Application, Appendix, DEQ Supplement, Routing Study, Direct Testimony and Exhibits of Virginia Electric and Power Company

Before the State Corporation Commission of Virginia

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Application No. 347

Case No. PUR-2025-00032

Filed: February 20, 2025

Volume 4 of 5

ERM

Environmental Routing Study

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

PREPARED FOR

Dominion Energy®

Dominion Energy Virginia

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Environmental Routing Study

Culpeper Technology Zone 230 kV Loop and Lines #2 #1065 Conversion Project

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CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACRONYMS AND ABBREVIATIONS

Acronyms	Description
AFD	The Virginia Agricultural and Forestal Districts
AGL	above ground level
AMSL	above mean sea level
BMP	best management practice
BOS	Board of Supervisors
CBG	Census Block Group

Acronyms	Description
CCB	Center for Conservation Biology
Company	Virginia Electric and Power Company
CFR	Code of Federal Regulations
CPCN	Certificate of Public Convenience and Necessity
CTEC	The Culpeper Technical Education Center
CTZ	Culpeper Technology Zone
CWA	Clean Water Act
DKey	Determination Key
Dominion Energy Virginia	Virginia Electric and Power Company
Dominion	Virginia Electric and Power Company
Dulles Airport	Washington Dulles International Airport
EJ	environmental justice
EMF	electromagnetic field
ERM	Environmental Resources Management, Inc.
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCV	Forest Conservation Value
GIS	geographic information system
HUC	hydrologic unit code
ID	identification
IFP	Instrument Flight Procedure(s)
INSTAR	Interactive Stream Assessment Resource
IPaC	Information for Planning and Consultation
IVMP	Integrated Vegetation Management Plan
KOP	key observation point
kV	kilovolt
MP	milepost
NA	not applicable
NEPA	The National Environmental Policy Act
NHD	National Hydrography Dataset
NHL	National Historic Landmark
NHP	Natural Heritage Program

Acronyms	Description
NHR	natural heritage resource
nm	nautical mile(s)
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
PEM	palustrine emergent
PFO	palustrine forested
Project	Culpeper Technology Zone 230 kV Loop and Line #2 Conversion Project
PSS	palustrine scrub shrub
Rt. 28	VA/U.S. Route 28
Rt. 50	VA/U.S. Route 50
SCC	State Corporation Commission
SCC Guidelines	State Corporation Commission Guidelines for Transmission Line Application Filed Under Title 56 of the Code of Virginia
SCS	stream conservation site
TCB	tricolored bat
TERPs	Terminal Instrument Procedures
TOYR	time-of-year restriction
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
Va. Code	Code of Virginia
VaFWIS	Virginia Fish and Wildlife Information Service
VCRIS	Virginia Cultural Resource Information System
VCU	Virginia Commonwealth University
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDHR	Virginia Department of Historic Resources
VDHR Guidelines	Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia
VDOT	Virginia Department of Transportation
VDWR	Virginia Department of Wildlife Resources
VEJA	The Virginia Environmental Justice Act

Acronyms	Description
VOF	Virginia Outdoors Foundation
VSR	visually sensitive resource
WERMS	Wildlife Environmental Review Map Service

1 INTRODUCTION AND BACKGROUND

This report presents the results of an environmental constraint identification and routing study prepared by Environmental Resources Management, Inc. (ERM) on behalf of Virginia Electric and Power Company (Dominion Energy Virginia, Dominion, or the Company) for the proposed Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project in Culpeper, Fauquier, and Orange, Counties, Virginia (Project).

1.1 PROJECT DESCRIPTION

The Project is needed to provide electrical service to multiple new industrial customers (the Customers) within an area referred to as the Culpeper Technology Zone (CTZ), with the requests being prompted by the growing data center development in the area; to maintain reliable service for the overall load growth in the area; and to comply with mandatory North American Electric Reliability Corporation Standards. To meet the Project purpose and need, Dominion proposes to construct and operate the following facilities:

- New 230 kilovolt (kV) Mt. Pony-Oak Green and Mt. Pony-Potato Run Lines and Mt. Pony Substation (referred to as Mt. Pony Lines and Substation, or Mt. Pony Components);
- New 230 kV Cirrus-Mt. Pony Lines and Chandler, McDevitt, and Palomino Substations (referred to as Tech Park Lines and Substations, or Tech Park Components);
- Conversion and rebuild of existing 115 kV Lines #2 and #11 to 230 kV from the existing Line #2/#2199 and #11/#2199 corridor to the relocated Oak Green Switching Station, including expansion of existing right-of-way and relocation of the Oak Green Switching Station and new 115 kV Line #153 tap to interconnect the relocated Oak Green Switching Station to the existing Line #153 (referred to as Oak Green Rebuild and Relocation, Oak Green Rebuild, Oak Green Lines, or Oak Green Components); and
- Conversion and rebuild of existing 115 kV Line #2 from existing Line #535 to the existing Remington Substation (referred to as Remington Rebuild, Remington Lines, or Remington Components).

