required), restore and revegetate disturbed land to allow for pre-construction land use to the extent practicable

2.0 PROJECT COMPONENTS AND DECOMMISSIONING ACTIVITIES

The solar facility components and decommissioning activities necessary to restore the Project area, as near as practicable, to conditions suitable for agricultural purposes as described within this section.

2.1 OVERVIEW OF SOLAR FACILITY SYSTEM

Wild Rose Solar anticipates utilizing approximately 234,012 solar modules, with a total nameplate generating capacity of up to 117 MW direct current (DC) converting to approximately 90 MW_[AC] on approximately 550 acres of disturbed area within perimeter fencing. Statistics and cost estimates provided in this Plan are based on a First Solar bifacial module although the final panel manufacturer has not been selected at the time of this report.

Foundations, steel piles, electrical cabling and conduit will be removed. Access roads may be left in place if requested and/or agreed to by the landowner. Wild Rose Solar will communicate with the appropriate local agency to coordinate the repair of public roads damaged or modified during the decommissioning and reclamation process.

Estimated quantities of materials to be removed and salvaged or disposed of are included in this section. Most of the materials described have salvage value, although there are some components that will likely have none at the time of decommissioning. All recyclable materials, salvaged and non-salvage, will be recycled to the extent possible. All other non-recyclable waste materials will be disposed of in accordance with state and federal law in a licensed solid waste facility. Table 1 presents a summary of the primary components of the Project included in this decommissioning plan.

Component	Quantity	Unit of Measure
Solar Modules (approximate)	234,012	Each
Tracking System (96-module equivalent trackers)	2,438	Each
Steel Piles	39,008	Each
Inverter/Transformer Stations	28	Each
Electrical Cables and Conduits (approximate)	69,500	Lineal Foot
Perimeter Fencing (approximate)	77,340	Lineal Foot
Internal Access Roads (approximate)	41,875	Lineal Foot
Operations and Maintenance Structure	1	Each
Substation	1	Each

2.2 SOLAR MODULES

Wild Rose Solar is considering the First Solar Series 7 TR1 (530-watt) bi-facial module or similar type of model for the Project. Each module assembly (with frame) has a total weight of approximately 87.5 pounds. The modules are approximately 90.6 inches long and 47.9 inches in width and are mainly comprised of non-metallic materials such as silicon or mono-crystalline glass, composite film, laminate material, and epoxies, with a galvanized steel frame.

At the time of decommissioning, module components in working condition may be refurbished and sold in a secondary market yielding greater revenue than selling as salvage material.

2.3 TRACKING SYSTEM AND SUPPORT

The solar modules will be mounted on a one-in-portrait single axis tracking system, such as the NX Horizon manufactured by Nextracker or similar. Each tracker is expected to be approximately 120 meters (392 feet) in length and will support approximately 96 solar modules. Smaller trackers may be employed at the edges of the layout, to efficiently utilize available space. The tracking systems are mainly comprised of galvanized and stainless steel; steel piles that support the system are comprised of structural steel.

The solar arrays will be deactivated from the surrounding electrical system and made safe for disassembly. Tracker lubricants will be removed and properly disposed of or recycled according to regulations current at the time of decommissioning. Electronic components, and internal electrical wiring will be removed and salvaged. The steel piles will be completely removed.

The supports, tracking system, and piles contain salvageable materials which will be sold to provide revenue to offset decommissioning costs.

2.4 INVERTER/TRANSFORMER STATIONS

Inverters and transformers are located within the array and will sit on concrete pads typically four to eight inches thick. The inverters and transformers will be deactivated, disassembled, and removed. Depending on condition, the equipment may be sold for refurbishment and re-use. If not re-used, they will be salvaged or disposed of at an approved solid waste management facility. All oils and lubricants will be collected and disposed of at a licensed facility.

2.5 ELECTRICAL CABLING AND CONDUITS

The Project's underground electrical collection system will be placed at a depth of approximately three to four feet (36-48 inches). For purposes of this Plan, it is assumed that all cabling and conduit located below the ground surface will be removed.

2.6 PROJECT SUBSTATION AND ABOVE GROUND TRANSMISSION LINE

The Project will include a substation as shown on the attached figure. The substation footprint will be approximately 200 feet by 200 feet and will contain within its perimeter, a gravel pad, one power transformers and footings, electrical control house and concrete foundations, as needed. An approximately 1.15-mile-long overhead transmission line connects the Project substation to a larger regional substation.

The substation transformer may be sold for re-use or salvage. Components of the substation that cannot be salvaged will be transported off-site for disposal at an approved waste management facility. Equipment foundations and footings will be demolished and removed. The transmission line and associated structures will also be removed. The substation and transmission line will service the Project and although they may be retained at the end of the Project life, an estimated decommissioning cost has been included in this Plan.

2.7 OPERATIONS AND MAINTENANCE BUILDING

Wild Rose Solar will potentially utilize a self-contained modular steel Conex-style unit or similar structure for an operations and maintenance (O&M) building. Although it has not yet been determined if an O&M building will be installed on site, it has been included in the estimated decommissioning costs to ensure a conservative approach. The structure would potentially be located near the Project substation and be installed on a gravel pad with connections to electrical or other services, as needed. The placement of the structure would be in conformance with all local and state building codes and will be completely removed during the decommissioning process.

2.8 PERIMETER FENCING, SITE ACCESS AND INTERNAL ROADS

The Project site will include an approximately seven-foot-high chain-link security fence surrounding the perimeter of each array site. Near the end of the decommissioning process, all fencing, poles, and foundations will be completely removed from the site.

A network of access roads will allow access to solar facility equipment. The internal access roads will be composed of gravel approximately 12 to 16 feet wide and total approximately 41,875 feet (7.9 miles) in length. The internal access road lengths may change with final Project design. To be conservative, the decommissioning estimate assumes that all internal access roads will be completely removed.

During installation of the Project site access roads, subgrade conditions may be stabilized by either the placement of geotextile reinforced granular fills over soft ground, or geogrid stabilization. This Plan assumes the installation of up to nine inches of aggregate base materials. The estimated quantity of these materials is provided in Table 2.

Table 2 Typical Access Road Construction Materials

Item	Quantity	Unit
Gravel or granular fill; nine-inch thick	13,958	Cubic Yards
Geotextile fabric	74,444	Square Yards

Decommissioning activities include the removal and stockpiling of aggregate materials onsite for salvage preparation. Stantec conservatively assumes that all aggregate materials will be removed from the Project site and hauled up to five miles from the Project area. Underlying geotextile fabric will also be removed during the decommissioning process. Fabric that is easily separated from the aggregate during excavation will be disposed of in an approved solid waste disposal facility. Fabric that remains with the aggregate will be sorted out at the processing site and properly disposed. Following removal of aggregate and geotextile

**DECOMMISSIONING PLAN
WILD ROSE SOLAR PROJECT, NELSON COUNTY, VIRGINIA**

fabric, the access road areas will be de-compacted with deep ripper or chisel plow (ripped to 18 inches), backfilled with native subsoil and topsoil, as needed, and graded as necessary.

3.0 LAND USE AND ENVIRONMENT

3.1 LAND USE

Land use prior to proposed development is a combination of forested, barren, and agricultural land, with low density housing in the surrounding area. The areas of the Project that have been disturbed will be restored so that the ground is again tillable and suitable to return to pre-construction land use. Restored areas will be revegetated in compliance with regulations in place at the time of decommissioning.

3.2 RESTORATION AND REVEGETATION

Topographic portions of the Project site that have been excavated and backfilled will be restored, as near as practicable, to preconstruction conditions. Soils compacted during de-construction activities will be de-compacted, as necessary, to allow pre-construction land use. Topsoil will be placed on disturbed areas, as needed, and re-grading and re-seeding will commence.

3.3 SURFACE WATER DRAINAGE AND CONTROL

The Project area terrain consists of hill ridges in the northwest and southeast portions with natural drainage features. The Project facilities are being sited to avoid wetlands, waterways, and drainage ditches to the extent practicable.

Surface water conditions at the Project site will be reassessed prior to the decommissioning phase. Wild Rose Solar will obtain the required water quality permits from the Virginia Department of Environment Quality (DEQ) and the U.S. Army Corps of Engineers (USACE), as needed, prior to decommissioning the Project. Required construction stormwater permits will also be obtained, and a Stormwater Pollution Prevention Plan (SWPPP) prepared describing the protection needed to reflect conditions present at the time of decommissioning. Best management practices may include: construction entrance improvements, temporary seeding, permanent seeding, mulching (in non-agricultural areas), erosion control matting, silt fence, filter berms, and filter socks.

3.4 MAJOR EQUIPMENT REQUIRED FOR DECOMMISSIONING

The activities involved in decommissioning the Project include removal of the Project components: solar modules, racking, tracking system, foundations and piles, inverters, transformers, access roads, and electrical cabling and conduits. Restoration activities include back-filling of pile and foundation sites; de-compaction of subsoils; grading of surfaces to pre-construction land contours and revegetation of the disturbed areas.

Equipment required for the decommissioning activities is similar to what is needed to construct the solar facility and may include, but is not limited to: small cranes, low ground pressure (LGP) track mounted excavators, backhoes, LGP track bulldozers and dump trucks, front-end loaders, deep rippers, water trucks, disc plows and tractors to restore subgrade conditions, and ancillary equipment. Standard dump trucks may be used to transport material removed from the site to disposal facilities and to import clean fill and topsoil if necessary.

4.0 DECOMMISSIONING COST ESTIMATE SUMMARY

Expenses associated with decommissioning the Project will be dependent on labor costs at the time of decommissioning. For the purposes of this report, 2023 average market values were used to estimate labor expenses. Fluctuation and inflation of the labor costs were not factored into the estimates.

4.1 DECOMMISSIONING EXPENSES

During decommissioning, the Project will incur costs associated with disposal of components not sold for salvage, including materials which will be disposed of at a licensed facility, as required. Decommissioning costs also include backfilling, grading, and restoration of the proposed Project site as described in Section 2. Table 3 summarizes the estimates for activities associated with the major components of the Project.

Table 3 Estimated Decommissioning Expenses

Activity	Unit	Number	Cost per Unit	Total
Overhead and management (includes estimated permitting required)	Lump Sum	1	\$557,000	\$557,000
Solar modules; disassembly and removal	Each	234,012	\$4.95	\$1,158,359
Tracking system disassembly and removal	Each	2,438	\$890	\$2,169,820
Steel pile/post removal	Each	39,008	\$10.70	\$417,386
Inverter/transformers stations	Each	28	\$3,300	\$92,400
Remove below ground cabling	Lineal Foot	69,500	\$0.90	\$62,550
Access road excavation and removal	Lump Sum	1	\$208,550	\$208,550
Perimeter fence removal	Lineal Foot	77,340	\$4.60	\$355,764
Topsoil replacement and rehabilitation of site	Lump Sum	1	\$484,100	\$484,100
O&M Building (Conex)	Each	1	\$6,000	\$6,000
Substation removal (one transformer)	Lump Sum	1	\$300,000	\$300,000
Overhead transmission tie-in line	Linear Mile	1.16	\$275,000	\$319,000
Total Estimated Decommissioning Cost				\$6,130,929

4.2 POTENTIAL DECOMMISSIONING REVENUES

Revenue from decommissioning the Project will be realized through the sale of the solar facility components and construction materials. As previously described, the value of the decommissioned components will be higher in the early stages of the Project and decline over time. Resale of components such as solar panels is expected to be greater than salvage (i.e., scrap) value for most of the life of the Project.

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WILD ROSE SOLAR PROJECT, NELSON COUNTY, VIRGINIA

Modules and other solar plant components can be sold within a secondary market for re-use. A current sampling of reused solar panels indicates a wide range of pricing depending on age and condition (\$0.10 to \$0.30 per watt). Future pricing of solar panels is difficult to predict at this time, due to the relatively young age of the market, changes to solar panel technology, and the ever-increasing product demand. A conservative estimation of the value of solar panels at \$0.10 per watt would yield approximately \$11,700,000. Increased costs of removal, for resale versus salvage, would be expected in order to preserve the integrity of the panels; however, the net revenue would be substantially higher than the salvage value.

The resale value of components such as trackers, may decline more quickly; however, the salvage value of the steel that makes up a large portion of the tracker is expected to remain a valuable commodity and provide revenue at the time of decommissioning. In compliance with the County Ordinance, no revenue gained from the resale or salvage of Project components is included in the final decommissioning cost estimate.

4.3 DECOMMISSIONING COST SUMMARY AND FINANCIAL ASSURANCE

Table 4 provides a summary of the estimated cost to decommission the Project, using the information detailed in Section 4.1. Estimates are based on late 2023 prices, with no market fluctuations or inflation considered.

The following table represents the total estimated decommissioning cost without reductions based on salvage value.

Table 4 Decommissioning Cost Summary

Item	Cost
Gross Decommissioning Expenses	\$6,130,929
Twenty-five percent (25%) of Gross Decommissioning Cost	\$1,532,732
Gross Decommissioning Cost with Additional Twenty-Five Percent (25%)	\$7,663,661

In terms of required bonding for the Project, Wild Rose Solar, LLC has indicated that they will comply with the Nelson County Solar Ordinance as stated in Section 22A-4, 2.A-C and any Conditions associated with the Special Use Permit.

FIGURES

DECOMMISSIONING PLAN
WILD ROSE SOLAR PROJECT, NELSON COUNTY, VIRGINIA

Figure 1 Project Layout

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Wild Rose Solar Project
Approved Site Plan
Nelson County Planning Department

Name: _____
Title: _____
Date: _____

Name: _____
Title: _____
Date: _____

Name: _____
Title: _____
Date: _____

Name: _____
Title: _____
Date: _____

Name: _____
Title: _____
Date: _____

Owner
Weyerhaeuser Company
205 Perry Lane Road
Brunswick, Georgia 31525
and
Bobby Hickey
171 Buck Mountain Lane
Gladstone, Virginia 24553

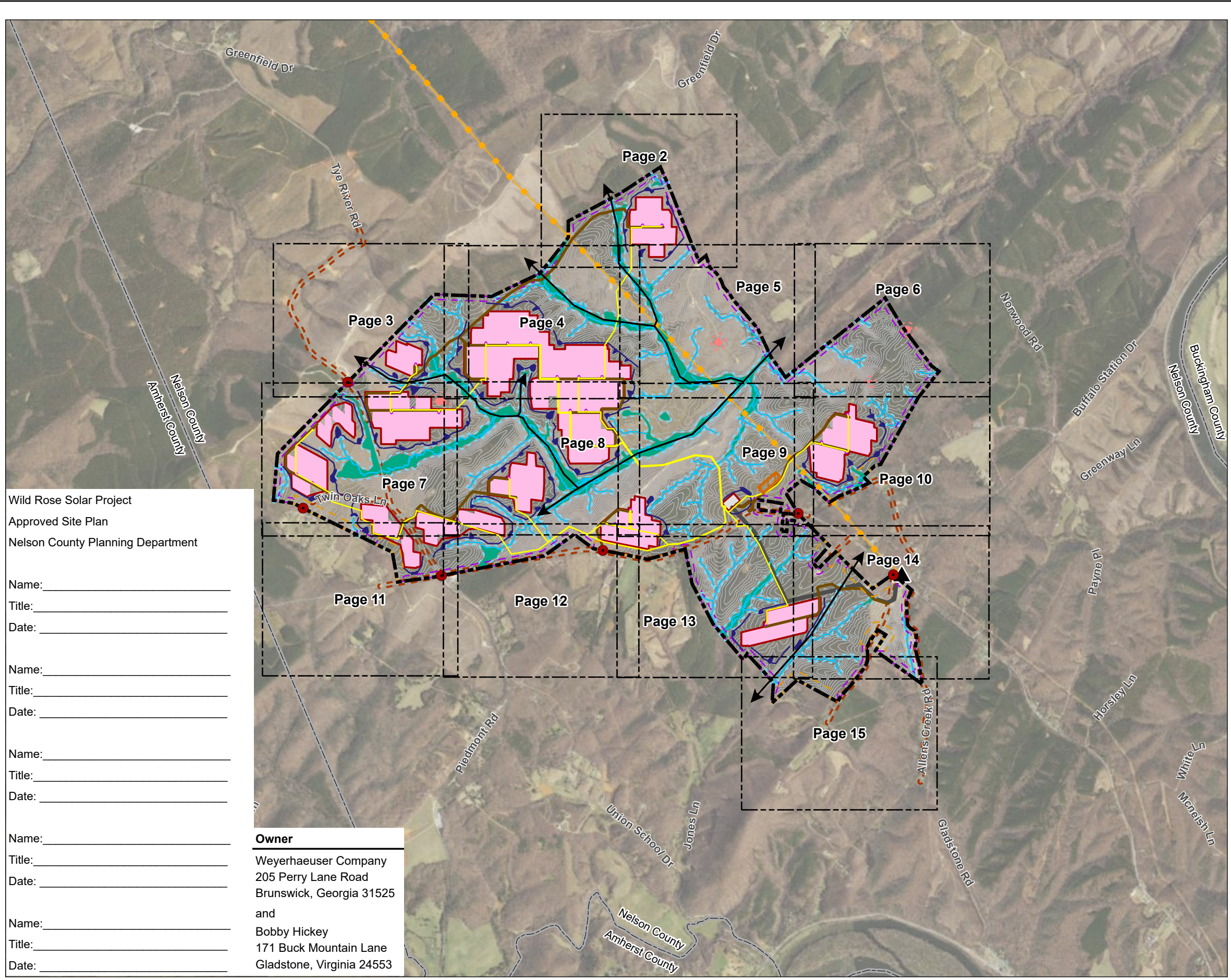
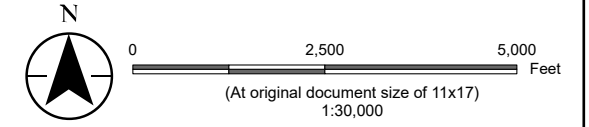


Figure No. **1**
Title **Preliminary Site Plan**

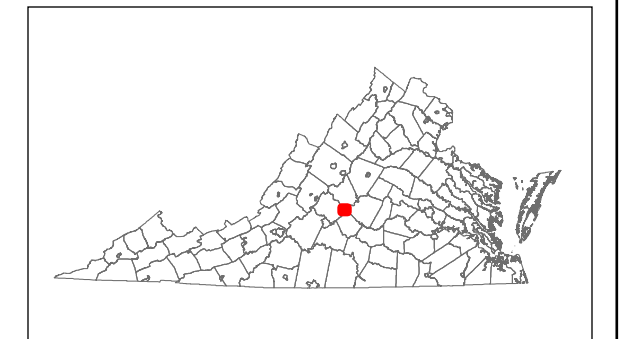
Client/Project **Wild Rose Solar Project, LLC**
Wild Rose Solar Project

Project Location **Nelson County, Virginia**
Prepared by MER on 2023-11-27
TR by MGS on 2023-11-27
IR by JLO on 2023-11-27



- Project Access
- ▲ Existing Substation
- Project Limits
- Page Index
- Fence Line
- 125-Foot Project Setback
- 200-Foot Project Setback
- 100-Foot Road Setback
- Panel Array
- Inverter
- Substation
- Cemetery
- 100-Foot Cemetery Buffer
- Desktop Stream
- Desktop Wetland
- 50-Foot Wetland Buffer
- Floodplain (Not Present within Project Boundary)
- Proposed Laydown Yard
- Preliminary Stormwater Basin
- Stormwater Ditch
- Project Road
- Collection Line
- Gen-Tie Line
- Existing Transmission Line
- 10-Foot Contour
- Wildlife Corridor

Site Data
Project Area **2,471.30 Acres ±**
Limit of Disturbance (LOD) **550.00 Acres ±**



Notes
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2. Data Sources: Wild Rose Solar Project, LLC, Stantec, HIFLD, U.S. Census Bureau, VGIN
3. Orthoimagery © Virginia Geographic Information Network (VGIN)
4. The wetlands and other surface waters shown on this map have been predicted based upon the application of desktop mapping techniques and have not been field verified. Therefore, these potential resources should be used for preliminary planning only.



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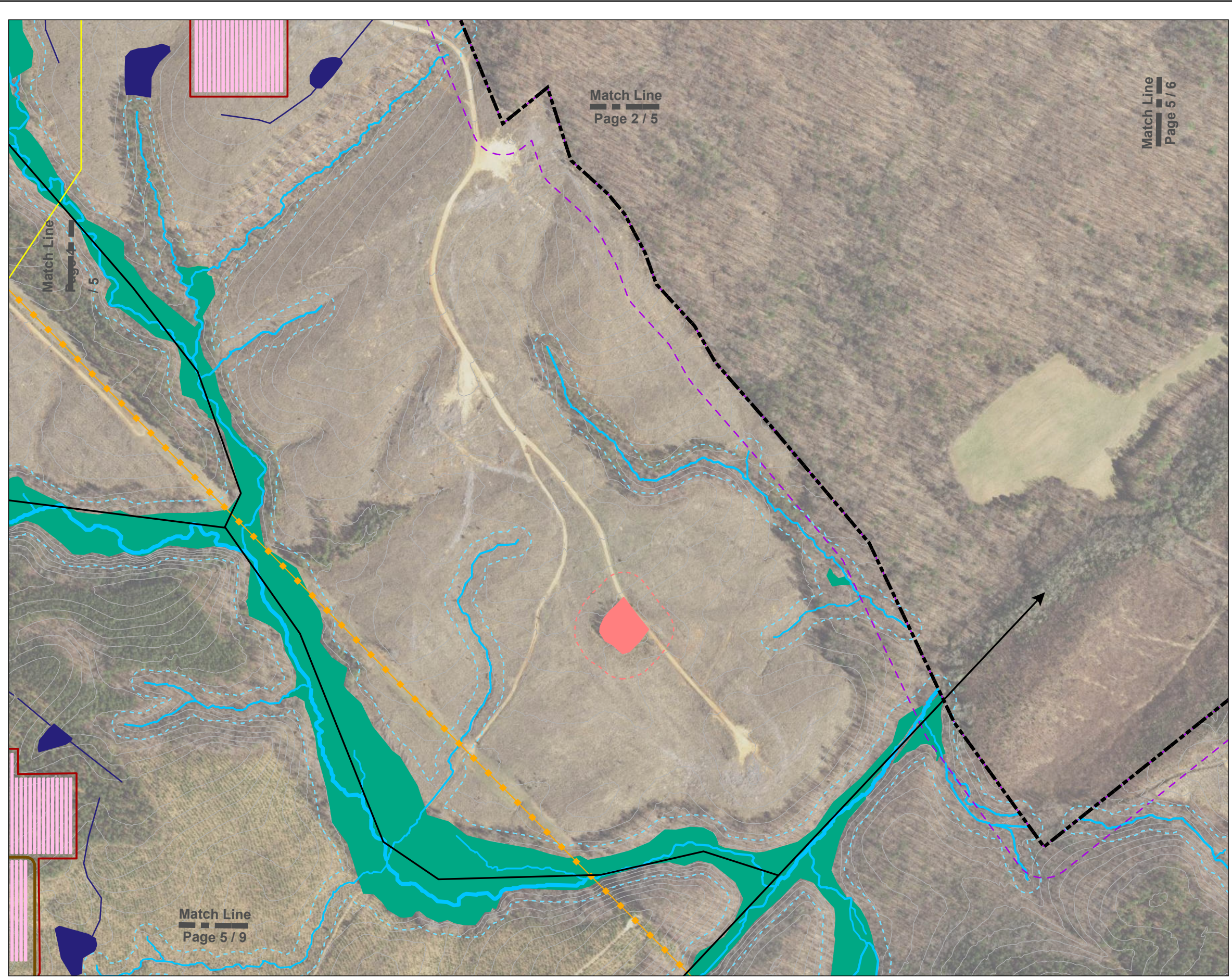
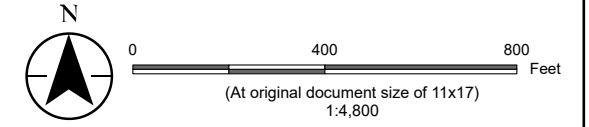


Figure No. **1**
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 Client/Project Wild Rose Solar Project, LLC 203402299
 Wild Rose Solar Project
 Project Location Nelson County, Virginia Prepared by MER on 2023-11-27
 TR by MGS on 2023-11-27
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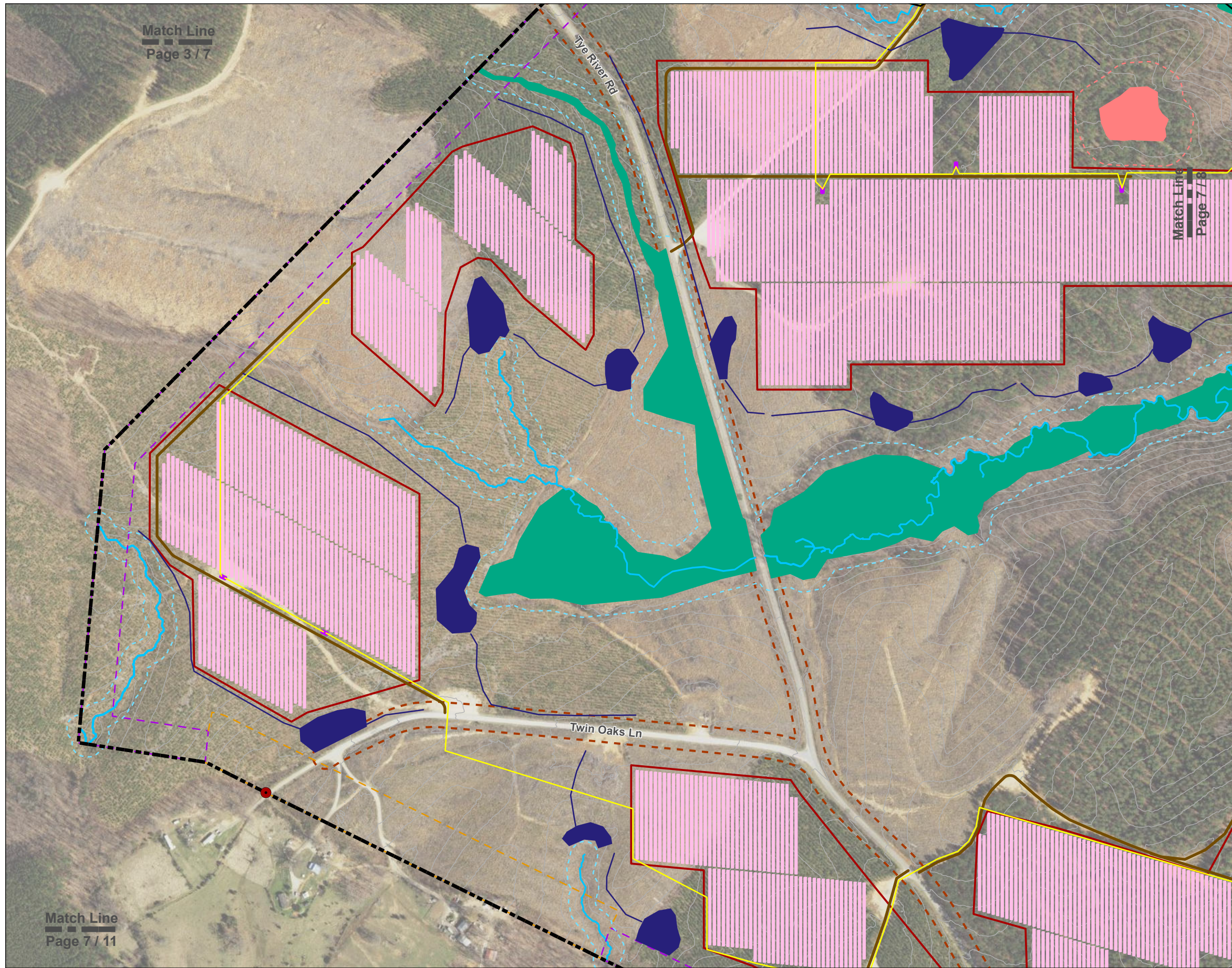
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| ● Project Access | --- 50-Foot Wetland Buffer |
| ▲ Existing Substation | ■ Floodplain (Not Present within Project Boundary) |
| --- Project Limits | ▨ Proposed Laydown Yard |
| ▭ Fence Line | ■ Preliminary Stormwater Basin |
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| --- 200-Foot Project Setback | — Project Road |
| --- 100-Foot Road Setback | — Collection Line |
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| ■ Inverter | — Existing Transmission Line |
| ■ Substation | — 10-Foot Contour |
| ■ Cemetery | ↔ Wildlife Corridor |
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| ■ Desktop Wetland | |



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Figure No.

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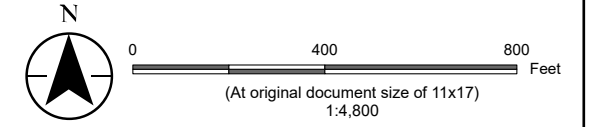
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Client/Project
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 Wild Rose Solar Project

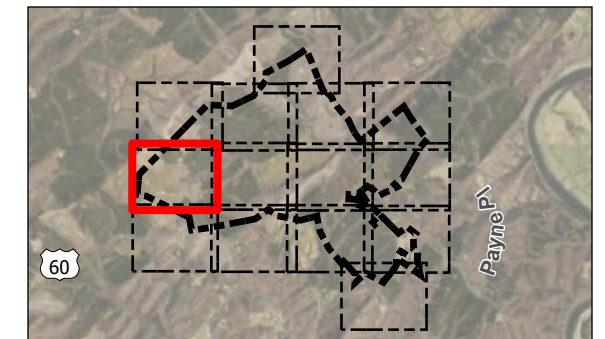
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Project Location
 Nelson County, Virginia

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Figure No.

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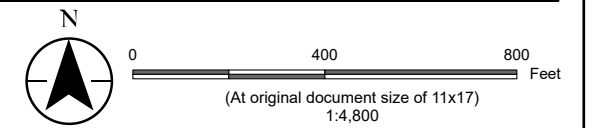
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Client/Project
Wild Rose Solar Project, LLC
Wild Rose Solar Project

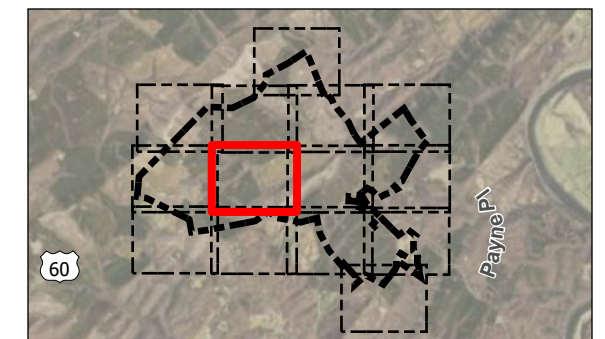
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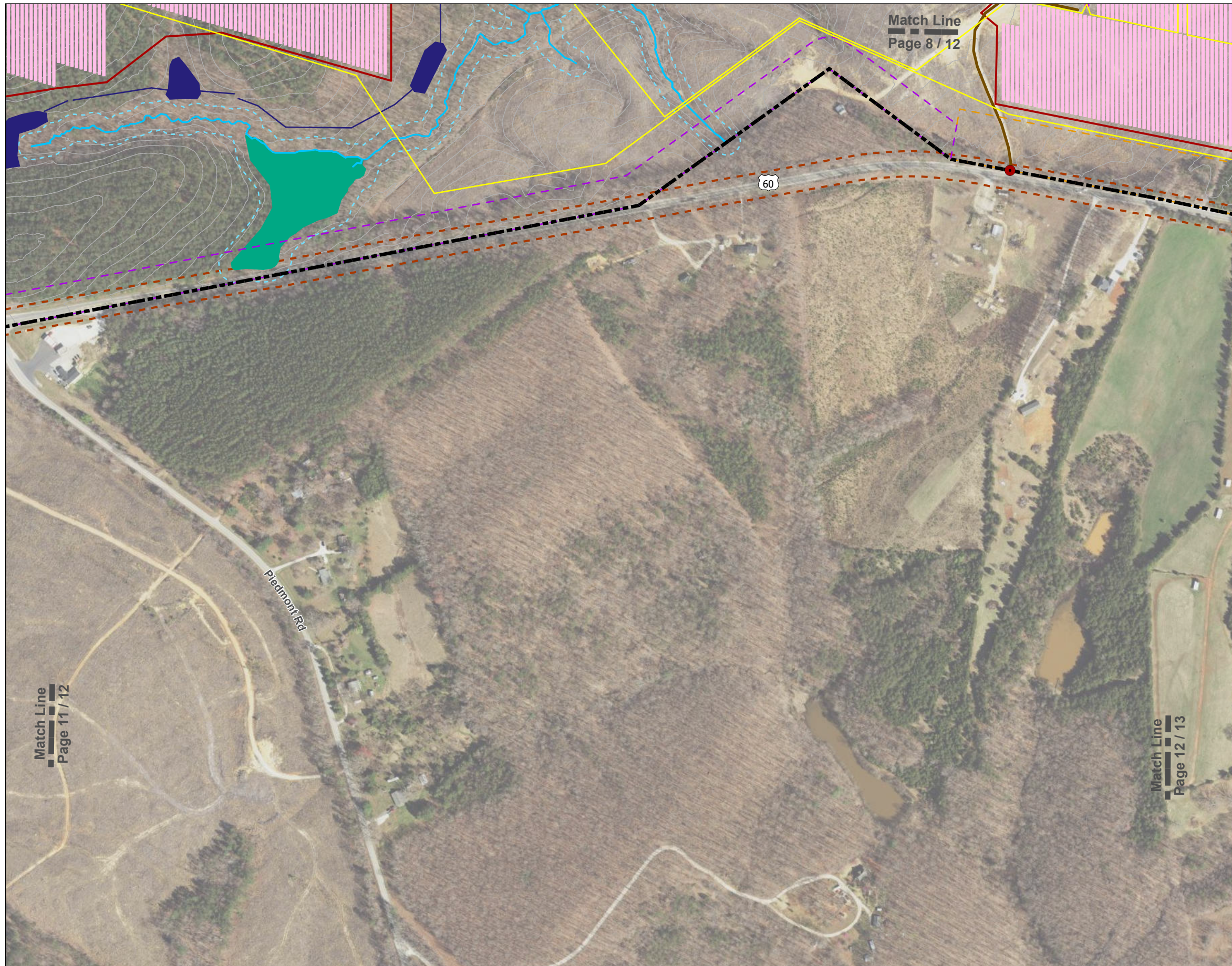


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Figure No.
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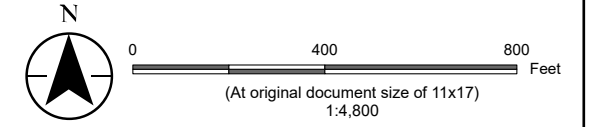
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Preliminary Site Plan

Client/Project
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Wild Rose Solar Project

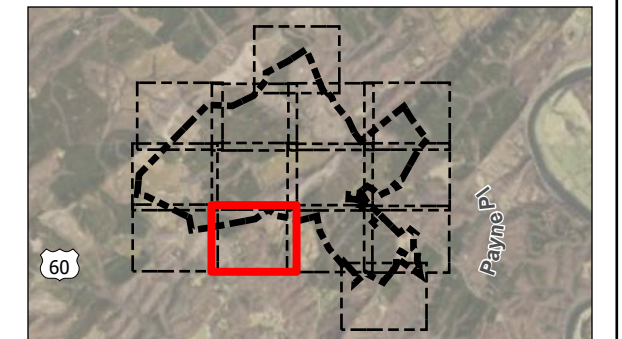
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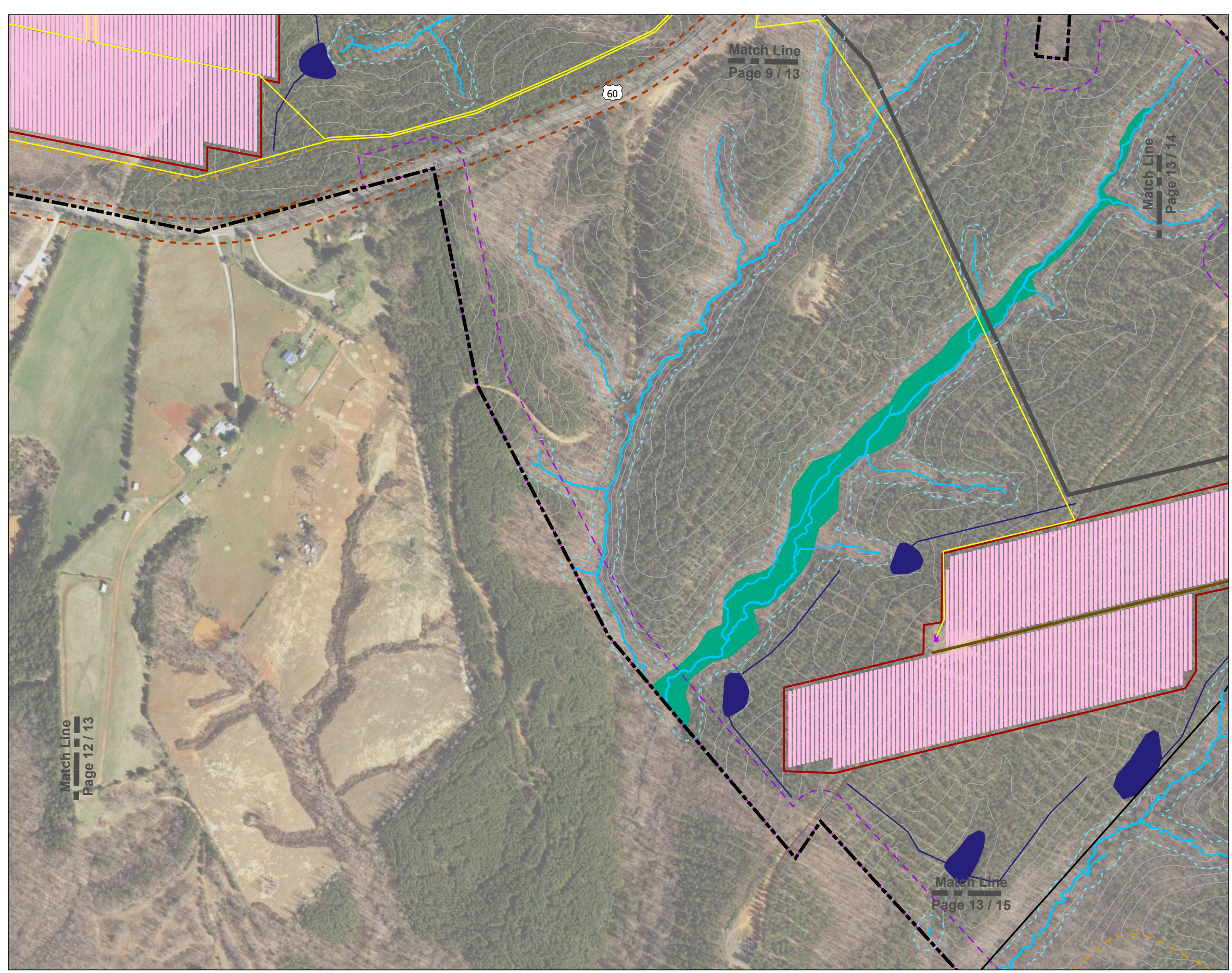
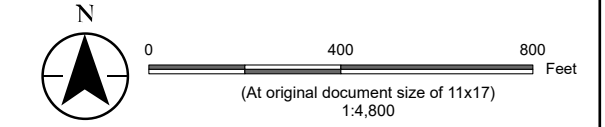


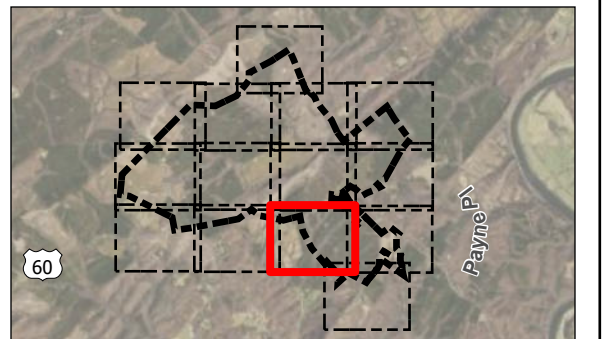
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 Title **Preliminary Site Plan**

Client/Project **Wild Rose Solar Project, LLC** 203402299
Wild Rose Solar Project

Project Location **Nelson County, Virginia** Prepared by MER on 2023-11-27
 TR by MGS on 2023-11-27
 IR by JLO on 2023-11-27



- | | |
|--------------------------|--|
| Project Access | 50-Foot Wetland Buffer |
| Existing Substation | Floodplain (Not Present within Project Boundary) |
| Project Limits | Proposed Laydown Yard |
| Fence Line | Preliminary Stormwater Basin |
| 125-Foot Project Setback | Stormwater Ditch |
| 200-Foot Project Setback | Project Road |
| 100-Foot Road Setback | Collection Line |
| Panel Array | Gen-Tie Line |
| Inverter | Existing Transmission Line |
| Substation | 10-Foot Contour |
| Cemetery | Wildlife Corridor |
| 100-Foot Cemetery Buffer | |
| Desktop Stream | |
| Desktop Wetland | |



Notes
 1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar Project, LLC, Stantec, HIFLD, U.S. Census Bureau, VGIN
 3. Orthoimagery © Virginia Geographic Information Network (VGIN)
 4. The wetlands and other surface waters shown on this map have been predicted based upon the application of desktop mapping techniques and have not been field verified. Therefore, these potential resources should be used for preliminary planning only.