These facilities are collectively referred to as the Project. The Company's targeted in-service date for the Project is May 1, 2028.

The cut-in for the Mt. Pony Lines along the existing Lines #2/#2199 and #1065/#2199 would be at existing Structure #2199/110 / #2/496 for Mt. Pony Route 1 and at existing Structure #2199/132 / #2/518 for Mt. Pony Route 2. The cut-in for the Oak Green Rebuild would be at Structure #2199/164 / #2/550. The cut-in for the Remington Rebuild would be at Structure #2/147.

Figures 1.1-1 and 1.1-2 depict the general location of the Project. All figures referred to in this document are provided in Appendix A, Figures. All mileposts (MPs) associated with the Project facilities listed above are rounded to the nearest 0.1 miles. All references to those MPs in this document are assumed to be approximate (e.g., a reference to MP 1.2 means "approximately at" MP 1.2, etc.).

In developing routes for the Mt. Pony Components, Tech Park Components, Oak Green Components, and Remington Components, ERM and the Company considered the facilities needed to construct and operate the new feeds, the required locations of the proposed new and relocated substations, the width of new right-of-way that would be required, the amount of existing and proposed development in the area, the potential for impacts on environmental resources and communities, and cost.[1]

ERM identified two viable overhead route alternatives for the Mt. Pony Lines and three viable overhead route alternatives for the Tech Park Lines. Because the Oak Green Rebuild and Relocation will be primarily within an existing 75-foot-wide right-of-way and the Remington Rebuild will occur entirely within existing rights-of-way, no route alternatives were identified for these two Project components. In addition, the converted Oak Green-Remington Line #2 was previously constructed for operation at 230 kV but has only been operating at 115 kV. As such, converting the existing Line #2 to 230 kV will not require new right-of-way or upgrades to the existing facility, and it is therefore not assessed in this report.

1.2 ROUTE LENGTH AND CONSTRUCTION FOOTPRINT

Table 1.2-1 shows the length, footprint acreage, and number of structures for each Project route alternative. The acreage of the Mt. Pony Substation (5.0 acres) is included in the total construction footprint of the Mt. Pony Routes; the Chandler Substation (4.7 acres), McDevitt Substation (4.5 acres), and Palomino Substation (4.4 acres) acreages are included in the total construction footprint of the Tech Park Routes; and the acreage of the relocated Oak Green Switching Station (4.7 acres) is included in the Oak Green Rebuild construction footprint.

1.3 STRUCTURE TYPES AND RIGHT-OF-WAY WIDTHS

The Company proposes to primarily use double circuit monopoles of either weathering or dulled galvanized steel for the Project. Table 1.3-1 lists the minimum, maximum, and average structure heights for the Mt. Pony, Tech Park, Oak Green, and Remington Lines. The information in Table 1.3-1 reflects preliminary conceptual design, excluding foundation reveal, and is subject to change based on final engineering (see the proposed structure types in Appendix B, Structural Drawings).

The Mt. Pony Lines and Tech Park Lines will be within a new 100-foot-wide right-of-way, except in areas collocated with Dominion's existing 100-foot-wide rights-of-way where only 60 additional feet of new right-of-way will be needed. In these collocated areas, the total right-of-way width will be 160 feet.

[1] Cost is addressed elsewhere in the Company's Application for the Project.

TABLE 1.3-1 ROUTE LENGTH, CONSTRUCTION FOOTPRINT, AND STRUCTURE COUNT

Feature	Unit	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3	Oak Green Rebuild	Remington Rebuild
Centerline Length	miles	5.2	4.8	3.7	3.5	3.5	2.9	0.7
Construction Footprint [a]	acres	49.7	62.3	49.9	48.7	48.6	37.4	9.1
Structures	number	52	42	40	38	38	32	18

[a] The Construction Footprint of the Mt. Pony, Tech Park, and Oak Green Rebuild lines include the acreages of the substations associated with each Project component.