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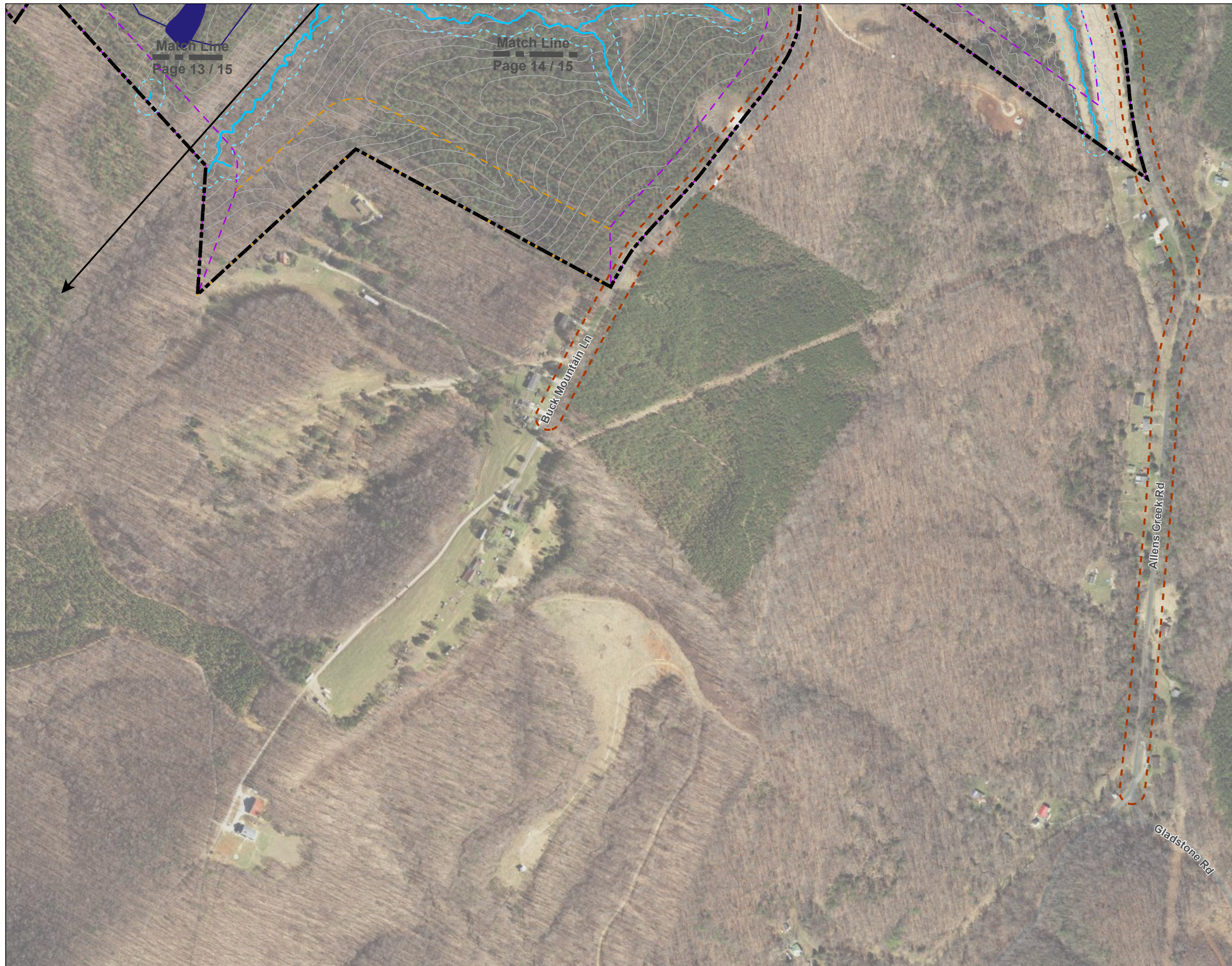


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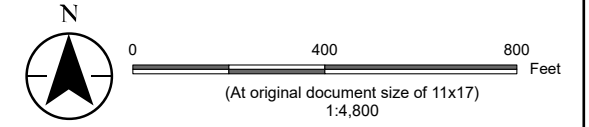
Preliminary Site Plan

Client/Project
Wild Rose Solar Project, LLC
Wild Rose Solar Project

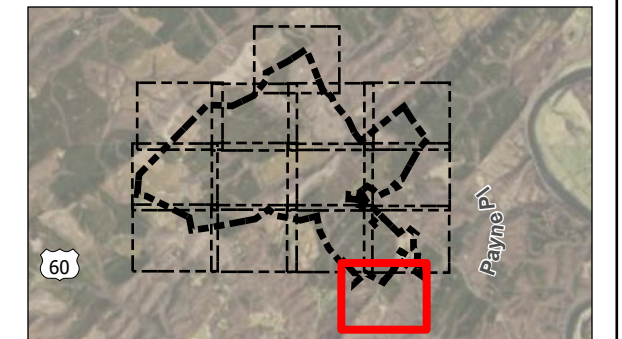
203402299

Project Location
Nelson County, Virginia

Prepared by MER on 2023-11-27
TR by MGS on 2023-11-27
IR by JLO on 2023-11-27



- Project Access
- Existing Substation
- Project Limits
- Fence Line
- 125-Foot Project Setback
- 200-Foot Project Setback
- 100-Foot Road Setback
- Panel Array
- Inverter
- Substation
- Cemetery
- 100-Foot Cemetery Buffer
- Desktop Stream
- Desktop Wetland
- 50-Foot Wetland Buffer
- Floodplain (Not Present within Project Boundary)
- Proposed Laydown Yard
- Preliminary Stormwater Basin
- Stormwater Ditch
- Project Road
- Collection Line
- Gen-Tie Line
- Existing Transmission Line
- 10-Foot Contour
- Wildlife Corridor



Notes

1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
2. Data Sources: Wild Rose Solar Project, LLC, Stantec, HIFLD, U.S. Census Bureau, VGIN
3. Orthoimagery © Virginia Geographic Information Network (VGIN)
4. The wetlands and other surface waters shown on this map have been predicted based upon the application of desktop mapping techniques and have not been field verified. Therefore, these potential resources should be used for preliminary planning only.



Appendix I: Context Map



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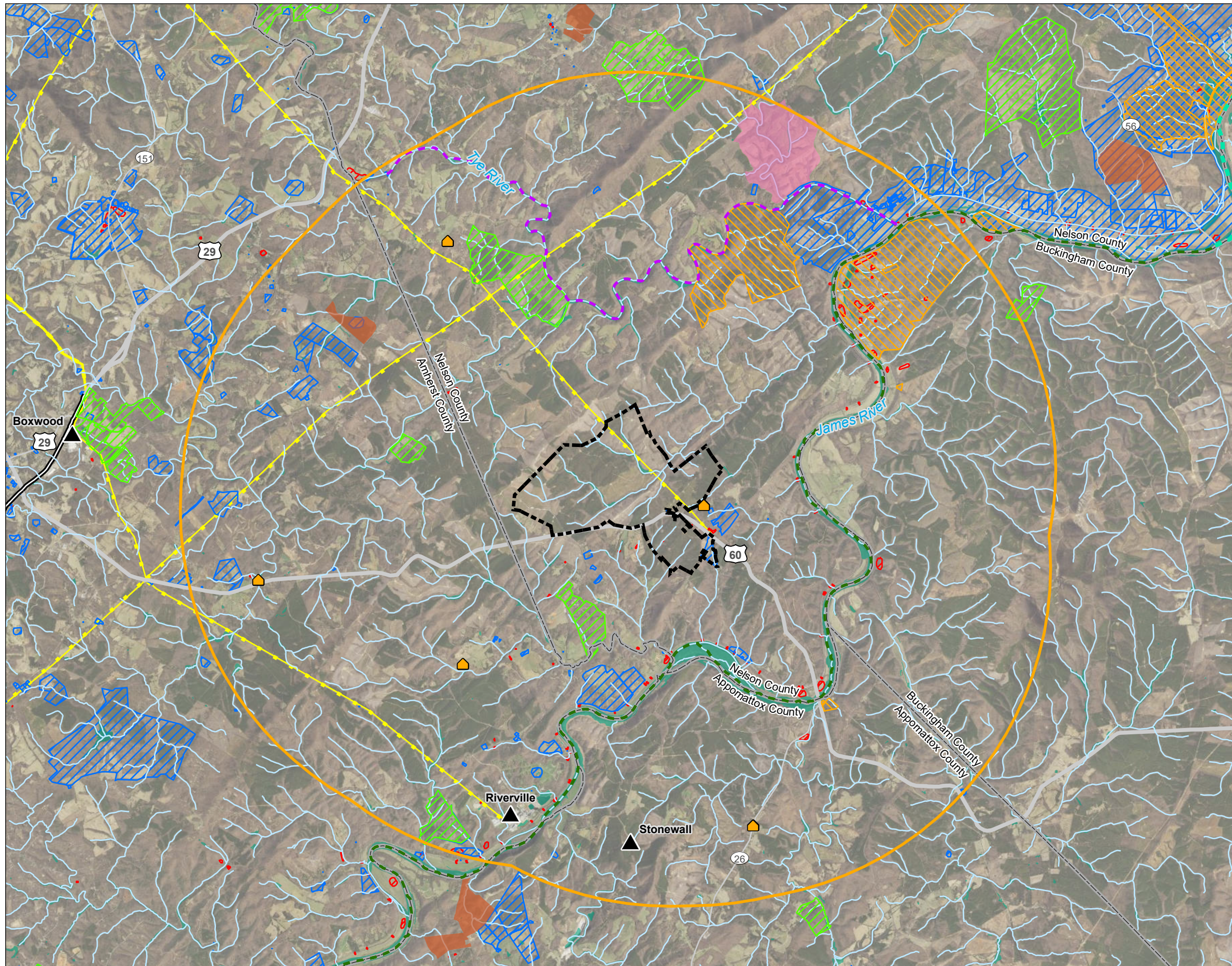


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H-1

Title

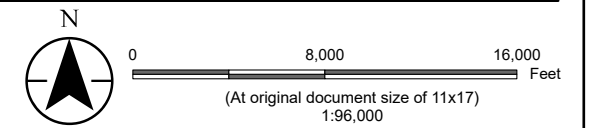
Context Map







Client/Project
Wild Rose Solar Project, LLC
Wild Rose Solar Project

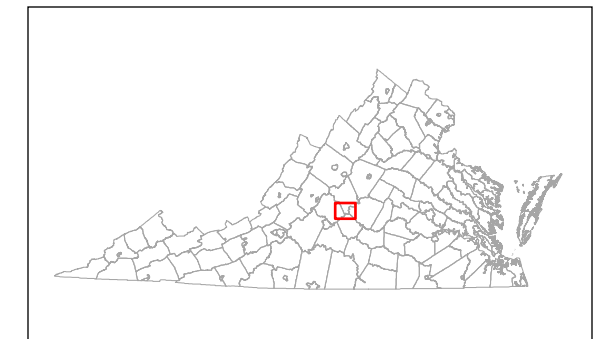
203402299

Project Location
Nelson County, Virginia

Prepared by MER on 2023-11-29
TR by MGS on 2023-11-29
IR by JLO on 2023-11-30



-  Place of Worship
-  Substation
-  Project Limits
-  5-Mile Radius
-  Land Trust of Virginia Conservation Easement
-  Virginia Department of Forestry Conservation Easement
-  Virginia Outdoor Foundation Conservation Easement
-  Conserved Land
-  Architectural Resource
-  Archaeological Site
-  NWI Wetland
-  NHD Flowline
-  Virginia Scenic River
-  Virginia Potential Scenic River
-  Virginia Qualified Scenic River
-  Limited Access Highway
-  Highway
-  Major Road
-  Existing Transmission Line



- Notes**
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Stantec, Wild Rose Solar Project, LLC, ESRI, DCR, U.S. Census Bureau, VGIN, Historic resource data provided by Virginia Department of Historic Resources, Virginia Cultural Resources Information System (VCRIS), Wetlands and waters data provided by USFWS National Wetlands Inventory (NWI) and USGS National Hydrography Dataset (NHD), HIFLD
 3. Orthoimagery © Virginia Geographic Information Network (VGIN)



Appendix J: Cultural Resources Desktop Analysis





Stantec Consulting Services Inc.
5209 Center Street, Williamsburg VA 23188-2680

October 26, 2023
File: 203402299

Attention: Ms. Lauren Devine
Senior Permitting and Environmental Manager
Savion, LLC
ldevine@savionenergy.com

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia

Dear Ms. Devine,

In September of 2023, Stantec Consulting Services Inc. (Stantec) conducted a cultural resources desktop assessment of approximately 2,470 acres associated with the proposed Wild Rose Solar project (Project) in Nelson County, Virginia. The Study Area, defined as the entire approximately 2,470-acre parcel, is partially divided by Richmond Highway (US Route 60), which separates the southeastern one quarter of the tract from the main tract, and forms the southern boundary of the main property in the western portion. Norwood Road (Route 626) is situated to the east of the Study Area and forms a short portion of the boundary near Five Corners; however, privately owned parcels make up the majority of the Study Area's eastern boundary. Private lands also surround the Study Area to the northeast, north and west. Owen's Creek extends through the Study Area as do several roads, including Route 657 in the western portion and Route 60 in the southern portion. The southeastern one quarter of the Study Area is partially adjacent to Allen's Creek Road (Route 622) and Buck Mountain Road (Route 791) on the east and south, while privately owned properties border the west (Attachment A). The work was conducted on behalf of Wild Rose Solar Project, LLC (Client).

For planning purposes, a desktop assessment will allow the Client to quickly review the nature and scope of potential cultural resources issues associated with the project. If additional cultural resource studies are required for compliance with local, state, and federal laws and regulations, a Phase I identification survey may be requested by regulating agencies. The cultural resources desktop review described herein was conducted in reference to the National Historic Preservation Act of 1966 (NHPA-PL89-665), as amended, the Archaeological and Historic Preservation Act of 1974, Executive Order 11593, and relevant sections of 36 CFR 60 and 36 CFR 800. The cultural resources desktop review took into consideration federal (Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation [United States Department of the Interior {USDI} 1983]) and state (Guidelines for Conducting Historic Resources Investigations in Virginia [Virginia Department of Historic Resources {DHR} 2017]) guidelines for preparing cultural resources reports.

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia

ENVIRONMENTAL CONTEXT

TOPOGRAPHY AND GEOLOGY

The 2,470 Study Area is located in the Inner Piedmont subprovince of the Piedmont physiographic province of Virginia. A variety of predominantly Proterozoic and Paleozoic igneous and metamorphic rock constitute the bedrock in the Piedmont province and forms the core of the Appalachian mountain belt. A number of grabens (elongated depressions between geologic faults) and half-grabens contain Triassic sedimentary rocks, diabase dikes, and basalt flows (The College of William and Mary Department of Geology 2011 and DEQ n.d.). Elevation within the Study Area ranges from approximately 548 to 780 feet above mean sea level (amsl).

HYDROLOGY

The Study Area is drained by Owens Creek, a tributary of the James River. The James River flows into the Chesapeake bay and thence to the Atlantic Ocean.

SOILS

The soils within the Study Area range from somewhat excessively drained and poorly drained to moderately well and well drained and range from 0 to 50 percent slope. Table 1 presents the soil types found within the Study Area and serves as a key to Attachment B.

Table 1 Key to the Soils Map

Symbol	Map Unit Name	% Slope	Drainage Description
4B	Buffstat silt loam	2-7	Well Drained
4C	Buffstat silt loam	7-15	Well Drained
4D	Buffstat silt loam	15-25	Well Drained
5C	Bugley channery silt loam	7-15	Somewhat Excessively Drained
5D	Bugley channery silt loam	15-25	Somewhat Excessively Drained
5E	Bugley channery silt loam	25-50	Somewhat Excessively Drained
7B	Chatuge loam	1-4	Poorly Drained
12B	Delanco loam	2-7	Moderately Well Drained
15B	Elioak loam	2-7	Well Drained
15C	Elioak loam	7-15	Well Drained
17B	Elsinboro loam, rarely flooded	2-7	Well Drained
21A	Hatboro loam, frequently flooded	0-2	Poorly Drained
27C	Jackland gravelly silt loam	7-15	Somewhat Poorly Drained
31B	Littlejoe silt loam	2-7	Well Drained

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia

Symbol	Map Unit Name	% Slope	Drainage Description
31C	Littlejoe silt loam	7-15	Well Drained
32B	Minnieville loam	2-7	Well Drained
32C	Minnieville loam	7-15	Well Drained
32D	Minnieville loam	15-25	Well Drained
32E	Minnieville loam	25-50	Well Drained
49B	Unison loam	2-7	Well Drained
52B	Wintergreen loam	2-7	Well Drained
52C	Wintergreen loam	7-15	Well Drained

NATURAL RESOURCES

The character of the topography, the proximity of water resources, and the types of soils all have a direct effect on the variety of flora that is attracted to the setting and in turn, the fauna that relies on that ecological setting for sustenance. The quantity and variety of both plants and animals in an area has a direct influence on human habitation. Native American populations successfully utilized a wide variety of native flora and fauna whose seasonal availability was well-known to them. New settlers relied on available timber to build shelter and in part, on procurable plants and animals to augment their diet. It would be difficult for a Woodland Indian in AD 900, a colonial planter in 1750, or a farmer in 1870 to have prospered without certain key natural resources (Dent 1995).

During the Holocene, prior to European contact, this region of Virginia supported a diverse biotic and floral community. The riverine area, dominated by hardwoods, provided shallow water environments beneficial to shellfish and baitfish, as well as a wide variety of amphibians, reptiles, and larger fishes. This habitat also supported numerous avian species, including raptors. The uplands of the interior supported numerous species of large game animals such as elk and whitetail deer, as well as predators including black bear, eastern gray wolf, and bobcat (Dent 1995).

A wide variety of native wildlife species still prosper in the upland and riverine setting and are typical of the mid-Atlantic region. The most common terrestrial wildlife in the area today includes deer, turkey, fox, raccoon, opossum, squirrel, rabbit, weasel, and groundhog. Amphibians and reptiles such as snakes, lizards, salamanders, frogs, and turtles are found throughout the area. Numerous species of wild songbirds nest in the area (Dent 1995).

RESEARCH DESIGN

OBJECTIVES

The desktop review was intended to provide information on previously identified cultural resources located within the bounds of the Study Area and within a 1-mile radius of the Study Area. While a desktop assessment report will not satisfy federal, state, or county regulatory requirements for a Phase I cultural

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia

resources identification survey, it does allow the client to quickly review the nature and scope of potential cultural resource issues associated with a specific Study Area. Within the review process for Section 106 of the NHPA, a Phase I level cultural resources identification survey would be required to formally identify any unrecorded resources located within the Study Area.

ARCHIVAL RESEARCH

Documentary research was conducted via the DHR’s Virginia Cultural Resources Information System (V-CRIS) files for archaeological sites and historic structures. These files were examined, and information was retrieved on all sites or structures located within the Study Area. Information was also retrieved for cultural resources located within a 1-mile radius of the Study Area.

HISTORIC MAP AND AERIAL IMAGE REVIEW

Historic maps and available aerial photographs were reviewed as part of the background research conducted for the cultural resource assessment. Online map repositories, including the Library of Congress, the United States Geological Survey (USGS) Historical Topographic Map Explorer, the online David Rumsey Map Collection hosted by Cartography Associates, Google Earth and state and county maps of Virginia compiled online at www.mapgeeks.org were examined to identify historic maps which depict the Study Area. The details and observations from this review are summarized in Tables 2 and 3.

Table 2 Summary of Observations for Historic Maps

Figure	Year	Observations, Property and Adjoining Sites
1	1827	This map provides little detail for the general Study Area vicinity and no specific detail for the Study Area itself. The James River is depicted as is the town of Lovingsston to the north of the Study Area. A railroad is also in the wider region.
2	1860	This map depicts major waterways and roadways in the Study Area vicinity including Owen’s Creek extending through the Study Area and the forerunner to Route 60 (Richmond Highway). Mountains and ridges are present in the wider region, as are churches and farmsteads with named landowners/residents. The Study Area is shown as mostly open land around the creek; however, some woodland is present near the northern edge. No evidence of occupation is shown within the Study Area, but farmsteads associated with the Hardin, Jennings, Moon, and Jordan families are present in the surrounding area, among others.
3	1865	This map provides little detail for the general Study Area vicinity and no specific detail for the Study Area itself. The James River is depicted as is the town of Lovingsston to the north of the Study Area. A railroad is also in the wider region.
4	1866	This map shows major waterways and roads in the Study Area vicinity, including Owen’s Creek extending through the Study Area. Roads are present in the study Area, including one which parallels Owen’s Creek. Farmsteads and other evidence of occupation is depicted in the region, including churches, shops, and other features such as fords and bridges. Farmsteads with landowner/resident names are shown in the immediate Study Area vicinity, including those associated with the Hardin, Jennings, Moon, and Jordan families. No structures are depicted within the Study Area.

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia

Table 3 Summary of Observations for USGS Topographic Maps and Aerial Images

Figure	Year/Quad	Scale	Observations, Property and Adjoining Sites
5	1892 Buckingham, VA	1:125,000	This map depicts the forerunner to Route 60 (Richmond Highway) as well as Owen's Creek and other roads and waterways in the Study Area vicinity. Buffalo Springs is shown to the northeast of the Study Area but there is no indication of occupation within the Study Area.
6	1961 Shipman, VA	1:62,500	This map shows Owen's Creek in the Study Area as well as Route 60 along and bisecting the southern portion of the Study Area. Other secondary roads are also present both within the Study Area and the surrounding region, as are landscape features such as ridges, mountains, and other waterways. The Study Area is shown primarily as woodland with a few small open areas in the northern portion. While most of the structures in the area are along Route 60 and clustered around Five Forks, one structure is shown in a small clearing in the western portion of the Study Area, north of Route 60 and at the end of a roadway. A transmission line is also now present in the Study Area.



Figure 1 Detail of Virginia. Depicting the Study Area Vicinity (Finley 1827; David Rumsey Map Collection).

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia



Figure 2 Detail of [Map of Nelson and Amherst counties, Va.] Depicting the Study Area Vicinity (Dwight 1860; Library of Congress Geography and Map Division).

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia

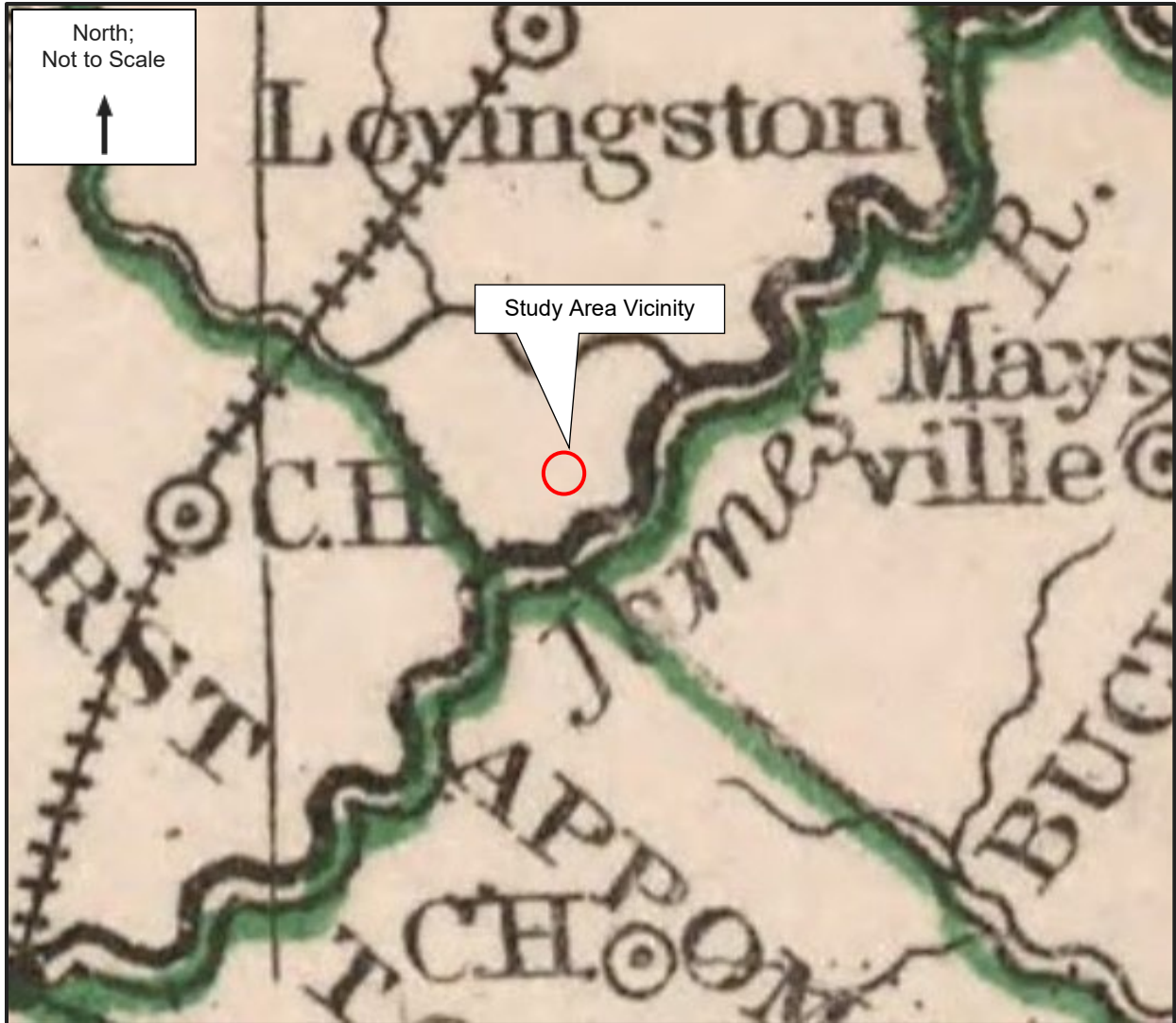


Figure 3 Detail of Map No. IX, Maryland, Virginia, West Virginia, and North Carolina. Depicting the Study Area Vicinity (Mitchell 1865; David Rumsey Map Collection).

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia



Figure 4 Detail of Map of Nelson County, Virginia Depicting the Study Area Vicinity (Hotchkiss et al. 1866; Library of Congress Geography and Map Collection).

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia

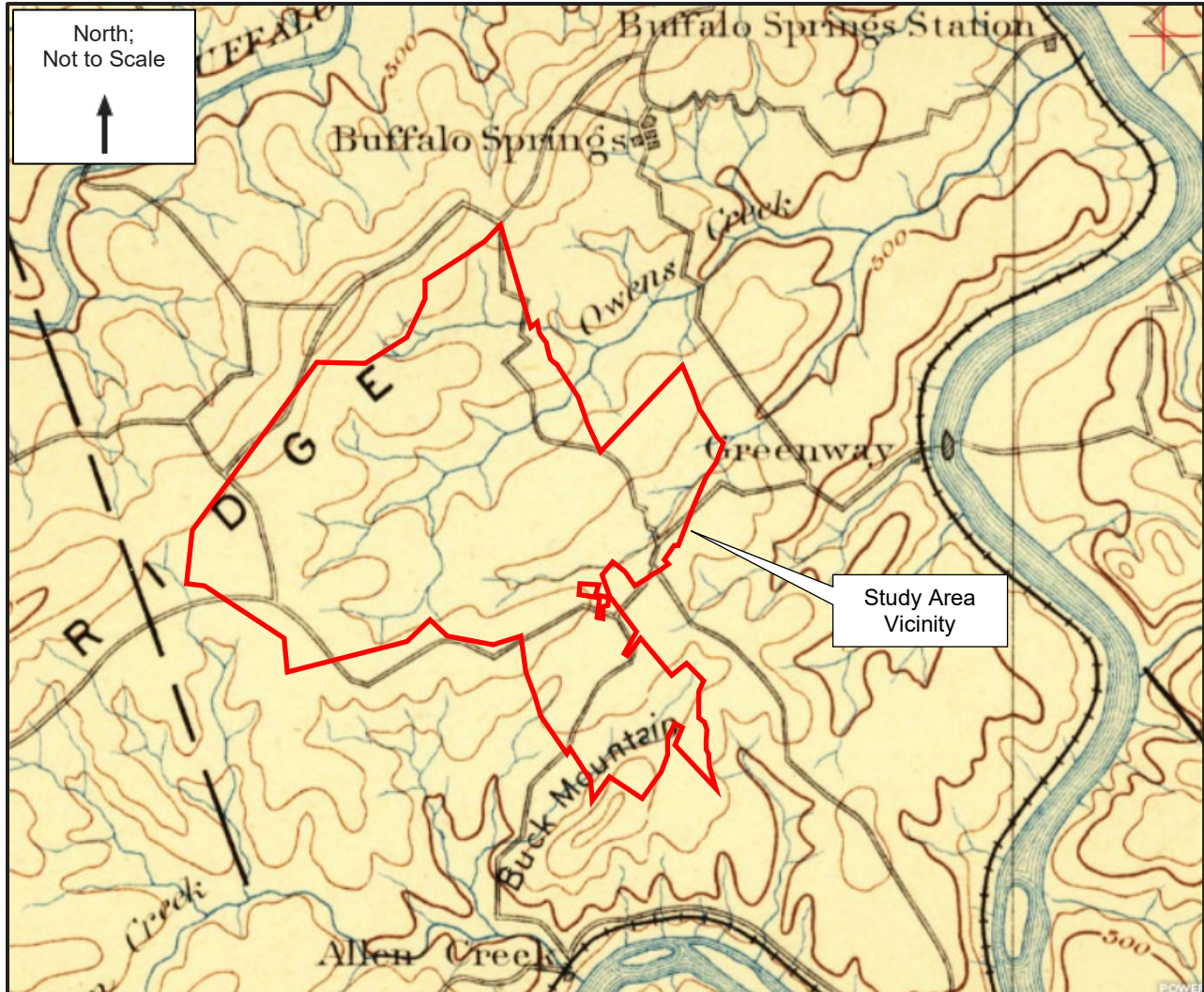


Figure 5 Detail of the USGS 1892 *Buckingham, VA* Topographic Map Depicting the Study Area in Red (USGS 1892; <https://livingatlas.arcgis.com/topoexplorer/index.html>, Accessed 2023).

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia



Figure 6 Detail of the USGS 1961 Shipman, VA Topographic Map Depicting the Study Area in Red (USGS 1961; <https://livingatlas.arcgis.com/topoexplorer/index.html>).

PREVIOUSLY CONDUCTED CULTURAL RESOURCES STUDIES

One previously conducted cultural resources survey has extended through the Study Area. This survey, conducted by POWER Engineers, Inc. in 2022, was conducted in association with the Joshua Falls-Riverville-Gladstone 138-kV Transmission Line Project, which extended through multiple counties, including Nelson. A portion of the survey area crosses the southern end of the Study Area, south of Route 60. This survey resulted in the identification of one archaeological site within the Study Area. Site 44NE0230 was an isolated flake and is discussed in greater detail below.

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia

ARCHAEOLOGICAL SITES

One previously identified archaeological site (44NE0230) is located within the Study Area. Eight additional previously identified archaeological sites are located within a 1-mile radius of the Study Area (Table 4; Attachment C). Of the nine sites, two are Native American and seven are historic. None of the sites have been formally evaluated for potential NRHP eligibility by the DHR.

Table 4 Previously Identified Archaeological Sites within a 1-Mile Radius of the Study Area

Resource	Resource Type	Association	Reference	NRHP Status
44NE0119	Canal	19 th c.	DHR 1984	Not Evaluated
44NE0223	Artifact Scatter	Late 19 th to Mid-20 th c.	POWER Engineers, Inc. 2022	Not Evaluated
44NE0224	Cemetery	20 th c.	POWER Engineers, Inc. 2022	Not Evaluated
44NE0225	Artifact Scatter	Pre-Contact	POWER Engineers, Inc. 2022	Not Evaluated
44NE0226	Pasture	20 th c.	POWER Engineers, Inc. 2022	Not Evaluated
44NE0227	Artifact Scatter	20 th c.	POWER Engineers, Inc. 2022	Not Evaluated
44NE0228	Artifact Scatter	19 th to 20 th c.	POWER Engineers, Inc. 2022	Not Evaluated
44NE0229	Wall/Fence	19 th to 20 th c.	POWER Engineers, Inc. 2022	Not Evaluated
44NE0230	Isolated Find	Pre-Contact	POWER Engineers, Inc. 2022	Not Evaluated

*Highlighted Resources are within the Study Area

ARCHITECTURAL RESOURCES

One previously identified architectural resource (DHR #068-5267) is located within the Study Area. Eight additional previously identified architectural resources are located within a 1-mile radius of the Study Area (Table 5; Attachment D). These resources primarily represent houses ranging in date from 1922 to 1970. Other resources include a cemetery, a bridge, a gas station, and a structure of indeterminate function. While the cemetery dates to c. 1800, the remainder of the resources all date to the twentieth century. One resource (DHR # 068-5080) has been determined to be not eligible for NRHP inclusion. The remaining eight resources have not been formally evaluated for potential NRHP eligibility.

Table 5 Previously Recorded Architectural Resources within a 1-Mile Radius of the Study Area

Resource	Resource Type	Association	Reference	NRHP Status
062-5057	Rose Hill and Cemetery	c. 1800	Clifford & Wood 1998	Not Evaluated
062-5080	Bridge #6146	1945	VTRC 1993	Not Eligible (DHR 1995)
062-5263	House, 232 Spring Lane	1968	POWER Engineers, Inc. 2022	Not Evaluated
062-5264	House, 288 Spring Lane	1970	POWER Engineers, Inc. 2022	Not Evaluated

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia

Resource	Resource Type	Association	Reference	NRHP Status
062-5265	House, 222 Union School Drive	1922	POWER Engineers, Inc. 2022	Not Evaluated
062-5266	Gas Station, 6107 Richmond Highway	1964	POWER Engineers, Inc. 2022	Not Evaluated
062-5267	House, 171 black Mountain Lane	1960	POWER Engineers, Inc. 2022	Not Evaluated
062-5268	Structure, 118 Union School Drive	1940	POWER Engineers, Inc. 2022	Not Evaluated
062-5269	House, 2014 Piedmont Road	1949	POWER Engineers, Inc. 2022	Not Evaluated

***Highlighted Resources are within the Study Area**

In addition to the nine previously identified architectural resources in the Study Area vicinity, a landowner informant has identified a number of cemeteries in the area. These cemeteries have not previously been surveyed or formally documented. Attachment E depicts these cemeteries in relation to the Study Area and shows that three are located interior to the Study Area and one is immediately adjacent to the Study Area boundary. All four cemeteries are present north of Route 60.

CONCLUSIONS

Desktop assessment of the proposed Project identified one previously recorded archaeological site and one architectural resource within the Study Area. Eight previously identified archaeological sites and eight additional previously identified architectural resources are located within a 1-mile radius of the Study Area. Two of the total nine archaeological sites are Native American, and both were artifact scatters of indeterminate temporal affiliation. Site 44NE0230, located within the Study Area, is situated along the channel of a branch of an unnamed tributary of Allen’s Creek and is an isolated find of a single flake. Site 44NE0225 is situated along modern Route 60 (Richmond Highway) on a terrace near the head of an unnamed branch of Allen’s Creek. Though few, the presence of Native American resources within and adjacent to the Study Area, suggests that Native American occupation may have occurred more widely throughout the region, including within the Study Area. The lack of documented sites appears likely to be a reflection of a lack of archaeological survey rather than an absence of Native American occupation in the region. Portions of the Study Area appear to have been attractive to Native Americans at least for short-term occupation or other short-term activities. The area appears to have been suitable for habitation as well as resource procurement and likely a wide range of other activities. As such it appears likely that the Study Area may retain a high probability for the identification of further evidence of Native American land use.

Seven of the nine previously identified archaeological sites in the Study Area vicinity are historic. These sites include artifact scatters, a canal, a cemetery, a pasture, and a wall/fence. All of the historic resources date between the nineteenth and twentieth centuries. In addition to these archaeological sites, architectural resources are present in the Study Area vicinity, including one resource within the Study Area. Architectural Resource DHR #062-5267 is located within the Study Area and is a house dating to 1960. The remaining

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia

architectural resources in the vicinity include houses, a structure of indeterminate function, a bridge, and a cemetery. These resources primarily date to the twentieth century, though the cemetery is recorded as c. 1800. In addition to these resources, a landowner informant has identified three cemeteries interior to the Study Area and one immediately adjacent to the Study Area boundary. These resources have not been formally surveyed and their age is not currently known. However, the presence of the gas station and the cemeteries interior to the Study Area as well as the depiction of one structure in the Study Area as presented on a 1961 topographic map (see Figure 6) indicates that archaeological deposits associated with nineteenth to twentieth century domestic occupation may be present within the Study Area.

The desktop review described herein is intended to provide a brief overview of the Study Area's environmental context as well as any known archaeological sites or architectural resources within the Study Area for planning purposes only. Within a local, state, or federal regulatory review process, a Phase I level cultural resources identification survey would likely be required to formally identify any unrecorded resources located within the Study Area.

If you have any questions or need additional information, please do not hesitate to contact me at (757) 220-6869 or brynn.stewart@stantec.com.

Regards,



Brynn Stewart
Senior Principal Investigator
Stantec Consulting Services Inc.

cc. Mr. Jim Orrell, Stantec

Attachments: Attachment A – Project Location
Attachment B – Soils Map
Attachment C – Previously Identified Archaeological Sites within a 1-Mile Radius of the Study Area
Attachment D – Previously Identified Architectural Resources within a 1-Mile Radius of the Study Area
Attachment E – Landowner Identified Cemeteries in the Study Area and Vicinity

Reference: A Desktop Assessment of the Proposed Wild Rose Solar Project in Nelson County, Virginia

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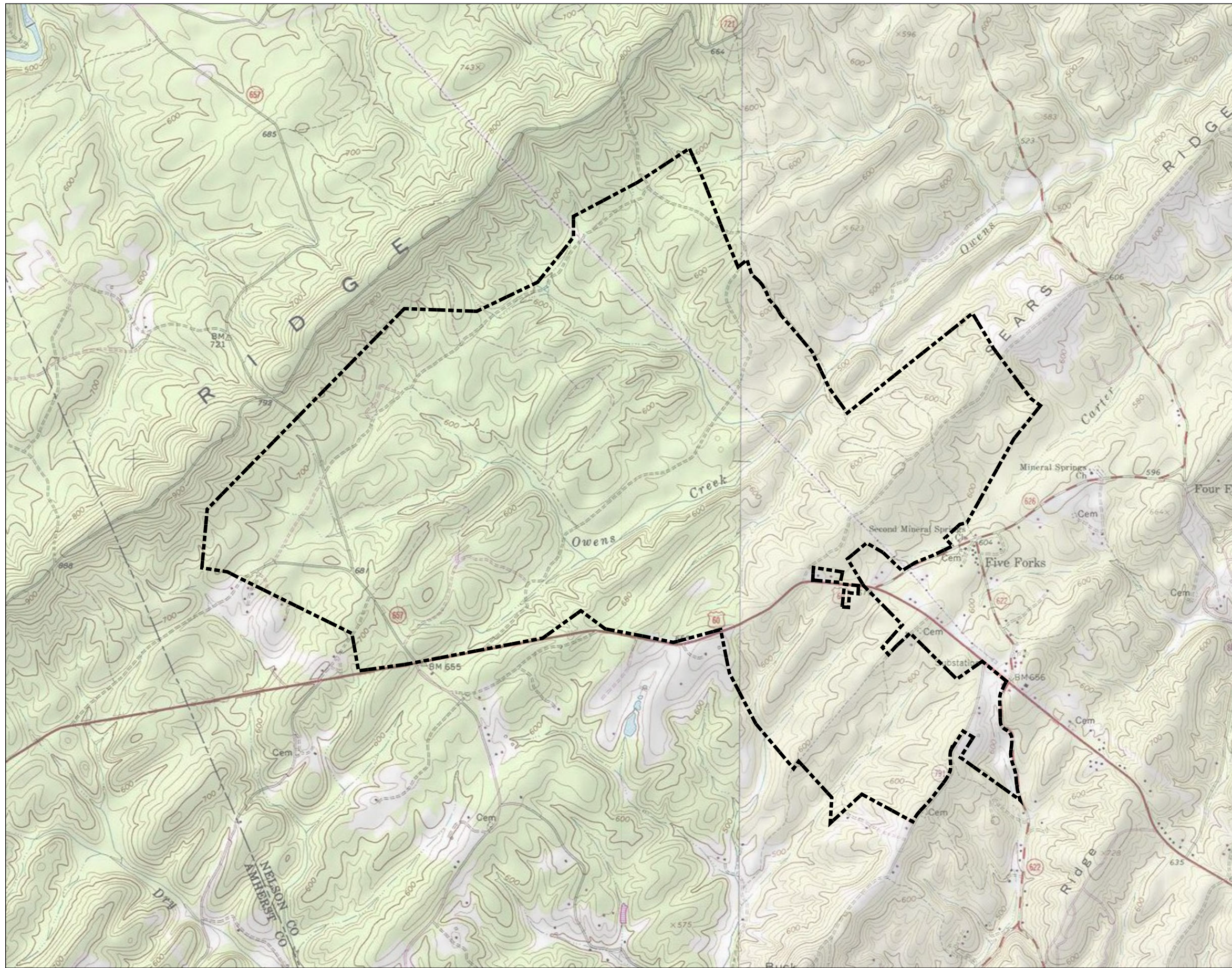
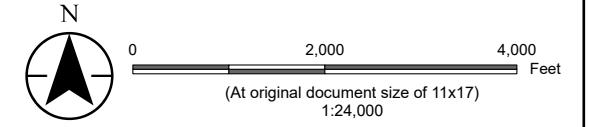



Figure No. **Attachment A**

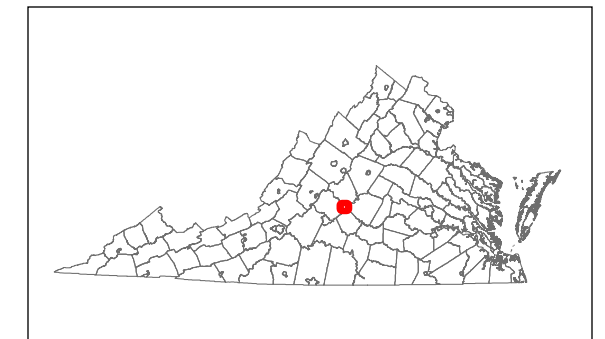
Title
Project Location Map

Client/Project **Wild Rose Solar Project, LLC** 203402299
Wild Rose Solar Project

Project Location Nelson County, Virginia Prepared by ECL on 2023-09-22
 TR by JMH on 2023-10-03
 IR by BSS on 2023-10-02



 Study Area



- Notes**
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar, LLC, U.S. Census Bureau
 3. Topographic map © USGS 7.5 Minute Series Topographic Map, Gladstone, VA Quadrangle 1987 and Buffalo Ridge, VA Quadrangle 1981



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Map Unit Symbol	Description	Map Unit Symbol	Description
4B	Buffstat silt loam, 2 to 7 percent slopes	21A	Hatboro loam, 0 to 2 percent slopes, frequently flooded
4C	Buffstat silt loam, 7 to 15 percent slopes	27C	Jackland gravelly silt loam, 7 to 15 percent slopes
4D	Buffstat silt loam, 15 to 25 percent slopes	31B	Littlejoe silt loam, 2 to 7 percent slopes
5C	Bugley channery silt loam, 7 to 15 percent slopes	31C	Littlejoe silt loam, 7 to 15 percent slopes
5D	Bugley channery silt loam, 15 to 25 percent slopes	32B	Minnieville loam, 2 to 7 percent slopes
5E	Bugley channery silt loam, 25 to 50 percent slopes	32C	Minnieville loam, 7 to 15 percent slopes
7B	Chatuge loam, 1 to 4 percent slopes	32D	Minnieville loam, 15 to 25 percent slopes
12B	Delanco loam, 2 to 7 percent slopes	32E	Minnieville loam, 25 to 7 percent slopes
15B	Elioak loam, 2 to 7 percent slopes	49B	Unison loam, 2 to 7 percent slopes
15C	Elioak loam, 7 to 15 percent slopes	52B	Wintergreen loam, 2 to 7 percent slopes
17B	Elsinboro loam, 2 to 7 percent slopes, rarely flooded	52C	Wintergreen loam, 7 to 15 percent slopes

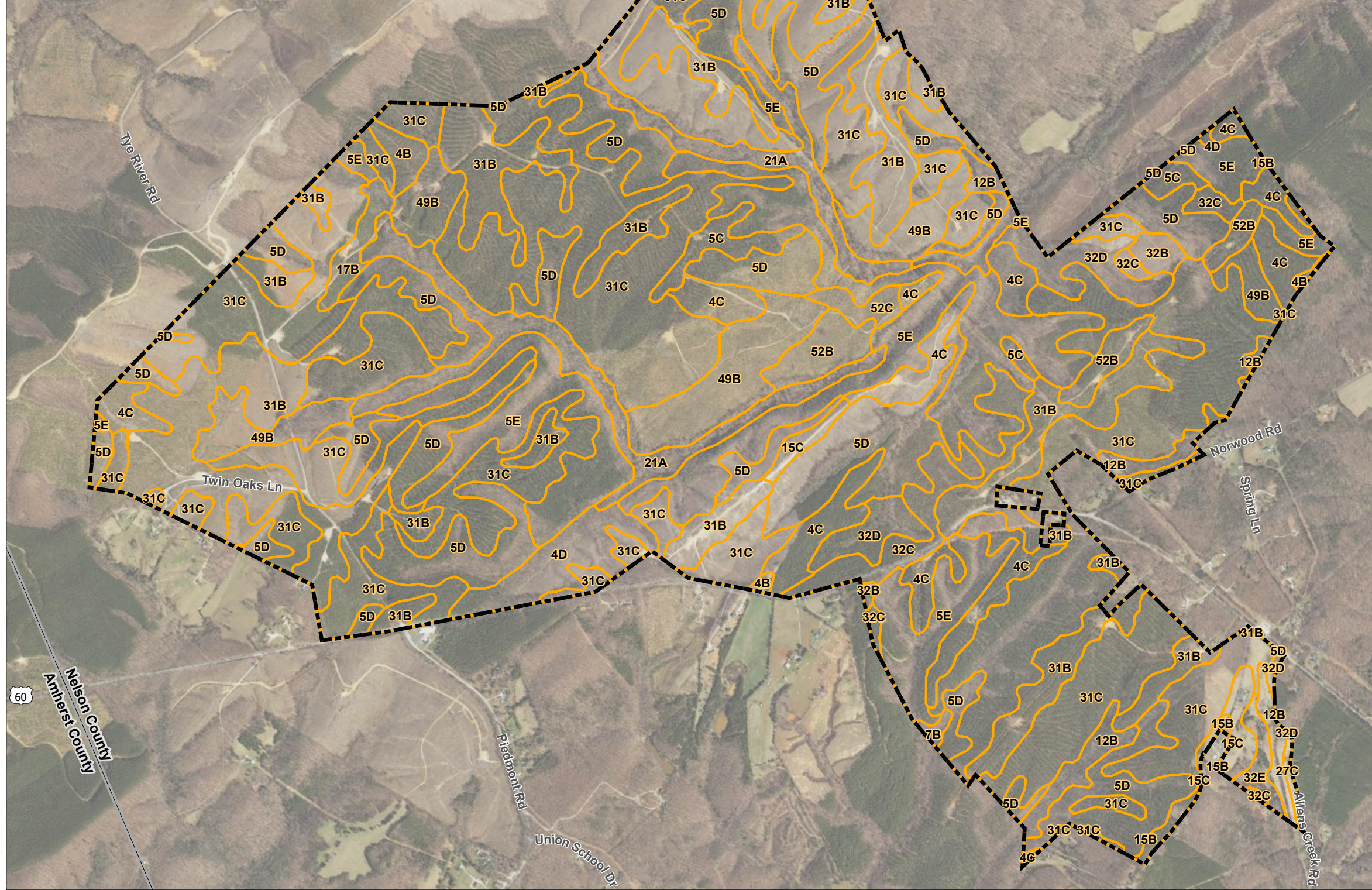
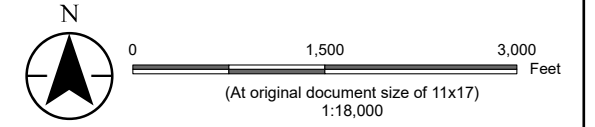