TABLE 1.3-2 ESTIMATED STRUCTURE HEIGHTS

Route [a]	Minimum (feet)	Maximum (feet)	Average (feet)
Mt. Pony Route 1	75	125	113
Mt. Pony Route 2	75	130	117
Tech Park Route 1	75	125	111
Tech Park Route 2	75	130	113
Tech Park Route 3	75	130	114
Oak Green Rebuild	75	130	118
Remington Rebuild	45	125	105

[a] All structure height estimates are based on conceptual engineering design and subject to change during final engineering design.

The Oak Green Lines will be within a variable width right-of-way. The existing right-of-way is 75 feet but will be expanded by 25 feet for a new width of 100 feet for most of the length of this component to accommodate the uprate and rebuild of the Company's #2 and #11 transmission lines. In addition, a segment of new 100-foot-wide right-of-way will be obtained to interconnect the existing right-of-way to the relocated substation.

The Remington Lines will be entirely within an existing 100-foot-wide right-of-way or on Dominion-owned land. The existing Remington Lines right-of-way is collocated with other Dominion transmission lines in a shared 200-foot-wide corridor.

At each of the cut-ins the Company will install one new monopole structure near the existing structures to provide a network connection to the existing transmission system.

1.4 CONSTRUCTION, OPERATION, AND MAINTENANCE PROCESSES

Construction of new overhead transmission lines may involve some or all the steps listed below:

- Detailed survey of the route alignment
- Right-of-way acquisition and clearing
- Construction of access roads, where necessary
- Installation of tower foundations
- Assembly and erection of new structures
- Stringing and tensioning of conductors
- Final cleanup and land restoration

All required materials for the Project's 230 kV structures would be delivered and assembled at each structure location within the proposed (or existing) right-of-way. Detailed foundation design will be completed prior to construction. The foundation design could include poured concrete requiring excavation or steel piles or caissons that might be vibrated, drilled, or driven into place, depending on soil conditions and final design. Structures would be erected with a crane and anchored to the foundation during final assembly. Excess soil from foundation construction (if any) would be evenly distributed at each structure, and the vegetation would be replanted and stabilized. In wetland areas, excess soil would be removed and evenly distributed on an upland site within Dominion's proposed right-of-way. Typical construction equipment could include hole diggers or drilling equipment, cranes, wire stringing rigs, tensioners, backhoes, and trucks.

All conductors and shield wires would be strung under tension. This system involves stringing a "lead line" between structures for the conductors and ground wires. The rope pulls a steel cable that is connected to the conductors and shield wires, which are pulled through neoprene stringing blocks to protect the conductor and shield wire from damage. Stringing the conductors and shield wires under tension protects the wires from possible damage should they be allowed to touch the ground, fences, or other objects.

Once the Project is in-service, maintenance of the right-of-way under the transmission lines will be essential for the reliable operation of the line as well as for public safety. Operation and maintenance of the Project will include periodic inspections of the line and the right-of-way;

occasional replacement of hardware as necessary; periodic clearing of vegetation, either mechanically or by selective, low-volume application of approved herbicides within the corridor; and the cutting of danger trees outside the right-of-way. Danger trees are trees outside the cleared corridor that are sufficiently tall enough to fall into the right-of-way and potentially impact the transmission line. Periodic inspections would occur through both aerial and walking patrols. Normal operation and maintenance would require only infrequent visits by Dominion Energy Virginia or its contractors.

Most maintenance activities would consist of selective, low-volume herbicide applications targeting only tree species on the right-of-way every 3 to 5 years and the cutting of danger trees every 3 years. Dominion uses only herbicides that are approved by the U.S. Environmental Protection Agency (USEPA) on power line rights-of-way.

Based on a discussion between the Company and representatives of the Virginia Department of Conservation and Recreation (VDCR) Division of Natural Heritage (DNH), the Company reviewed its Integrated Vegetation Management Plan (IVMP) for application to both woody and herbaceous species based on the species list available on the VDCR website. The Company continues to coordinate with DNH on an addendum to the IVMP to further explain how the Company's operations and maintenance forestry program addresses invasive species. In November 2023, the Company submitted the addendum draft to VDCR for review and continued discussions. VDCR provided an initial response to the addendum in January 2024. The Company is in the process of ongoing coordination with VDCR-DNH pertaining to the Company's IVMP with a meeting held on November 11, 2024. The Company is continuing to coordinate with VDCR with the commitment to schedule additional meetings to discuss VDCR's concern. Once the addendum is finalized, the Company will report on the results of its communications with VDCR in future proceedings.

1.5 OBJECTIVES OF THE STUDY

The Company requested ERM's services to define and collect information about resources within the study area, identify and compare route alternatives,[2] and document this information in a report. More specifically, ERM's scope of work consisted of:

- Defining and describing a study area for routing the transmission lines proposed for the Project;
- Gathering and assessing information about routing constraints and opportunities to be considered as part of the study;
- Identifying and mapping routing constraints and opportunities within the study area;

[2] Route alternatives were only identified for the Mt. Pony Lines and Tech Park Lines new build components of the Project. No route alternatives were identified for the Oak Green Rebuild and Relocation or Remington Rebuild components, as those Project components primarily utilize existing Dominion rights-of-way. In addition, as the conversion of the existing Line #2 from 115 kV to 230 kV will not entail any construction activity or changes in the existing rights-of-way outside of the areas covered by the Oak Green Rebuild and Remington Rebuild project components, the Line #2 conversion is not included in this report as there are no changes or impacts anticipated to the existing conditions.

- Participating in public outreach efforts for the Project (e.g., public open house and agency meetings) to gather information from stakeholders, agency staff, and the public regarding constraints in the study area;
- Identifying buildable alternative routes for the proposed transmission lines meeting the siting criteria provided in the Code of Virginia (Va. Code) and included in the State Corporation Commission's (SCC's) minimum filing guidelines (the Guidelines for Transmission Line Application Filed Under Title 56 of the Code of Virginia, referred to as "SCC Guidelines") for transmission projects;
- Comparing the alternative routes based on an analysis of environmental impacts and use of routing opportunities; and
- Recommending preferred routes.

2 ROUTING PROCESS

The process of routing new electric transmission lines begins with the definition of a study area encompassing and surrounding the beginning and end points for the new line. This is followed by evaluating routing opportunities and constraints within the area, such as collocation opportunities (e.g., roads, existing utility lines, or other linear infrastructure), land uses, planned developments, and environmental, visual, recreational, and cultural features. The study area is adjusted as needed based on constraints and opportunities, and viable route alternatives are developed to avoid constraints and use opportunities to the extent practicable. Communication with stakeholders and analysis of impacts results in adjustments to routes throughout the process.

The fundamental goals of the routing process are to maximize collocation with compatible linear features or land uses; avoid, minimize, or mitigate impacts on the human and natural environment; and provide regulators with viable route alternatives meeting the purpose and need of the project that are both efficient and equitable. Route viability is assessed through permitting risk, constructability, right-of-way acquisition, and cost after the least impactful alternatives are developed. The routing process steps, outlined below, provide a framework for understanding the Project, how routes are identified and screened, and the selection of a preferred alternative.

2.1 DEFINING THE STUDY AREA

The first step in the routing process is to define a geographic study area based on the Company's electric transmission and service obligations specific to a project—encompassing the beginning and end points of the route—that will allow for a reasonable range of potential alternatives. Additionally, and to the extent practicable, the limits of the study area are defined by reference to easily distinguishable landmarks, such as roads or other features. Doing so helps Dominion and ERM describe the boundaries to stakeholders, such as potentially affected landowners or county and agency staff. Section 3.1 describes the study area for the Project.

2.2 INVENTORY OF ROUTING CONSTRAINTS AND OPPORTUNITIES

The second step in the routing process involves the identification and mapping of environmental and built features within the study area. Based on extensive data collection, this step results in an inventory of routing constraints and opportunities in the study area, including but not limited to:

- Locations of substations;
- Electric transmission and other utility rights-of-way;
- Residences and residential areas;
- Planned developments;
- State, county, and private road rights-of-way;
- Public lands;
- Conservation and open space easements;
- Parks and trails;
- Wetlands and waterbodies;

- Forested lands;
- Hospitals, schools, cemeteries, and places of worship or other public gatherings;
- Areas of ecological significance (e.g., conservation sites and habitat for threatened and endangered [T&E] species);
- Visually sensitive resources (VSRs)—locations where views are protected by regulation, or where higher quality views are an expected condition, regardless of regulatory status; and
- Archaeological and historic sites and other nationally or locally significant cultural resources.