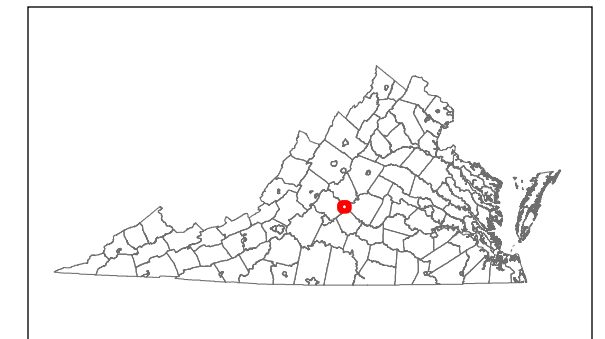
Figure No. **Attachment B**
Soils Map

Client/Project: Wild Rose Solar Project, LLC
 Wild Rose Solar Project

Project Location: Nelson County, Virginia
 Prepared by ECL on 2023-09-22
 TR by JMH on 2023-10-03
 IR by BSS on 2023-10-02



Study Area
 Soils



Notes
 1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar Project, LLC, U.S. Census Bureau, USDA NRCS SSURGO Soil Survey, VGIN
 3. Orthoimagery © Virginia Geographic Information Network (VGIN)



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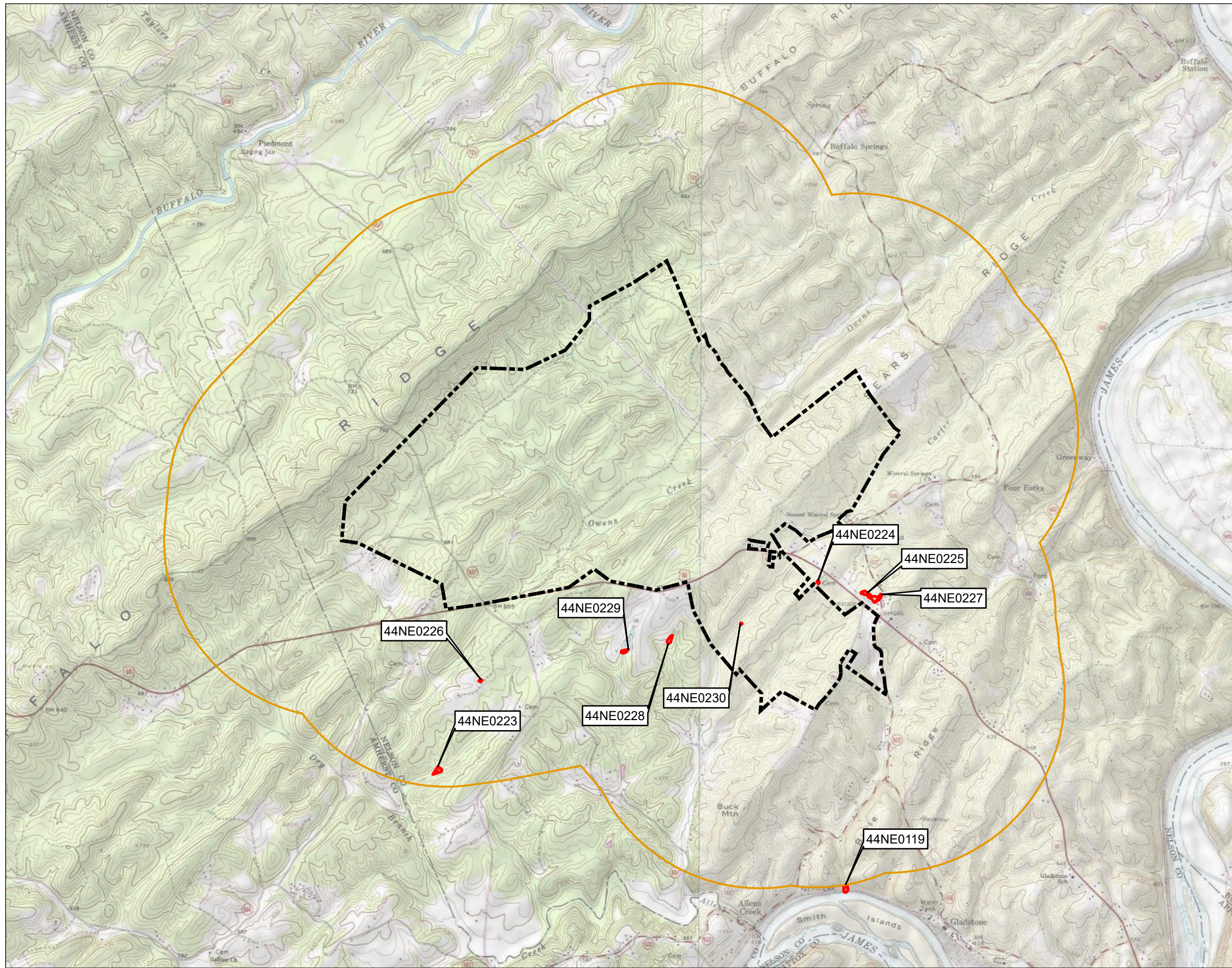


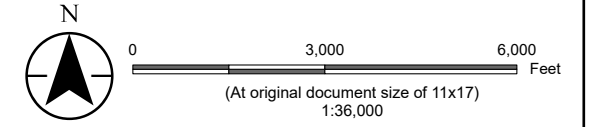
Figure No. **Attachment C**




Title
Previously Identified Archaeological Sites within a 1-Mile Radius of the Study Area

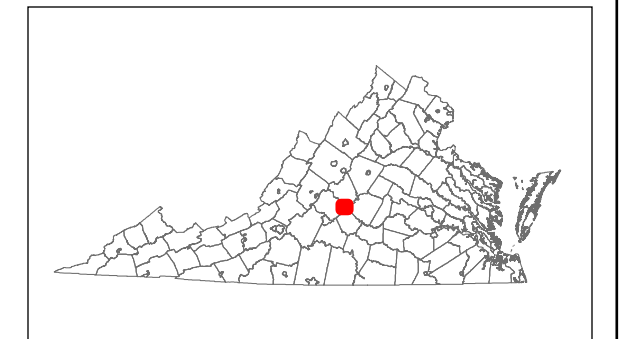
Client/Project Wild Rose Solar Project, LLC
Wild Rose Solar Project

203402299

Project Location Nelson County, Virginia
Prepared by ECL on 2023-09-22
TR by JMH on 2023-10-03
IR by BSS on 2023-10-02



-  Study Area
-  1-Mile Buffer
-  Archaeological Site



Notes
 1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar Project, LLC, Stantec, U.S. Census Bureau, Virginia Department of Historic Resources, Virginia Cultural Resources Information System (VCRIS)
 3. Topographic map © USGS 7.5 Minute Series Topographic Map, Gladstone, VA Quadrangle 1987 and Buffalo Ridge, VA Quadrangle 1981



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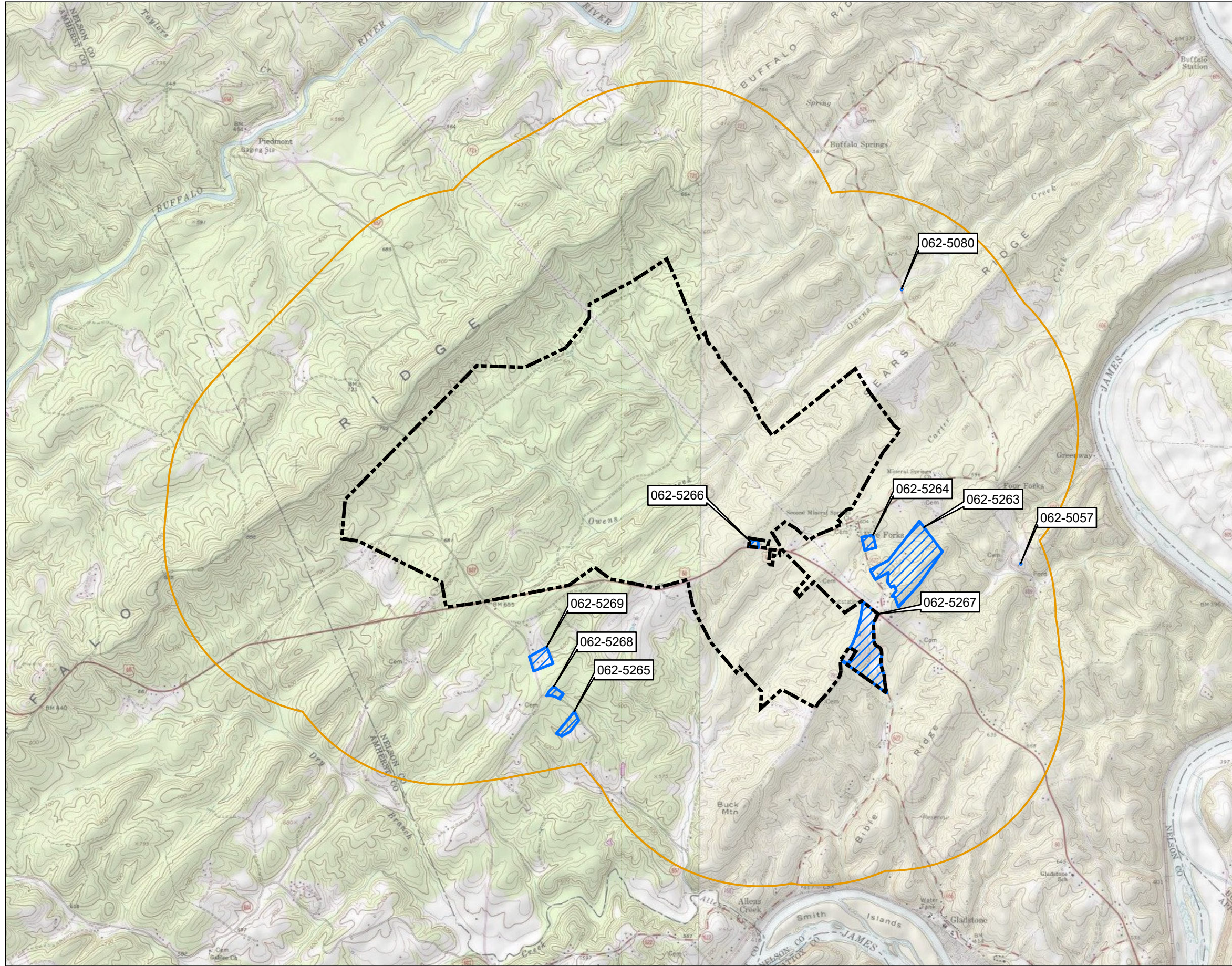
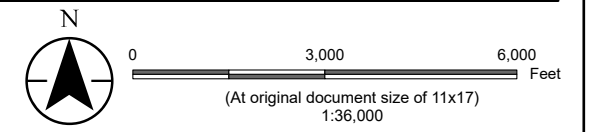
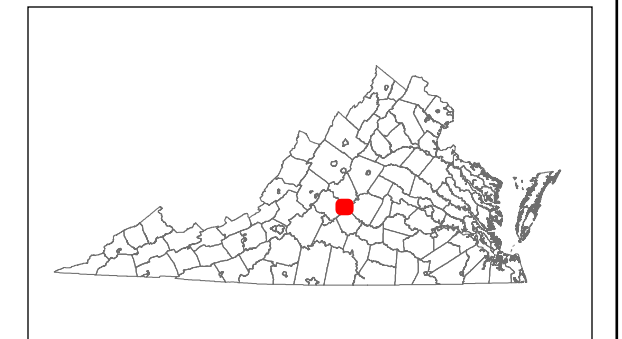


Figure No. **Attachment D**
 Title **Previously Identified Architectural Resources within a 1-Mile Radius of the Study Area**
 Client/Project **Wild Rose Solar Project, LLC** 203402299
Wild Rose Solar Project
 Project Location **Nelson County, Virginia** Prepared by ECL on 2023-09-22
 TR by JMH on 2023-10-03
 IR by BSS on 2023-10-02



- 1-Mile Buffer
- Study Area
- Architectural Resource



Notes
 1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar Project, LLC, Stantec, U.S. Census Bureau, Virginia Department of Historic Resources, Virginia Cultural Resources Information System (VCRIS)
 3. Topographic map © USGS 7.5 Minute Series Topographic Map, Gladstone, VA Quadrangle 1987 and Buffalo Ridge, VA Quadrangle 1981



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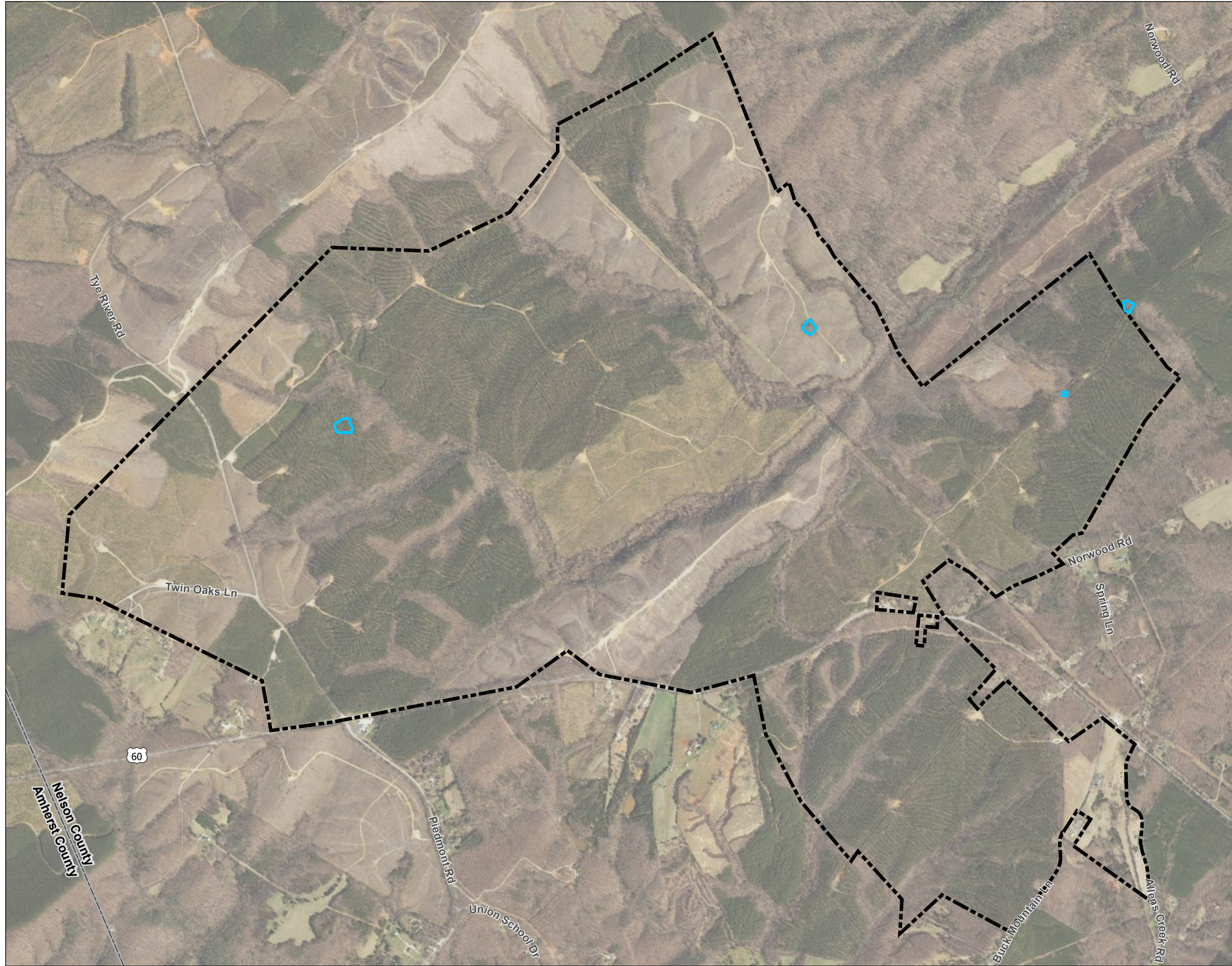


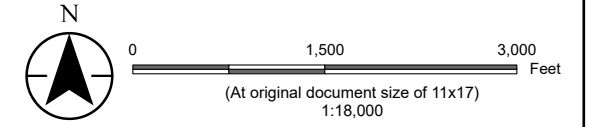
Figure No.
Appendix E
 Title
Cemetery Location Map

Client/Project
 Wild Rose Solar Project, LLC
 Wild Rose Solar Project

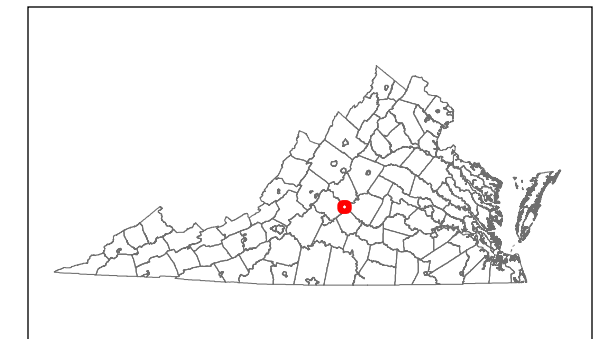
203402299

Project Location
 Nelson County, Virginia

Prepared by ECL on 2023-10-04
 TR by JMH on 2023-10-04
 IR by BSS on 2023-10-04



- Study Area
- Cemetery



- Notes**
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar Project, LLC, Stantec, U.S. Census Bureau, VGIN
 3. Orthoimagery © Virginia Geographic Information Network (VGIN)



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Appendix K: Desktop Wetland Review





Stantec Consulting Services Inc.
5209 Center Street, Williamsburg Virginia 23188-2680

November 9, 2023
File: 203402299

Ms. Lauren Devine
Senior Permitting and Environmental Manager
Savion, LLC
ldevine@savionenergy.com

RE: Desktop Wetland Review
Wild Rose Solar Project, Nelson County, Virginia
Latitude: 37.5822337° Longitude: -78.8797257° W

Dear Ms. Devine:

The following report presents the results of a desktop wetland review conducted by Stantec Consulting Services Inc. (Stantec) for the Wild Rose Solar Project (Project) located in Nelson County, Virginia (Figure 1). The purpose of this study is to determine the approximate location and extent of areas that have the potential of containing jurisdictional wetlands and other surface waters using available off-site resources.

The study area (approximately 2,470 acres) is located west of Norwood Road (Route 626); north of Piedmont Road (Route 601) and Buck Mountain Lane (Route 791); east of Banton; and is bisected by Tye River Road (Route 657), Twin Oaks Lane (Route 820) and Richmond Highway (Route 60).

Due to the preliminary nature of this study, the field methods outlined in the *1987 Corps of Engineers Delineation Manual* and the *2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0)* were not applied to determine the limits of wetlands and other water features on-site. Rather, U.S. Geological Survey (USGS) Quadrangle Maps, current and historical web-based aerial imagery, wetland photo interpretation techniques, soil surveys, and the National Wetlands Inventory (NWI) were used to ascertain the approximate limits of wetlands and other surface waters. For an evaluation of this type, the dimensions of these features are difficult to determine using even the highest resolution and most recent off-site reference materials. Large floodplains containing broad, flat topography can be assessed accurately using aerial photography. However, smaller secondary drainages containing lower order streams and headwater wetlands are more difficult to evaluate and could contain a high degree of deviation when compared to field conditions. Therefore, all site conditions predicted as a part of this analysis and in the mapping provided are considered preliminary, and without site reconnaissance should only be utilized for early-stage planning purposes.

Multiple off-site resources were reviewed to determine areas that have the potential to contain jurisdictional wetlands or other surface waters within the study area described above. These materials include the U.S. Geological Survey 7.5-minute Topographic Quadrangle Maps (Quads) for Buffalo



November 9, 2023
Mr. Lauren Devine
Page 2 of 4

Reference: Wild Rose Solar Project

Ridge, Virginia (1980) and Gladstone, Virginia (1987); the National Wetlands Inventory Interactive Mapper (NWI), administered by the U.S. Fish and Wildlife Service (USFWS); the SSURGO Soils Survey, administered by the Natural Resources Conservation Service (NRCS); and web-based aerial images. In addition, ArcGIS was utilized to generate and evaluate digital elevation models (DEM) and stream flow accumulation models to predict the location and extent of potential stream channels.

USGS Quads

The Quads depict the study area as primarily forested land situated on gently sloping to steeply sloping terrain. Named drainageways within the study area include Carter Creek and Owens Creek. Numerous unnamed perennial and non-perennial tributaries are also mapped within the study area.

NWI Maps

The NWI maps administered by USFWS are useful in the identification of potential wetland areas. The maps are compiled through photo interpretation techniques with limited field verification. Large floodplain and regularly inundated wetlands are easily illustrated and are often mapped with reasonable accuracy, while certain forested wetlands (e.g., seasonally saturated, groundwater driven, and evergreen dominated) and other drier-end wetlands tend to be either conservatively mapped or not shown at all.

The NWI maps depict multiple freshwater forested/shrub wetlands, freshwater emergent wetlands, and riverine systems within the study area. The NWI identifies all wetlands within the proposed study area as palustrine, which includes all non-tidal wetlands and wetlands that occur in tidal areas where salinity due to ocean derived salts is below 0.05%. Riverine systems within the study area are generally mapped consistently with the Quad maps and include intermittent and perennial systems.

Digital Aerial Imagery

Web-based aerial images of the study area were reviewed to determine the approximate location and extent of areas that have the potential of containing jurisdictional wetlands and other surface waters. Historical and current aerial imagery can be compared across seasons and year-over-year to determine the potential occurrence of jurisdictional features. Seasonal variations in deciduous vegetation and the presence of stream channels, as well as inundated or saturated areas were all evaluated for their resource potential.

Based on this review of current and historical digital aerial imagery, jurisdictional features are likely present at most Quad mapped stream systems, NWI mapped wetland features, and are potentially present in many of the secondary drainage features within the study area, as shown on the attached Detailed Desktop Wetlands and Waters Map (Figure 2).



Reference: Wild Rose Solar Project

Soil Survey

The Natural Resources Conservation Service (NRCS) Web Soil Survey shows numerous soil types within the study area. For the purpose of this report, the location of hydric and partially hydric soils within the study area are of particular interest, as areas mapped with these soils generally have a high potential to contain jurisdictional features. It should be noted that areas mapped with non-hydric soils could also contain jurisdictional features.

The majority of the soils mapped within the study area are classified by the NRCS as non-hydric or predominately non-hydric. Hydric soils present include Chatuge loam and Hatboro loam.

Stream Resources

Identifying stream networks is an important aspect of a desktop analysis and ArcGIS provides a range of tools to help with this task. The Flow Accumulation tool has been used to predict stream networks from a DEM. Once created, the stream network was reviewed by experienced Stantec staff and refined based upon indicators observed in shade relief maps and topography generated by the DEM. Stream origins and smaller tributaries can be difficult to map accurately. Therefore, for the purposes of a desktop analysis the limits of the predicted stream resources are mapped conservatively.

Results

The following table presents a summary of potential jurisdictional features based on the desktop wetland review for the Project. These features are shown on the attached Detailed Desktop Wetlands and Waters Map (Figure 2). All wetland features present within the study area would likely be classified in the field as palustrine wetlands. Forested wetlands (PFO) are likely the dominant wetland type onsite; however, there are likely scrub shrub (PSS) and emergent (PEM) wetlands present as well. The distinction between wetland types is often difficult to ascertain using even the highest resolution aerial images and have been combined for this analysis. Similarly, no attempt to distinguish between stream flow regimes has been made for this analysis.

Wetlands (Acres)	Stream Channels Acres (LF)
118.29	13.76 (131,348)

Conclusion

Based on Stantec's interpretation of the above-mentioned off-site resources, the potential exists for jurisdictional features to occur in association with all major drainage features (including floodplains) and secondary drainages. In order to verify the findings described in this report, Stantec recommends a detailed delineation of wetlands and surface waters be performed within the final, approved study area followed by confirmation by the U.S. Army Corps of Engineers and the



November 9, 2023
Mr. Lauren Devine
Page 4 of 4

Reference: Wild Rose Solar Project

Virginia Department of Environmental Quality, if necessary.

If you have any questions regarding the findings presented in this report, please feel free to contact me at your convenience.

Regards,

A handwritten signature in black ink, appearing to read "Justin Carey".

Justin Carey
Ecologist
Phone: (757) 968-6126
justin.carey@stantec.com

A handwritten signature in black ink, appearing to read "Kenrick Presgraves".

Kenrick Presgraves, PWD
Senior Ecologist
Phone: (757) 810-1464
kenny.presgraves@stantec.com

Enclosures: Figures1 and 2

cc. Ms. Lauren Devine – Savion LLC
Mr. Jim Orrell – Stantec

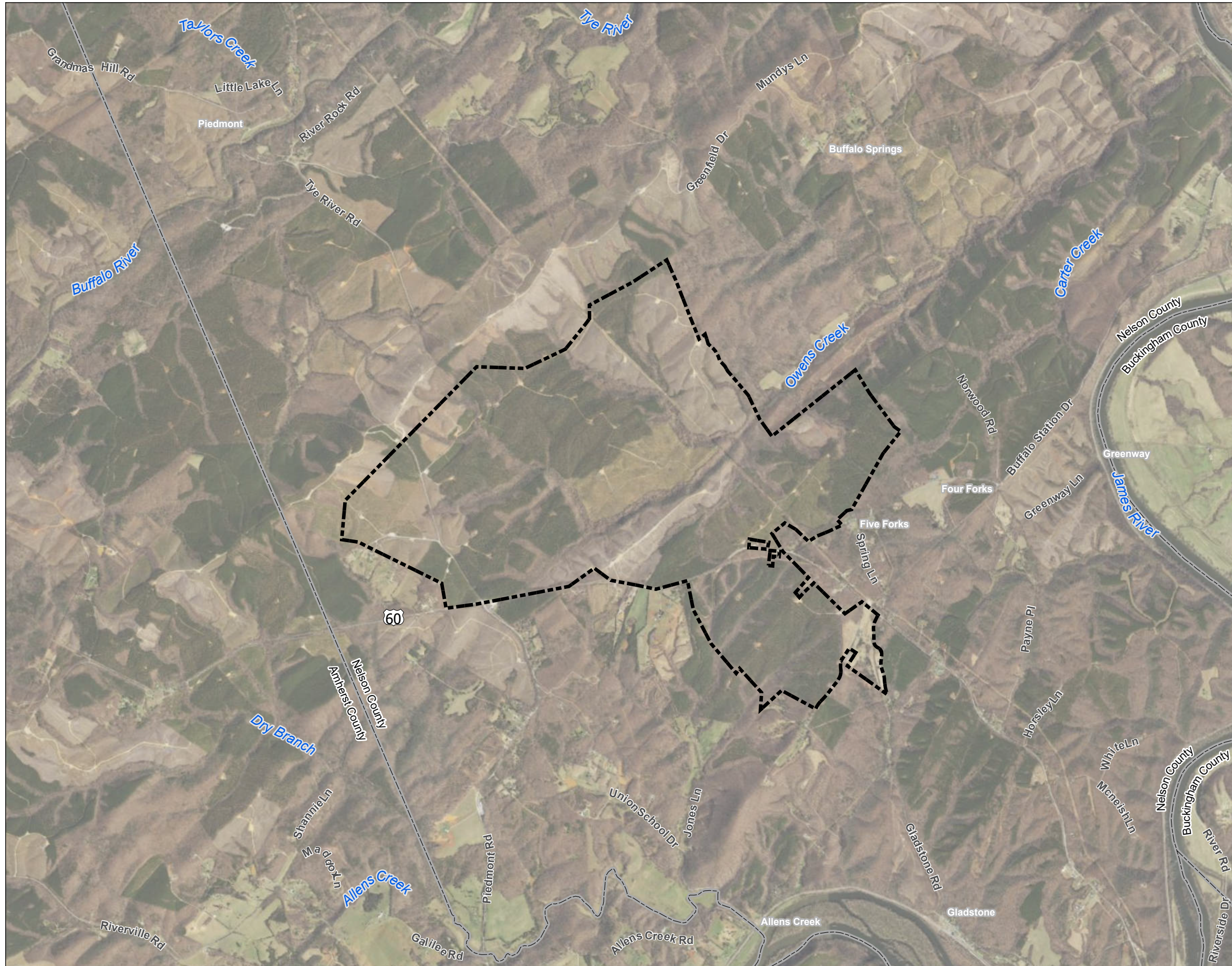


Figure No.

1

Title

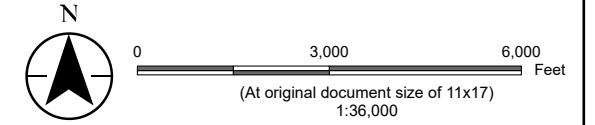
Location Map

Client/Project
 Wild Rose Solar Project, LLC
 Wild Rose Solar Project

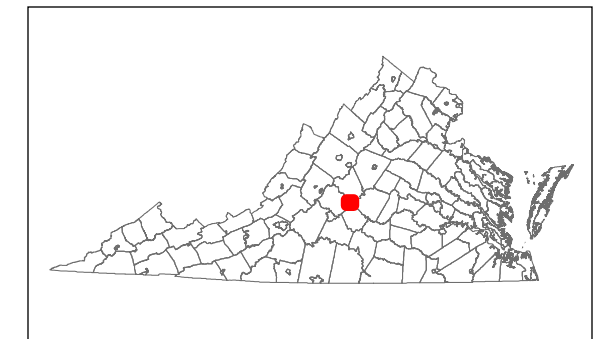
203402299

Project Location
 Nelson County, Virginia

Prepared by MER on 2023-10-23
 TR by BJW on 2023-11-06
 IR by KHP on 2023-11-06



 Project Limits



- Notes**
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar Project, LLC, VGIN, U.S. Census Bureau, Geographic Names Information System (GNIS), USGS National Hydrography Dataset (NHD)
 3. Orthoimagery © Virginia Geographic Information Network (VGIN)



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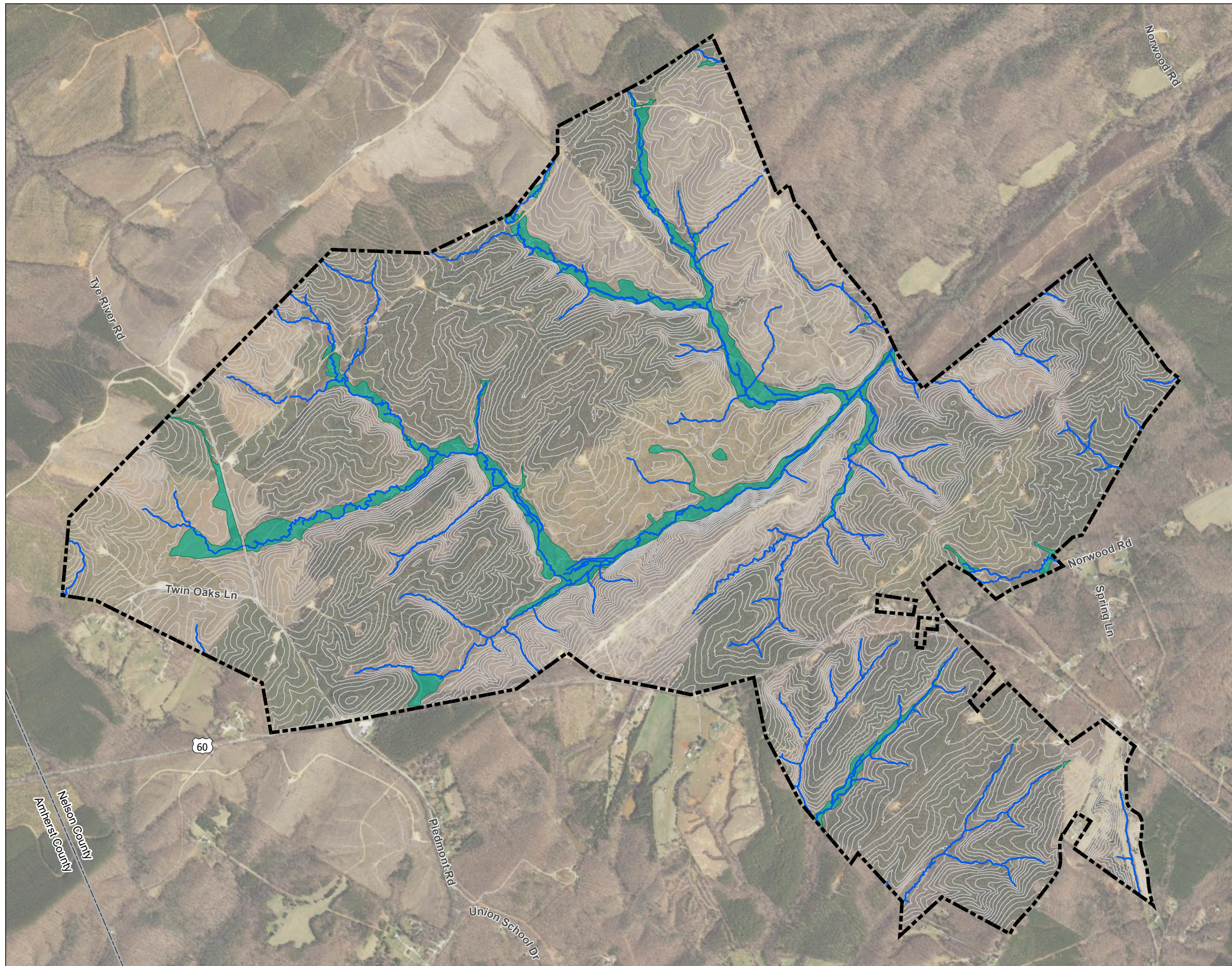
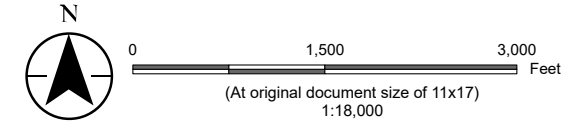


Figure No. **2**
Title **Detailed Desktop Wetlands and Waters**

Client/Project **Wild Rose Solar Project, LLC** 203402299
Wild Rose Solar Project

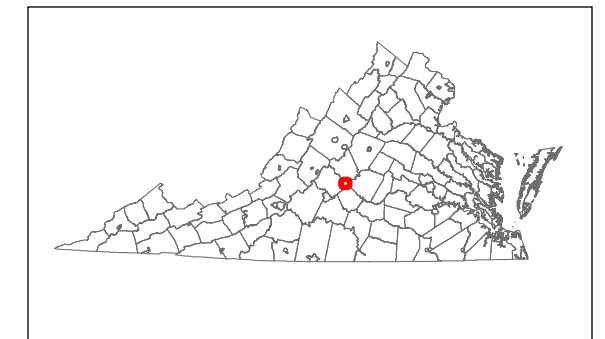
Project Location **Nelson County, Virginia** Prepared by MER on 2023-10-02
TR by JMH on 2023-10-02
IR by KHP on 2023-11-06



- Project Limits
- Detailed Desktop Stream
- Detailed Desktop Wetland
- 10-Foot Contour

Site Data

Project Area	2,471.30 Acres ±
Detailed Desktop Wetland	118.29 Acres ±
Detailed Desktop Stream	13.76 Acres ± (131,348 L.F. ±)



- Notes**
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar Project, LLC, Stantec, U.S. Census Bureau, VGIN, Topography generated from digital elevation model derived from USGS Lidar Point Cloud
 3. Orthoimagery © Virginia Geographic Information Network (VGIN)
 4. The wetlands and other surface waters shown on this map have been predicted based upon the application of desktop mapping techniques and have not been field verified. Therefore, these potential resources should be used for preliminary planning only.



Appendix L: Threatened and Endangered Species Desktop Review



To: Lauren Devine
Savion, LLC

From: Sean Wender, PWD
Richmond, Virginia

Project: Wild Rose Solar Project

Date: December 5, 2023

Reference: Threatened and Endangered Species Desktop Review

This memo summarizes the results of a threatened and endangered (T&E) species desktop review conducted for the Wild Rose Solar Project (Project). The Project is located in Nelson County, Virginia, within the Middle James - Buffalo drainage basin. The study area (approximately 2,470 acres) is located west of Norwood Road (Route 626); north of Piedmont Road (Route 601) and Buck Mountain Lane (Route 791); and is bisected by Tye River Road (Route 657), Twin Oaks Lane (Route 820) and Richmond Highway (Route 60).

The purpose of this review is to identify T&E species that potentially exist within or in the vicinity of the study area through database searches, as well as the potential for the occurrence of suitable habitat for each species within the study area. Stantec evaluated the habitat requirements for each species that was identified in the database searches and determined if there is any potential for habitat to occur for each species within the study area.

The online database searches include the following:

- U.S. Fish & Wildlife (USFWS) Information for Planning and Consultation (IPaC) Trust Resource List
- The Virginia Department of Wildlife Resources (DWR) Virginia Fish and Wildlife Information Service (VAFWIS) Database
- Virginia DWR Northern Long-eared Bat (NLEB) Regulatory Buffer Interactive Tool (RBI Tool)
- Virginia DWR Little Brown Bat (MYLU) and Tri-colored Bat (PESU) Habitat Application
- Virginia Department of Conservation and Recreation (DCR) Natural Heritage Data Explorer (NHDE)
- Center for Conservation Biology (CCB) Bald Eagle Nest Locator for Virginia

In addition, Stantec received an official review of the Project from DCR to determine what T&E species may potentially occur within the study area.

Threatened and Endangered Species Review

Online database searches for federal and state T&E species were completed by Stantec for the Wild Rose Solar Project. Based on a search of the USFWS IPaC system, the federally endangered and state threatened northern long-eared bat (*Myotis septentrionalis*), federally proposed and state endangered tricolored bat (*Perimyotis subflavus*), and monarch butterfly (*Danaus plexippus*), which is a candidate species, have the potential to occur within the study area. No designated critical habitat occurs within the study area. Based upon a review of the DWR NLEB RBI Tool and the MYLU and PESU Habitat Application, no known hibernacula or roost trees for these species were identified in the immediate vicinity

Reference: Threatened and Endangered Species Desktop Evaluation

of the Project. The CCB Eagle Nest Locator identified the nearest nest occurring greater than 10 miles away. In addition, the DWR VaFWIS was searched for listed species within a two-mile radius of the study area and the Virginia DCR NHDE database was searched for listed species that may be present within James River-Allens Creek and James River-Alabama Creek sub-watersheds where the Project is located. The VaFWIS database search identified the federally and state endangered James spiny mussel (*Parvaspina collina*), state threatened green floater (*Lasmigona subviridis*) and state endangered little brown bat (*Myotis lucifugus*) as having potential to occur within the Project vicinity. The DCR NHDE database did not identify any listed species within the sub-watersheds which was also confirmed in the official Project review from DCR. The DCR review identifies the Allens Creek Stream Conservation Site (SCS), occurring within the southeast portion of the study area, but no listed species are identified in association with the SCS.

Species with confirmed or potential presence within the Project vicinity have been identified by database searches and are summarized below in Table 1. The results of the database searches are provided in Appendix A. Habitat requirements were compared with available online aerial imagery and the desktop wetland review map conducted by Stantec to predict the likelihood for potential habitat to be present within the study area, as provided in the table below.

Table 1. Threatened and Endangered Species Database Search Results

Species	Status	Database	Likelihood for Potential Habitat	Species/Habitat Requirements
Northern long-eared bat (<i>Myotis septentrionalis</i>)	FE, SE	USFW-IPaC, DGIF-NLEB DWR NLEB RBI Tool	High	Identified as potentially occurring near the Project. No known hibernacula or maternity roost trees occur within the immediate vicinity of the Project. This species typically hibernates in caves in the winter and can be found in wooded or semi-wooded areas in the summer, roosting singly or in colonies underneath bark, in cavities or in crevices of both live trees and snags. The study area consists primarily of managed pine forest with open areas associated with recent silviculture activity and existing rights-of-way (ROW) that could potentially support the northern long-eared bat.
Tricolored bat (<i>Perimyotis subflavus</i>)	FP, SE	USFW-IPaC, DWR MYLU and PESU Habitat Application	High	Identified as potentially occurring near the Project. No known hibernacula or maternity roost trees occur within the immediate vicinity of the Project. This species typically hibernates in caves in the winter and can be found in forested areas in the summer, where

Reference: Threatened and Endangered Species Desktop Evaluation

				they roost in trees, primarily among leaves of live or recently dead deciduous hardwood trees, but may also be found in pine trees, and occasionally human structures. The study area consists primarily of managed pine forest with open areas associated with recent silviculture activity and existing ROW that could potentially support the tricolored bat.
James spinymussel (<i>Paravaspina collina</i>)	FE, SE	DWR VaFWIS,	Moderate	Identified as potentially occurring near the Project. This species lives in a variety of habitats ranging from large rivers to shallow streams with low to moderate current and substrates composed of sand, mixed sand and/or gravel. Owens Creek and other perennial stream systems within the study area could have suitable habitat characteristics for the James spinymussel. DWR identifies T&E waters offsite in the James River and Tye River but none are identified within the study area.
Monarch Butterfly (<i>Danaus plexippus</i>)	FC	USFWS-IPaC	Moderate	Identified as potentially occurring near the Project. This species is a nectivorous insect preferring a variety of habitats including rangelands, meadows, riparian areas, farms, and open forests. The study area consists primarily of managed pine forest with open areas associated with recent silviculture activity and existing ROW.
Bald eagle (<i>Haliaeetus leucocephalus</i>)	Bald and Golden Eagle Protection Act (BGEPA)	CCB	Low	No bald eagle nests are documented within 10 miles of the study area. The bald eagle prefers open bodies of water surrounded by tall trees but can also be found in forested areas away from waterbodies.
Little brown bat (<i>Myotis lucifigus</i>)	SE	DWR VaFWIS, DWR MYLU and PESU	High	Identified as potentially occurring near the Project. No known hibernacula or maternity roost trees occur within the immediate vicinity of the Project. These bats use a wide range of habitats and typically hibernates in caves in

Reference: Threatened and Endangered Species Desktop Evaluation

		Habitat Application		the winter and can be found in forested areas and human-made structures in the summer. Maternity colonies are commonly within buildings and other structures and also infrequently within hollow trees. The study area consists primarily of managed pine forest with open areas associated with recent silviculture activity and existing ROW that could potentially support the little brown bat. If any structures were to remain within the study area they could provide potential maternity roosting habitat.
Green floater (<i>Lasmigona subviridis</i>)	ST	DWR VaFWS	Moderate	Identified as potentially occurring near the Project. The green floater is more likely to be found in hydrologically stable streams that are not prone to flooding and drying. The species is intolerant of strong currents and occurs in pools and other areas of calm water with gravel and sand substrates. Owens Creek and other perennial stream systems within the study area could have suitable habitat characteristics for the green floater.

FE: federally endangered, FT: federally threatened, FP: federal proposed endangered, FC: federal candidate, SE: state endangered, ST: state threatened

Conclusion

Based upon the results of the online database searches and desktop habitat review, the Project provides suitable habitat for T&E species identified in the database searches as summarized in the table above. An onsite habitat survey would be required to make a determination on the extent of suitable habitat within the study area for the individual species.