2.3 IDENTIFYING AND ASSESSING ROUTE VARIATIONS

The third step in the routing process is the identification of potential route corridors—swaths of the study area feasible for routing new transmission infrastructure—and the exclusion of areas where transmission line routing is impracticable due to land use or other constraints. This step is critical in larger, heavily developed or developing areas, where planned developments or protected lands, like parks, can limit potential routes. This step can also aid in the refinement of the study area. Agencies such as the Virginia Department of Transportation (VDOT) and locality staff are engaged at this stage by the Company to provide insight on current and future developments and land use planning. The viability of a potential route corridor is assessed by evaluating environmental impacts, compatibility with existing and future land uses, permitting risk, community input, ability to acquire new right-of-way, constructability, and cost.

After a route corridor is identified, potential route alternatives or variations within that corridor are developed using geographic information system (GIS) software, and field reconnaissance is conducted to better inform the understanding of the area. To the extent practicable, routes are identified that avoid constraints and utilize opportunities. Throughout this step, the Project team continues to collect and assess data on constraints, obtained through desktop sources, field reconnaissance, and ongoing stakeholder/public engagement activities (e.g., photography, targeted mailings, a Project website, open houses, and virtual and in-person meetings). The Project team uses this information to qualify and better understand resources that could be affected and to refine routes, where feasible, to avoid or reduce potential impacts.

Public engagement opportunities for the Project are discussed in Section 2.4. Routes considered but rejected and the viable routes developed for the Project are described in Section 4.6.

2.4 ROUTE ALTERNATIVE ANALYSIS AND ROUTE RECOMMENDATION

Using data gathered and stakeholder outreach feedback, route alternatives are analyzed and compared quantitatively and qualitatively based on constraint data and community/stakeholder input. After completing this analysis, a preferred route is selected through comparison of the advantages and disadvantages of each alternative relative to SCC Guidelines. A Proposed Route and route alternatives or route variations, if applicable, are presented for notice in the SCC Application for the Project. Routes deemed too impactful and/or infeasible or impracticable are not carried forward for notice.

3 STUDY AREA

3.1 STUDY AREA DESCRIPTION

Based on the large geographic area covered by the Project, as well as two project components being located within or partially within existing Dominion rights-of-way, ERM identified three study areas for the Project. The Mt. Pony and Tech Park study area, which encompasses approximately 14,330 acres, is within and adjacent to (to the east of) the Town of Culpeper in Culpeper County, Virginia. The limits of the Mt. Pony and Tech Park study area, depicted on page 2 of 4 of Figures 3.1-1 and 3.1-2, are generally defined by the following features:

- The Norfolk Southern Railroad to the north and west;
- Greens Corner Road and the town of Stevensburg to the northeast;
- Dominion's existing Line #2199 to the southeast; and
- Sumerduck Run creek/Racoon Ford Road to the southwest.

The Oak Green Rebuild and Relocation and Remington Rebuild will primarily utilize existing Dominion rights-of-way; therefore, no alternative routes were identified for these components. As a result, the study area for these components is a 0.25-mile buffer from the affected portions of the rights-of-way for existing Lines #2/#11 (for the Oak Green Components) and existing Lines #70/#535 (for the Remington Components).

The Oak Green study area, which encompasses approximately 1,030 acres, is generally located south of US 522 (Zachary Taylor Highway) from the west side of the Culpeper/Orange County boundary heading southeast to the intersection of US 522 and True Blue Road in Orange County. This study area is depicted on pages 3 of 4 on Figures 3.1-1 and 3.1-2.

The Remington study area, which encompasses approximately 320 acres, is adjacent to the eastern boundary of the Town of Remington and extends to the northeast in Fauquier County. This study area is depicted on pages 4 of 4 on Figures 3.1-1 and 3.1-2.

3.2 GIS MAPPING AND INVENTORY OF ROUTING CONSTRAINTS AND OPPORTUNITIES

In accordance with the Guidelines for Transmission Line Applications Filed Under Title 56 of the Va. Code, ERM assessed opportunities for routing the Project. ERM used the following sources to identify constraints and opportunities within the study areas:

- Culpeper County GIS datasets (Culpeper County 2024a);
- Environmental Systems Research Institute, Inc. (ESRI) World Imagery from 2021–2023 (ESRI et al. 2024a)
- ESRI World Elevation Terrain 2-foot contours (ESRI et al. 2024b);
- VDOT Projects and Studies Database (VDOT 2024);
- National Conservation Easement Database (NCED 2024);
- VDCR Conservation Lands Database (VDCR 2024a);
- VDCR Natural Heritage Database (VDCR 2024b);

- Virginia Geographic Information Network (VGIN) statewide land cover dataset (VGIN 2024);
- U.S. Census Bureau American Community Survey, 5-Year Estimates (2019-2023) (U.S. Census Bureau 2023a–2023e);
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping (USFWS 2024);
- Virginia Cultural Resources Information System (VCRIS) (VDHR 2024);
- American Battlefield Trust (ABT 2024)
- Historical Marker Database (2021)
- Preservation Virginia (2024)
- Existing utility transmission and distribution lines (Rextag 2024); and
- American Battlefield Protection Program (ABPP 2009).

ERM researched, studied, mapped, and incorporated resources identified through these sources into GIS, where the layers were organized by resource type.

The remainder of this section summarizes the major constraints and opportunities in the study areas affecting transmission line routing. Constraints include existing and planned developments, public lands, and conservation easements that can only be crossed with permission from landowners or the applicable managing agency, such as Virginia Community College System lands and Virginia Outdoors Foundation (VOF) easements, and nearby natural resources including forested areas, ecological cores, and wetlands. Several features in the study areas are both constraints and opportunities. For example, highways and roads can provide opportunities for routing new transmission infrastructure, but adjacent development can limit the area available for a new transmission right-of-way. Routing constraints and opportunities in the three study areas are shown on Figure 3.2-1.

3.2.1 MT. PONY AND TECH PARK COMPONENTS STUDY AREA

ERM identified the major routing constraints and opportunities listed below within the Mt. Pony and Tech Park study area.

- **Existing Transmission Infrastructure:** Dominion's existing 115 kV Line #2/#70 corridor runs through the study area from Dominion's Line #2/#2199 corridor (eastern terminus) to the Town of Culpeper, terminating at the existing Culpeper Substation (western terminus). The SCC previously approved this existing 100-foot-wide right-of-way for uprating to 230 kV transmission lines. The existing transmission lines provide a routing opportunity to collocate and utilize a portion of the existing right-of-way.
- **Planned Developments and the Culpeper Tech Zone:** There are multiple planned developments within this study area, including multiple proposed data center campuses that are located within an area designated as the CTZ near the boundary of the Town of Culpeper and Culpeper County north of U.S. Route (US) 15/29 (James Madison Highway) and Virginia State Route (Rt.) 3 (Germanna Highway). ERM and Dominion solicited input from and coordinated with both the Customers and other data center developers in the study area to avoid conflicts with planned data center campuses. Crossing these planned industrial

developments, when possible, are also an opportunity, because data centers are a compatible land use for electric transmission lines.

- **Existing Commercial and Industrial Developments:** Existing commercial and industrial developments are primarily in the northwest portion of the study area west of US 15/29. These existing developments include data centers, office buildings, a campus of Germanna Community College (part of the Virginia Community College System), and retail uses. While transmission lines are generally compatible with these land uses, routes can be constrained by existing buildings and facilities that limit the area available for new rights-of-way.
- **Public Lands:** Public lands can only be crossed with permission from the land managing agency. Federal, state, and locally owned lands in the study area include the federal National Audio-Visual Conservation Center (part of the Library of Congress) and Culpeper National Cemetery, the Germanna Community College campus, and the locally owned Culpeper Water Pollution Control Facility. Generally, these lands are considered a constraint, although can be an opportunity if the public land has an industrial use and the landowning agency permits new right-of-way.
- **VOF Easement:** A VOF easement occupies approximately 209 acres near the intersection of Dominion's existing Lines #2/#70 and #70/#2199 in the eastern portion of the study area. Dominion's existing Line #2 /#70 corridor crosses this easement; however, the VOF has indicated that expansion of this right-of-way will not be permitted (see Appendix C, Agency and Stakeholder Correspondence). As a result, this easement is considered a routing constraint.
- **Aboveground Cultural Resources and Mt. Pony Historic District:** Mt. Pony Historic District is a 3,910-acre area located within Culpeper County that spans structures built from pre-revolutionary war to post–World War II. In addition, several properties in this district have been identified as significant with respect to old historic road beds, which predate the Revolutionary War. The Mt. Pony Historic District was determined eligible for listing on the National Register for Historic Places in 1996. These historic resources are considered a constraint, and impacts (especially visual impacts) were minimized to the extent practicable.

3.2.2 OAK GREEN COMPONENTS STUDY AREA

ERM identified the major routing constraints and opportunities listed below for the Oak Green study area.