Potential time-of-year (TOYR) restrictions for the clearing of suitable roosting bat habitat may be required between April 1 through November 14 for the summer roosting season or June 1 and July 31 for the pup season, which would need to be determined through consultation with USFWS and DWR. There is no defined TOYR for the tricolored bat at this time and it is likely that it will be similar to the TOYR for NLEB. A mussel survey would be required for impacts to suitable habitat and a TOYR would also likely be required for any instream work due to the potential presence of the James spiny mussel (May 15 – July 31) and green floater (April 15 through June 15 (glochidia release); and August 15 through September 30 (spawning)).

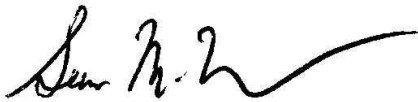
Reference: Threatened and Endangered Species Desktop Evaluation

The Wild Rose Solar Project will coordinate with the appropriate federal and state agencies to carry out any necessary species specific surveys to ensure that impacts to T&E species are avoided, minimized, or mitigated.

Please let us know if you have any questions regarding the results of the threatened and endangered species desktop review for the Wild Rose Solar Project.

Respectfully,

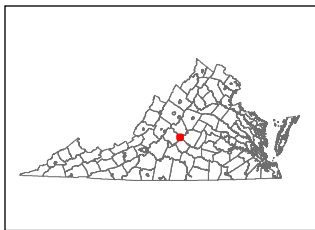
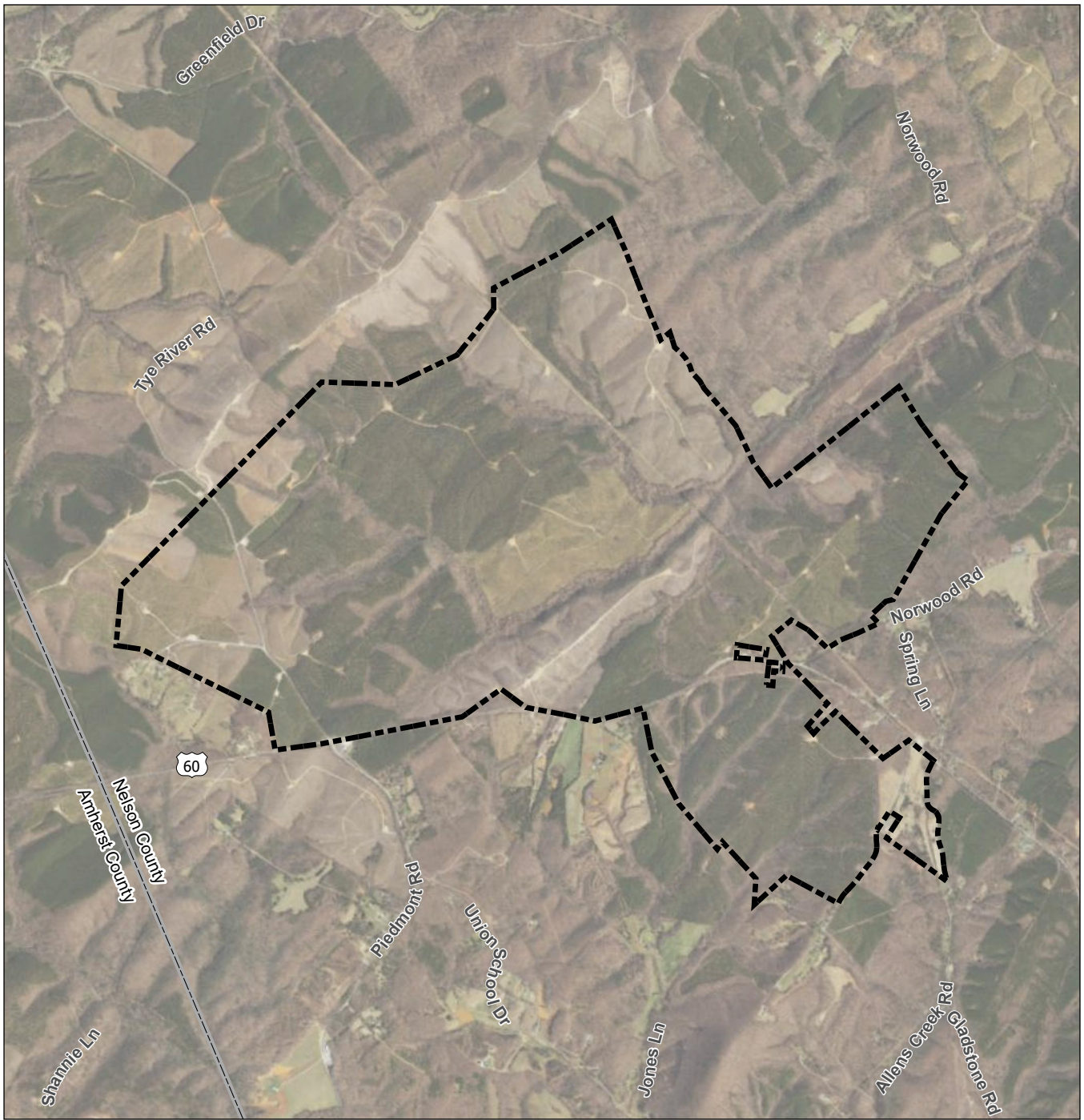
Stantec Consulting Services Inc.


A handwritten signature in black ink, appearing to read "Sean Wender", with a long, sweeping horizontal line extending to the right.

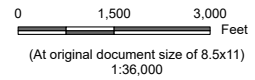
Sean Wender
Senior Ecologist

Phone: 804-317-8027
Fax: 804-267-3470
sean.wender@stantec.com

Attachment: Figure 1 – Project Location Map; Appendix A: Database Search Results



 Study Area



Project Location Prepared by MER on 2023-10-24
 Nelson County, Virginia TR by BJW on 2023-10-25
 IR by JLO on 2023-10-25

Client/Project 203402299
 Wild Rose Solar Project, LLC
 Wild Rose Solar Project

Figure No. 1
 Title
Location Map

- Notes**
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar Project, LLC, U.S. Census Bureau, VGIN
 3. Orthoimagery © VGIN

APPENDIX A DATABASE SEARCH RESULTS

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Project information

NAME

Wild Rose Solar Project, LLC

LOCATION

Nelson County, Virginia



DESCRIPTION

Some(The Wild Rose Solar project is located southwest of Norwood Road (Route 626), south of Greenfield Drive (Route 721), and north and west of the James River in southern Nelson County, Virginia (approximate coordinates are 37.581688 degrees N, 78.881102

degrees W). The project will be sited on roughly 2,460 acres across 10 parcels of land (Study Area). Detailed design is yet to be completed, but the area inside the project fence lines is estimated to be 482 acres and total limits of disturbance is approximately 550. The solar array will connect up to 90 Megawatts AC to American Electric Power's grid via a gen-tie line connecting the project substation to the existing Gladstone Substation. Existing site conditions are forest and cleared/agricultural land.)

Local office

Virginia Ecological Services Field Office

☎ (804) 693-6694

📠 (804) 693-9032

6669 Short Lane

Gloucester, VA 23061-4410

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

-
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
 2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of

Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat <i>Myotis septentrionalis</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat <i>Perimyotis subflavus</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act¹ and the Migratory Bird Treaty Act².

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats³, should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds
<https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds
<https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC
<https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON

Bald Eagle *Haliaeetus leucocephalus*

Breeds Sep 1 to Jul 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey

effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

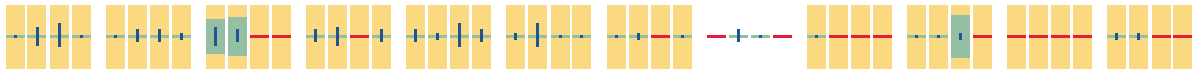
Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

■ probability of presence ■ breeding season | survey effort — no data

SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

Bald Eagle
Non-BCC
Vulnerable



What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply). To see a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs of bald and golden eagles in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the [Eagle Act](#) should such impacts occur. Please contact your local Fish and Wildlife Service Field Office if you have questions.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats³ should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The [Migratory Birds Treaty Act](#) of 1918.

2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide conservation measures for birds <https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf>
- Supplemental Information for Migratory Birds and Eagles in IPaC <https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern \(BCC\)](#) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25

Eastern Whip-poor-will *Antrostomus vociferus*
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 1 to Aug 20

Prairie Warbler *Dendroica discolor*
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 1 to Jul 31

Red-headed Woodpecker *Melanerpes erythrocephalus*
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 10 to Sep 10

Wood Thrush *Hyllocichla mustelina*
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [Rapid Avian Information Locator \(RAIL\) Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the [RAIL Tool](#) and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird

on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key

component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

[PEM1/SS1C](#)

[PEM1A](#)

[PEM1Fb](#)

[PEM1C](#)

FRESHWATER FORESTED/SHRUB WETLAND

[PFO1A](#)

[PFO1C](#)

[PSS1C](#)

[PSS1/FO1C](#)

[PSS1A](#)

RIVERINE

[R5UBH](#)

[R4SBC](#)

A full description for each wetland code can be found at the [National Wetlands Inventory website](#)

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and

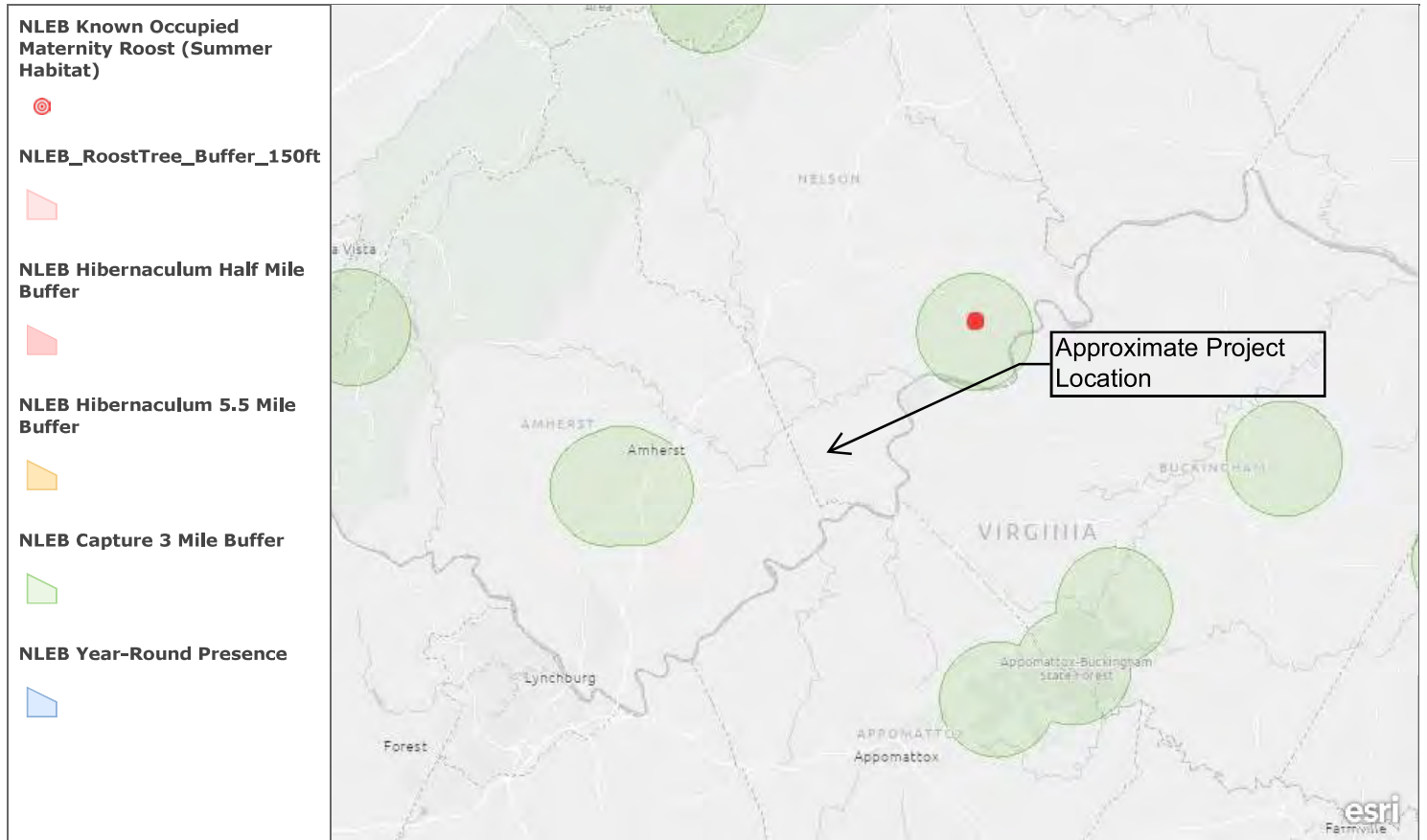
nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

NLEB Winter Habitat and Roost Trees



NLEB Regulatory Buffer Map

VGIN, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS | VGIN, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS | Virginia Geographic Information Network (VGIN), and the Census and Localities and Towns submitting data to the project

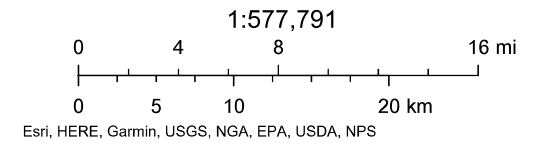
ArcGIS Web Map



9/27/2023, 2:39:58 PM

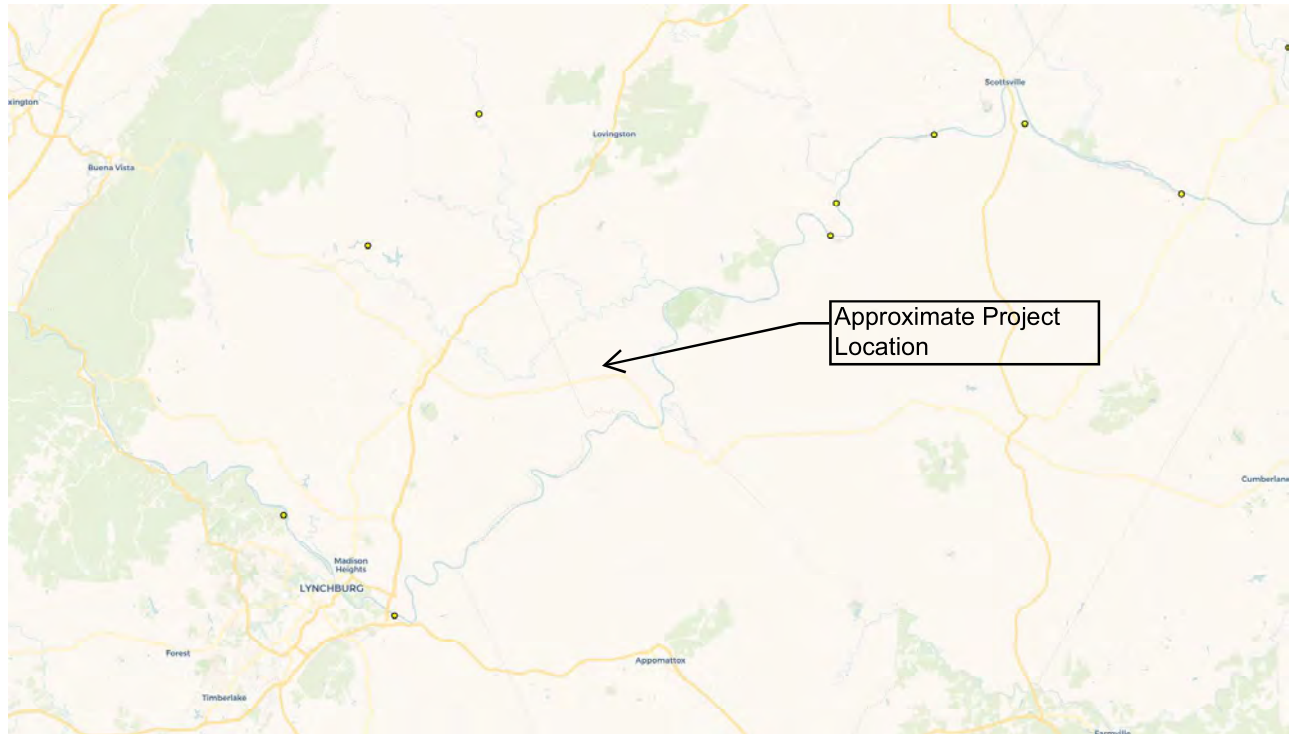
 Tri-colored and Little Brown Hibernaculum Half Mile Buffer

 Tri-colored and Little Brown Hibernaculum 5.5 Mile Buffer





CCB Mapping Portal



Layers: VA Eagle Nest Locator

Map Center [longitude, latitude]: [-78.80218505859375, 37.599816190326464]

Map Link:

https://www.cbbirds.org/maps/#layer=VA+Eagle+Nest+Locator&zoom=11&lat=37.599816190326464&lng=-78.80218505859375&legend=legend_tab_7c321b7e-e523-11e4-aaa0-0e0c41326911&base=Street+Map+%28OSM%2FCarto%29

Report Generated On: 09/27/2023

The Center for Conservation Biology (CCB) provides certain data online as a free service to the public and the regulatory sector. CCB encourages the use of its data sets in wildlife conservation and management applications. These data are protected by intellectual property laws. All users are reminded to view the [Data Use Agreement](#) to ensure compliance with our data use policies. For additional data access questions, view our [Data Distribution Policy](#), or contact our Data Manager, Marie Pitts, at mlpitts@wm.edu or 757-221-7503.

Report generated by [The Center for Conservation Biology Mapping Portal](#).

To learn more about CCB visit cbbirds.org or contact us at info@cbbirds.org

Site Location

37,35,44.8 -78,52,33.1
is the Search Point

Show Position Rings

Yes No
1 mile and 1/4 mile at the Search Point

Show Search Area

Yes No
2 Search distance miles buffer

Display Search Point is not at map center

Base Map Choices

Topography

Map Overlay Choices

Current List: Position, Search, BECAR, BAEANests, TEWaters, TierII, Habitat, Trout, Anadromous

Map Overlay Legend

T & E Waters

Federal
States

Predicted Habitat WAP Tier I & II

Aquatic
Terrestrial

Trout Waters

Class I - IV
Class V - VI

Anadromous Fish Reach

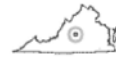
Confirmed
Potential

Impediment

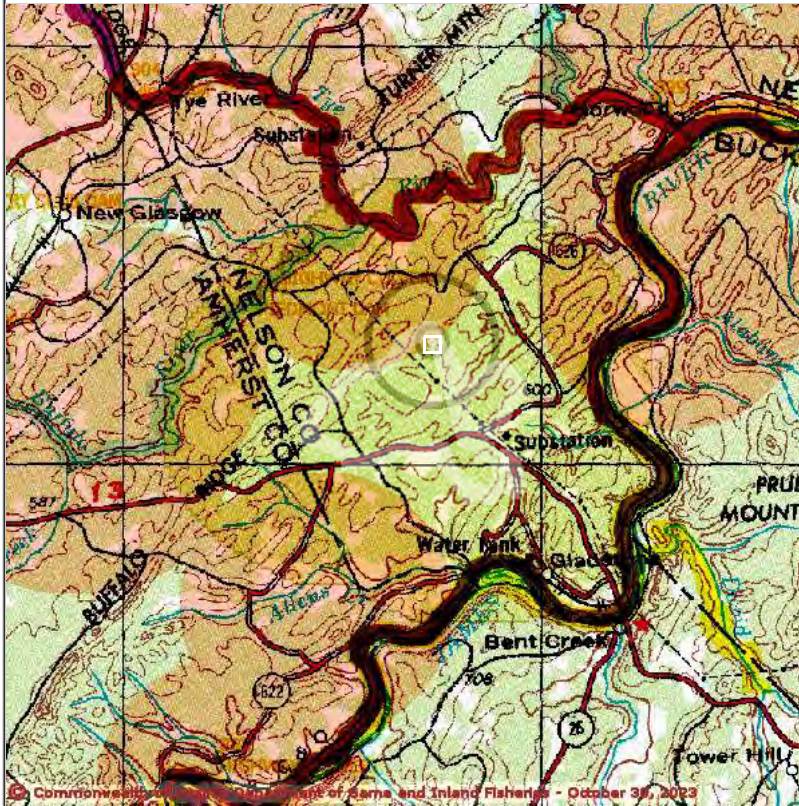
Position Rings
1 mile and 1/4 mile at the Search Point

2 mile radius Search Area

Bald Eagle Concentration Areas and Roosts



Map Click **Pan** **In** **Zoom** **Out** Screen Size **Small** **Size** **Big** [Help](#)



Point of Search 37,35,44.8 -78,52,33.1
Map Location 37,34,56.1 -78,52,58.3

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

Base Map source: USGS 1:250,000 topographic maps (see [Microsoft terraserver-usa.com](http://Microsoft.terraserver-usa.com) for details)

Map projection is UTM Zone 17 NAD 1983 with left 677338 and top 4171175. Pixel size is 19. . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 19200 meters east to west by 19200 meters north to south for a total of 368.6 square kilometers. The map display represents 63002 feet east to west by 63002 feet north to south for a total of 142.3 square miles.

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

map assembled 2023-10-30 11:48:15 (qa/qc March 21, 2016 12:20 - tn=1535155.0 dist=3218 I)
\$poi=37.5958000 -78.8758799



Virginia Department of Wildlife Resources

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[Fish and Wildlife Information Service](#)

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 - By Name
 - By Land Management
 - References
- Geographic Search
 - By Map
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VaFWIS Search Report Compiled on 10/30/2023, 11:47:06 AM

Known or likely to occur within a **2 mile buffer around polygon; center 37.5958000 -78.8758799**
in **009 Amherst County, 011 Appomattox County, 029 Buckingham County, 125 Nelson County, VA**

[View Map of Site Location](#)

611 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 34) (34 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
050022	FEST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes	BOVA,TEWaters
050021	FESE	Ila	Bat, gray	Myotis grisescens		BOVA
060173	FTST	Ia	Pigtoe, Atlantic	Fusconaia masoni		BOVA
060029	FTST	Ila	Lance, yellow	Elliptio lanceolata		BOVA,HU6
050020	SE	Ia	Bat, little brown	Myotis lucifugus	Yes	BOVA,SppObs,HU6
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA
060006	SE	Ib	Floater, brook	Alasmidonta varicosa		BOVA
020052	SE	Ila	Salamander, eastern tiger	Ambystoma tigrinum		BOVA
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA,HU6
060081	ST	Ila	Floater, green	Lasmigona subviridis	Yes	BOVA,TEWaters,Habitat,HU6
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100079	FC	IIIa	Butterfly, monarch	Danaus plexippus		BOVA
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA
030031	CC	IIIc	Kingsnake, scarlet	Lampropeltis elapsoides		BOVA
030012	CC	IVa	Rattlesnake, timber	Crotalus horridus	Yes	BOVA,SppObs,HU6
010174		Ia	Bass, Roanoke	Ambloplites cavifrons		BOVA
010077		Ia	Shiner, bridle	Notropis bifrenatus		BOVA
040092		Ia	Eagle, golden	Aquila chrysaetos		BOVA
040040		Ia	Ibis, glossy	Plegadis falcinellus		BOVA,HU6
040306		Ia	Warbler, golden-winged	Vermivora chrysoptera		BOVA,HU6
080214		Ia	Stonefly, Beartown periodid	Isoperla major		BOVA
100248		Ia	Fritillary, regal	Speyeria idalia idalia		BOVA,HU6
010346		Ib	Shiner, roughhead	Notropis semperasper	Yes	SppObs
060084		Ib	Pigtoe, Virginia	Lexingtonia subplana		BOVA
020023		Ila	Salamander, mole	Ambystoma talpoideum		BOVA,HU6
040052		Ila	Duck, American black	Anas rubripes		BOVA,HU6
040320		Ila	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140		Ila	Woodcock, American	Scolopax minor	Potential	BOVA,BBA,HU6

040203		Ilb	Cuckoo, black-billed	Coccyzus erythrophthalmus		BOVA
040105		Ilb	Rail, king	Rallus elegans		BOVA
040304		Ilc	Warbler, Swainson's	Limnolophus swainsonii		HU6
080336		Ilc	Beetle, Gammon's stenelmis riffle	Stenelmis gammoni		BOVA

To view **All 611 species** [View 611](#)

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

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Virginia Wildlife Action Plan Conservation Opportunity Ranking;

a - On the ground management strategies/actions exist and can be feasibly implemented.; b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;

c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

[View Map of All Query Results from All Observation Tables](#)

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams (3 records)

[View Map of All Anadromous Fish Use Streams](#)

Stream ID	Stream Name	Reach Status	Anadromous Fish Species			View Map
			Different Species	Highest TE *	Highest Tier **	
P188	Tye River	Potential	0			Yes
P189	James River 4	Potential	0			Yes
P50	David creek	Potential	0			Yes

Impediments to Fish Passage (2 records)

[View Map of All Fish Impediments](#)

ID	Name	River	View Map
832	HIGHWAY CULVERT	TAYLORS CREEK	Yes
831	PIEDMONT DAM	BUFFALO RIVER	Yes

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters (27 Reaches - displaying first 20)

[View Map of All Threatened and Endangered Waters](#)

Stream Name	T&E Waters Species						View Map
	Highest TE *	BOVA Code, Status *, Tier **, Common & Scientific Name					
Tye River (0100916)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	Ila	Floater, green	Lasmigona subviridis	
Tye River (0106500)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	Ila	Floater, green	Lasmigona subviridis	
Tye River (088683)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	Ila	Floater, green	Lasmigona subviridis	
Tye River (088970)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	Ila	Floater, green	Lasmigona subviridis	
Tye River (093206)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	Ila	Floater, green	Lasmigona subviridis	
Tye River (098480)	FESE	060017	FESE	Ia	Spinymussel, James	Parvaspina collina	Yes
		060081	ST	Ila	Floater, green	Lasmigona subviridis	
(0141747)	ST	060081	ST	Ila	Floater, green	Lasmigona subviridis	Yes
(0145496)	ST	060081	ST	Ila	Floater, green	Lasmigona subviridis	Yes
(0149677)	ST	060081	ST	Ila	Floater, green	Lasmigona subviridis	Yes
(0152147)	ST	060081	ST	Ila	Floater, green	Lasmigona subviridis	Yes
(0157758)	ST	060081	ST	Ila	Floater, green	Lasmigona subviridis	Yes

(096901.)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (0100124.)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (0103213.)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (0103373.)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (0104203.)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (085808.)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (089091.)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (089554.)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (090714.)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (092753.)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (092798.)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (095774.)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes

To view **All 27 Threatened and Endangered Waters records** [View 27](#)

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Species Observations (23 records - displaying first 20 ,
2 Observations with Threatened
or Endangered species)

[View Map of All Query Results
Species Observations](#)

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
67404	SppObs	Jan 1 1900	NORMAN REICHENBACH, LIBERTY UNIVERSITY LYNCHBURG, VA	10	SE	I	Yes
366936	SppObs	Jan 1 1900	MITCHELL, J. C.	1	CC	IV	Yes
627177	SppObs	Sep 16 2015	Jason; Hill Drew; Miller	45		I	Yes
425052	SppObs	Jun 30 2011	VCU - INSTAR	17		III	Yes
425038	SppObs	May 25 2011	VCU - INSTAR	17		III	Yes
425026	SppObs	May 25 2011	VCU - INSTAR	15		III	Yes
425027	SppObs	May 25 2011	VCU - INSTAR	25		III	Yes
9120	SppObs	Oct 15 1993	STEVE SMITH, KEN PETRIE	18		III	Yes
362155	SppObs	Jan 1 1900		1		III	Yes
362118	SppObs	Jan 1 1900		1		III	Yes
362128	SppObs	Jan 1 1900		1		III	Yes
615972	SppObs	Oct 16 2012	Roger; Thoma George; Thoma John; Thoma	2			Yes
425035	SppObs	Jun 24 2011	VCU - INSTAR	5			Yes
375404	Aquatics	Jul 22 1999	M. A. McGregor, R. Steinberg	17			Yes
58457	SppObs	Oct 17 1996	C. S. HOBSON, S. M. ROBLE	1			Yes
15614	SppObs	Apr 15 1965	HOGARTH ETAL	12			Yes
332995	SppObs	Jan 1 1965	WTH-HOGARTH	12			Yes
331913	SppObs	Jan 1 1953	HHH-HOBBS	15			Yes
67403	SppObs	Jan 1 1900	NORMAN REICHENBACH, LIBERTY UNIVERSITY LYNCHBURG, VA	2			Yes
362139	SppObs	Jan 1 1900		2			Yes

Displayed 20 Species Observations

Selected 23 Observations [View all 23 Species Observations](#)

Habitat Predicted for Aquatic WAP Tier I & II Species (4 Reaches)

[View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species](#)

Stream Name	Tier Species	View Map
-------------	--------------	----------

	Highest TE *	BOVA Code, Status *, Tier **, Common & Scientific Name					
Buffalo River (20802031)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (20802031)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
James River (20802032)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes
Piney River (20802031)	ST	060081	ST	Ila	Floater_green	Lasmigona subviridis	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Virginia Breeding Bird Atlas Blocks (4 records)

[View Map of All Query Results](#)
[Virginia Breeding Bird Atlas Blocks](#)

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE *	Highest Tier **	
39106	Arrington, SE	50		III	Yes
39096	Buffalo Ridge, SE	61		II	Yes
40095	Gladstone, SW	3		IV	Yes
40105	Shipman, SW	1			Yes

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
009	Amherst	394	FESE	I
011	Appomattox	338	FESE	I
029	Buckingham	358	FESE	I
125	Nelson	396	FESE	I

USGS 7.5' Quadrangles:

Buffalo Ridge
 Arrington
 Gladstone
 Shipman

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
JM17	James River-Allens Creek	56	FTSE	I
JM19	David Creek	44	SS	II
JM20	James River-Alabama Creek	52	FTST	I
JM27	Iye River-Brown Creek	61	ST	I
JM31	Buffalo River-Rocky Creek	59	ST	I
JM33	Iye River-Joe Creek	50	ST	I

Compiled on 10/30/2023, 11:47:07 AM 11535155.0 report=ball searchType=P dist= 3218 pos= 37.5956000 -78.8759789 siteID= 37.5957968 -78.8759879 siteID= 37.5940040 -78.8749655 37.5944023 -78.8743403 37.5939467 -78.8741539 37.5936000 -78.8740126 37.5932121 -78.8739644 37.5928143 -78.8739633 37.5925990 -78.8739624 37.5922477 -78.8721
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 -78.8640433 37.5689733 -78.8639446 37.5691023 -78.8638143 37.5692090 -78.8636843 37.5693160 -78.8635643 37.5694094 -78.8634451 37.5694994 -78.8633150 37.5695894 -78.8631858 37.5696794 -78.8630266 37.5697694 -78.8628674 37.5698594 -78.8627082 37.5699494 -78.8625490 37.5700394 -78.8623898 37.5701294 -78.8622302 37.5702194 -78.8621106 37.5703094 -78.8619910 37.5703994 -78.8618714 37.5704894 -78.8617518 37.5705794 -78.8616322 37.5706694 -78.8615126 37.5707594 -78.8613930 37.5708494 -78.8612734 37.5709394 -78.8611538 37.5710294 -78.8610342 37.5711194 -78.8609146 37.5712094 -78.8607950 37.5712994 -78.8606754 37.5713894 -78.8605558 37.5714794 -78.8604362 37.5715694 -78.8603166 37.5716494 -78.8601970 37.5717294 -78.8600774 37.5718094 -78.8599578 37.5718894 -78.8598382 37.5719694 -78.8597186 37.5720494 -78.8595990 37.5721294 -78.8594794 37.5722094 -78.8593594 37.5722894 -78.8592398 37.5723694 -78.8591202 37.5724494 -78.8589806 37.5725294 -78.8588610 37.5726094 -78.8587414 37.5726894 -78.8586218 37.5727694 -78.8585022 37.5728494 -78.8583826 37.5729294 -78.8582630 37.5730094 -78.8581434 37.5730894 -78.8580238 37.5731694 -78.8579042 37.5732494 -78.8577846 37.5733294 -78.8576650 37.5734094 -78.8575454 37.5734894 -78.8574258 37.5735694 -78.8573062 37.5736494 -78.8571866 37.5737294 -78.8570670 37.5738094 -78.8569474 37.5738894 -78.8568278 37.5739694 -78.8567082 37.5740494 -78.8565886 37.5741294 -78.8564690 37.5742094 -78.8563494 37.5742894 -78.8562298 37.5743694 -78.8561102 37.5744494 -78.8559906 37.5745294 -78.8558710 37.5746094 -78.8557514 37.5746894 -78.8556318 37.5747694 -78.8555122 37.5748494 -78.8553926 37.5749294 -78.8552730 37.5750094 -78.8551534 37.5750894 -78.8550338 37.5751694 -78.8549142 37.5752494 -78.8547946 37.5753294 -78.8546750 37.5754094 -78.8545554 37.5754894 -78.8544358 37.5755694 -78.8543162 37.5756494 -78.8541966 37.5757294 -78.8540770 37.5758094 -78.8539574 37.5758894 -78.8538378 37.5759694 -78.8537182 37.5760494 -78.8535986 37.5761294 -78.8534790 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-78.8482060 37.5797294 -78.8480864 37.5798094 -78.8479668 37.5798894 -78.8478472 37.5799694 -78.8477276 37.5800494 -78.8476080 37.5801294 -78.8474884 37.5802094 -78.8473688 37.5802894 -78.8472492 37.5803694 -78.8471296 37.5804494 -78.8470100 37.5805294 -78.8468904 37.5806094 -78.8467708 37.5806894 -78.8466512 37.5807694 -78.8465316 37.5808494 -78.8464120 37.5809294 -78.8462924 37.5810094 -78.8461728 37.5810894 -78.8460532 37.5811694 -78.8459336 37.5812494 -78.8458140 37.5813294 -78.8456944 37.5814094 -78.8455748 37.5814894 -78.8454552 37.5815694 -78.8453356 37.5816494 -78.8452160 37.5817294 -78.8450964 37.5818094 -78.8449768 37.5818894 -78.8448572 37.5819694 -78.8447376 37.5820494 -78.8446180 37.5821294 -78.8444984 37.5822094 -78.8443788 37.5822894 -78.8442592 37.5823694 -78.8441396 37.5824494 -78.8440200 37.5825294 -78.8438804 37.5826094 -78.8437608 37.5826894 -78.8436412 37.5827694 -78.8435216 37.5828494 -78.8434020 37.5829294 -78.8432824 37.5830094 -78.8431628 37.5830894 -78.8430432 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Travis A. Voyles
Secretary of Natural and Historic Resources

Frank N. Stovall
Deputy Director
for Operations

Matthew S. Wells
Director



Darryl Glover
Deputy Director for
Dam Safety,
Floodplain Management and
Soil and Water Conservation

Andrew W. Smith
Chief Deputy Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Laura Ellis
Deputy Director for
Administration and Finance

November 13, 2023

Mary Roseblock
Stantec Consulting Services, Inc.
1011 Boulder Springs Dr., Suite 225
Richmond, VA 23225

Re: Wild Rose Solar Project

Dear Ms. Roseblock:

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.

According to the information in our files, the Allens Creek Stream Conservation Site (SCS) is located within the project area. SCSs encompass stream/river reaches, waterbodies, and terrestrial contributing areas containing or associated with aquatic or semi-aquatic resources, including upstream and downstream reaches and tributaries up to 3-km stream distance from the aquatic resources. The size and dimensions of an SCS are based on the hydrology of the waterway and surrounding landscape, taking into consideration dam locations and whether the waterway is tidal. SCSs are also given a biodiversity significance ranking (B-rank) based on the rarity, quality, and number of element occurrences they contain. The Allens Creek SCS has been given a B-rank of B4, which represents a site of moderate significance. The natural heritage resource associated with this SCS is:

Aquatic Natural Community NP-Middle James-Buffalo Third Order Stream G3/S3/NL/NL

The documented Aquatic Natural Community is based on Virginia Commonwealth University's **INSTAR** (*Interactive Stream Assessment Resource*) database which includes over 2,000 aquatic (stream and river) collections statewide for fish and macroinvertebrate. These data represent fish and macroinvertebrate assemblages, instream habitat, and stream health assessments. The associated Aquatic Natural Community is significant on multiple levels. First, this stream is a grade A per the VCU-Center for Environmental Sciences (CES), indicating its relative regional significance, considering its aquatic community composition and the present-day conditions of other streams in the region. This stream reach also holds a "Outstanding" stream designation per the INSTAR Virtual Stream Assessment (VSS) score. This score assesses the similarity of this stream to ideal stream conditions of biology and habitat for this region. Lastly, this stream contributes to high Biological Integrity at the watershed level (6th order) based on number of native/non-native, pollution-tolerant/intolerant and rare, threatened or endangered fish and macroinvertebrate species present.

Threats to the significant Aquatic Natural Community and the surrounding watershed include water quality degradation related to point and non-point pollution, water withdrawal and introduction of non-native species.

600 East Main Street, 24th Floor | Richmond, Virginia 23219 | 804-786-6124

*State Parks • Soil and Water Conservation • Outdoor Recreation Planning
Natural Heritage • Dam Safety and Floodplain Management • Land Conservation*

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations, establishment/enhancement of riparian buffers with native plant species and maintaining natural stream flow.

In addition, the proposed project will impact multiple Ecological Cores (**C2, C3, C4 and C5**) as identified in the Virginia Natural Landscape Assessment (<https://www.dcr.virginia.gov/natural-heritage/vaconvisvnl>). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: <http://vanhde.org/content/map>.

Ecological Cores are areas of at least 100 acres of continuous interior, natural cover that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Interior core areas begin 100 meters inside core edges and continue to the deepest parts of cores. Cores also provide the natural, economic, and quality of life benefits of open space, recreation, thermal moderation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including sequestration of carbon, absorption of gaseous pollutants, and production of oxygen). Cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of natural heritage resources they contain.

Impacts to cores occur when their natural cover is partially or completely converted permanently to developed land uses. Habitat conversion to development causes reductions in ecosystem processes, native biodiversity, and habitat quality due to habitat loss; less viable plant and animal populations; increased predation; and increased introduction and establishment of invasive species.

DCR recommends avoidance of impacts to cores. When avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact.

If the cleared forest in the most western corner of the project boundary is not allowed to re-generate into mature forest, the proposed project will impact a core with very high ecological integrity. Further investigation of these impacts is recommended and DCR-DNH can conduct a formal impact analysis upon request. This analysis would estimate direct impacts to cores and habitat fragments and indirect impacts to cores. The final products of this analysis would include an estimate of the total impact of the project in terms of acres. For more information about the analysis and service charges, please contact Joe Weber, DCR Chief of Biodiversity Information and Conservation Tools at Joseph.Weber@dcr.virginia.gov.

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, summer, and fall to maximize benefits to native pollinators. DCR supports the requirement in Nelson County's Solar Energy Ordinance § 22A-1 – 22A-11 that "Non-invasive plant species and pollinator-friendly and wildlife-friendly native plants, shrubs, trees, grasses, forbs and wildflowers must be used in the vegetative buffer". DCR supports planting these species in at least the buffer areas of the planned facility and recommends optimally including other areas within the project site. For screening zones outside the perimeter fencing, DCR recommends native species appropriate for the region be used. Guidance on plant species can be found here: <http://www.dcr.virginia.gov/natural-heritage/solar-site-native-plants-finder>. In addition, Virginia native species alternatives to the non-native species listed in the Virginia Erosion and Sediment Control Handbook (Third Edition 1992), can be found in the 2017 addendum titled "Native versus Invasive Plant Species", here: <https://www.deq.virginia.gov/home/showpublisheddocument?id=2466>. Page 3 of the addendum provides a list of native alternatives for non-natives commonly used for site stabilization including native cover crop species (i.e., Virginia wildrye).

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.

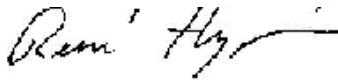
New and updated information is continually added to Biotics. Please re-submit a completed order form and project map for an update on this natural heritage information if the scope of the project changes and/or six months (May 13, 2024) has passed before it is utilized.

A fee of \$250.00 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 Virginia Department of Wildlife Resources (VDWR) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed <https://services.dwr.virginia.gov/fwis/> or contact Amy Martin at 804-367-2211 or amy.martin@dwr.virginia.gov.

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

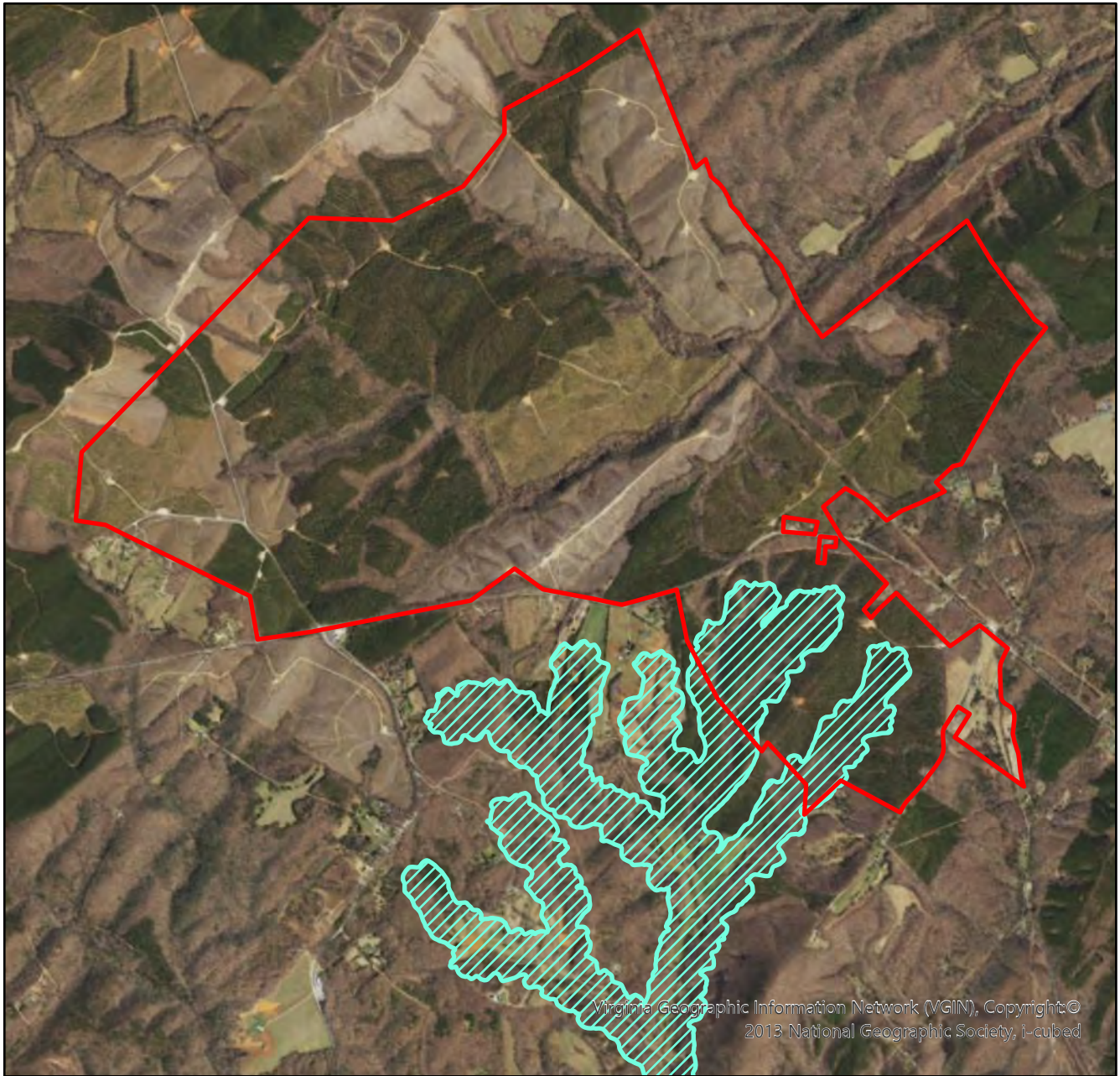
Sincerely,



S. René Hypes
Natural Heritage Project Review Coordinator

Cc: Susan Tripp, DEQ
Candy McGarry, Nelson County Administrator

Wild Rose Solar Project



0 0.5 1 2 Miles



Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES
Virginia Natural Heritage Program

-  Project Area
-  Allens Creek Stream Conservation Site



Select All	Select All
G1 - Critically imperiled	S1 - Critically imperiled
G2 - Imperiled	S2 - Imperiled
G3 - Vulnerable	S3 - Vulnerable

Federal Legal Status:	State Legal Status:
Select All	Select All
LE - Listed endangered	LE - Listed endangered
LT - Listed threatened	LT - Listed threatened
PE - Proposed endangered	PE - Proposed endangered
Select Operand: <input type="radio"/> AND <input checked="" type="radio"/> OR	

County:	Physiographic Province:
Select All	Select All
Middlesex	Allegheny Mountains
Montgomery	Cumberland Mountains
Nelson	Northern Blue Ridge

[Click here to view county map](#)

[Click here to view province map](#)

Watershed (8 digit HUC):	Subwatershed (12 digit HUC):
Select All	Select All
02080111 - Pokomoke-Western Lower	JM17 - James River-Aliens Creek
02080201 - Upper James River	JM18 - Bent Creek
02080202 - Maury River	JM19 - David Creek
02080203 - Middle James-Buffalo	JM20 - James River-Alabama Creek

[Click here to view watershed map](#)

[Click here to view subwatershed map](#)

Planning District:	Virginia Coastal Zone:
Select All	Select All
Accomack-Northampton	Yes
Central Shenandoah	No
Commonwealth Regional Council	

[Click here to view planning district map](#)

[Click here to view coastal zone map](#)

Search Reset

Results
No results

Feature Search Error
No results found.