- **Existing Transmission Infrastructure:** Dominion's existing Line #2/#11 corridor runs through the study area, beginning at Structure #2199/164, the tap location on Dominion's existing Line #2199 (western terminus), and ending at the existing Oak Green Switching Station (eastern terminus).
- **VOF Easements:** The existing Line #2/#11 crosses two VOF easements. One easement occupies the area between the western terminus of the Oak Green Line and the Rapidan River in Culpeper County. The other easement is located southeast of River Road and Bushy Mountain Road in Orange County. While Dominion has an existing 75-foot-wide right-of-way, based on conversations with VOF the existing right-of-way cannot be expanded on the VOF

easement properties (see Appendix C, Agency and Stakeholder Correspondence); therefore, these easements are considered a routing constraint.

3.2.3 REMINGTON COMPONENTS STUDY AREA

ERM identified no major routing constraints for the Remington study area. One major routing opportunity is described below.

- **Existing Transmission Infrastructure:** Dominion's existing Line #2/#70 and Line #535 corridor runs through the study area, beginning at Structure #70/147 (western terminus), and ending in the existing Remington Substation (eastern terminus).

4 ROUTE ALTERNATIVES

4.1 STAKEHOLDER ENGAGEMENT

ERM and Company staff conducted field reconnaissance of the study area and potential route corridors from public roads and rights-of-way in the spring and summer of 2024. During these visits, ERM took photographs to aid in the analysis of impacts, particularly on visual and cultural resources.

After identifying preliminary routes, Dominion met with Culpeper County and Town of Culpeper County Staff in the spring, summer, and fall of 2024 to review the Project and potential alternatives. Dominion gathered feedback on the routes through engagement with the public, elected officials, regulatory and planning groups, and land managing agencies. Dominion announced the Project via mail and on their website[3] in December 2024 and also held two in-person open houses to share information and receive feedback in January 2025. Dominion maintained the website with up-to-date Project information and an interactive public comment map. Based on feedback obtained through stakeholder engagement, ERM adjusted and optimized some routes and helped inform the Company's decision to reject others. The Company's SCC Application describes the stakeholder engagement process in further detail.

4.2 MT. PONY LINES

This section provides descriptions of the two overhead transmission line routes deemed feasible for construction for the Mt. Pony Lines and retained for further analysis. Figures 3.1-1 and 3.1-2 depict the Mt. Pony route alternatives.

4.2.1 MT. PONY ROUTE 1

Mt. Pony Route 1 originates at a cut-in location on the Company's existing Lines #2/#2199 at Structure #2199/110 / #2/496. From the cut-in location, the route parallels Blackjack Road north for approximately 0.6 mile, then parallels Alvere Road to the west and north for approximately 0.6 mile where it joins the corridor for the Company's existing Lines #2/#70. Mt. Pony Route 1 then runs west, collocated with the Company's Lines #2/#70 for approximately 3.1 miles. Mt. Pony Route 1 then turns northwest, crosses Rt. 3 and runs another 0.6 mile (collocated with existing Lines #2/#70) before reaching the south side of US 15/29. At this point, Mt. Pony Route 1 turns southwest, paralleling the south side of US 15/29 for 0.3 mile before terminating at the proposed Mt. Pony Substation.

In total, Mt. Pony Route 1 measures approximately 5.2 miles long. Mt. Pony Route 1 would be constructed within a new 100-foot right-of-way in areas where not collocated with existing transmission lines. The 3.7-mile portion of Mt. Pony Route 1 that would be collocated with existing Lines #2/#70 would require a new 60-foot new right-of-way adjacent to the existing 100-foot right-of-way, creating a 160-foot-wide right-of-way.

[3] https://dominionenergy.com/ctz.

4.2.2 MT. PONY ROUTE 2

Mt. Pony Route 2 originates at a cut-in location on the Company's existing Lines #2/#2199 Lines at Structure #2199/132 / #2/518. From the cut-in location, the route heads northwest through forested and open land for approximately 3.5 miles and crosses Woolens Lane. The route then turns northeast, parallels the east side of US 522 for approximately 0.3 mile, crosses Rt. 3, and continues north across forested and open lands for approximately 0.5 mile before terminating at the proposed Mt. Pony Substation.

In total, Mt. Pony Route 2 measures approximately 4.8 miles long. Mt. Pony Route 2 would be constructed entirely within a new 100-foot-wide right-of-way.

4.2.3 MT. PONY SUBSTATION

The proposed 230-34.5 kV Mt. Pony Substation would be located on the south side of US 15/29, approximately 0.4 mile northeast of the intersection with Rt. 3. The substation would be constructed on land obtained through easement and owned by the developers of the proposed Customer A Data Center (see Section 5.1.6). The substation will be designed to serve load within the Culpeper Load Area. The proposed Mt. Pony Substation would require approximately 5.0 acres.