Appendix M: Glare Hazard Analysis





**Wild Rose Solar Project Glare Hazard
Analysis**
Nelson County, Virginia

November 29, 2023

Prepared for:

Wild Rose Solar Project, LLC

Prepared by:

Stantec Consulting Services Inc.
5209 Center Street
Williamsburg, VA 23188



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APPENDIX A: ForgeSolar Reports



Executive Summary

Stantec Consulting Services, Inc. (Stantec) utilized the web-based ForgeSolar glare hazard analysis program to analyze the potential for glare from the proposed Wild Rose Solar Project (Project), a utility-scale solar-powered electric generation facility that will have a solar generating capacity of up to 90 megawatts (MW), located in Nelson County, Virginia, and depicted in **Figure 1**. The Project will include photovoltaic (PV) solar panels mounted on a racking system to maximize solar energy capture and electric generation of the array. The Project area encompasses approximately 550 acres in a rural area located approximately 2 miles northwest of the Gladstone community in central Virginia.

The ForgeSolar program, which is based on the Solar Glare Hazard Analysis Tool developed by Sandia National Laboratories, identifies the three following types of glare (no color indicates no glare predicted):

- GREEN - Low potential for temporary after-image.
- YELLOW - Potential for temporary after-image.
- RED - Potential for permanent eye damage.

Based on the solar array parameters provided and the current site design, glare is not predicted for pilots approaching either of the airstrips located within five miles of the project, including the 4VA5 Airstrip and the 1VA3 airstrip. Glare is not predicted for any of road segments included in this analysis, including Tye River Road, Twin Oaks Lane, Richmond Highway-US 60, Norwood Road, and Buck Mountain Lane. Residents in 28 homes in the vicinity of the project site are not predicted to receive glare.



Abbreviations

AGL	Above Ground Level
deg	degrees (0 is due north, 180 is due south)
DNI	Direct Normal Irradiance
FAA	Federal Aviation Administration
FP	Flight Path (landing path from threshold to two miles out)
ft	Feet
kW	Kilowatt
kWh	kilowatt hour
m	Meters
mi	Mile
min	Minutes
mrad	Milliradian
MW	Megawatt
MSL	Mean Sea Level
OP	Observation Point (e.g., control tower, structure)
PV	Photovoltaic



WILD ROSE SOLAR PROJECT GLARE HAZARD ANALYSIS

Glossary

Correlate Slope Error with Surface Type?	Correlates the slope error value based on the surface material type; default value is 8.43 milliradians (mrads).
Eye Focal Length (m)	Typical distance between the cornea and the retina of the human eye, default is 0.017, though some sources indicate that the typical length is 0.022.
Glide Slope (deg)	Angle at which the plane approaches the runway during landing (default is 3 degrees [deg] from horizontal).
Maximum Tracking Angle (deg)	Rotation limit of panels in either direction. Full rotation is 2*maximum tracking angle. E.g., maximum tracking angle of 60 deg indicates full panel rotation range of 120 deg.
Resting Angle (deg)	Angle modules return to after maximum angle is reached.
Observation Point	A specific location, such as a control tower or structure, from which an observer might experience glare.
Ocular Transmission Coefficient	Related to the ability of the eye to transmit light, set at 0.5 by Forge Solar.
Offset angle of module (deg)	Additional tilt/elevation angle between the tracking axis and the panel.
Orientation of Tracking Axis (deg)	Azimuthal position of tracking axis measured clockwise from true north. Tracking systems in the northern hemisphere are typically oriented near 180 deg. Tracking systems in the southern hemisphere are typically oriented near 0 deg.
Peak DNI (W/m ²)**	This value is set at 1,000 by ForgeSolar and is the amount of solar radiation per unit surface area by a surface perpendicular to the sun's rays in a straight line from the direction of the sun at its current position in the sky.
Pupil Diameter (m)	Typical pupil diameter for observer, default is 0.002 meters (m).
PV Array Axis Tracking	Panel tracking mode, if any. Panel can be set to track along one (single) or two (dual) axis tracking. This parameter affects the positioning of the panels at every time step when the sun is up.
PV Array Panel Material	Surface material of panels, including use of anti-reflective coating (ARC). Options include: smooth glass without ARC, smooth glass with ARC, light-textured glass without ARC, light-textured glass with ARC, and deeply textured glass.
Rated Power (kW)	Power rating of the solar array - used to estimate the energy output per year of the array (optional).
Slope Error (mrad)	Accounts for beam scatter of sunlight on the array. Default is 8.43 mrads but the value may be adjusted based on the panel material type.
Subtended Angle of Sun (mrad)	The angle above horizontal at which the viewer observes the sun, default value is 9.3 mrad.
Threshold	The physical beginning of the runway. Aircraft are typically expected to be 50 ft above ground at this point.

WILD ROSE SOLAR PROJECT GLARE HAZARD ANALYSIS

Time Interval (min)	Time step intervals used by the program for analyses. Default is set to analyze for glare at every one-minute interval throughout the year.
Time zone	Time zone difference from Greenwich Mean Time at the location of the analysis.
Tilt of Tracking Axis (deg)	The elevation angle of the tracking axis upon which panels rotate (e.g., torque tube), measured from flat ground. 0 deg implies the axis is on level, flat ground. Values between 0 and 30 deg are typical.
Vary Reflectivity	Varies panel reflectivity with sun position at each time step.
Maximum Downward Viewing Angle (deg)	The angle extending downward from the horizon indicating the maximum downward viewing angle from the cockpit. Used to determine whether glare is visible by the pilot along the flight path. Default is 30 degrees.

Sources:

Ho, Clifford, K., Cianan A. Sims, Julius E. Yellowhair. 2015. Solar Glare Hazard Analysis Tool (SGHAT) Users Manual v. 2H. Sandia National Laboratories.

ForgeSolar – PV Planning & Glare Analysis. <https://www.forgesolar.com/>

**Source: <http://www.3tier.com/en/support/solar-prospecting-tools/what-direct-normal-irradiance-solar-prospecting/>

WILD ROSE SOLAR PROJECT GLARE HAZARD ANALYSIS

1.0 INTRODUCTION

On behalf of Wild Rose Solar Project, LLC (Wild Rose Solar), Stantec utilized the web based ForgeSolar glare hazard analysis program to complete a glare analysis for the Wild Rose Solar Project (the Project) to determine the potential for glint/glare from the photovoltaic (PV) solar panels to affect residents in the area and drivers passing through the vicinity of the array. The Project is located in a rural area of Nelson County, Virginia (**Figure 1**), approximately 2 miles northwest of the Gladstone community in central Virginia.

ForgeSolar is an interactive tool that provides a quantified assessment of (1) when and where glare will occur throughout the year for a prescribed solar project and (2) potential effects on the human eye at locations where glare occurs. Glare can occur from the reflection of sunlight on the PV solar panels of utility-scale solar-powered electric generating facilities. While PV solar panels absorb direct sunlight, some reflection can especially occur when the panels are directed close to horizontal, which predominately occurs during sunset and sunrise when the incidence angle of the panels is highest, as depicted in **Figure 2** below.

ForgeSolar employs an interactive Google map for site location, mapping the proposed PV array(s), and specifying observer locations, vehicular travel routes, or flight paths. Latitude, longitude, and elevation are automatically recorded through the Google interface, providing necessary information for sun position and vector calculations. Additional information regarding the orientation and tilt of the PV solar panels, reflectance, environment, and ocular factors are entered by the user.

If glare is found, the tool calculates the retinal irradiance and subtended angle (size/distance) of the glare source to predict potential ocular hazards ranging from temporary after-image to retinal burn. The results are presented in a plot that specifies when glare will occur throughout the year, with color codes indicating the potential ocular hazard.

The airstrips included in the analysis are shown in **Figure 3** below while arrays, routes, and structures are shown in **Figures 4 and 5**. Due to program limitations on the number of subarrays that may be drawn per analysis, the site was divided into two analysis blocks. All houses and road segments were analyzed with both blocks.

WILD ROSE SOLAR PROJECT GLARE HAZARD ANALYSIS

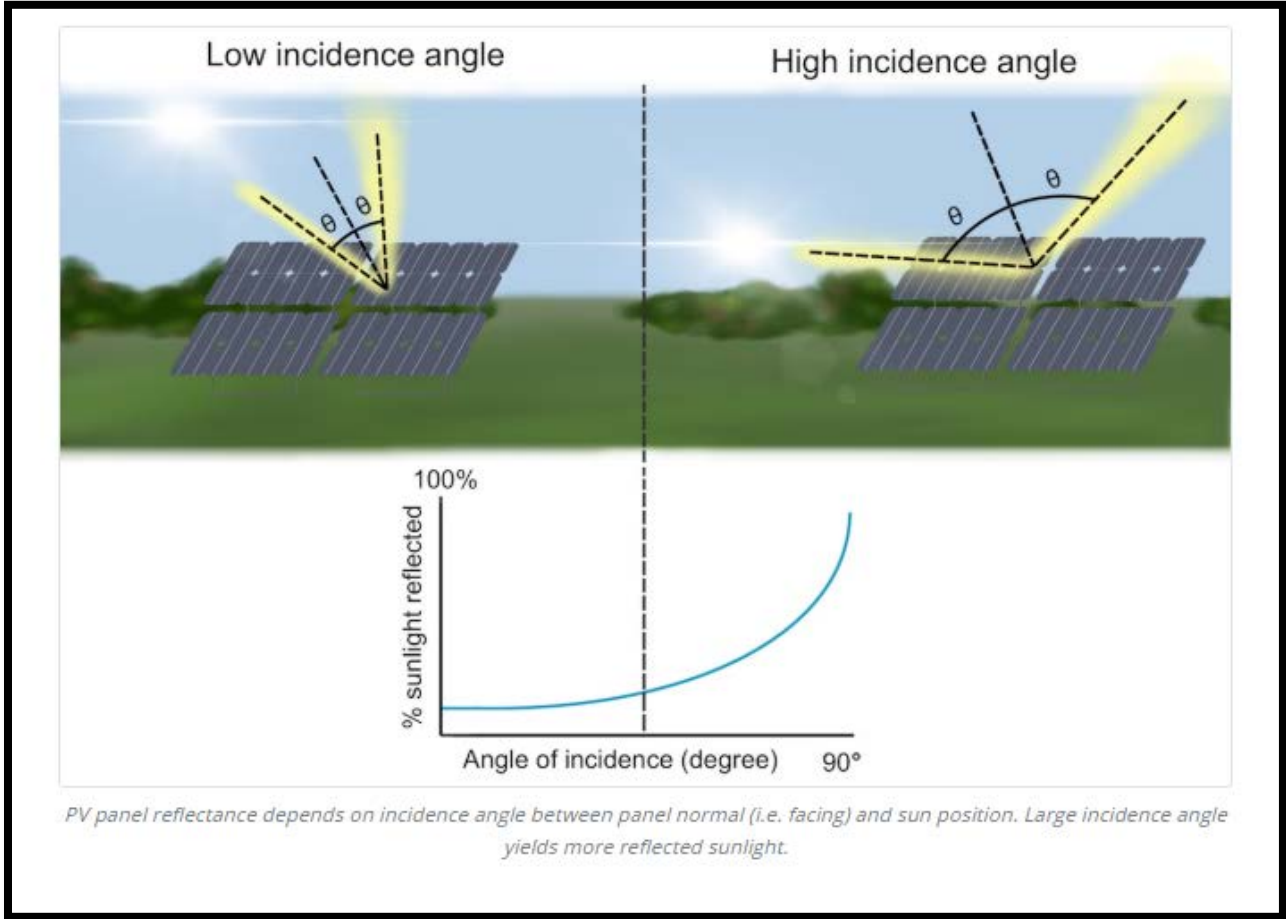


Figure 2. Reflectivity differences between low and high incidence angles.
Source: ForgeSolar.com 2023

WILD ROSE SOLAR PROJECT GLARE HAZARD ANALYSIS

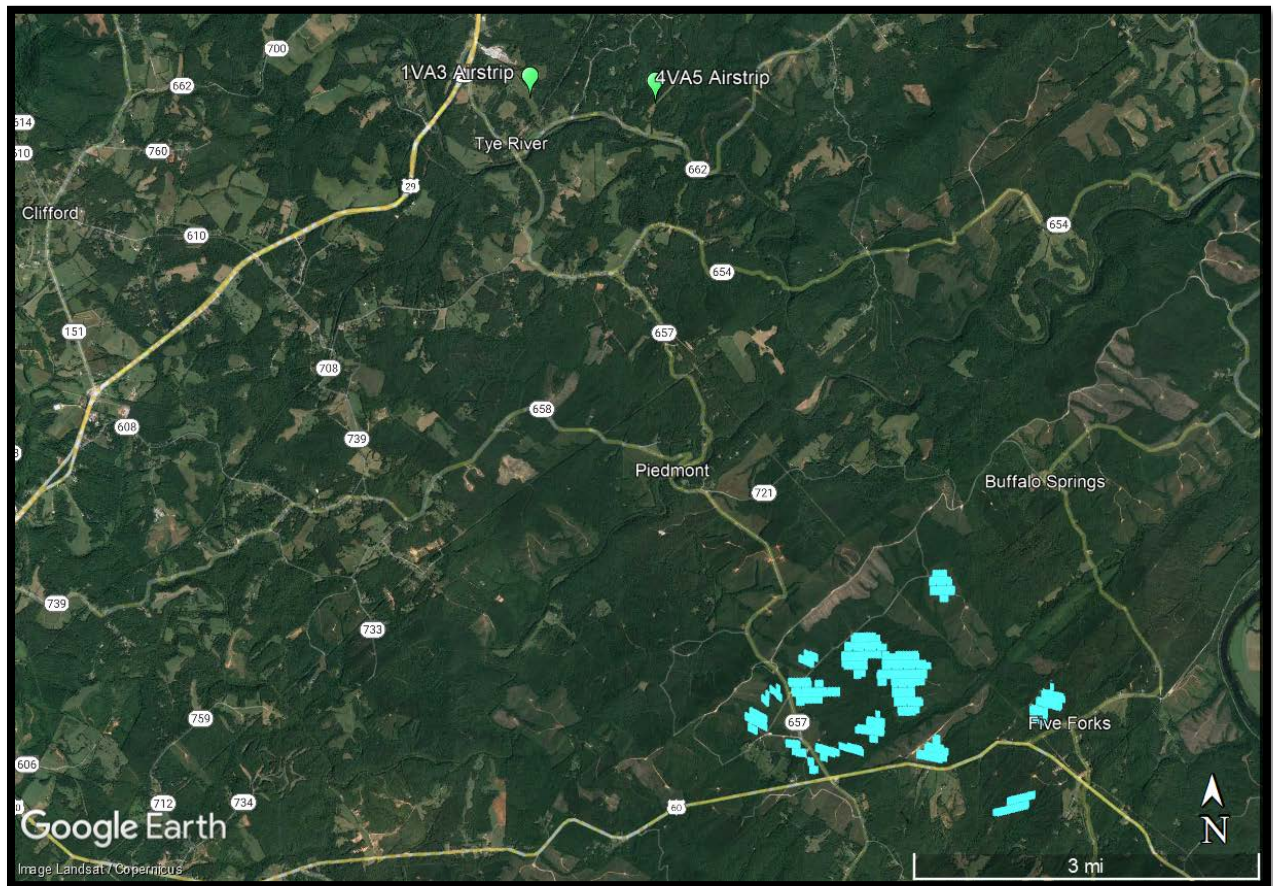


Figure 3. Analysis area and airports

Source: Google Earth Imagery.

2.0 DATA INPUT SUMMARY

The parameters used for the analyses are listed in **Table 1** below. “Default” indicates the default parameter value set by ForgeSolar and is generally considered a conservative value for the parameter. “Provided” parameters are Project specific information provided by the client.

2.1 SOLAR ARRAY

The location of the solar array and array parameters used for the analyses are based on information provided by Wild Rose Solar. A detailed description of each parameter is provided in the Glossary.

WILD ROSE SOLAR PROJECT GLARE HAZARD ANALYSIS

Table 1: Solar Panel Parameters Used for the Glare Analysis

Parameter	Value Used	Default or Provided?
Axis tracking	Single axis	Provided
Tracking Axis Tilt (deg)	0.0	Provided
Tracking Axis Orientation (deg)	180.0	Provided
Tracking Axis Panel Offset (deg)	0.0	Default
Maximum Tracking Angle (deg)	52	Provided
Resting Angle (deg)	60	Provided
Rated Power (kW)	Not Used	NA
Vary reflectivity?	Yes	Default
Panel material	Lightly textured glass with Anti-Reflective Coating	Provided
Time zone offset	-5	Based on site location
Subtended angle of sun (mrad)	9.3	Default
Peak DNI (W/m ²)	1,000	Default
Ocular transmission coefficient	0.5	Default
Pupil diameter (m)	0.002	Default
Eye focal length (m)	0.017	Default
Time interval (min)	1	Default
Correlate slope error with surface type?	Yes	Default
Slope error (mrad)	9.16	Default
Ground Cover Ratio (%)	42	Provided

2.2 AIRPORT APPROACH PATHS AND AIR TRAFFIC CONTROL TOWER

The glare analysis included analysis of potential glare for two airstrips located within five miles of the Project, the 4VA5 and the 1VA3 airstrips, including two approach paths to each airstrip (**Figure 3**). Neither airstrip is associated with an Air Traffic Control Tower (ATCT).

2.3 ROADWAYS AND PROPERTIES LOCATED ADJACENT TO THE SOLAR ARRAYS

This analysis included potential glare to vehicles travelling on seven different roads in the vicinity of the Project area (**Figures 4-5**), including Tye River Road, Twin Oak Lane, Richmond Highway-US 60, Norwood Road, and Buck Mountain Lane. The ForgeSolar program sets the default viewing angle of the array at 50 degrees from the driver’s direct line of sight (when looking forward). The Federal Aviation Administration

WILD ROSE SOLAR PROJECT GLARE HAZARD ANALYSIS

(FAA) has determined that glare beyond 50 degrees from the line of sight will have no impact on the viewer.¹ Potential glare to drivers was evaluated for both passenger vehicles and semi-trucks, where the passenger vehicles were assumed to have a maximum viewing height of 5-ft AGL while the viewing height for drivers of semi-trucks was assumed to be a maximum of 9-ft AGL.

Potential glare to viewers at 28 observation points (OPs), structures which appear to be primarily residences, in the vicinity of the Project was also analyzed at 16-ft AGL viewing heights for the structures. Structures and roadways were analyzed for 5-ft panel heights, which represents the center of the panel height at the torque tube.

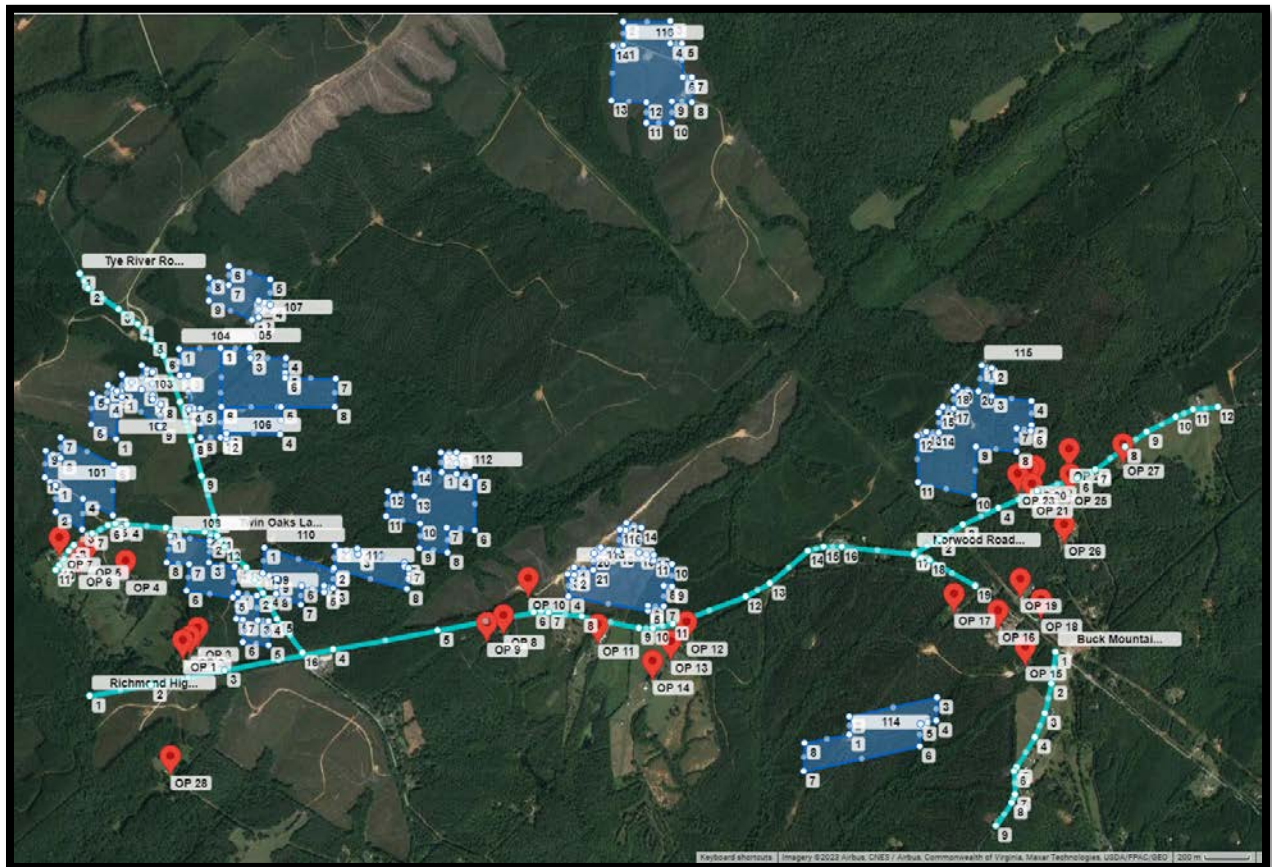


Figure 4. Block 1 Analysis area, structures and roadways*

*Turquoise lines indicate roads, blue polygons indicate PV arrays, and red pins indicate structures. Source: ForgeSolar, Google Earth Imagery.

¹ Rogers, J. A., et al. (2015). Evaluation of Glare as a Hazard for General Aviation Pilots on Final Approach, Federal Aviation Administration

(https://www.faa.gov/sites/faa.gov/files/data_research/research/med_humanfacs/oamtechreports/201512.pdf)

WILD ROSE SOLAR PROJECT GLARE HAZARD ANALYSIS

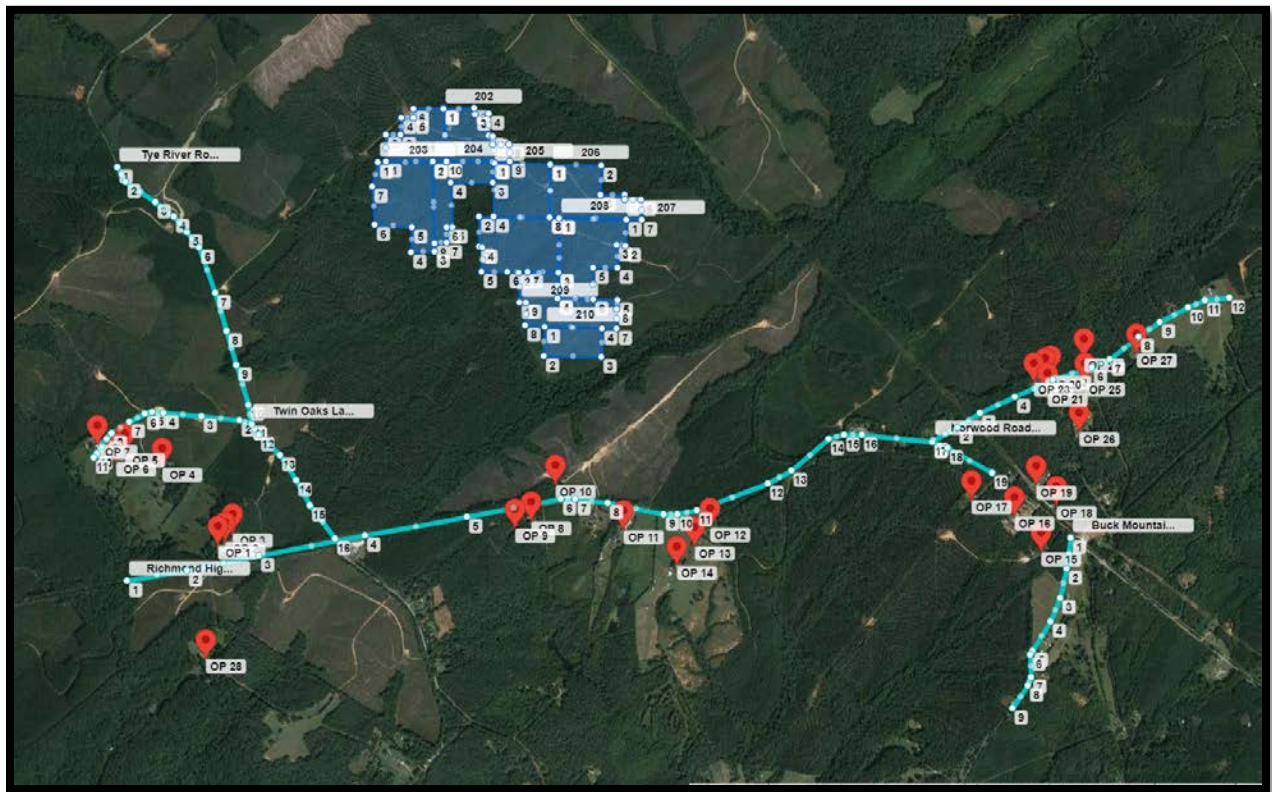


Figure 5. Block 2 Analysis area, structures and roadways*

*Turquoise lines indicate roads, blue polygons indicate PV arrays, and red pins indicate structures.

Source: ForgeSolar, Google Earth Imagery.

3.0 GLARE ANALYSES RESULTS

The web-based ForgeSolar program was used to analyze glare potential in one-minute increments throughout the year and results are presented in **Appendix A** (ForgeSolar reports). The program identifies the three following types of glare (no color indicates no glare predicted):

- GREEN** - Low potential for temporary after-image.
- YELLOW** - Potential for temporary after-image.
- RED** - Potential for permanent eye damage.

3.1 AIRPORT APPROACH PATHS AND CONTROL TOWERS

Glare is not predicted for pilots approaching any of the four approach paths associated with the two airstrips in the vicinity of the project. There are no ATCTs associated with the airstrips and therefore impacts to ATCT staff is not anticipated.

3.2 ROADWAYS AND PROPERTIES LOCATED ADJACENT TO THE SOLAR ARRAYS

Glare is not predicted for any of the roadways included in this analysis. Glare is also not predicted for any of the 28 structures (OPs 1-28) included in the analysis.

4.0 CONCLUSIONS

Based on the solar array parameters provided and the current site design, glare is not predicted for pilots approaching the 4VA5 or 1VA3 airstrips located within five miles of the Project. Glare is not predicted for drivers on Tye River Road, Twin Oaks Lane, Richmond Highway-US 60, Norwood Road, and Buck Mountain Lane within the vicinity of the Project. Glare is also not predicted for residents of 28 homes in the vicinity of the project.

APPENDIX A

ForgeSolar Reports

Wild Rose

Block 1 5 ft vehicles

Created Nov 28, 2023
Updated Nov 28, 2023
Time-step 1 minute
Timezone offset UTC-5
Minimum sun altitude 0.0 deg
Site ID 106583.18493

Project type Advanced
Project status: active
Category 10 MW to 100 MW

Misc. Analysis Settings

DNI: varies (1,000.0 W/m² peak)
 Ocular transmission coefficient: **0.5**
 Pupil diameter: **0.002 m**
 Eye focal length: **0.017 m**
 Sun subtended angle: **9.3 mrad**

PV Analysis Methodology: **Version 2**
 Enhanced subtended angle calculation: **On**

Summary of Results No glare predicted!

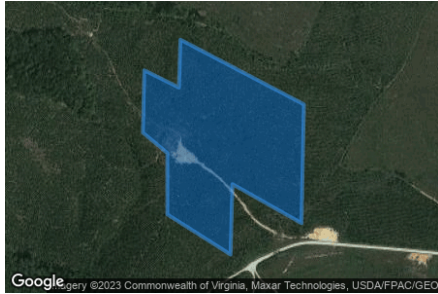
PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
101	SA tracking	SA tracking	0	0	-
102	SA tracking	SA tracking	0	0	-
103	SA tracking	SA tracking	0	0	-
104	SA tracking	SA tracking	0	0	-
105	SA tracking	SA tracking	0	0	-
106	SA tracking	SA tracking	0	0	-
107	SA tracking	SA tracking	0	0	-
108	SA tracking	SA tracking	0	0	-
109	SA tracking	SA tracking	0	0	-
110	SA tracking	SA tracking	0	0	-
111	SA tracking	SA tracking	0	0	-
112	SA tracking	SA tracking	0	0	-
113	SA tracking	SA tracking	0	0	-
114	SA tracking	SA tracking	0	0	-
115	SA tracking	SA tracking	0	0	-
116	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Total PV footprint area: 266.1 acres

Name: 101
Footprint area: 19.8 acres
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 60.0 deg
Ground Coverage Ratio: 0.42
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.579400	-78.909923	776.23	5.00	781.23
2	37.578328	-78.909923	764.84	5.00	769.84
3	37.577627	-78.908523	722.50	5.00	727.50
4	37.578856	-78.908480	760.16	5.00	765.16
5	37.578175	-78.906951	710.54	5.00	715.54
6	37.580250	-78.906897	753.97	5.00	758.97
7	37.581381	-78.909633	819.30	5.00	824.30
8	37.580543	-78.909666	789.09	5.00	794.09
9	37.580845	-78.910433	817.43	5.00	822.43
10	37.579757	-78.910465	787.89	5.00	792.89

Name: 102
Footprint area: 4.8 acres
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 60.0 deg
Ground Coverage Ratio: 0.42
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.581316	-78.906757	760.73	5.00	765.73
2	37.583292	-78.906741	729.92	5.00	734.92
3	37.583539	-78.907218	767.89	5.00	772.89
4	37.582893	-78.907240	789.51	5.00	794.51
5	37.583195	-78.908028	795.16	5.00	800.16
6	37.581928	-78.908050	795.40	5.00	800.40

Name: 103

Footprint area: 5.8 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.583046	-78.906451	729.97	5.00	734.97
2	37.583977	-78.906472	755.13	5.00	760.13
3	37.583365	-78.905459	725.52	5.00	730.52
4	37.584359	-78.905453	728.04	5.00	733.04
5	37.584070	-78.904879	712.71	5.00	717.71
6	37.583114	-78.904885	713.28	5.00	718.28
7	37.582965	-78.904885	709.78	5.00	714.78
8	37.582748	-78.904466	694.92	5.00	699.92
9	37.581813	-78.904482	720.56	5.00	725.56

Name: 104

Footprint area: 13.8 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.585035	-78.903522	716.21	5.00	721.21
2	37.583934	-78.903484	688.33	5.00	693.33
3	37.583943	-78.903050	685.07	5.00	690.07
4	37.582557	-78.903007	686.84	5.00	691.84
5	37.582561	-78.902395	677.75	5.00	682.75
6	37.581371	-78.902379	721.35	5.00	726.35
7	37.581375	-78.901349	715.08	5.00	720.08
8	37.585066	-78.901355	712.56	5.00	717.56

Name: 105

Footprint area: 22.6 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

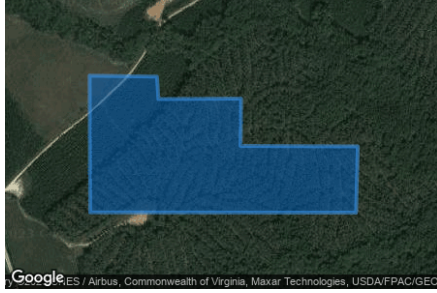
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.585062	-78.901344	711.14	5.00	716.14
2	37.585045	-78.899853	635.99	5.00	640.99
3	37.584650	-78.899821	636.95	5.00	641.95
4	37.584658	-78.897991	732.89	5.00	737.89
5	37.584050	-78.897997	719.82	5.00	724.82
6	37.583825	-78.898002	709.60	5.00	714.60
7	37.583816	-78.895406	715.89	5.00	720.89
8	37.582652	-78.895443	687.98	5.00	692.98
9	37.582656	-78.901333	720.17	5.00	725.17

Name: 106

Footprint area: 8.3 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.581376	-78.901355	715.08	5.00	720.08
2	37.581368	-78.901060	710.84	5.00	715.84
3	37.581572	-78.901054	711.62	5.00	716.62
4	37.581529	-78.898260	677.07	5.00	682.07
5	37.582639	-78.898238	708.19	5.00	713.19
6	37.582652	-78.901339	720.51	5.00	725.51

Name: 107

Footprint area: 10.8 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

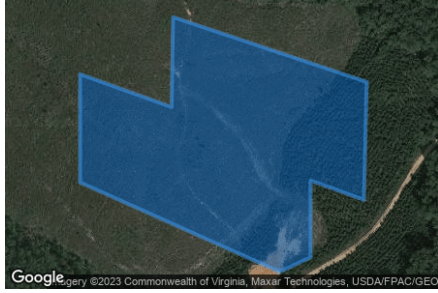
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.586199	-78.899732	642.93	5.00	647.93
2	37.586327	-78.899389	637.60	5.00	642.60
3	37.587003	-78.899389	648.37	5.00	653.37
4	37.586833	-78.898799	628.28	5.00	633.28
5	37.587870	-78.898766	646.59	5.00	651.59
6	37.588439	-78.900912	747.50	5.00	752.50
7	37.587649	-78.900928	747.11	5.00	752.11
8	37.587938	-78.901942	752.71	5.00	757.71
9	37.586986	-78.901942	749.10	5.00	754.10

Name: 108

Footprint area: 12.0 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.577322	-78.903996	679.85	5.00	684.85
2	37.577135	-78.901915	673.65	5.00	678.65
3	37.576242	-78.901958	671.05	5.00	676.05
4	37.576064	-78.900638	704.57	5.00	709.57
5	37.574831	-78.900702	717.95	5.00	722.95
6	37.575103	-78.903106	660.04	5.00	665.04
7	37.576174	-78.902998	653.64	5.00	658.64
8	37.576251	-78.904136	671.44	5.00	676.44

Name: 109

Footprint area: 5.7 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.574997	-78.900477	716.27	5.00	721.27
2	37.574895	-78.899485	686.03	5.00	691.03
3	37.573874	-78.899447	682.87	5.00	687.87
4	37.573840	-78.898889	674.98	5.00	679.98
5	37.572862	-78.898873	655.05	5.00	660.05
6	37.572969	-78.900193	678.01	5.00	683.01
7	37.573891	-78.900203	684.35	5.00	689.35
8	37.573925	-78.900568	697.16	5.00	702.16

Name: 110

Footprint area: 11.0 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.576850	-78.899093	733.61	5.00	738.61
2	37.575928	-78.895526	717.00	5.00	722.00
3	37.575188	-78.895510	686.32	5.00	691.32
4	37.575286	-78.896008	701.69	5.00	706.69
5	37.575026	-78.896014	691.24	5.00	696.24
6	37.575299	-78.897162	704.90	5.00	709.90
7	37.574499	-78.897221	694.53	5.00	699.53
8	37.574950	-78.898487	725.17	5.00	730.17
9	37.575579	-78.898455	731.34	5.00	736.34
10	37.575817	-78.899179	719.71	5.00	724.71

Name: 111

Footprint area: 9.3 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

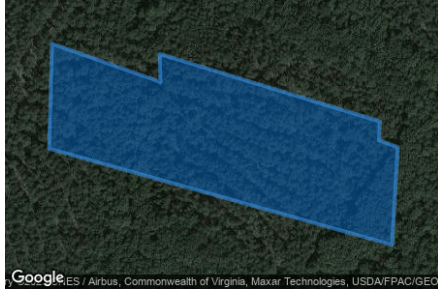
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.576000	-78.895494	717.81	5.00	722.81
2	37.576923	-78.895461	723.46	5.00	728.46
3	37.576587	-78.894260	699.21	5.00	704.21
4	37.576833	-78.894270	696.41	5.00	701.41
5	37.576238	-78.891830	671.00	5.00	676.00
6	37.576072	-78.891840	663.87	5.00	668.87
7	37.576013	-78.891631	661.09	5.00	666.09
8	37.575154	-78.891695	644.83	5.00	649.83

Name: 112

Footprint area: 25.0 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.579954	-78.889915	704.99	5.00	709.99
2	37.580770	-78.889957	671.00	5.00	676.00
3	37.580770	-78.889121	677.26	5.00	682.26
4	37.579899	-78.889137	691.13	5.00	696.13
5	37.579792	-78.888176	665.77	5.00	670.77
6	37.577565	-78.888209	607.13	5.00	612.13
7	37.577692	-78.889636	645.15	5.00	650.15
8	37.576655	-78.889603	611.65	5.00	616.65
9	37.576833	-78.891052	646.38	5.00	651.38
10	37.577837	-78.891030	691.05	5.00	696.05
11	37.578147	-78.892779	702.18	5.00	707.18
12	37.579167	-78.892709	700.21	5.00	705.21
13	37.578963	-78.891320	699.65	5.00	704.65
14	37.580081	-78.891266	682.09	5.00	687.09

Name: 113

Footprint area: 26.3 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.576051	-78.883043	735.68	5.00	740.68
2	37.575745	-78.883032	731.65	5.00	736.65
3	37.575779	-78.883365	728.49	5.00	733.49
4	37.574844	-78.883322	696.11	5.00	701.11
5	37.574265	-78.879207	664.46	5.00	669.46
6	37.574486	-78.879212	666.36	5.00	671.36
7	37.574435	-78.878424	647.60	5.00	652.60
8	37.575299	-78.878413	640.75	5.00	645.75
9	37.575256	-78.877995	632.04	5.00	637.04
10	37.576183	-78.877963	641.94	5.00	646.94
11	37.576327	-78.878928	663.50	5.00	668.50
12	37.576540	-78.878907	656.32	5.00	661.32
13	37.576651	-78.879690	659.31	5.00	664.31
14	37.577679	-78.879561	695.53	5.00	700.53
15	37.577875	-78.880355	725.31	5.00	730.31
16	37.577577	-78.880387	720.87	5.00	725.87
17	37.577620	-78.880688	727.00	5.00	732.00
18	37.576719	-78.880784	691.84	5.00	696.84
19	37.576863	-78.881685	726.57	5.00	731.57
20	37.576616	-78.882007	731.56	5.00	736.56
21	37.575945	-78.882061	699.09	5.00	704.09

Name: 114

Footprint area: 23.1 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

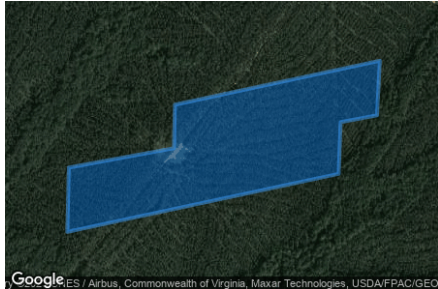
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.569160	-78.868792	633.81	5.00	638.81
2	37.569926	-78.868770	635.11	5.00	640.11
3	37.570700	-78.864232	612.68	5.00	617.68
4	37.569739	-78.864297	612.99	5.00	617.99
5	37.569620	-78.865101	596.70	5.00	601.70
6	37.568710	-78.865144	593.60	5.00	598.60
7	37.567689	-78.871152	615.44	5.00	620.44
8	37.568820	-78.871120	593.41	5.00	598.41

Name: 115

Footprint area: 38.2 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.584347	-78.861925	686.26	5.00	691.26
2	37.584236	-78.861421	693.74	5.00	698.74
3	37.583080	-78.861400	670.89	5.00	675.89
4	37.582876	-78.859361	643.72	5.00	648.72
5	37.581881	-78.859361	644.07	5.00	649.07
6	37.581651	-78.859372	632.18	5.00	637.18
7	37.581771	-78.860123	645.89	5.00	650.89
8	37.580801	-78.860134	630.94	5.00	635.94
9	37.581014	-78.862226	679.96	5.00	684.96
10	37.579016	-78.862290	622.81	5.00	627.81
11	37.579551	-78.865241	634.65	5.00	639.65
12	37.581439	-78.865284	682.73	5.00	687.73
13	37.581626	-78.864779	680.59	5.00	685.59
14	37.581575	-78.864136	677.18	5.00	682.18
15	37.582417	-78.864146	694.59	5.00	699.59
16	37.582646	-78.863953	698.12	5.00	703.12
17	37.582578	-78.863385	690.31	5.00	695.31
18	37.583335	-78.863395	692.83	5.00	697.83
19	37.583454	-78.863191	699.93	5.00	704.93
20	37.583275	-78.862076	671.75	5.00	676.75

Name: 116

Footprint area: 29.6 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

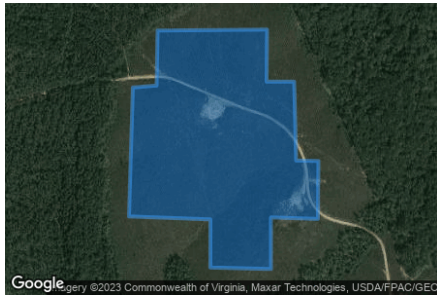
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.597498	-78.880506	655.37	5.00	660.37
2	37.598459	-78.880484	624.02	5.00	629.02
3	37.598476	-78.878060	637.29	5.00	642.29
4	37.597566	-78.878070	649.61	5.00	654.61
5	37.597566	-78.877459	642.60	5.00	647.60
6	37.596189	-78.877416	661.12	5.00	666.12
7	37.596181	-78.876922	673.15	5.00	678.15
8	37.595169	-78.876933	656.13	5.00	661.13
9	37.595195	-78.877974	657.72	5.00	662.72
10	37.594294	-78.877974	642.01	5.00	647.01
11	37.594319	-78.879315	631.43	5.00	636.43
12	37.595161	-78.879315	609.56	5.00	614.56
13	37.595212	-78.881117	622.93	5.00	627.93
14	37.597464	-78.881032	647.14	5.00	652.14

2-Mile Flight Path Receptor(s)

Name: 1VA3 Airstrip northwest bound
Description:
Threshold height : 50 ft
Direction: 324.0 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg



Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.657357	-78.943952	611.96	50.00	661.96
2-mile point	37.633975	-78.922445	668.95	546.44	1215.39

Name: 1VA3 Airstrip southeast bound
Description:
Threshold height : 50 ft
Direction: 149.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg



Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.661340	-78.947213	666.50	50.00	716.50
2-mile point	37.686323	-78.965617	565.39	704.54	1269.93

Name: 4VA5 Airstrip northeast bound
Description:
Threshold height : 50 ft
Direction: 43.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg



Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.657127	-78.925444	590.49	50.00	640.49
2-mile point	37.636256	-78.950747	709.23	484.69	1193.92

Name: 4VA5 Airstrip southwest bound

Description:

Threshold height : 50 ft

Direction: 224.5 deg

Glide slope: 3.0 deg

Pilot view restricted? Yes

Vertical view restriction: 30.0 deg

Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.661833	-78.919683	638.31	50.00	688.31
2-mile point	37.682441	-78.894036	679.37	562.37	1241.74



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Route Receptor(s)

Name: Buck Mountain Lane
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	37.572587	-78.858115	638.89	5.00	643.89
2	37.571294	-78.858298	635.38	5.00	640.38
3	37.570070	-78.858673	650.58	5.00	655.58
4	37.569058	-78.859156	674.52	5.00	679.52
5	37.567833	-78.860132	676.00	5.00	681.00
6	37.567680	-78.860229	676.53	5.00	681.53
7	37.566736	-78.860218	703.80	5.00	708.80
8	37.566379	-78.860358	704.19	5.00	709.19
9	37.565435	-78.861205	678.58	5.00	683.58

Name: Norwood Road
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	37.576651	-78.865400	618.17	5.00	623.17
2	37.577187	-78.864113	615.27	5.00	620.27
3	37.577816	-78.862911	606.55	5.00	611.55
4	37.578488	-78.861044	632.00	5.00	637.00
5	37.579202	-78.859059	601.10	5.00	606.10
6	37.579729	-78.856967	614.74	5.00	619.74
7	37.580069	-78.856055	605.10	5.00	610.10
8	37.581013	-78.854510	608.55	5.00	613.55
9	37.581634	-78.853362	610.58	5.00	615.58
10	37.582221	-78.851892	613.22	5.00	618.22
11	37.582535	-78.850991	610.64	5.00	615.64
12	37.582629	-78.849672	601.29	5.00	606.29

Name: Richmond Highway US 60
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	37.570767	-78.908147	665.00	5.00	670.00
2	37.571226	-78.904972	705.16	5.00	710.16
3	37.571813	-78.901142	664.18	5.00	669.18
4	37.572671	-78.895541	636.92	5.00	641.92
5	37.573454	-78.890134	708.89	5.00	713.89
6	37.574193	-78.885145	699.01	5.00	704.01
7	37.574210	-78.884362	681.35	5.00	686.35
8	37.574032	-78.882656	665.32	5.00	670.32
9	37.573573	-78.879673	663.65	5.00	668.65
10	37.573556	-78.878965	663.13	5.00	668.13
11	37.573734	-78.877935	671.77	5.00	676.77
12	37.574848	-78.874169	663.73	5.00	668.73
13	37.575392	-78.872903	676.21	5.00	681.21
14	37.576727	-78.870929	676.31	5.00	681.31
15	37.576909	-78.870114	670.32	5.00	675.32
16	37.576905	-78.869191	657.24	5.00	662.24
17	37.576598	-78.865436	617.97	5.00	622.97
18	37.576341	-78.864642	621.00	5.00	626.00
19	37.575299	-78.862260	643.80	5.00	648.80

Name: Twin Oaks Lane

Route type Two-way

View angle: 50.0 deg

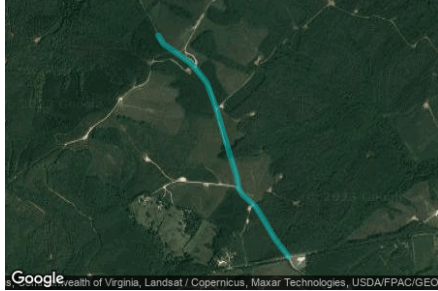


Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.577374	-78.901592	681.46	5.00	686.46
2	37.577510	-78.902171	689.07	5.00	694.07
3	37.577663	-78.904178	698.40	5.00	703.40
4	37.577807	-78.906195	687.04	5.00	692.04
5	37.577833	-78.906796	690.33	5.00	695.33
6	37.577765	-78.907214	681.27	5.00	686.27
7	37.577450	-78.907997	677.77	5.00	682.77
8	37.576965	-78.908974	688.30	5.00	693.30
9	37.576727	-78.909220	669.25	5.00	674.25
10	37.576098	-78.909725	657.05	5.00	662.05
11	37.575937	-78.909896	655.32	5.00	660.32

Name: Tye River Road

Route type Two-way

View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588116	-78.908649	771.28	5.00	776.28
2	37.587521	-78.908209	804.61	5.00	809.61
3	37.586663	-78.906643	795.74	5.00	800.74
4	37.586059	-78.905634	760.13	5.00	765.13
5	37.585413	-78.904969	727.41	5.00	732.41
6	37.584758	-78.904326	709.02	5.00	714.02
7	37.582837	-78.903446	673.27	5.00	678.27
8	37.581264	-78.902877	692.17	5.00	697.17
9	37.579818	-78.902330	691.45	5.00	696.45
10	37.578169	-78.901686	701.35	5.00	706.35
11	37.577348	-78.901528	682.59	5.00	687.59
12	37.576906	-78.901163	694.03	5.00	699.03
13	37.576056	-78.900026	706.53	5.00	711.53
14	37.575001	-78.899189	689.97	5.00	694.97
15	37.573938	-78.898427	676.43	5.00	681.43
16	37.572552	-78.897129	656.60	5.00	661.60

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	37.572259	-78.903341	701.36	16.00	717.36
OP 2	37.572456	-78.902971	706.10	16.00	722.10
OP 3	37.572775	-78.902566	704.39	16.00	720.39
OP 4	37.575522	-78.906302	687.89	16.00	703.89
OP 5	37.576158	-78.908284	677.46	16.00	693.46
OP 6	37.575788	-78.908740	668.15	16.00	684.15
OP 7	37.576483	-78.909741	668.27	16.00	684.27
OP 8	37.573289	-78.886738	684.47	16.00	700.47
OP 9	37.572975	-78.887570	675.71	16.00	691.71
OP 10	37.574807	-78.885432	717.00	16.00	733.00
OP 11	37.572931	-78.881840	675.76	16.00	691.76
OP 12	37.573024	-78.877255	686.05	16.00	702.05
OP 13	37.572220	-78.878044	677.17	16.00	693.17
OP 14	37.571408	-78.879004	664.74	16.00	680.74
OP 15	37.572008	-78.859708	634.50	16.00	650.50
OP 16	37.573492	-78.861098	622.37	16.00	638.37
OP 17	37.574180	-78.863367	649.59	16.00	665.59
OP 18	37.573947	-78.858866	621.34	16.00	637.34
OP 19	37.574784	-78.859934	614.84	16.00	630.84
OP 20	37.579325	-78.859483	594.32	16.00	610.32
OP 21	37.578704	-78.859328	607.02	16.00	623.02
OP 22	37.579418	-78.859183	598.93	16.00	614.93
OP 23	37.579116	-78.860068	589.26	16.00	605.26
OP 24	37.580111	-78.857402	595.56	16.00	611.56
OP 25	37.579095	-78.857380	620.71	16.00	636.71
OP 26	37.577025	-78.857681	583.00	16.00	599.00
OP 27	37.580337	-78.854618	584.73	16.00	600.73
OP 28	37.567492	-78.903980	628.76	16.00	644.76

Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
101	SA tracking	SA tracking	0	0	-	-
102	SA tracking	SA tracking	0	0	-	-
103	SA tracking	SA tracking	0	0	-	-
104	SA tracking	SA tracking	0	0	-	-
105	SA tracking	SA tracking	0	0	-	-
106	SA tracking	SA tracking	0	0	-	-
107	SA tracking	SA tracking	0	0	-	-
108	SA tracking	SA tracking	0	0	-	-
109	SA tracking	SA tracking	0	0	-	-
110	SA tracking	SA tracking	0	0	-	-
111	SA tracking	SA tracking	0	0	-	-
112	SA tracking	SA tracking	0	0	-	-
113	SA tracking	SA tracking	0	0	-	-
114	SA tracking	SA tracking	0	0	-	-
115	SA tracking	SA tracking	0	0	-	-
116	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

101 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not automatically account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographical obstructions.

- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

Wild Rose

Block 1 9 ft vehicles

Created Nov 28, 2023
Updated Nov 28, 2023
Time-step 1 minute
Timezone offset UTC-5
Minimum sun altitude 0.0 deg
Site ID 106596.18493

Project type Advanced
Project status: active
Category 10 MW to 100 MW

Misc. Analysis Settings

DNI: varies (1,000.0 W/m² peak)
 Ocular transmission coefficient: **0.5**
 Pupil diameter: **0.002 m**
 Eye focal length: **0.017 m**
 Sun subtended angle: **9.3 mrad**

PV Analysis Methodology: **Version 2**
 Enhanced subtended angle calculation: **On**

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
101	SA tracking	SA tracking	0	0	-
102	SA tracking	SA tracking	0	0	-
103	SA tracking	SA tracking	0	0	-
104	SA tracking	SA tracking	0	0	-
105	SA tracking	SA tracking	0	0	-
106	SA tracking	SA tracking	0	0	-
107	SA tracking	SA tracking	0	0	-
108	SA tracking	SA tracking	0	0	-
109	SA tracking	SA tracking	0	0	-
110	SA tracking	SA tracking	0	0	-
111	SA tracking	SA tracking	0	0	-
112	SA tracking	SA tracking	0	0	-
113	SA tracking	SA tracking	0	0	-
114	SA tracking	SA tracking	0	0	-
115	SA tracking	SA tracking	0	0	-
116	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Total PV footprint area: 266.1 acres

Name: 101

Footprint area: 19.8 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

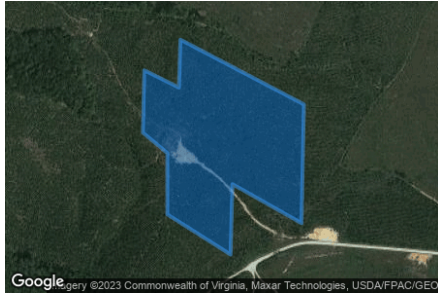
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.579400	-78.909923	776.23	5.00	781.23
2	37.578328	-78.909923	764.84	5.00	769.84
3	37.577627	-78.908523	722.50	5.00	727.50
4	37.578856	-78.908480	760.16	5.00	765.16
5	37.578175	-78.906951	710.54	5.00	715.54
6	37.580250	-78.906897	753.97	5.00	758.97
7	37.581381	-78.909633	819.30	5.00	824.30
8	37.580543	-78.909666	789.09	5.00	794.09
9	37.580845	-78.910433	817.43	5.00	822.43
10	37.579757	-78.910465	787.89	5.00	792.89

Name: 102

Footprint area: 4.8 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.581316	-78.906757	760.73	5.00	765.73
2	37.583292	-78.906741	729.92	5.00	734.92
3	37.583539	-78.907218	767.89	5.00	772.89
4	37.582893	-78.907240	789.51	5.00	794.51
5	37.583195	-78.908028	795.16	5.00	800.16
6	37.581928	-78.908050	795.40	5.00	800.40

Name: 103

Footprint area: 5.8 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.583046	-78.906451	729.97	5.00	734.97
2	37.583977	-78.906472	755.13	5.00	760.13
3	37.583365	-78.905459	725.52	5.00	730.52
4	37.584359	-78.905453	728.04	5.00	733.04
5	37.584070	-78.904879	712.71	5.00	717.71
6	37.583114	-78.904885	713.28	5.00	718.28
7	37.582965	-78.904885	709.78	5.00	714.78
8	37.582748	-78.904466	694.92	5.00	699.92
9	37.581813	-78.904482	720.56	5.00	725.56

Name: 104

Footprint area: 13.8 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.585035	-78.903522	716.21	5.00	721.21
2	37.583934	-78.903484	688.33	5.00	693.33
3	37.583943	-78.903050	685.07	5.00	690.07
4	37.582557	-78.903007	686.84	5.00	691.84
5	37.582561	-78.902395	677.75	5.00	682.75
6	37.581371	-78.902379	721.35	5.00	726.35
7	37.581375	-78.901349	715.08	5.00	720.08
8	37.585066	-78.901355	712.56	5.00	717.56

Name: 105

Footprint area: 22.6 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

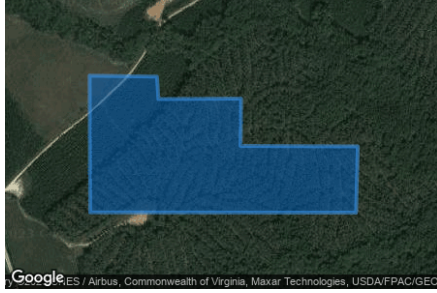
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.585062	-78.901344	711.14	5.00	716.14
2	37.585045	-78.899853	635.99	5.00	640.99
3	37.584650	-78.899821	636.95	5.00	641.95
4	37.584658	-78.897991	732.89	5.00	737.89
5	37.584050	-78.897997	719.82	5.00	724.82
6	37.583825	-78.898002	709.60	5.00	714.60
7	37.583816	-78.895406	715.89	5.00	720.89
8	37.582652	-78.895443	687.98	5.00	692.98
9	37.582656	-78.901333	720.17	5.00	725.17

Name: 106

Footprint area: 8.3 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.581376	-78.901355	715.08	5.00	720.08
2	37.581368	-78.901060	710.84	5.00	715.84
3	37.581572	-78.901054	711.62	5.00	716.62
4	37.581529	-78.898260	677.07	5.00	682.07
5	37.582639	-78.898238	708.19	5.00	713.19
6	37.582652	-78.901339	720.51	5.00	725.51

Name: 107

Footprint area: 10.8 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

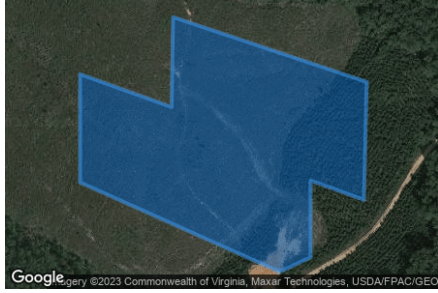
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.586199	-78.899732	642.93	5.00	647.93
2	37.586327	-78.899389	637.60	5.00	642.60
3	37.587003	-78.899389	648.37	5.00	653.37
4	37.586833	-78.898799	628.28	5.00	633.28
5	37.587870	-78.898766	646.59	5.00	651.59
6	37.588439	-78.900912	747.50	5.00	752.50
7	37.587649	-78.900928	747.11	5.00	752.11
8	37.587938	-78.901942	752.71	5.00	757.71
9	37.586986	-78.901942	749.10	5.00	754.10

Name: 108

Footprint area: 12.0 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.577322	-78.903996	679.85	5.00	684.85
2	37.577135	-78.901915	673.65	5.00	678.65
3	37.576242	-78.901958	671.05	5.00	676.05
4	37.576064	-78.900638	704.57	5.00	709.57
5	37.574831	-78.900702	717.95	5.00	722.95
6	37.575103	-78.903106	660.04	5.00	665.04
7	37.576174	-78.902998	653.64	5.00	658.64
8	37.576251	-78.904136	671.44	5.00	676.44

Name: 109

Footprint area: 5.7 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.574997	-78.900477	716.27	5.00	721.27
2	37.574895	-78.899485	686.03	5.00	691.03
3	37.573874	-78.899447	682.87	5.00	687.87
4	37.573840	-78.898889	674.98	5.00	679.98
5	37.572862	-78.898873	655.05	5.00	660.05
6	37.572969	-78.900193	678.01	5.00	683.01
7	37.573891	-78.900203	684.35	5.00	689.35
8	37.573925	-78.900568	697.16	5.00	702.16

Name: 110

Footprint area: 11.0 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.576850	-78.899093	733.61	5.00	738.61
2	37.575928	-78.895526	717.00	5.00	722.00
3	37.575188	-78.895510	686.32	5.00	691.32
4	37.575286	-78.896008	701.69	5.00	706.69
5	37.575026	-78.896014	691.24	5.00	696.24
6	37.575299	-78.897162	704.90	5.00	709.90
7	37.574499	-78.897221	694.53	5.00	699.53
8	37.574950	-78.898487	725.17	5.00	730.17
9	37.575579	-78.898455	731.34	5.00	736.34
10	37.575817	-78.899179	719.71	5.00	724.71

Name: 111

Footprint area: 9.3 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

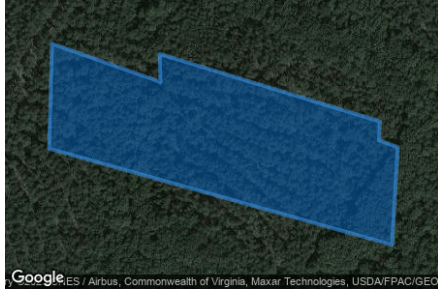
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.576000	-78.895494	717.81	5.00	722.81
2	37.576923	-78.895461	723.46	5.00	728.46
3	37.576587	-78.894260	699.21	5.00	704.21
4	37.576833	-78.894270	696.41	5.00	701.41
5	37.576238	-78.891830	671.00	5.00	676.00
6	37.576072	-78.891840	663.87	5.00	668.87
7	37.576013	-78.891631	661.09	5.00	666.09
8	37.575154	-78.891695	644.83	5.00	649.83

Name: 112

Footprint area: 25.0 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.579954	-78.889915	704.99	5.00	709.99
2	37.580770	-78.889957	671.00	5.00	676.00
3	37.580770	-78.889121	677.26	5.00	682.26
4	37.579899	-78.889137	691.13	5.00	696.13
5	37.579792	-78.888176	665.77	5.00	670.77
6	37.577565	-78.888209	607.13	5.00	612.13
7	37.577692	-78.889636	645.15	5.00	650.15
8	37.576655	-78.889603	611.65	5.00	616.65
9	37.576833	-78.891052	646.38	5.00	651.38
10	37.577837	-78.891030	691.05	5.00	696.05
11	37.578147	-78.892779	702.18	5.00	707.18
12	37.579167	-78.892709	700.21	5.00	705.21
13	37.578963	-78.891320	699.65	5.00	704.65
14	37.580081	-78.891266	682.09	5.00	687.09

Name: 113

Footprint area: 26.3 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.576051	-78.883043	735.68	5.00	740.68
2	37.575745	-78.883032	731.65	5.00	736.65
3	37.575779	-78.883365	728.49	5.00	733.49
4	37.574844	-78.883322	696.11	5.00	701.11
5	37.574265	-78.879207	664.46	5.00	669.46
6	37.574486	-78.879212	666.36	5.00	671.36
7	37.574435	-78.878424	647.60	5.00	652.60
8	37.575299	-78.878413	640.75	5.00	645.75
9	37.575256	-78.877995	632.04	5.00	637.04
10	37.576183	-78.877963	641.94	5.00	646.94
11	37.576327	-78.878928	663.50	5.00	668.50
12	37.576540	-78.878907	656.32	5.00	661.32
13	37.576651	-78.879690	659.31	5.00	664.31
14	37.577679	-78.879561	695.53	5.00	700.53
15	37.577875	-78.880355	725.31	5.00	730.31
16	37.577577	-78.880387	720.87	5.00	725.87
17	37.577620	-78.880688	727.00	5.00	732.00
18	37.576719	-78.880784	691.84	5.00	696.84
19	37.576863	-78.881685	726.57	5.00	731.57
20	37.576616	-78.882007	731.56	5.00	736.56
21	37.575945	-78.882061	699.09	5.00	704.09

Name: 114

Footprint area: 23.1 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

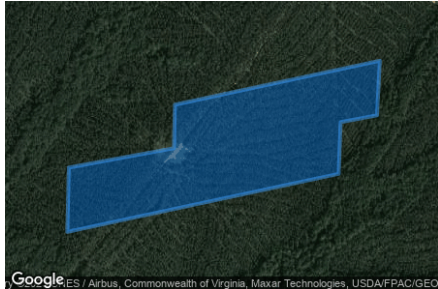
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.569160	-78.868792	633.81	5.00	638.81
2	37.569926	-78.868770	635.11	5.00	640.11
3	37.570700	-78.864232	612.68	5.00	617.68
4	37.569739	-78.864297	612.99	5.00	617.99
5	37.569620	-78.865101	596.70	5.00	601.70
6	37.568710	-78.865144	593.60	5.00	598.60
7	37.567689	-78.871152	615.44	5.00	620.44
8	37.568820	-78.871120	593.41	5.00	598.41

Name: 115

Footprint area: 38.2 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.584347	-78.861925	686.26	5.00	691.26
2	37.584236	-78.861421	693.74	5.00	698.74
3	37.583080	-78.861400	670.89	5.00	675.89
4	37.582876	-78.859361	643.72	5.00	648.72
5	37.581881	-78.859361	644.07	5.00	649.07
6	37.581651	-78.859372	632.18	5.00	637.18
7	37.581771	-78.860123	645.89	5.00	650.89
8	37.580801	-78.860134	630.94	5.00	635.94
9	37.581014	-78.862226	679.96	5.00	684.96
10	37.579016	-78.862290	622.81	5.00	627.81
11	37.579551	-78.865241	634.65	5.00	639.65
12	37.581439	-78.865284	682.73	5.00	687.73
13	37.581626	-78.864779	680.59	5.00	685.59
14	37.581575	-78.864136	677.18	5.00	682.18
15	37.582417	-78.864146	694.59	5.00	699.59
16	37.582646	-78.863953	698.12	5.00	703.12
17	37.582578	-78.863385	690.31	5.00	695.31
18	37.583335	-78.863395	692.83	5.00	697.83
19	37.583454	-78.863191	699.93	5.00	704.93
20	37.583275	-78.862076	671.75	5.00	676.75

Name: 116

Footprint area: 29.6 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

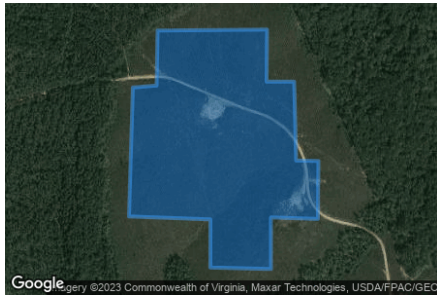
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.597498	-78.880506	655.37	5.00	660.37
2	37.598459	-78.880484	624.02	5.00	629.02
3	37.598476	-78.878060	637.29	5.00	642.29
4	37.597566	-78.878070	649.61	5.00	654.61
5	37.597566	-78.877459	642.60	5.00	647.60
6	37.596189	-78.877416	661.12	5.00	666.12
7	37.596181	-78.876922	673.15	5.00	678.15
8	37.595169	-78.876933	656.13	5.00	661.13
9	37.595195	-78.877974	657.72	5.00	662.72
10	37.594294	-78.877974	642.01	5.00	647.01
11	37.594319	-78.879315	631.43	5.00	636.43
12	37.595161	-78.879315	609.56	5.00	614.56
13	37.595212	-78.881117	622.93	5.00	627.93
14	37.597464	-78.881032	647.14	5.00	652.14

2-Mile Flight Path Receptor(s)

Name: 1VA3 Airstrip northwest bound
Description:
Threshold height : 50 ft
Direction: 324.0 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg



Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.657357	-78.943952	611.96	50.00	661.96
2-mile point	37.633975	-78.922445	668.95	546.44	1215.39

Name: 1VA3 Airstrip southeast bound
Description:
Threshold height : 50 ft
Direction: 149.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg



Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.661340	-78.947213	666.50	50.00	716.50
2-mile point	37.686323	-78.965617	565.39	704.54	1269.93

Name: 4VA5 Airstrip northeast bound
Description:
Threshold height : 50 ft
Direction: 43.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg



Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.657127	-78.925444	590.49	50.00	640.49
2-mile point	37.636256	-78.950747	709.23	484.69	1193.92

Name: 4VA5 Airstrip southwest bound

Description:

Threshold height : 50 ft

Direction: 224.5 deg

Glide slope: 3.0 deg

Pilot view restricted? Yes

Vertical view restriction: 30.0 deg

Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.661833	-78.919683	638.31	50.00	688.31
2-mile point	37.682441	-78.894036	679.37	562.37	1241.74



Route Receptor(s)

Name: Buck Mountain Lane
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	37.572587	-78.858115	638.89	9.00	647.89
2	37.571294	-78.858298	635.38	9.00	644.38
3	37.570070	-78.858673	650.58	9.00	659.58
4	37.569058	-78.859156	674.52	9.00	683.52
5	37.567833	-78.860132	676.00	9.00	685.00
6	37.567680	-78.860229	676.53	9.00	685.53
7	37.566736	-78.860218	703.80	9.00	712.80
8	37.566379	-78.860358	704.19	9.00	713.19
9	37.565435	-78.861205	678.58	9.00	687.58

Name: Norwood Road
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	37.576651	-78.865400	618.17	9.00	627.17
2	37.577187	-78.864113	615.27	9.00	624.27
3	37.577816	-78.862911	606.55	9.00	615.55
4	37.578488	-78.861044	632.00	9.00	641.00
5	37.579202	-78.859059	601.10	9.00	610.10
6	37.579729	-78.856967	614.74	9.00	623.74
7	37.580069	-78.856055	605.10	9.00	614.10
8	37.581013	-78.854510	608.55	9.00	617.55
9	37.581634	-78.853362	610.58	9.00	619.58
10	37.582221	-78.851892	613.22	9.00	622.22
11	37.582535	-78.850991	610.64	9.00	619.64
12	37.582629	-78.849672	601.29	9.00	610.29

Name: Richmond Highway US 60
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	37.570767	-78.908147	665.00	9.00	674.00
2	37.571226	-78.904972	705.16	9.00	714.16
3	37.571813	-78.901142	664.18	9.00	673.18
4	37.572671	-78.895541	636.92	9.00	645.92
5	37.573454	-78.890134	708.89	9.00	717.89
6	37.574193	-78.885145	699.01	9.00	708.01
7	37.574210	-78.884362	681.35	9.00	690.35
8	37.574032	-78.882656	665.32	9.00	674.32
9	37.573573	-78.879673	663.65	9.00	672.65
10	37.573556	-78.878965	663.13	9.00	672.13
11	37.573734	-78.877935	671.77	9.00	680.77
12	37.574848	-78.874169	663.73	9.00	672.73
13	37.575392	-78.872903	676.21	9.00	685.21
14	37.576727	-78.870929	676.31	9.00	685.31
15	37.576909	-78.870114	670.32	9.00	679.32
16	37.576905	-78.869191	657.24	9.00	666.24
17	37.576598	-78.865436	617.97	9.00	626.97
18	37.576341	-78.864642	621.00	9.00	630.00
19	37.575299	-78.862260	643.80	9.00	652.80

Name: Twin Oaks Lane

Route type Two-way

View angle: 50.0 deg

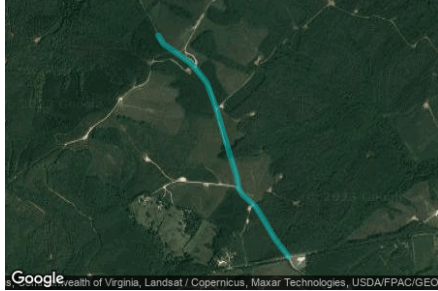


Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.577374	-78.901592	681.46	9.00	690.46
2	37.577510	-78.902171	689.07	9.00	698.07
3	37.577663	-78.904178	698.40	9.00	707.40
4	37.577807	-78.906195	687.04	9.00	696.04
5	37.577833	-78.906796	690.33	9.00	699.33
6	37.577765	-78.907214	681.27	9.00	690.27
7	37.577450	-78.907997	677.77	9.00	686.77
8	37.576965	-78.908974	688.30	9.00	697.30
9	37.576727	-78.909220	669.25	9.00	678.25
10	37.576098	-78.909725	657.05	9.00	666.05
11	37.575937	-78.909896	655.32	9.00	664.32

Name: Tye River Road

Route type Two-way

View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588116	-78.908649	771.28	9.00	780.28
2	37.587521	-78.908209	804.61	9.00	813.61
3	37.586663	-78.906643	795.74	9.00	804.74
4	37.586059	-78.905634	760.13	9.00	769.13
5	37.585413	-78.904969	727.41	9.00	736.41
6	37.584758	-78.904326	709.02	9.00	718.02
7	37.582837	-78.903446	673.27	9.00	682.27
8	37.581264	-78.902877	692.17	9.00	701.17
9	37.579818	-78.902330	691.45	9.00	700.45
10	37.578169	-78.901686	701.35	9.00	710.35
11	37.577348	-78.901528	682.59	9.00	691.59
12	37.576906	-78.901163	694.03	9.00	703.03
13	37.576056	-78.900026	706.53	9.00	715.53
14	37.575001	-78.899189	689.97	9.00	698.97
15	37.573938	-78.898427	676.43	9.00	685.43
16	37.572552	-78.897129	656.60	9.00	665.60

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	37.572259	-78.903341	701.36	16.00	717.36
OP 2	37.572456	-78.902971	706.10	16.00	722.10
OP 3	37.572775	-78.902566	704.39	16.00	720.39
OP 4	37.575522	-78.906302	687.89	16.00	703.89
OP 5	37.576158	-78.908284	677.46	16.00	693.46
OP 6	37.575788	-78.908740	668.15	16.00	684.15
OP 7	37.576483	-78.909741	668.27	16.00	684.27
OP 8	37.573289	-78.886738	684.47	16.00	700.47
OP 9	37.572975	-78.887570	675.71	16.00	691.71
OP 10	37.574807	-78.885432	717.00	16.00	733.00
OP 11	37.572931	-78.881840	675.76	16.00	691.76
OP 12	37.573024	-78.877255	686.05	16.00	702.05
OP 13	37.572220	-78.878044	677.17	16.00	693.17
OP 14	37.571408	-78.879004	664.74	16.00	680.74
OP 15	37.572008	-78.859708	634.50	16.00	650.50
OP 16	37.573492	-78.861098	622.37	16.00	638.37
OP 17	37.574180	-78.863367	649.59	16.00	665.59
OP 18	37.573947	-78.858866	621.34	16.00	637.34
OP 19	37.574784	-78.859934	614.84	16.00	630.84
OP 20	37.579325	-78.859483	594.32	16.00	610.32
OP 21	37.578704	-78.859328	607.02	16.00	623.02
OP 22	37.579418	-78.859183	598.93	16.00	614.93
OP 23	37.579116	-78.860068	589.26	16.00	605.26
OP 24	37.580111	-78.857402	595.56	16.00	611.56
OP 25	37.579095	-78.857380	620.71	16.00	636.71
OP 26	37.577025	-78.857681	583.00	16.00	599.00
OP 27	37.580337	-78.854618	584.73	16.00	600.73
OP 28	37.567492	-78.903980	628.76	16.00	644.76

Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
101	SA tracking	SA tracking	0	0	-	-
102	SA tracking	SA tracking	0	0	-	-
103	SA tracking	SA tracking	0	0	-	-
104	SA tracking	SA tracking	0	0	-	-
105	SA tracking	SA tracking	0	0	-	-
106	SA tracking	SA tracking	0	0	-	-
107	SA tracking	SA tracking	0	0	-	-
108	SA tracking	SA tracking	0	0	-	-
109	SA tracking	SA tracking	0	0	-	-
110	SA tracking	SA tracking	0	0	-	-
111	SA tracking	SA tracking	0	0	-	-
112	SA tracking	SA tracking	0	0	-	-
113	SA tracking	SA tracking	0	0	-	-
114	SA tracking	SA tracking	0	0	-	-
115	SA tracking	SA tracking	0	0	-	-
116	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

101 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not automatically account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographical obstructions.

- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

Wild Rose

Block 2 5 ft vehicles

Created Nov 28, 2023
Updated Nov 28, 2023
Time-step 1 minute
Timezone offset UTC-5
Minimum sun altitude 0.0 deg
Site ID 106599.18493

Project type Advanced
Project status: active
Category 10 MW to 100 MW

Misc. Analysis Settings

DNI: varies (1,000.0 W/m² peak)
 Ocular transmission coefficient: **0.5**
 Pupil diameter: **0.002 m**
 Eye focal length: **0.017 m**
 Sun subtended angle: **9.3 mrad**

PV Analysis Methodology: **Version 2**
 Enhanced subtended angle calculation: **On**

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
201	SA tracking	SA tracking	0	0	-
202	SA tracking	SA tracking	0	0	-
203	SA tracking	SA tracking	0	0	-
204	SA tracking	SA tracking	0	0	-
205	SA tracking	SA tracking	0	0	-
206	SA tracking	SA tracking	0	0	-
207	SA tracking	SA tracking	0	0	-
208	SA tracking	SA tracking	0	0	-
209	SA tracking	SA tracking	0	0	-
210	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

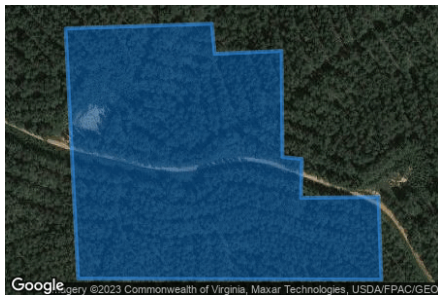
Total PV footprint area: 169.3 acres

Name: 201
Footprint area: 13.8 acres
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 60.0 deg
Ground Coverage Ratio: 0.42
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588360	-78.894421	684.66	5.00	689.66
2	37.589482	-78.894410	684.07	5.00	689.07
3	37.589482	-78.893617	696.41	5.00	701.41
4	37.590179	-78.893574	674.07	5.00	679.07
5	37.590179	-78.892951	665.91	5.00	670.91
6	37.590562	-78.892962	667.56	5.00	672.56
7	37.590587	-78.891342	653.16	5.00	658.16
8	37.588360	-78.891224	700.24	5.00	705.24

Name: 202
Footprint area: 13.8 acres
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 60.0 deg
Ground Coverage Ratio: 0.42
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.590553	-78.891342	654.03	5.00	659.03
2	37.590596	-78.889722	647.23	5.00	652.23
3	37.590332	-78.889690	643.54	5.00	648.54
4	37.590358	-78.888950	644.15	5.00	649.15
5	37.589431	-78.888939	673.52	5.00	678.52
6	37.589414	-78.888724	668.00	5.00	673.00
7	37.589074	-78.888735	693.67	5.00	698.67
8	37.589082	-78.887877	657.41	5.00	662.41
9	37.588360	-78.887844	683.68	5.00	688.68
10	37.588368	-78.891203	701.09	5.00	706.09

Name: 203

Footprint area: 23.3 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588326	-78.894829	680.15	5.00	685.15
2	37.588334	-78.891943	688.18	5.00	693.18
3	37.584585	-78.891846	647.50	5.00	652.50
4	37.584559	-78.893059	655.06	5.00	660.06
5	37.585614	-78.893016	658.06	5.00	663.06
6	37.585707	-78.895001	643.27	5.00	648.27
7	37.587289	-78.895129	677.62	5.00	682.62

Name: 204

Footprint area: 11.8 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588351	-78.891932	687.83	5.00	692.83
2	37.588334	-78.888746	685.73	5.00	690.73
3	37.587467	-78.888756	666.40	5.00	671.40
4	37.587459	-78.890988	670.27	5.00	675.27
5	37.585614	-78.890891	668.55	5.00	673.55
6	37.585597	-78.891203	675.35	5.00	680.35
7	37.584967	-78.891170	656.07	5.00	661.07
8	37.584933	-78.891836	654.94	5.00	659.94

Name: 205

Footprint area: 16.1 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

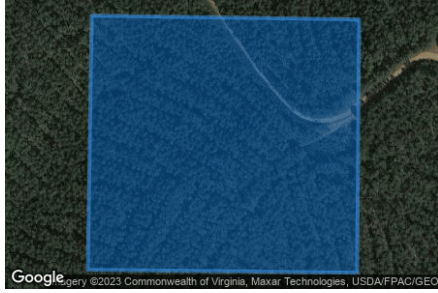
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588275	-78.888649	684.64	5.00	689.64
2	37.588241	-78.885688	658.72	5.00	663.72
3	37.586013	-78.885709	678.90	5.00	683.90
4	37.586039	-78.888692	691.05	5.00	696.05

Name: 206

Footprint area: 19.0 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

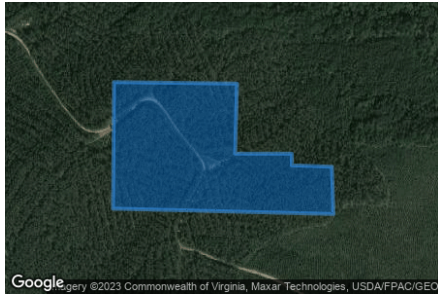
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588224	-78.885699	659.60	5.00	664.60
2	37.588198	-78.882974	684.17	5.00	689.17
3	37.586974	-78.883016	678.34	5.00	683.34
4	37.586974	-78.881761	646.75	5.00	651.75
5	37.586770	-78.881761	647.64	5.00	652.64
6	37.586744	-78.880871	637.11	5.00	642.11
7	37.585920	-78.880839	605.98	5.00	610.98
8	37.586013	-78.885720	679.20	5.00	684.20

Name: 207

Footprint area: 21.7 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

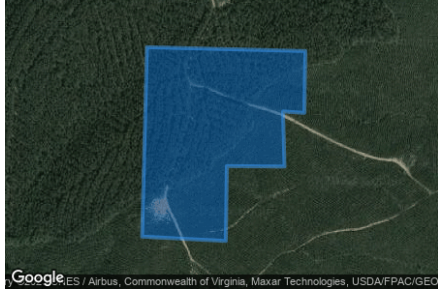
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.585920	-78.881675	645.37	5.00	650.37
2	37.584831	-78.881697	588.78	5.00	593.78
3	37.584857	-78.882169	599.89	5.00	604.89
4	37.583888	-78.882137	582.28	5.00	587.28
5	37.583896	-78.883413	594.37	5.00	599.37
6	37.582578	-78.883435	634.85	5.00	639.85
7	37.582655	-78.885291	658.06	5.00	663.06
8	37.585988	-78.885184	667.77	5.00	672.77

Name: 208

Footprint area: 22.2 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

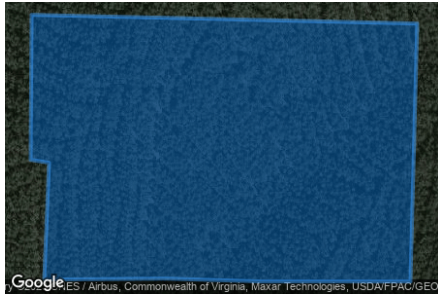
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.585971	-78.885205	667.71	5.00	672.71
2	37.586047	-78.889475	656.42	5.00	661.42
3	37.584780	-78.889486	678.47	5.00	683.47
4	37.584755	-78.889282	687.11	5.00	692.11
5	37.583735	-78.889336	648.56	5.00	653.56
6	37.583743	-78.887984	644.43	5.00	649.43
7	37.583718	-78.886911	647.87	5.00	652.87
8	37.583718	-78.885280	649.39	5.00	654.39

Name: 209

Footprint area: 18.6 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.582451	-78.887340	608.72	5.00	613.72
2	37.583709	-78.887351	620.00	5.00	625.00
3	37.583684	-78.885270	647.76	5.00	652.76
4	37.582612	-78.885312	658.16	5.00	663.16
5	37.582553	-78.882126	574.90	5.00	579.90
6	37.582179	-78.882158	582.23	5.00	587.23
7	37.581346	-78.882190	581.04	5.00	586.04
8	37.581482	-78.887008	616.24	5.00	621.24
9	37.582451	-78.886975	615.00	5.00	620.00

Name: 210

Footprint area: 9.0 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.581431	-78.886010	608.46	5.00	613.46
2	37.580206	-78.886053	597.24	5.00	602.24
3	37.580164	-78.882974	558.64	5.00	563.64
4	37.581354	-78.882963	596.48	5.00	601.48

2-Mile Flight Path Receptor(s)

Name: 1VA3 Airstrip northwest bound
Description:
Threshold height : 50 ft
Direction: 324.0 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg



Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.657357	-78.943952	611.96	50.00	661.96
2-mile point	37.633975	-78.922445	668.95	546.44	1215.39

Name: 1VA3 Airstrip southeast bound
Description:
Threshold height : 50 ft
Direction: 149.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg



Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.661340	-78.947213	666.50	50.00	716.50
2-mile point	37.686323	-78.965617	565.39	704.54	1269.93

Name: 4VA5 Airstrip northeast bound
Description:
Threshold height : 50 ft
Direction: 43.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg



Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.657127	-78.925444	590.49	50.00	640.49
2-mile point	37.636256	-78.950747	709.23	484.69	1193.92

Name: 4VA5 Airstrip southwest bound

Description:

Threshold height : 50 ft

Direction: 224.5 deg

Glide slope: 3.0 deg

Pilot view restricted? Yes

Vertical view restriction: 30.0 deg

Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.661833	-78.919683	638.31	50.00	688.31
2-mile point	37.682441	-78.894036	679.37	562.37	1241.74



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Route Receptor(s)

Name: Buck Mountain Lane
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	37.572587	-78.858115	638.89	5.00	643.89
2	37.571294	-78.858298	635.38	5.00	640.38
3	37.570070	-78.858673	650.58	5.00	655.58
4	37.569058	-78.859156	674.52	5.00	679.52
5	37.567833	-78.860132	676.00	5.00	681.00
6	37.567680	-78.860229	676.53	5.00	681.53
7	37.566736	-78.860218	703.80	5.00	708.80
8	37.566379	-78.860358	704.19	5.00	709.19
9	37.565435	-78.861205	678.58	5.00	683.58

Name: Norwood Road
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	37.576651	-78.865400	618.17	5.00	623.17
2	37.577187	-78.864113	615.27	5.00	620.27
3	37.577816	-78.862911	606.55	5.00	611.55
4	37.578488	-78.861044	632.00	5.00	637.00
5	37.579202	-78.859059	601.10	5.00	606.10
6	37.579729	-78.856967	614.74	5.00	619.74
7	37.580069	-78.856055	605.10	5.00	610.10
8	37.581013	-78.854510	608.55	5.00	613.55
9	37.581634	-78.853362	610.58	5.00	615.58
10	37.582221	-78.851892	613.22	5.00	618.22
11	37.582535	-78.850991	610.64	5.00	615.64
12	37.582629	-78.849672	601.29	5.00	606.29

Name: Richmond Highway US 60
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	37.570767	-78.908147	665.00	5.00	670.00
2	37.571226	-78.904972	705.16	5.00	710.16
3	37.571813	-78.901142	664.18	5.00	669.18
4	37.572671	-78.895541	636.92	5.00	641.92
5	37.573454	-78.890134	708.89	5.00	713.89
6	37.574193	-78.885145	699.01	5.00	704.01
7	37.574210	-78.884362	681.35	5.00	686.35
8	37.574032	-78.882656	665.32	5.00	670.32
9	37.573573	-78.879673	663.65	5.00	668.65
10	37.573556	-78.878965	663.13	5.00	668.13
11	37.573734	-78.877935	671.77	5.00	676.77
12	37.574848	-78.874169	663.73	5.00	668.73
13	37.575392	-78.872903	676.21	5.00	681.21
14	37.576727	-78.870929	676.31	5.00	681.31
15	37.576909	-78.870114	670.32	5.00	675.32
16	37.576905	-78.869191	657.24	5.00	662.24
17	37.576598	-78.865436	617.97	5.00	622.97
18	37.576341	-78.864642	621.00	5.00	626.00
19	37.575299	-78.862260	643.80	5.00	648.80

Name: Twin Oaks Lane

Route type Two-way

View angle: 50.0 deg

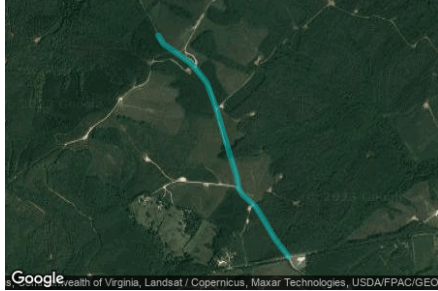


Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.577374	-78.901592	681.46	5.00	686.46
2	37.577510	-78.902171	689.07	5.00	694.07
3	37.577663	-78.904178	698.40	5.00	703.40
4	37.577807	-78.906195	687.04	5.00	692.04
5	37.577833	-78.906796	690.33	5.00	695.33
6	37.577765	-78.907214	681.27	5.00	686.27
7	37.577450	-78.907997	677.77	5.00	682.77
8	37.576965	-78.908974	688.30	5.00	693.30
9	37.576727	-78.909220	669.25	5.00	674.25
10	37.576098	-78.909725	657.05	5.00	662.05
11	37.575937	-78.909896	655.32	5.00	660.32

Name: Tye River Road

Route type Two-way

View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588116	-78.908649	771.28	5.00	776.28
2	37.587521	-78.908209	804.61	5.00	809.61
3	37.586663	-78.906643	795.74	5.00	800.74
4	37.586059	-78.905634	760.13	5.00	765.13
5	37.585413	-78.904969	727.41	5.00	732.41
6	37.584758	-78.904326	709.02	5.00	714.02
7	37.582837	-78.903446	673.27	5.00	678.27
8	37.581264	-78.902877	692.17	5.00	697.17
9	37.579818	-78.902330	691.45	5.00	696.45
10	37.578169	-78.901686	701.35	5.00	706.35
11	37.577348	-78.901528	682.59	5.00	687.59
12	37.576906	-78.901163	694.03	5.00	699.03
13	37.576056	-78.900026	706.53	5.00	711.53
14	37.575001	-78.899189	689.97	5.00	694.97
15	37.573938	-78.898427	676.43	5.00	681.43
16	37.572552	-78.897129	656.60	5.00	661.60

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	37.572259	-78.903341	701.36	16.00	717.36
OP 2	37.572456	-78.902971	706.10	16.00	722.10
OP 3	37.572775	-78.902566	704.39	16.00	720.39
OP 4	37.575522	-78.906302	687.89	16.00	703.89
OP 5	37.576158	-78.908284	677.46	16.00	693.46
OP 6	37.575788	-78.908740	668.15	16.00	684.15
OP 7	37.576483	-78.909741	668.27	16.00	684.27
OP 8	37.573289	-78.886738	684.47	16.00	700.47
OP 9	37.572975	-78.887570	675.71	16.00	691.71
OP 10	37.574807	-78.885432	717.00	16.00	733.00
OP 11	37.572931	-78.881840	675.76	16.00	691.76
OP 12	37.573024	-78.877255	686.05	16.00	702.05
OP 13	37.572220	-78.878044	677.17	16.00	693.17
OP 14	37.571408	-78.879004	664.74	16.00	680.74
OP 15	37.572008	-78.859708	634.50	16.00	650.50
OP 16	37.573492	-78.861098	622.37	16.00	638.37
OP 17	37.574180	-78.863367	649.59	16.00	665.59
OP 18	37.573947	-78.858866	621.34	16.00	637.34
OP 19	37.574784	-78.859934	614.84	16.00	630.84
OP 20	37.579325	-78.859483	594.32	16.00	610.32
OP 21	37.578704	-78.859328	607.02	16.00	623.02
OP 22	37.579418	-78.859183	598.93	16.00	614.93
OP 23	37.579116	-78.860068	589.26	16.00	605.26
OP 24	37.580111	-78.857402	595.56	16.00	611.56
OP 25	37.579095	-78.857380	620.71	16.00	636.71
OP 26	37.577025	-78.857681	583.00	16.00	599.00
OP 27	37.580337	-78.854618	584.73	16.00	600.73
OP 28	37.567492	-78.903980	628.76	16.00	644.76

Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
201	SA tracking	SA tracking	0	0	-	-
202	SA tracking	SA tracking	0	0	-	-
203	SA tracking	SA tracking	0	0	-	-
204	SA tracking	SA tracking	0	0	-	-
205	SA tracking	SA tracking	0	0	-	-
206	SA tracking	SA tracking	0	0	-	-
207	SA tracking	SA tracking	0	0	-	-
208	SA tracking	SA tracking	0	0	-	-
209	SA tracking	SA tracking	0	0	-	-
210	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

201 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not automatically account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographical obstructions.

- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

Wild Rose

Block 2 9 ft vehicles

Created Nov 28, 2023
Updated Nov 28, 2023
Time-step 1 minute
Timezone offset UTC-5
Minimum sun altitude 0.0 deg
Site ID 106600.18493

Project type Advanced
Project status: active
Category 10 MW to 100 MW

Misc. Analysis Settings

DNI: varies (1,000.0 W/m² peak)
 Ocular transmission coefficient: **0.5**
 Pupil diameter: **0.002 m**
 Eye focal length: **0.017 m**
 Sun subtended angle: **9.3 mrad**

PV Analysis Methodology: **Version 2**
 Enhanced subtended angle calculation: **On**

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
201	SA tracking	SA tracking	0	0	-
202	SA tracking	SA tracking	0	0	-
203	SA tracking	SA tracking	0	0	-
204	SA tracking	SA tracking	0	0	-
205	SA tracking	SA tracking	0	0	-
206	SA tracking	SA tracking	0	0	-
207	SA tracking	SA tracking	0	0	-
208	SA tracking	SA tracking	0	0	-
209	SA tracking	SA tracking	0	0	-
210	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

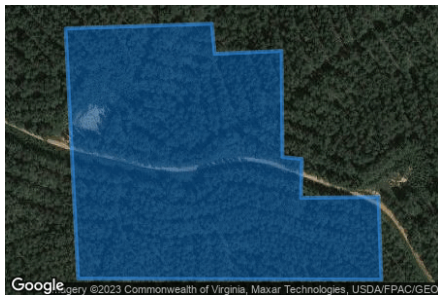
Total PV footprint area: 169.3 acres

Name: 201
Footprint area: 13.8 acres
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 60.0 deg
Ground Coverage Ratio: 0.42
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588360	-78.894421	684.66	5.00	689.66
2	37.589482	-78.894410	684.07	5.00	689.07
3	37.589482	-78.893617	696.41	5.00	701.41
4	37.590179	-78.893574	674.07	5.00	679.07
5	37.590179	-78.892951	665.91	5.00	670.91
6	37.590562	-78.892962	667.56	5.00	672.56
7	37.590587	-78.891342	653.16	5.00	658.16
8	37.588360	-78.891224	700.24	5.00	705.24

Name: 202
Footprint area: 13.8 acres
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 60.0 deg
Ground Coverage Ratio: 0.42
Rated power: -
Panel material: Light textured glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.590553	-78.891342	654.03	5.00	659.03
2	37.590596	-78.889722	647.23	5.00	652.23
3	37.590332	-78.889690	643.54	5.00	648.54
4	37.590358	-78.888950	644.15	5.00	649.15
5	37.589431	-78.888939	673.52	5.00	678.52
6	37.589414	-78.888724	668.00	5.00	673.00
7	37.589074	-78.888735	693.67	5.00	698.67
8	37.589082	-78.887877	657.41	5.00	662.41
9	37.588360	-78.887844	683.68	5.00	688.68
10	37.588368	-78.891203	701.09	5.00	706.09

Name: 203

Footprint area: 23.3 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588326	-78.894829	680.15	5.00	685.15
2	37.588334	-78.891943	688.18	5.00	693.18
3	37.584585	-78.891846	647.50	5.00	652.50
4	37.584559	-78.893059	655.06	5.00	660.06
5	37.585614	-78.893016	658.06	5.00	663.06
6	37.585707	-78.895001	643.27	5.00	648.27
7	37.587289	-78.895129	677.62	5.00	682.62

Name: 204

Footprint area: 11.8 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588351	-78.891932	687.83	5.00	692.83
2	37.588334	-78.888746	685.73	5.00	690.73
3	37.587467	-78.888756	666.40	5.00	671.40
4	37.587459	-78.890988	670.27	5.00	675.27
5	37.585614	-78.890891	668.55	5.00	673.55
6	37.585597	-78.891203	675.35	5.00	680.35
7	37.584967	-78.891170	656.07	5.00	661.07
8	37.584933	-78.891836	654.94	5.00	659.94

Name: 205

Footprint area: 16.1 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

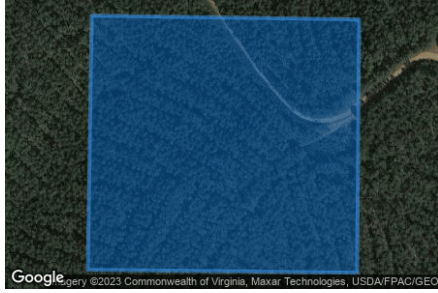
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588275	-78.888649	684.64	5.00	689.64
2	37.588241	-78.885688	658.72	5.00	663.72
3	37.586013	-78.885709	678.90	5.00	683.90
4	37.586039	-78.888692	691.05	5.00	696.05

Name: 206

Footprint area: 19.0 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

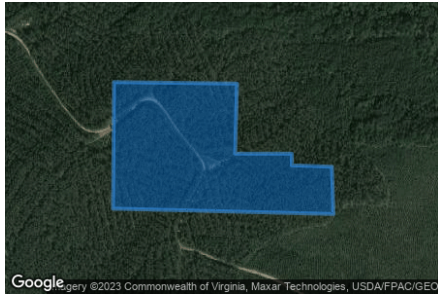
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588224	-78.885699	659.60	5.00	664.60
2	37.588198	-78.882974	684.17	5.00	689.17
3	37.586974	-78.883016	678.34	5.00	683.34
4	37.586974	-78.881761	646.75	5.00	651.75
5	37.586770	-78.881761	647.64	5.00	652.64
6	37.586744	-78.880871	637.11	5.00	642.11
7	37.585920	-78.880839	605.98	5.00	610.98
8	37.586013	-78.885720	679.20	5.00	684.20

Name: 207

Footprint area: 21.7 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

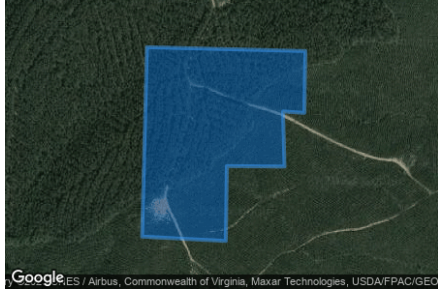
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.585920	-78.881675	645.37	5.00	650.37
2	37.584831	-78.881697	588.78	5.00	593.78
3	37.584857	-78.882169	599.89	5.00	604.89
4	37.583888	-78.882137	582.28	5.00	587.28
5	37.583896	-78.883413	594.37	5.00	599.37
6	37.582578	-78.883435	634.85	5.00	639.85
7	37.582655	-78.885291	658.06	5.00	663.06
8	37.585988	-78.885184	667.77	5.00	672.77

Name: 208

Footprint area: 22.2 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

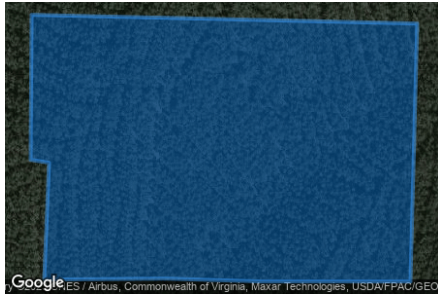
Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.585971	-78.885205	667.71	5.00	672.71
2	37.586047	-78.889475	656.42	5.00	661.42
3	37.584780	-78.889486	678.47	5.00	683.47
4	37.584755	-78.889282	687.11	5.00	692.11
5	37.583735	-78.889336	648.56	5.00	653.56
6	37.583743	-78.887984	644.43	5.00	649.43
7	37.583718	-78.886911	647.87	5.00	652.87
8	37.583718	-78.885280	649.39	5.00	654.39

Name: 209

Footprint area: 18.6 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.582451	-78.887340	608.72	5.00	613.72
2	37.583709	-78.887351	620.00	5.00	625.00
3	37.583684	-78.885270	647.76	5.00	652.76
4	37.582612	-78.885312	658.16	5.00	663.16
5	37.582553	-78.882126	574.90	5.00	579.90
6	37.582179	-78.882158	582.23	5.00	587.23
7	37.581346	-78.882190	581.04	5.00	586.04
8	37.581482	-78.887008	616.24	5.00	621.24
9	37.582451	-78.886975	615.00	5.00	620.00

Name: 210

Footprint area: 9.0 acres

Axis tracking: Single-axis rotation

Backtracking: Shade-slope

Tracking axis orientation: 180.0 deg

Maximum tracking angle: 52.0 deg

Resting angle: 60.0 deg

Ground Coverage Ratio: 0.42

Rated power: -

Panel material: Light textured glass with AR coating

Vary reflectivity with sun position? Yes

Correlate slope error with surface type? Yes

Slope error: 9.16 mrad



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.581431	-78.886010	608.46	5.00	613.46
2	37.580206	-78.886053	597.24	5.00	602.24
3	37.580164	-78.882974	558.64	5.00	563.64
4	37.581354	-78.882963	596.48	5.00	601.48

2-Mile Flight Path Receptor(s)

Name: 1VA3 Airstrip northwest bound
Description:
Threshold height : 50 ft
Direction: 324.0 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg



Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.657357	-78.943952	611.96	50.00	661.96
2-mile point	37.633975	-78.922445	668.95	546.44	1215.39

Name: 1VA3 Airstrip southeast bound
Description:
Threshold height : 50 ft
Direction: 149.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg



Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.661340	-78.947213	666.50	50.00	716.50
2-mile point	37.686323	-78.965617	565.39	704.54	1269.93

Name: 4VA5 Airstrip northeast bound
Description:
Threshold height : 50 ft
Direction: 43.8 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg



Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.657127	-78.925444	590.49	50.00	640.49
2-mile point	37.636256	-78.950747	709.23	484.69	1193.92

Name: 4VA5 Airstrip southwest bound

Description:

Threshold height : 50 ft

Direction: 224.5 deg

Glide slope: 3.0 deg

Pilot view restricted? Yes

Vertical view restriction: 30.0 deg

Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	37.661833	-78.919683	638.31	50.00	688.31
2-mile point	37.682441	-78.894036	679.37	562.37	1241.74



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Route Receptor(s)

Name: Buck Mountain Lane
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	37.572587	-78.858115	638.89	9.00	647.89
2	37.571294	-78.858298	635.38	9.00	644.38
3	37.570070	-78.858673	650.58	9.00	659.58
4	37.569058	-78.859156	674.52	9.00	683.52
5	37.567833	-78.860132	676.00	9.00	685.00
6	37.567680	-78.860229	676.53	9.00	685.53
7	37.566736	-78.860218	703.80	9.00	712.80
8	37.566379	-78.860358	704.19	9.00	713.19
9	37.565435	-78.861205	678.58	9.00	687.58

Name: Norwood Road
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	37.576651	-78.865400	618.17	9.00	627.17
2	37.577187	-78.864113	615.27	9.00	624.27
3	37.577816	-78.862911	606.55	9.00	615.55
4	37.578488	-78.861044	632.00	9.00	641.00
5	37.579202	-78.859059	601.10	9.00	610.10
6	37.579729	-78.856967	614.74	9.00	623.74
7	37.580069	-78.856055	605.10	9.00	614.10
8	37.581013	-78.854510	608.55	9.00	617.55
9	37.581634	-78.853362	610.58	9.00	619.58
10	37.582221	-78.851892	613.22	9.00	622.22
11	37.582535	-78.850991	610.64	9.00	619.64
12	37.582629	-78.849672	601.29	9.00	610.29

Name: Richmond Highway US 60
Route type: Two-way
View angle: 50.0 deg



Vertex	Latitude deg	Longitude deg	Ground elevation ft	Height above ground ft	Total elevation ft
1	37.570767	-78.908147	665.00	9.00	674.00
2	37.571226	-78.904972	705.16	9.00	714.16
3	37.571813	-78.901142	664.18	9.00	673.18
4	37.572671	-78.895541	636.92	9.00	645.92
5	37.573454	-78.890134	708.89	9.00	717.89
6	37.574193	-78.885145	699.01	9.00	708.01
7	37.574210	-78.884362	681.35	9.00	690.35
8	37.574032	-78.882656	665.32	9.00	674.32
9	37.573573	-78.879673	663.65	9.00	672.65
10	37.573556	-78.878965	663.13	9.00	672.13
11	37.573734	-78.877935	671.77	9.00	680.77
12	37.574848	-78.874169	663.73	9.00	672.73
13	37.575392	-78.872903	676.21	9.00	685.21
14	37.576727	-78.870929	676.31	9.00	685.31
15	37.576909	-78.870114	670.32	9.00	679.32
16	37.576905	-78.869191	657.24	9.00	666.24
17	37.576598	-78.865436	617.97	9.00	626.97
18	37.576341	-78.864642	621.00	9.00	630.00
19	37.575299	-78.862260	643.80	9.00	652.80

Name: Twin Oaks Lane

Route type Two-way

View angle: 50.0 deg

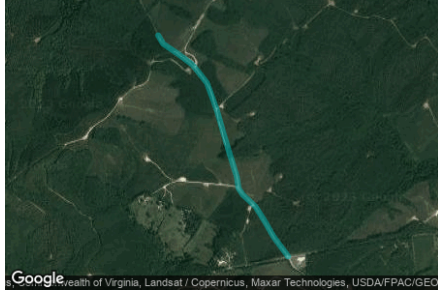


Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.577374	-78.901592	681.46	9.00	690.46
2	37.577510	-78.902171	689.07	9.00	698.07
3	37.577663	-78.904178	698.40	9.00	707.40
4	37.577807	-78.906195	687.04	9.00	696.04
5	37.577833	-78.906796	690.33	9.00	699.33
6	37.577765	-78.907214	681.27	9.00	690.27
7	37.577450	-78.907997	677.77	9.00	686.77
8	37.576965	-78.908974	688.30	9.00	697.30
9	37.576727	-78.909220	669.25	9.00	678.25
10	37.576098	-78.909725	657.05	9.00	666.05
11	37.575937	-78.909896	655.32	9.00	664.32

Name: Tye River Road

Route type Two-way

View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.588116	-78.908649	771.28	9.00	780.28
2	37.587521	-78.908209	804.61	9.00	813.61
3	37.586663	-78.906643	795.74	9.00	804.74
4	37.586059	-78.905634	760.13	9.00	769.13
5	37.585413	-78.904969	727.41	9.00	736.41
6	37.584758	-78.904326	709.02	9.00	718.02
7	37.582837	-78.903446	673.27	9.00	682.27
8	37.581264	-78.902877	692.17	9.00	701.17
9	37.579818	-78.902330	691.45	9.00	700.45
10	37.578169	-78.901686	701.35	9.00	710.35
11	37.577348	-78.901528	682.59	9.00	691.59
12	37.576906	-78.901163	694.03	9.00	703.03
13	37.576056	-78.900026	706.53	9.00	715.53
14	37.575001	-78.899189	689.97	9.00	698.97
15	37.573938	-78.898427	676.43	9.00	685.43
16	37.572552	-78.897129	656.60	9.00	665.60

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	37.572259	-78.903341	701.36	16.00	717.36
OP 2	37.572456	-78.902971	706.10	16.00	722.10
OP 3	37.572775	-78.902566	704.39	16.00	720.39
OP 4	37.575522	-78.906302	687.89	16.00	703.89
OP 5	37.576158	-78.908284	677.46	16.00	693.46
OP 6	37.575788	-78.908740	668.15	16.00	684.15
OP 7	37.576483	-78.909741	668.27	16.00	684.27
OP 8	37.573289	-78.886738	684.47	16.00	700.47
OP 9	37.572975	-78.887570	675.71	16.00	691.71
OP 10	37.574807	-78.885432	717.00	16.00	733.00
OP 11	37.572931	-78.881840	675.76	16.00	691.76
OP 12	37.573024	-78.877255	686.05	16.00	702.05
OP 13	37.572220	-78.878044	677.17	16.00	693.17
OP 14	37.571408	-78.879004	664.74	16.00	680.74
OP 15	37.572008	-78.859708	634.50	16.00	650.50
OP 16	37.573492	-78.861098	622.37	16.00	638.37
OP 17	37.574180	-78.863367	649.59	16.00	665.59
OP 18	37.573947	-78.858866	621.34	16.00	637.34
OP 19	37.574784	-78.859934	614.84	16.00	630.84
OP 20	37.579325	-78.859483	594.32	16.00	610.32
OP 21	37.578704	-78.859328	607.02	16.00	623.02
OP 22	37.579418	-78.859183	598.93	16.00	614.93
OP 23	37.579116	-78.860068	589.26	16.00	605.26
OP 24	37.580111	-78.857402	595.56	16.00	611.56
OP 25	37.579095	-78.857380	620.71	16.00	636.71
OP 26	37.577025	-78.857681	583.00	16.00	599.00
OP 27	37.580337	-78.854618	584.73	16.00	600.73
OP 28	37.567492	-78.903980	628.76	16.00	644.76

Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
201	SA tracking	SA tracking	0	0	-	-
202	SA tracking	SA tracking	0	0	-	-
203	SA tracking	SA tracking	0	0	-	-
204	SA tracking	SA tracking	0	0	-	-
205	SA tracking	SA tracking	0	0	-	-
206	SA tracking	SA tracking	0	0	-	-
207	SA tracking	SA tracking	0	0	-	-
208	SA tracking	SA tracking	0	0	-	-
209	SA tracking	SA tracking	0	0	-	-
210	SA tracking	SA tracking	0	0	-	-

PV & Receptor Analysis Results

Results for each PV array and receptor

201 no glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Component	Green glare (min)	Yellow glare (min)
FP: 1VA3 Airstrip northwest bound	0	0
FP: 1VA3 Airstrip southeast bound	0	0
FP: 4VA5 Airstrip northeast bound	0	0
FP: 4VA5 Airstrip southwest bound	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
OP: OP 13	0	0
OP: OP 14	0	0
OP: OP 15	0	0
OP: OP 16	0	0
OP: OP 17	0	0
OP: OP 18	0	0
OP: OP 19	0	0
OP: OP 20	0	0
OP: OP 21	0	0
OP: OP 22	0	0
OP: OP 23	0	0
OP: OP 24	0	0
OP: OP 25	0	0
OP: OP 26	0	0
OP: OP 27	0	0
OP: OP 28	0	0
Route: Buck Mountain Lane	0	0
Route: Norwood Road	0	0
Route: Richmond Highway US 60	0	0
Route: Twin Oaks Lane	0	0
Route: Tye River Road	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not automatically account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographical obstructions.

- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

Appendix N: Preliminary Equipment Specification Sheets



SG3300UD-MV-US

SG4400UD-MV-US

Turnkey Station for 1500 Vdc System MV Transformer Integrated



HIGH YIELD

- Advanced three-level technology, max. inverter efficiency 99%
- Full power operation at 40 °C(104 °F)
- Effective cooling, wide operation temperature

EASY O&M

- Integrated current, voltage and MV parameters monitoring function for online analysis and trouble shooting
- Modular design, easy for maintenance

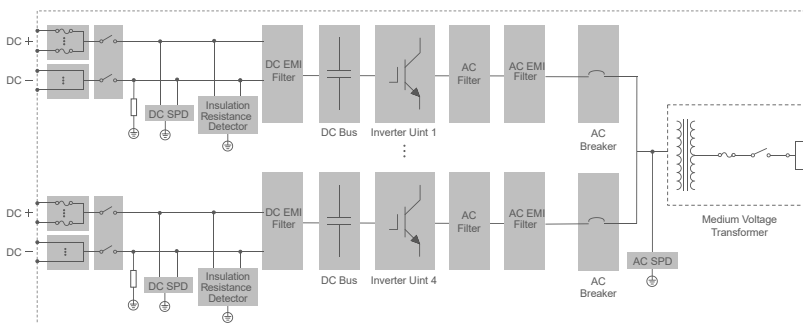
SAVED INVESTMENT

- Low transportation and installation cost due to 20-foot container size design
- DC 1500V system, low system cost
- Integrated MV transformer and LV auxiliary power supply
- Q at night optional

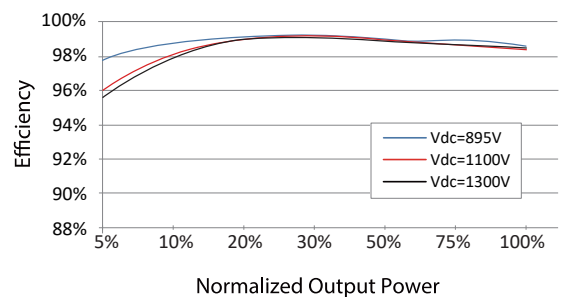
GRID SUPPORT

- Compliance with standards:UL 1741,UL 1741 SA, IEEE 1547, Rule 21 and NEC code
- Low / High voltage ride through (L/HVRT), L/HFRT, soft start/stop
- Active & reactive power control and power ramp rate control

CIRCUIT DIAGRAM



EFFICIENCY CURVE



Type Designation	SG3300UD-MV-US	SG4400UD-MV-US
Input (DC)		
Max. PV input voltage	1500 V	
Min. PV input voltage / Start-up input voltage	895 V / 905 V	
Available DC Fuse Sizes	250A - 630A	
MPP Voltage Range	905 V – 1500 V	
No. of independent MPP inputs	3	4
No. of DC inputs	18(optional: 21 inputs negative grounding)	24(optional:28 inputs negative grounding)
Max. PV input current	3 * 1435 A	4 * 1435 A
Max. DC short-circuit current	3 * 5000 A	4 * 5000 A
PV Array Configuration	Negative grounding or floating	
Output (AC)		
AC output power	3300 kVA @ 40 °C(104 °F)	4400 kVA @ 40 °C(104 °F)
Nominal Grid Frequency / Grid Frequency Range	60 Hz / 55 – 65 Hz	
Harmonic (THD)	< 3 % (at nominal power)	
Power Factor at Nominal Power / Adjustable Power Factor	> 0.99 / 0.8 leading - 0.8 lagging	
Efficiency		
Inverter Max. efficiency	99.0 %	
Inverter CEC efficiency	98.5%	
Transformer		
Transformer rated power	3300 kVA	4400 kVA
Transformer max. power	3300 kVA	4400 kVA
LV / MV voltage	0.63 kV / (12 – 35) kV	0.63 kV / 34.5 kV
Transformer vector	Dy1 (Optional: Dy11, Yny)	
Transformer cooling type	KNAN (Optional: ONAN)	
Protection		
DC Input Protection	Load break switch + fuse	
Inverter Output Protection	Circuit breaker	
AC MV Output Protection	Load break switch + fuse	
Overvoltage Protection	DC Type II / AC Type II	
Grid Monitoring / Ground Fault Monitoring	Yes / Yes	
Insulation Monitoring	Yes	
Overheat Protection	Yes	
General Data		
Dimensions (W*H*D)*	6058*2896*2438 mm 238.5"*114.0"*96.0"	
Weight*	≤18000 kg (≤39683 lbs)	≤20000 kg (≤44092 lbs)
Degree of Protection	NEMA 4X(Electronic for Inverter) / NEMA 3R(Others)	
Auxiliary Power Supply	5kVA, 120Vac; Optional: 35kVA, 480Vac/277Vac	
Operating Ambient Temperature Range	-35 to 60 °C (> 40 °C derating) / optional: -40 to 60 °C (> 40 °C derating) -31 to 140 °F (> 104 °F derating) / optional: -40 to 140 °F (> 104 °F derating)	
Allowable Relative Humidity Range	0 - 100 %	
Cooling Method	Temperature controlled forced air cooling	
Max. Operating Altitude	1000 m (Standard) / > 1000 m (Customized) (3280.8 ft (standard) / > 3280.8 ft (Customized))	
Display	LED Indicators, WLAN+WebHMI	
Night Reactive Power Function	Optional	
DC-Coupled Storage Interface	Optional	
Charging Power from the Grid	Optional	
Communication	Standard: RS485, Ethernet	
Compliance	UL 1741, IEEE 1547, UL1741 SA, NEC 2017, CSA C22.2 No.107.1-01, PRC-024, Rule 21	
Grid Support	Q at night function (optional), L/HVRT, L/HFRT, Active & reactive power control and power ramp rate control, Volt-var, Frequency-watt	

*: The actual product received shall prevail.



Series 7 TR1 Bifacial.

505-540 Watt Thin Film Solar Module

Series 7 TR1 Bifacial modules combine First Solar's thin film technology with a larger form factor and an innovative new back rail mounting system to deliver improved efficiency, enhanced installation velocity, and unmatched lifetime energy performance for utility-scale PV projects.



More Lifetime Energy per Nameplate Watt

- Industry's best (0.3%) warranted degradation rate
- Superior temperature coefficient, spectral response and shading behavior
- No power loss from LID and LeTID
- Anti-reflective coated glass enhances energy production
- Added bifacial energy yield



Unmatched Quality and Reliability

- End-to-end manufacturing process for globally consistent quality
- Tested and certified to IEC standards and beyond
- Durable glass/glass construction
- Immune to and warranted against power loss from cell cracking
- 30-year Linear Performance Warranty
- 12-year Limited Product Warranty



Optimized Module Design

- Optimized back rail mount design enhances installation velocity
- Frameless design improves soiling and snow shedding
- Dual junction box design reduces wire management complexity and cost



Industry's Most Eco-efficient PV Solution

- Industry leading carbon footprint, water footprint and energy payback time
- Globally available PV module recycling services



America's Solar Company

- Designed, responsibly sourced, and manufactured in the USA

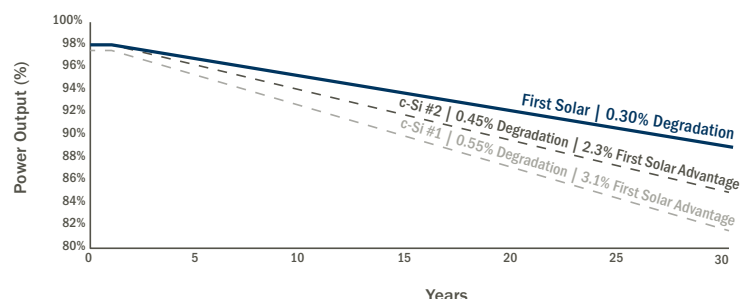
19.4%
HIGH BIN EFFICIENCY

30YR
LINEAR PERFORMANCE
WARRANTY

98%
WARRANTY START POINT

0.3%
WARRANTED ANNUAL
DEGRADATION RATE

First Solar Lifetime Energy Advantage
From 30 Year Warranted Annual Power Degradation



Learn more about First Solar
and Series 7 TR1
at firstsolar.com/S7

Series 7 TR1 Bifacial.

Electrical Specifications



RATINGS AT STANDARD TEST CONDITIONS (1000W/m², AM 1.5, 25°C)²

SERIES 7 BIFACIAL MODEL TYPES: FS-7XXX-TR1-B / FS-7XXXA-TR1-B (XXX = NOMINAL POWER)

Nominal Power ³ (-0/+5%) P _{MAX} (W)	505		510		515		520		525		530		535		540	
	STC ⁴	BNPI ⁵	STC	BNPI	STC	BNPI	STC	BNPI	STC	BNPI	STC	BNPI	STC	BNPI	STC	BNPI
Nominal Power P _{MAX} (W)	505	519	510	524	515	529	520	535	525	540	530	545	535	550	540	555
Voltage at P _{MAX} V _{MAX} (V)	182.5	182.5	183.4	183.4	184.3	184.3	185.2	185.2	186.0	186.0	186.9	186.9	187.8	187.8	188.7	188.7
Current at P _{MAX} I _{MAX} (A)	2.77	2.85	2.78	2.86	2.80	2.88	2.81	2.89	2.82	2.90	2.84	2.92	2.85	2.93	2.86	2.94
Open Circuit Voltage V _{OC} (V)	223.9	223.9	224.5	224.5	225.0	225.0	225.6	225.6	226.1	226.1	226.7	226.7	227.2	227.2	227.7	227.7
Short Circuit Current I _{SC} (A)	3.01	3.10	3.02	3.11	3.03	3.12	3.04	3.13	3.04	3.13	3.05	3.14	3.06	3.15	3.06	3.15
Efficiency (%)	18.1		18.3		18.5		18.6		18.8		19.0		19.2		19.4	
Maximum System Voltage V _{SVS} (V)	1500 ⁶															
Limiting Reverse Current I _R (A)	5.0															
Maximum Series Fuse I _{CF} (A)	5.0															

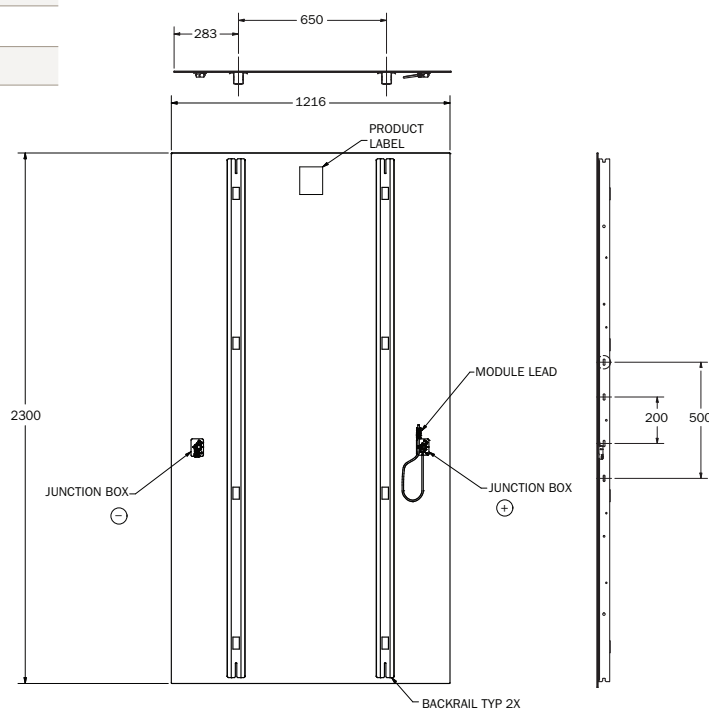
TEMPERATURE CHARACTERISTICS

Module Operating Temperature Range	(°C)	-40 to +85
Temperature Coefficient of P _{MAX}	T _K (P _{MAX})	-0.32%/°C [Temperature Range: 25°C to 75°C]
Temperature Coefficient of V _{OC}	T _K (V _{OC})	-0.28%/°C
Temperature Coefficient of I _{SC}	T _K (I _{SC})	+0.04%/°C
Nominal Operating Cell Temperature	(°C)	43
Bifaciality Factor	%	20±5%

PACKAGING INFORMATION

Model Type	Modules Per Pack	Packs per 53' Container
FS-7XXXA-TR1-B	46	10

Mechanical Specifications



MECHANICAL DESCRIPTION

Length	2300mm
Width	1216mm
Area	2.80m ²
Module Weight	39.7kg
Leadwire ⁶	2.5mm ² , 650mm (+) & Bulkhead (-)
Connectors	TE Connectivity PV4-S or alternate
Junction Box	IP68 Rated
Bypass Diode	N/A
Cell Type	Thin film CdTe semiconductor, up to 268 cells
Frame Material	Galvanized steel
Front Glass	Heat strengthened
Back Glass	Heat strengthened
Encapsulation	Laminate material with edge seal
Frame to Glass Adhesive	Silicone
Load Rating	2400Pa

Certifications & Tests⁷

CERTIFICATIONS AND LISTINGS

IEC 61215:2021 & 61730-1:2016⁶, CE
IEC 61701 Salt Mist Corrosion
IEC 60068-2-68 Dust and Sand Resistance
IEC 62716 Ammonia Corrosion
UL 61730 1500V Listed

EXTENDED DURABILITY TESTS

IEC TS 63209-1 Extended Stress Test
Long-Term Sequential
Thresher Test
PID Resistant

QUALITY & EHS

ISO 9001:2015
ISO 14001:2015
ISO 45001:2018
ISO 14064-3:2006
EPEAT Silver Registered

Install in portrait only

- Limited power output and product warranties subject to warranty terms and conditions
- All ratings ±10%, unless specified otherwise. Specifications are subject to change
- Measurement uncertainty applies
- Frontside electrical ratings
- Bifacial Name Plate Irradiance, as per IEC 61215:2021
- IEC 61730-1:2016 Class II
- Testing Certifications/Listings pending



Disclaimer

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nexttracker™

NX Horizon™



NX Horizon™ is the world's most chosen solar tracker system for utility-scale power plants, deployed and contracted on over 75 gigawatts of solar power plants globally as of March 2023. NX Horizon's unrivaled combination of integrated hardware and software has become the gold standard for the utility-scale solar industry, thanks to its robust design, ease of installation, field-proven weather durability, and LCOE-optimized performance.

Pioneering independent-row technology

NX Horizon's patented independent row, self-powered tracking system provides reliable performance across the widest possible range of site conditions. Simple, robust hardware, including self-aligning module rails and vibration-proof fasteners, enables rapid installation and long life without maintenance. Mechanically balanced rows minimize tracking power

requirements and pair with a time-proven, rugged drive & control system for maximum durability and uptime. NX Horizon's decentralized architecture with intelligent communications supports maximum layout adaptability, flexible construction and commissioning sequencing, advanced tracker functionality, and over-the-air updates.

Proven resilience

NX Horizon is designed to withstand extreme weather events, proven season after season across hundreds of systems around the world. Through Nextracker's in-house project-engineering services, NX Horizon is configured and optimized to suit the unique combination of severe weather hazards and climate for each project site. Based on the industry's most comprehensive wind analysis and field testing, NX Horizon is hardened against wind-related failures by robust structural design, an optimized damping system, and advanced stowing functionality. Furthermore, the combination of balanced, independent self-powered rows with integrated UPS, 60° stowing angle, and available smart software enables rapid hail-stow protection to maximize panel survivability, even in the event of a grid outage. NX Horizon is inherently tolerant of flooding with drive and control components 4-5' above grade and available flood stowing functions to protect panels.

Features and Benefits

7 years in a row

Global Market Share Leader

75 GW

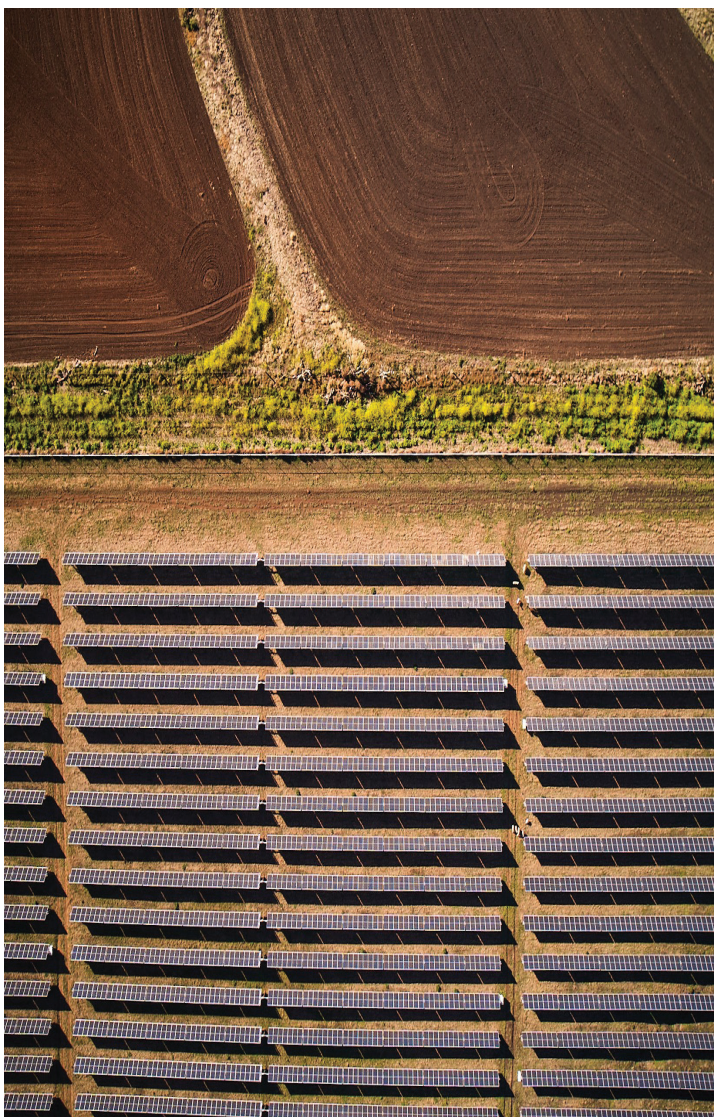
Delivered on 6 Continents

Best-in Class

Software Ecosystem and
Global Services

Up to 6% more energy

Using TrueCapture™
Smart Control System



Optimized for the lowest LCOE

Compared with conventional tracking systems, NX Horizon delivers Levelized Cost of Energy (LCOE) reductions of up to 7% by maximizing energy generation and solving for the lowest possible project CAPEX and OPEX. With pre-assembled components, no drive linkages, no AC wiring, self-aligning rails, and available XTR terrain following upgrades, NX Horizon is fundamentally faster to install, requiring less construction labor, less grading, and less total project capital cost. Projects using NX Horizon enjoy open-row access for maximum vegetation management and panel cleaning efficiency. Compared with linked row systems, NX Horizon cuts mowing costs by up to 55% and cleaning costs by up to 73%, reducing total project operations costs.

Lastly, but crucially for project returns, NX Horizon boosts project energy generation and revenue with its unique bifacial-optimized design as standard, and available IE-validated, 38GW proven TrueCapture Smart Control System with diffuse mode and row to row optimization functions.

GENERAL AND MECHANICAL	
Architecture	Horizontal single-axis, independent row, independently balanced
Configuration	1x module in portrait
Tracking range of motion	Options for $\pm 60^\circ$ or $\pm 50^\circ$
Row Size	Configurable per module type, string length and site layout
Array Height	Rotation axis elevation, 1.3 to 1.8 m / 4'3" to 5'10"
Drive type	High accuracy slew gear
Modules supported	All utility-scale crystalline and thin-film modules
Bifacial optimization	High-rise mounting rails, bearing & driveline gaps, round torque tube
Structural connections	Engineered fastening system, vibration-proof
Materials	Galvanized steel; other coatings available
Foundations	Complete range of foundation solutions available
Slope	Up to 15% N-S and 15% E-W
Ground coverage ratio (GCR)	No specific limit Typical range 25-45%
Operating temperature range	SELF POWERED: -30°C to 55°C (-22°F to 131°F) AC POWERED: -40°C to 55°C (-40°F to 131°F)
Wind speed	Configurable up to 240 kph (150 mph) 10m, 3-second gust
Wind protection	Intelligent wind stowing with symmetric damping system

ELECTRONICS AND CONTROLS	
Solar tracking method	Astronomical algorithm with backtracking standard. TrueCapture™ upgrades available for enhanced energy yield
Tracker controller	Self-Powered Controller (SPC) with integrated inclinometer and UPS
Motor	Brushless DC
Power supply	SELF POWERED: Standalone smart solar power AC POWERED: Customer-provided 120-277 VAC circuit
Communications	Network control units (NCUs) at inverter pads/skids, self-powered weather stations, centralized data hub, encrypted Zigbee wireless mesh communications
Defensive stowing functions	Wind, hail, hurricane, snow, flood, loss of grid power
Operator interface	NX Navigator advanced HMI available, with SCADA integration

SERVICE, WARRANTY, AND STANDARDS	
Tracker engineering & PE stamped design package	Standard
Foundation engineering & PE stamped design package	Available
Onsite construction support & commissioning service	Available
Warranty	10-year structural, 5-year drive and controls standard; extended warranty available
Certifications	UL 2703, UL 3703, IEC 62817, CSA
Codes and standards	UL 3703 / UL 2703 / IEC 62817 / CSA



Appendix O: Traffic Study





WILD ROSE SOLAR TRAFFIC STATEMENT

December 8, 2023

Prepared for:
Wild Rose Solar Project, LLC

Prepared by:
Stantec Consulting Services

Project Number:
203402299

Project Overview

Wild Rose Solar Project, LLC (the Applicant) is proposing a large solar energy facility (Wild Rose Solar Project or the Project) in southern Nelson County on an approximately 2,470-acre site (the Project Limits). The solar array footprint will cover approximately 550 acres of the Property (Project Footprint), and the remaining acreage will continue to be utilized for silviculture. The site is located along US Route 60 (Richmond Highway) and its array areas straddle both sides of this highway. The project is also served by a series of secondary highways. This site is close to the boundaries with Amherst and Appomattox Counties (served by US Route 60), and Buckingham County is nearby. The town of Amherst is approximately 10 miles to the west along US Route 60. Refer to **Figure 1** for the *Regional Context Map*. At this point, the Wild Rose Solar Project is planning to have the site served by a total of seven (7) entrances (or site access points) across the various roadways (further information is provided in subsequent sections for the study area roadways and the entrance locations). The site is predominately forested with remaining areas as open land. Refer to **Figure 2** for the *Preliminary Site Plan* that illustrate site layout with internal roadways. The remainder of this memorandum will focus on the expected traffic generated during construction activities.

Proposed Construction Traffic Routes.

The primary roadway to/from the site is US Route 60 (Richmond Highway), an east-west highway. The town of Amherst is approximately 10 miles to the west along US Route 60. The site is also served by US Route 29, a north-south highway. Lynchburg is approximately 15 miles south of Amherst along US Route 29. The metropolitan area of Richmond is approximately 100 miles to the east along US Route 60, and the Richmond area is served by several interstates. The Lynchburg and Richmond communities are also served by freight rail lines.

US Route 60's lane widths are at least 11 feet, is a two-lane roadway, has a centerline pavement marking and carries an average annual daily traffic (ADT) of 1,700 vehicles a day, based on VDOT data¹. The VDOT data indicates that the roadway has a two-way peak hour volume of approximately 190 vehicles an hour. Vehicle classification is approximately 77 percent motorcycles, cars & light trucks, three (3) percent straight trucks and 20 percent tractor-trailers. VDOT classifies US Route 60 as a minor arterial.

Route 657 (Tye River Road) varies in width between 20 to 22 feet and has a centerline. The ADT varies along the roadway but carries approximately 410 vehicles a day near US Route 60. Route 657 is classified as a minor collector to the north of US Route 60 (and as a major collector to the south).

Route 791 (Buck Mountain Lane) begins as an intersection with US Route 60 and this narrow roadway does not have a centerline. It is a dead-end roadway. The ADT is less than 100 vehicles a day. The roadway would be considered as a local road.

Route 820 (Twin Oaks Lane) begins as an intersection with Route 657 and this narrow roadway does not have a centerline. Route 820 is a dead-end roadway and has less than 50 vehicles a day. The roadway would be considered as a local road.

¹ VDOT data is from 2021 (latest year available). <https://www.virginiadot.org/info/ct-TrafficCounts.asp> accessed November 2023.

TRAFFIC STATEMENT – Wild Rose Solar Project

At this time, a pavement condition assessment has not been performed for the above roadways within the bounds of the site. A pavement condition assessment should be completed a month prior to site preparation activities commencing, then be completed once site becomes operational.

Most secondary roadways (600 series or higher) or other local roads in the area tend to be narrow roadways without centerlines which are not suitable for a large volume of truck traffic. As such, all construction related trucks would use US Route 60 to approach the site, then using the above roadways to access specific array areas for this project. Trucks will be restricted from utilizing any other roadways due to geometric limitations of those facilities.

Project Intersections and Entrance Locations

US Route 60 is the primary highway in the area. All roads intersecting US Route 60 are stopped-controlled on the minor approaches. As described above, the site is planned to be served by seven (7) different entrances. The vegetation along the roadways at the entrance points may need to be trimmed to improve sight distance for egressing vehicles. It is not anticipated that geometric improvements would not be necessary at existing intersections in the area. The entrance locations are as follows:

- Array Area 1: along Route 657, east side, north of Route 820 (access via US Route 60).
- Array Area 2: along Route 820, north side (access via US Route 60).
- Array Area 3: along Route 657, west side, south of Route 820 (access via US Route 60.)
- Array Area 4: along Route 657, east side, south of Route 820 (access via US Route 60).
- Array Area 5: along US Route 60, north side, about midway between Route 657 and Route 626.
- Array Area 6: along US Route 60, north side, just west of Route 626. The proposed substation would also share this entrance.
- Array Area 7: along Route 791, west side (access via US Route 60).

Refer to **Figure 3** that illustrates the *Entrance Locations*.

Traffic Distribution

The site's traffic will be distributed over the seven (7) entrances. The percentage of traffic at each entrance will be proportional (or close to) the size of each array area.

- Array Area 1: 58 percent
- Array Area 2: 8 percent
- Array Area 3: 3 percent
- Array Area 4: 10 percent
- Array Area 5: 5 percent
- Array Area 6: 9 percent
- Array Area 7: 7 percent

Refer to Figure 3 (Entrance Locations) which also presents each array area's percentage of the development footprint. Access to Array Areas 1 through 4 is located along Route 657, including access to Array Area 2 located along Route 820, which means 79 percent of traffic will travel on that roadway from US Route 60 to reach the individual array areas.

Construction Traffic Control

Temporary traffic control signs will be installed along the various roadways required by the Virginia Department of Transportation (VDOT). These signs will be posted in advance of the array area access points.

Transit

Public transit stops do not exist in the vicinity of the project site; therefore, no conflicts are anticipated.

Project Schedule

A detailed schedule has not yet been developed, but this project is anticipated to have a 12-month construction duration. Currently, the project is expected to move to construction in the second quarter of 2026 with a completion in the first quarter of 2027. The general timeline for the project construction activities is as follows:

- Approximately 3 to 4 months for site grading and site preparation, including the installation of necessary erosion control, stormwater devices and basins, and the construction of internal site roadways.
- Approximately 5 to 6 months for the installation of solar panels, power inverters, and electric wiring.
- Approximately 2 months for site clean-up activities and site commissioning.

Construction Traffic Estimates

Construction traffic will consist of trucks bringing site preparation materials and component deliveries (solar panels, inverters, and other electrical equipment). It also includes passenger vehicles (likely pick-up trucks or vans) that carry personnel and their tools/small equipment to/from and around the construction site. The site is currently owned by a logging company and the trees within the proposed development area will be harvested prior to the site preparation phase beginning. Removal of stumps, etc, will still be included as part of the site preparation phase.

The following assumptions were made:

- 2,471-acre site
- Capacity of a gravel dump truck is 15 cubic yards of gravel
- Estimated 8 miles of interior gravel roads at 12-16 feet wide with assumed 1 foot gravel roadbed
- 234,012 solar modules and 28 inverters
- Assumes 100 panels delivered per truck
- Capacity for standard tractor trailer (WB-50 or WB-62) is 80,000 pounds

With the assumptions above, it is estimated that the site will generate a total of approximately nearly 5,600 truck trips over the 12-month construction period, broken out as follows:

- 25 trucks per day during site preparation phase
- 17 trucks per day during panel and electrical installation phase

TRAFFIC STATEMENT – Wild Rose Solar Project

- 15 trucks per day during site clean-up and commissioning phase

The Project could be phased such that the three (3) different activities are occurring at same time throughout the site's array areas. Even such, total daily truck traffic is expected to be less than 100 a day to the site, with the same volume leaving the site.

Delivery of the inverters to the project site may require a tractor-trailer(s) (flatbed trailer) with a weight exceeding 80,000 pounds. Any such tractor-trailer(s) will be equipped with additional axles to distribute the additional load onto the roadway. All necessary hauling and overweight permits will be obtained prior to the start of construction.

The construction employees include following mix: laborers, electricians, equipment operators, supervisory and support personnel, and construction management personnel. The Project expects an average daily total of 250 employees on site. Construction work will generally occur during daylight hours Monday through Saturday; however, there may be occasions when critical work needs to be completed outside of those hours. The Applicant may request permission from the Zoning Administrator to conduct construction activities on Sunday, but such permission will be granted or denied at the sole discretion of the Zoning Administrator.

Once the site clean-up activities and site commissioning has been completed, operation and maintenance activities over the life of the facility will not generate significant volumes of traffic.

Traffic Mitigation

Prior to the start of construction, the Applicant will develop a Construction Traffic Management Plan in coordination with Nelson County and VDOT. The plan will include appropriate transportation management procedures which may include, but are not limited to, lane closures, signage, and flagging procedures. Employee and delivery traffic will also be scheduled and managed to minimize conflicts with local traffic.

Based on the existing roadway conditions, the locations for the proposed entrances, and the available average daily traffic volumes for the transport roads, the anticipated construction traffic volumes will not exceed available roadway capacities; therefore, the roadways should not be significantly impacted by standard construction traffic. During operation and maintenance (post-construction), the facility will not generate a significant volume of traffic with the anticipation of only a few pickup trucks and other maintenance vehicles each week.

Temporary traffic control plans will be developed for the construction of entrances along the area roadways, following the requirements of the Virginia Work Area Protection Manual. Once construction of the entrances are completed, it is recommended that temporary signage be posted along the roadways in advance of the entrance. This would entail posting W11-V4 signs (TRUCKS ENTERING HIGHWAY) following TTC-63.2 (Logging Operations) of the Virginia Work Area Protection Manual.

Physical improvements to the existing roadway network are not anticipated as being necessary for this project.

Conclusions

Based on Stantec’s review of available data, existing condition, and estimated traffic, the following are the conclusions of this study:

- The Project Limits consist of a total of approximately 2,470 acres, broken into 7 array areas comprising 550 acres of land disturbance.
- US Route 60 is the primary highway to the site. There are 2 entrances directly onto US Route 60, while Route 657 has 3 entrances and Route 820 and 791 each have 1 entrance.
- The 4 array areas with access from Route 657 account for 79 percent of the land area. As such, it is expected that these array areas will generate approximately the same proportion of total construction traffic to the site.
- Heavy truck traffic generated by the site development and construction is estimated to average at 25 trucks a day during site preparation, 17 trucks a day during panel and electrical installation, and would decrease to 15 trucks a day during site clean-up and commissioning. The project could be phased such that all three activities occur at the same time, but total truck traffic is expected to be less than 100 trucks a day.
- The expected trip generation for this site is lower than VDOT’s threshold of 5,000 vpd required for a traffic impact study.
- The key roadways can accommodate the increased traffic due to construction and no geometric improvements are anticipated as necessary for this project.
- Temporary traffic control plans will be developed for the construction of the seven (7) entrances themselves, as well as posting temporary warning signs at each entrance location while site work is occurring. These plans will follow the requirements of the Virginia Work Area Protection Manual.
- Prior to commencing any construction activities, pavement conditions should be documented along US Route 60, and along Routes 657, 791 and 820; then reassessed following completion of the project. This can be completed via a video survey of the corridor.
- Truck traffic should be limited to US Route 60, and along Routes 657, 791 and 820 in the immediate vicinity of the site. Beyond those roadways, truck traffic should be limited to primary roadways. Trucks should be restricted from the other roadways.
- All temporary signage should be coordinated with Nelson County and VDOT.

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Figure No.

1

Title

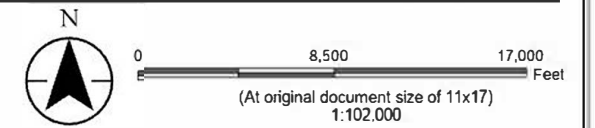
Regional Context Map

Client/Project
Wild Rose Solar Project, LLC
Wild Rose Solar Project

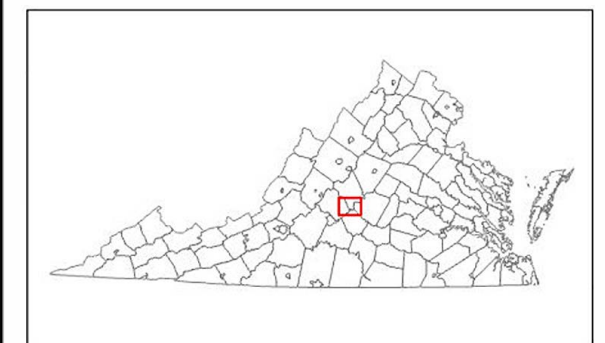
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Project Location
Nelson County, Virginia

Prepared by MER on 2023-10-23
TR by BJW on 2023-11-08
IR by KHP on 2023-11-08



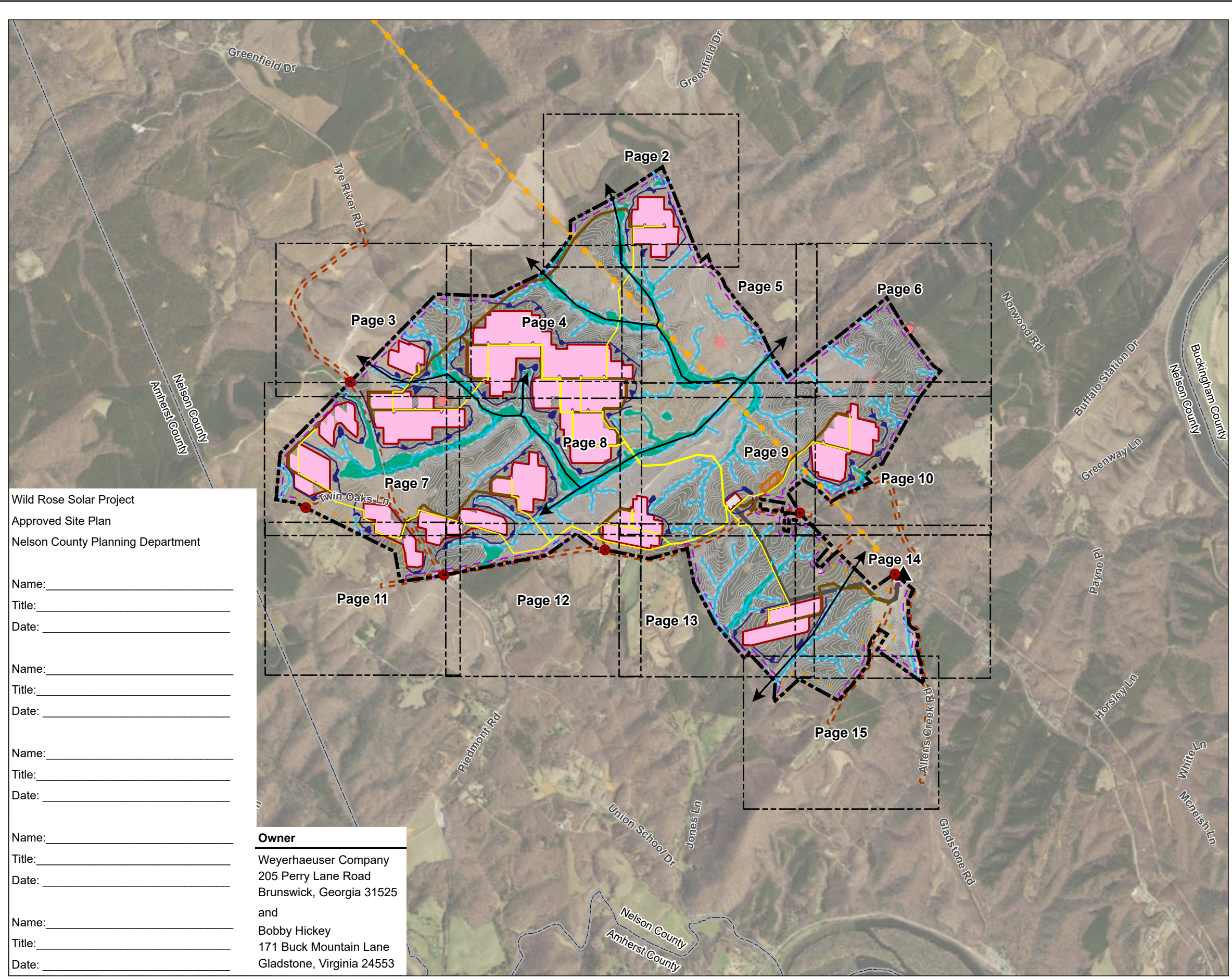
 Project Limits



- Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
 2. Data Sources: Wild Rose Solar Project, LLC, VGIN, U.S. Census Bureau, Geographic Names Information System (GNIS), USGS National Hydrography Dataset (NHD)
 3. Orthimagery © Virginia Geographic Information Network (VGIN)



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Wild Rose Solar Project
Approved Site Plan
Nelson County Planning Department

Name: _____
Title: _____
Date: _____

Name: _____
Title: _____
Date: _____

Name: _____
Title: _____
Date: _____

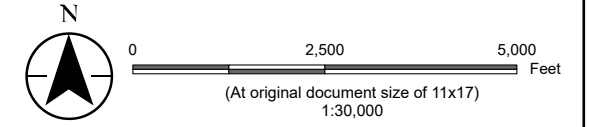
Name: _____
Title: _____
Date: _____

Owner
Weyerhaeuser Company
205 Perry Lane Road
Brunswick, Georgia 31525
and
Bobby Hickey
171 Buck Mountain Lane
Gladstone, Virginia 24553

Figure No.
2
Title
Preliminary Site Plan

Client/Project
Wild Rose Solar Project, LLC
Wild Rose Solar Project
203402299

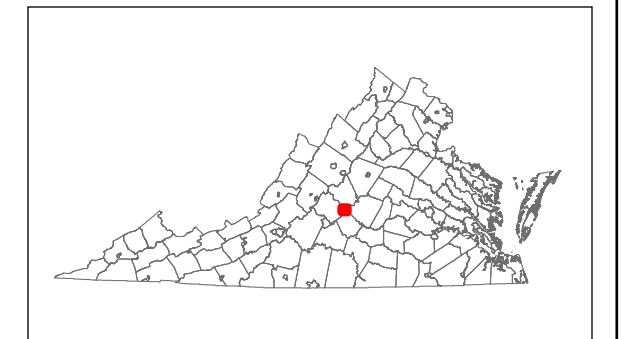
Project Location
Nelson County, Virginia
Prepared by MER on 2023-11-27
TR by MGS on 2023-11-27
IR by JLO on 2023-11-27



- Project Access
- ▲ Existing Substation
- ▬ Project Limits
- ▬ Page Index
- ▬ Fence Line
- ▬ 125-Foot Project Setback
- ▬ 200-Foot Project Setback
- ▬ 100-Foot Road Setback
- ▬ Panel Array
- ▬ Inverter
- ▬ Substation
- ▬ Cemetery
- ▬ 100-Foot Cemetery Buffer
- ▬ Desktop Stream
- ▬ Desktop Wetland
- ▬ 50-Foot Wetland Buffer
- ▬ Floodplain (Not Present within Project Boundary)
- ▬ Proposed Laydown Yard
- ▬ Preliminary Stormwater Basin
- ▬ Stormwater Ditch
- ▬ Project Road
- ▬ Collection Line
- ▬ Gen-Tie Line
- ▬ Existing Transmission Line
- ▬ 10-Foot Contour
- ▬ Wildlife Corridor

Site Data

Project Area 2,471.30 Acres ±
Limit of Disturbance (LOD) 550.00 Acres ±



Notes
1. Coordinate System: NAD 1983 StatePlane Virginia South FIPS 4502 Feet
2. Data Sources: Wild Rose Solar Project, LLC, Stantec, HIFLD, U.S. Census Bureau, VGIN
3. Orthoimagery © Virginia Geographic Information Network (VGIN)
4. The wetlands and other surface waters shown on this map have been predicted based upon the application of desktop mapping techniques and have not been field verified. Therefore, these potential resources should be used for preliminary planning only.



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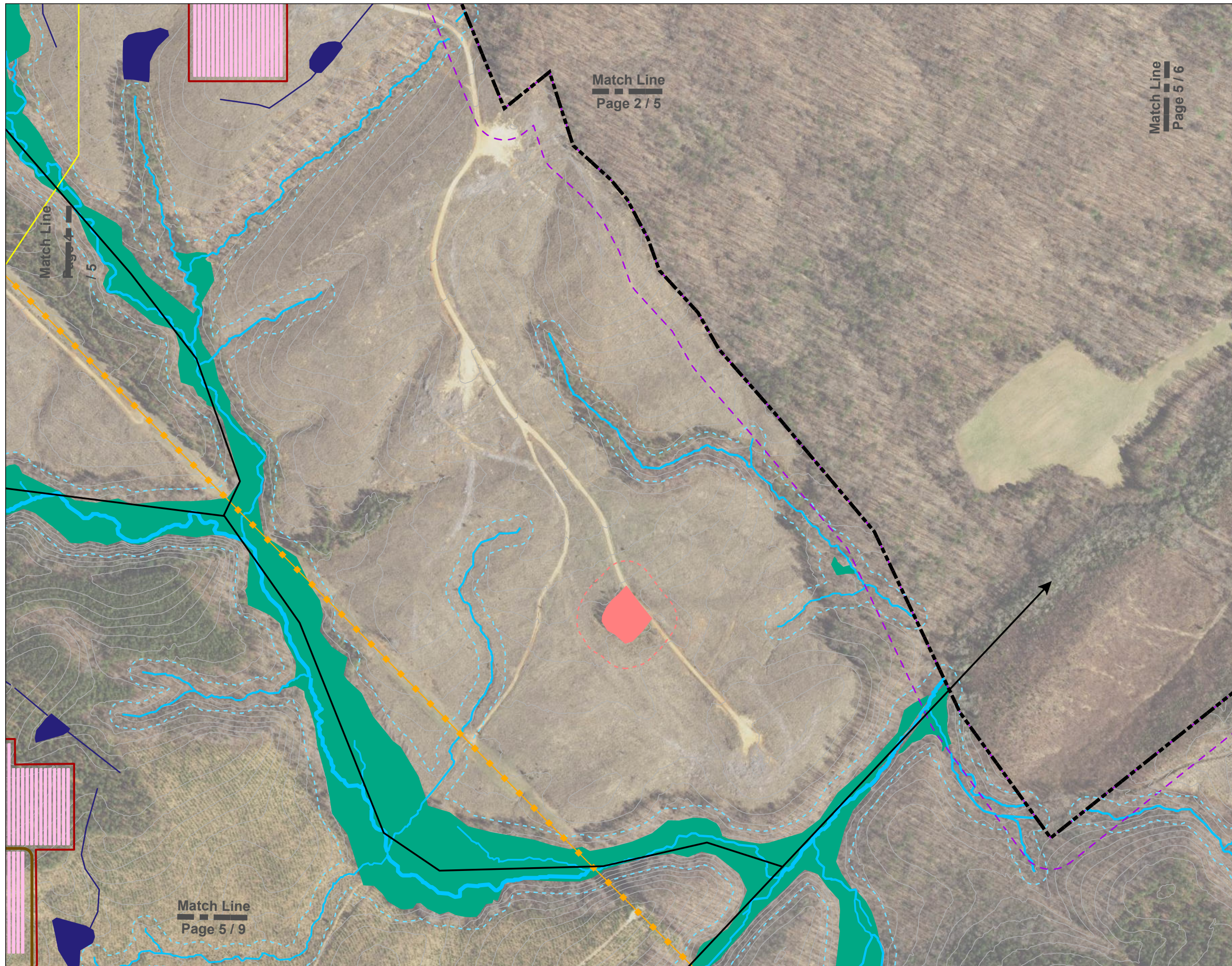
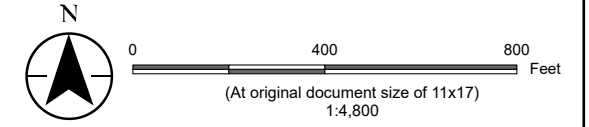


Figure No. 2
Title Preliminary Site Plan

Client/Project Wild Rose Solar Project, LLC
Wild Rose Solar Project 203402299

Project Location Nelson County, Virginia Prepared by MER on 2023-11-27
TR by MGS on 2023-11-27
IR by JLO on 2023-11-27



- Project Access
- ▲ Existing Substation
- ▬ Project Limits
- ▭ Fence Line
- ▭ 125-Foot Project Setback
- ▭ 200-Foot Project Setback
- ▭ 100-Foot Road Setback
- ▭ Panel Array
- ▭ Inverter
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- ▭ Existing Transmission Line
- ▭ 10-Foot Contour
- ▭ Wildlife Corridor



Notes
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2. Data Sources: Wild Rose Solar Project, LLC, Stantec, HIFLD, U.S. Census Bureau, VGIN
3. Orthoimagery © Virginia Geographic Information Network (VGIN)
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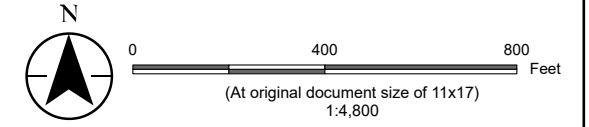


Match Line
Page 3 / 7

Figure No.
2
Title
Preliminary Site Plan

Client/Project
Wild Rose Solar Project, LLC
Wild Rose Solar Project
203402299

Project Location
Nelson County, Virginia
Prepared by MER on 2023-11-27
TR by MGS on 2023-11-27
IR by JLO on 2023-11-27



- Project Access
- Existing Substation
- Project Limits
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Notes

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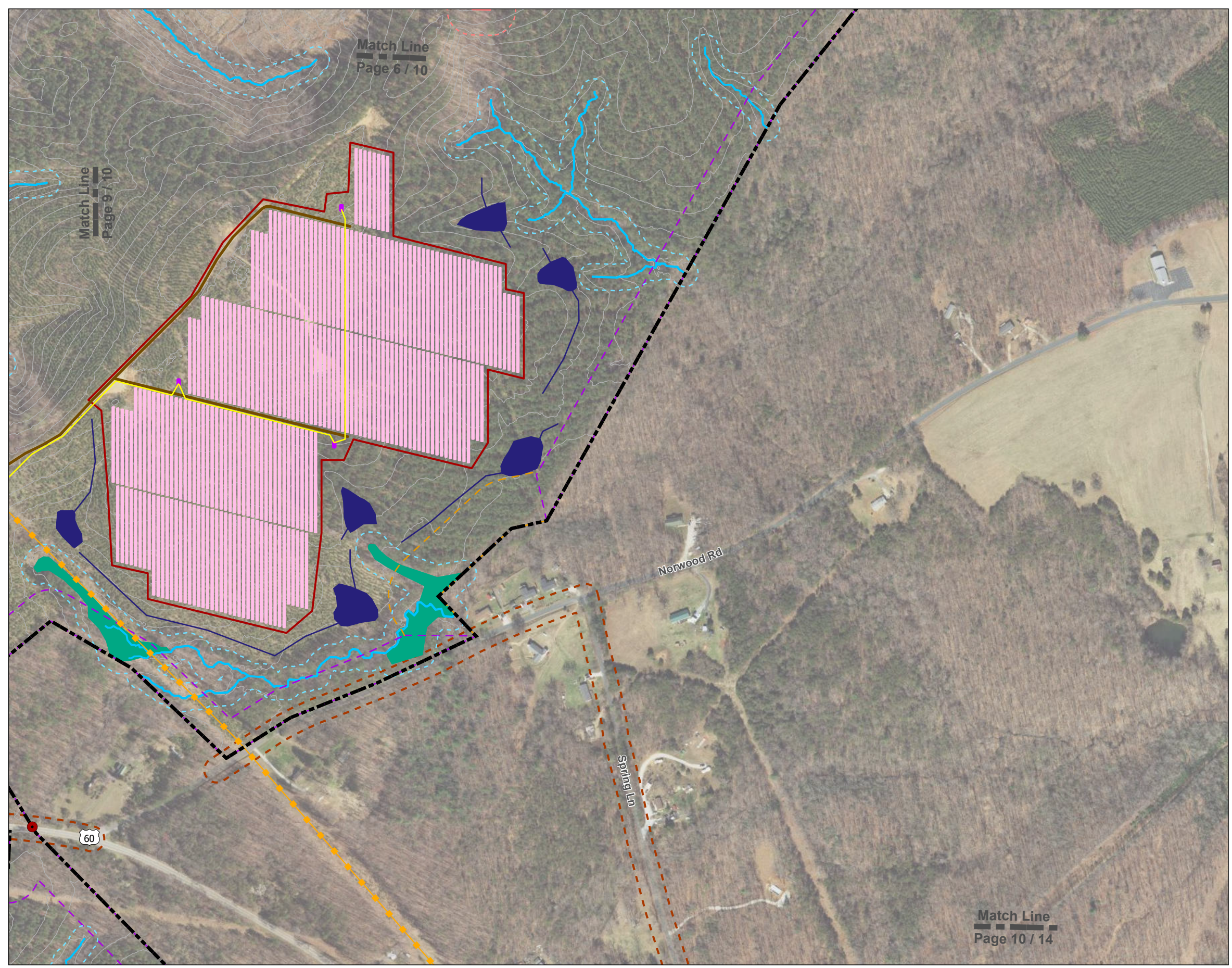
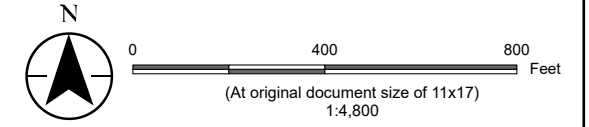


Figure No. **2**
Title **Preliminary Site Plan**

Client/Project **Wild Rose Solar Project, LLC** 203402299
Wild Rose Solar Project

Project Location **Nelson County, Virginia** Prepared by MER on 2023-11-27
TR by MGS on 2023-11-27
IR by JLO on 2023-11-27



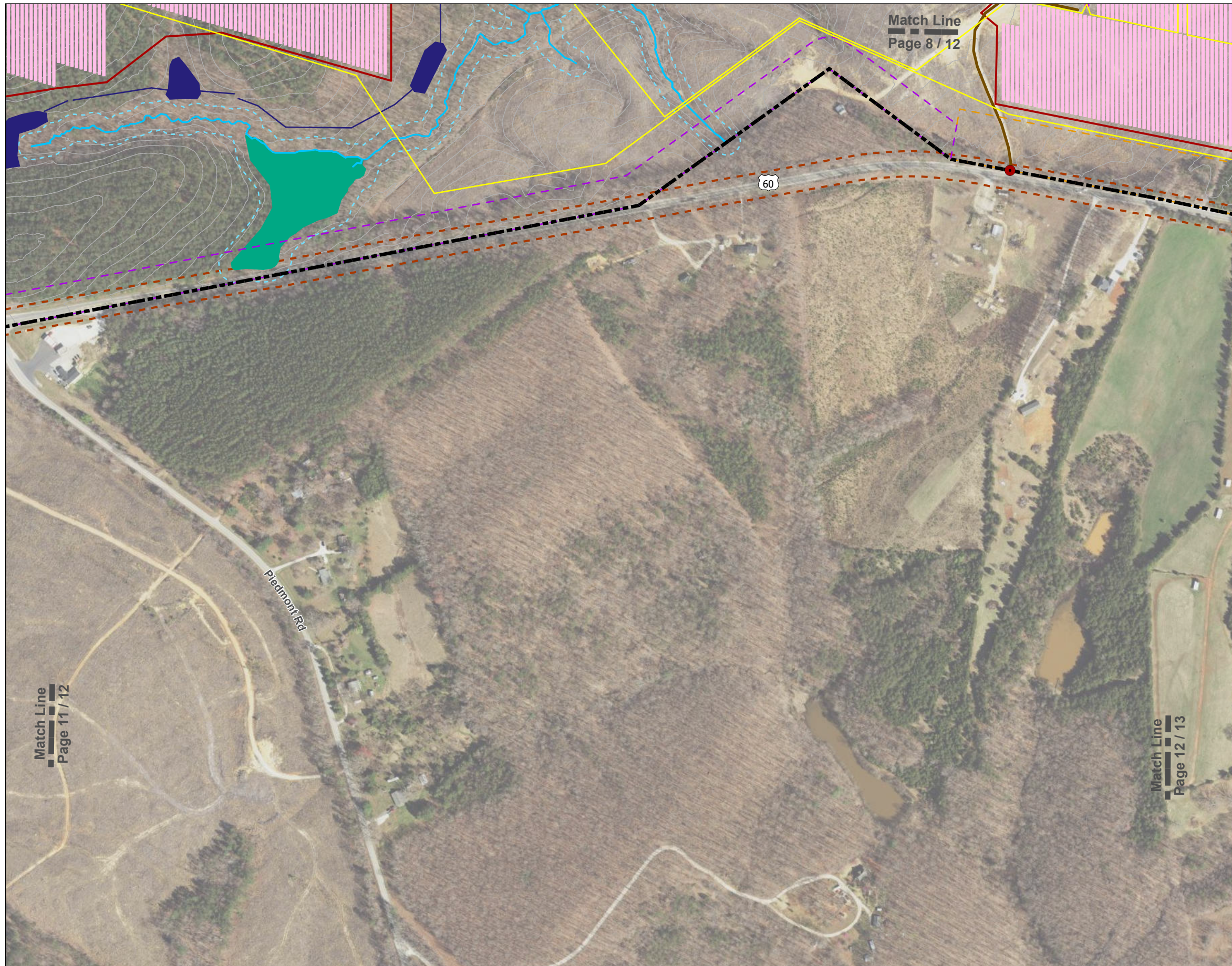
- Project Access
- Existing Substation
- Project Limits
- Fence Line
- 125-Foot Project Setback
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- Inverter
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Page 12 / 13

Figure No.
2

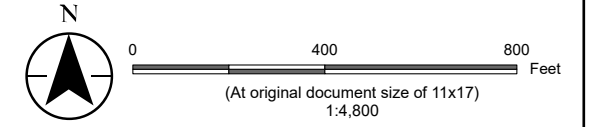
Title
Preliminary Site Plan

Client/Project
Wild Rose Solar Project, LLC
Wild Rose Solar Project

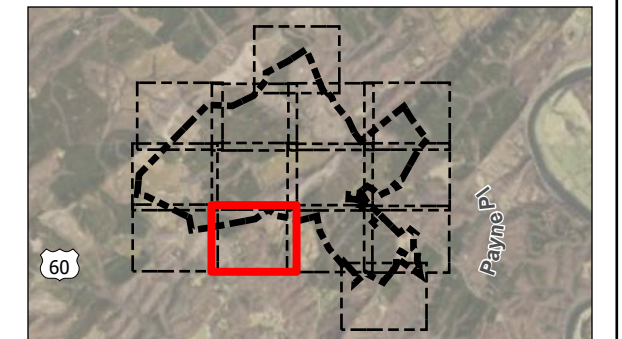
203402299

Project Location
Nelson County, Virginia

Prepared by MER on 2023-11-27
TR by MGS on 2023-11-27
IR by JLO on 2023-11-27



- Project Access
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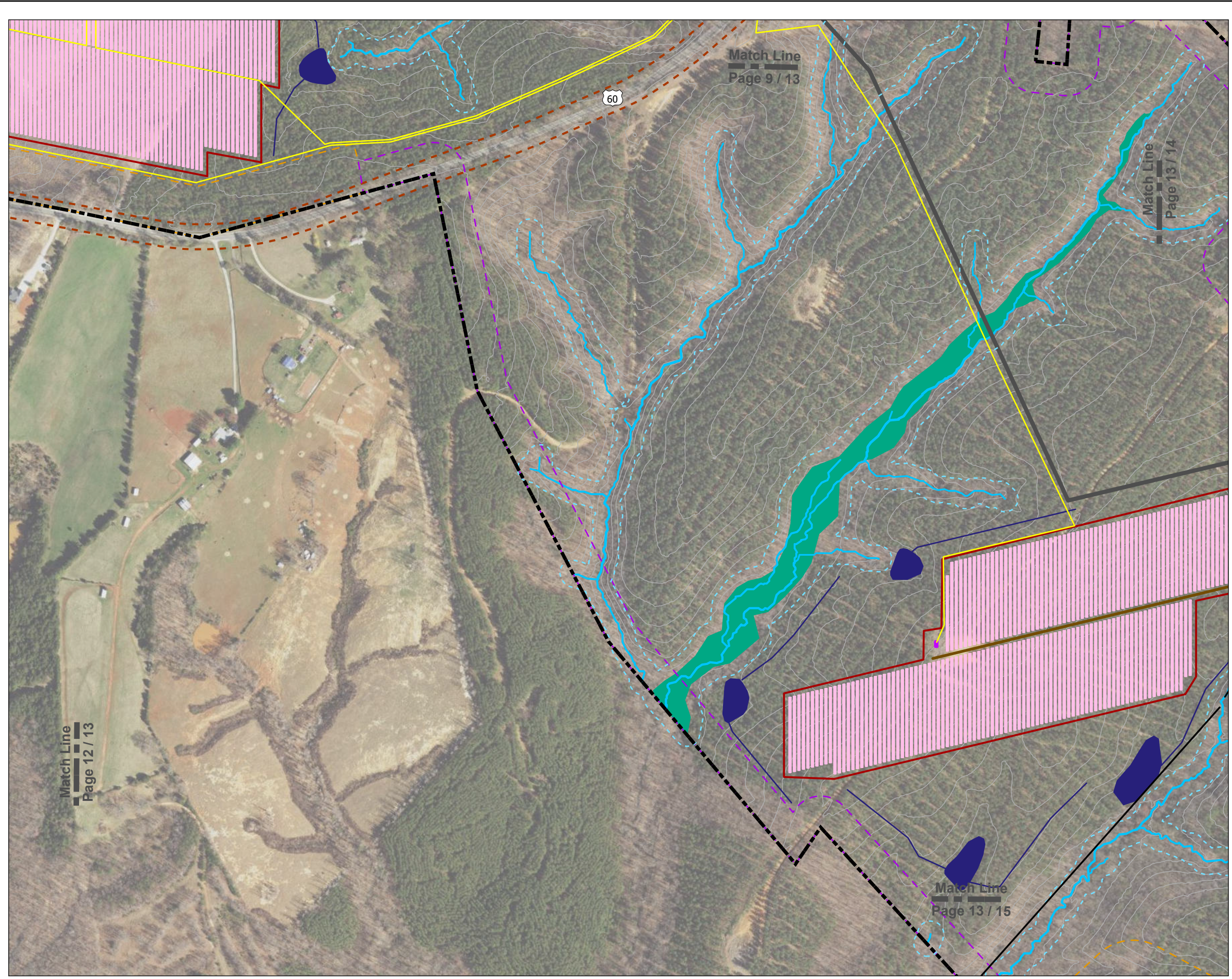
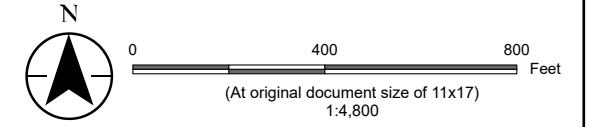


Figure No. 2
Title Preliminary Site Plan

Client/Project Wild Rose Solar Project, LLC
Wild Rose Solar Project
203402299
Project Location Nelson County, Virginia
Prepared by MER on 2023-11-27
TR by MGS on 2023-11-27
IR by JLO on 2023-11-27



- Project Access
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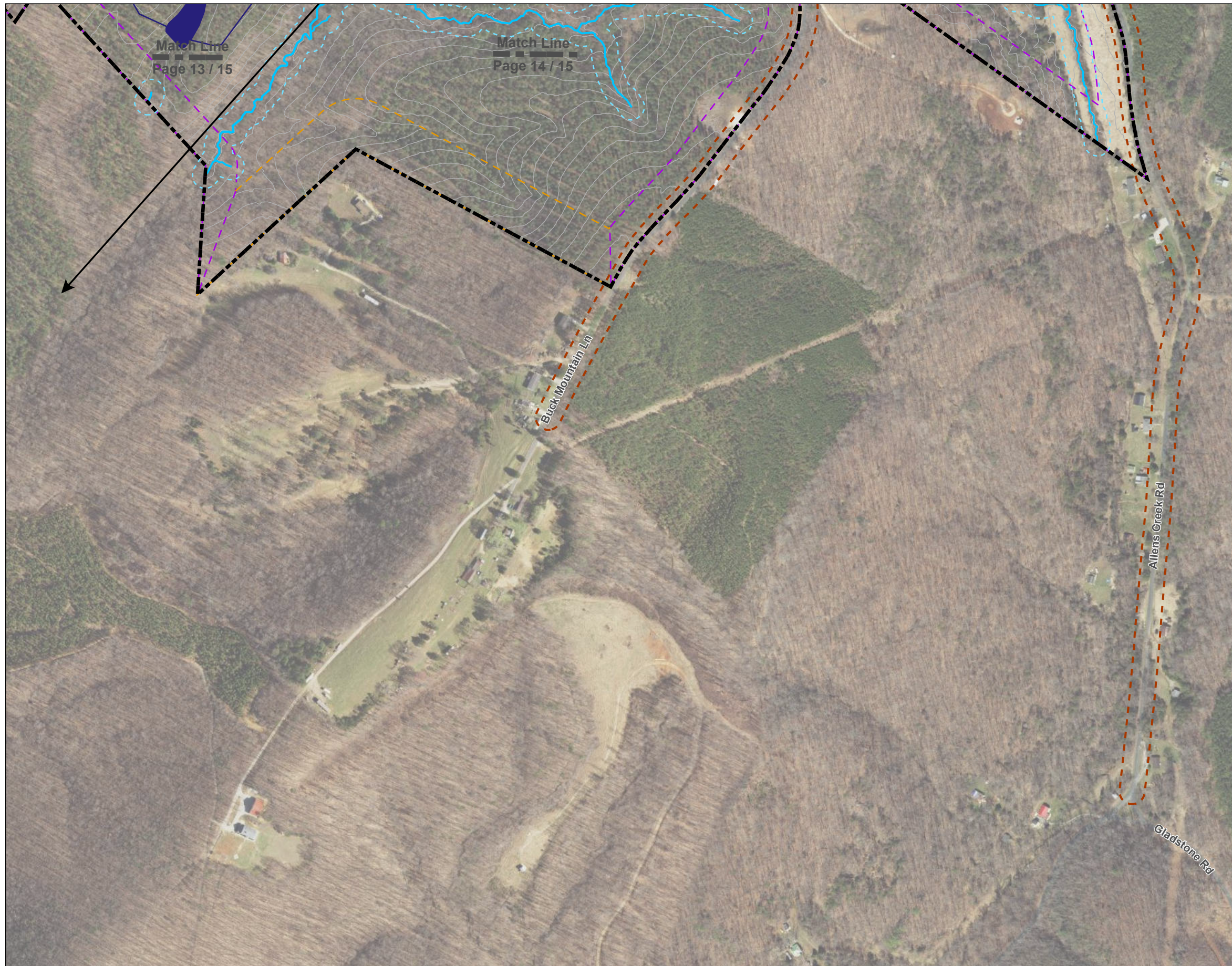


Figure No.

2

Title

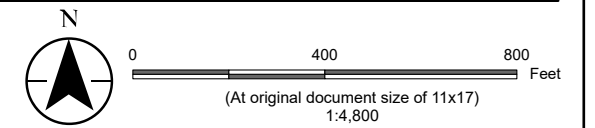
Preliminary Site Plan

Client/Project
 Wild Rose Solar Project, LLC
 Wild Rose Solar Project

203402299

Project Location
 Nelson County, Virginia

Prepared by MER on 2023-11-27
 TR by MGS on 2023-11-27
 IR by JLO on 2023-11-27



- | | |
|------------------------------|--|
| ● Project Access | --- 50-Foot Wetland Buffer |
| ▲ Existing Substation | ■ Floodplain (Not Present within Project Boundary) |
| --- Project Limits | ■ Proposed Laydown Yard |
| □ Fence Line | ■ Preliminary Stormwater Basin |
| --- 125-Foot Project Setback | --- Stormwater Ditch |
| --- 200-Foot Project Setback | --- Project Road |
| --- 100-Foot Road Setback | --- Collection Line |
| ■ Panel Array | --- Gen-Tie Line |
| ■ Inverter | --- Existing Transmission Line |
| ■ Substation | --- 10-Foot Contour |
| ■ Cemetery | ↔ Wildlife Corridor |
| --- 100-Foot Cemetery Buffer | |
| ■ Desktop Stream | |
| ■ Desktop Wetland | |



Notes
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Wild Rose Solar Project

Richard <richard.wingfield2@gmail.com>

Mon 6/17/2024 9:24 AM

To: Dylan Bishop <dbishop@nelsoncounty.org>

Cc: Jessica Ligon <jligon@nelsoncounty.org>

IRONSCALES couldn't recognize this email as this is the first time you received an email from this sender richard.wingfield2@gmail.com

Mr. Bishop,

My wife and I received notice of the scheduled public hearing on the pending solar project adjacent to our property. In lieu of scheduling conflicts that may prohibit our being able to attend, we would like to take this opportunity to offer our hopefully constructive input on the matter. We attended two of the open house meetings that Wild Rose Solar hosted. We enjoyed meeting the representatives and were impressed with both their presentation and their candid answers to all of our concerns. My wife and I are enthusiastically in full support of this project. We see it as both an environmentally friendly and low-impact way to significantly provide additional power to our nation's growing need for electricity. The proposed area for this project seems to be ideal in every respect given the fact that the land is primarily for timber production. Issues such as traffic inconveniences during construction, land disturbances creating erosion issues, or aesthetic concerns are all dramatically less than is typically seen with the routine timber harvesting on these lands. Given the fact that this project is term limited (40-year lease) as we understand it, provides for the option to reconsider such projects in the future with little to no risk to the county. We would think the revenues to the county and the added employment opportunities would be a welcome consequence of this proposed project.

We do hope to attend the hearing, but if not, again, we hope our thoughts expressed here will be considered.

Sincerely,

Richard and Patty Wingfield
4154 Richmond Hwy
Gladstone, VA 24553
Nelson County

cc: Supervisor Dr. Jessica Ligon