4.3 TECH PARK LINES

This section provides descriptions of the three overhead transmission line routes deemed feasible for construction for the Tech Park Lines and retained for further analysis. Figures 3.1-1 and 3.1-2 depict the Tech Park route alternatives.

4.3.1 TECH PARK ROUTE 1

Tech Park Route 1 originates at the proposed Mt. Pony Substation. From the proposed Mt. Pony Substation, Tech Park Route 1 heads northeast for approximately 0.3 mile on the south side of US 15/29, then turns northwest for approximately 0.2 mile. This segment crosses US 15/29 and would be collocated with the Company's existing Lines #2/#70. The route then runs southwest and west along the southern and western edges of a non-customer planned data center campus for 0.6 mile (including a crossing of McDevitt Drive), then crosses the Customer B (Culpeper Tech Campus by Stack Infrastructure, Inc.) and Customer C (Copper Ridge Data Center Campus) data center campuses as part of a 2.0 mile loop that connects the proposed Chandler, McDevitt, and Palomino Substations. Tech Park Route 1 then follows the existing 115 kV Line #70 corridor to the southeast and south for approximately 0.5 mile and terminates at the future Cirrus substation (approved as part of a separate filing). In total, Tech Park Route 1 measures approximately

3.7 miles[4] long. Tech Park Route 1 would be constructed within a new 100-foot right-of-way, except for two 0.2-mile segments where it is collocated with the existing Lines #2/#70 right-of-way and would require only 60 additional feet of right-of-way.

4.3.2 TECH PARK ROUTE 2

Tech Park Route 2 originates at the proposed Mt. Pony Substation. From the proposed Mt. Pony Substation, Tech Park Route 2 heads southwest for approximately 0.2 mile along the south side of US 15/29. The route then turns northwest, crosses US 15/29, and continues northwest and north for approximately 0.6 mile, crossing Technology Drive. Tech Park Route 2 turns west and follows the southern and western edges of a non-customer planned data center for 0.4 mile (including a crossing of McDevitt Drive), then crosses the Customer B and Customer C data center campuses as part of a 2.0-mile loop that connects the proposed Chandler, McDevitt, and Palomino Substations. Tech Park Route 2 then follows the existing 115 kV Line #70 corridor to the southeast and south for approximately 0.5 mile and terminates at the future Cirrus substation (approved as part of a separate filing). In total, Tech Park Route 2 measures approximately 3.5 miles long. Tech Park Route 2 would be constructed within a new 100-foot right-of-way, except for one 0.2-mile segment where it is collocated with the existing Line #70 right-of-way and would require only 60 additional feet of right-of-way.

4.3.3 TECH PARK ROUTE 3

Tech Park Route 3 originates at the proposed Mt. Pony Substation. From the proposed Mt. Pony Substation, Tech Park Route 3 heads southwest for approximately 0.2 mile along the south side of US 15/29. The route turns northwest, crossing US 15/29, and continues generally northwest for approximately 0.8 mile generally parallel to Technology Drive and crossing McDevitt Drive. Tech Park Route 3 then crosses the Culpeper Tech Campus and Copper Ridge data center campuses as part of a 2.0-mile loop that connects the proposed Chandler, McDevitt, and Palomino Substations. Tech Park Route 3 then follows the existing 115 kV Line #70 corridor to the southeast and south for approximately 0.5 mile and terminates at the future Cirrus substation (approved as part of a separate filing). In total, Tech Park Route 3 measures approximately 3.5 miles long. Tech Park Route 3 would be constructed within a new 100-foot right-of-way, except for one 0.2-mile segment where it is collocated with the existing Line #70 right-of-way and would require only 60 additional feet of right-of-way.

4.3.4 MCDEVITT SUBSTATION

The proposed 230-34.5 kV McDevitt Substation would be located 0.1 mile north of the intersection of Rt. 3 and the Norfolk-Southern Railroad within the Town of Culpeper, on land to be owned by

[4] If Mt. Pony Route 1 and Tech Park Route 1 are selected by the Commission, then a 0.3-mile segment of 100-foot-wide right-of-way along the south side of US 15/29 will not be needed by the Tech Park Route 1, as the Tech Park Route 1 will tap into the Mt. Pony Route 1 at Structure # 2437/168 / 2438/126 rather than beginning at the proposed Mt. Pony Substation. In this scenario, the Tech Park Route 1 is 3.4 miles in length, rather than 3.7 miles, and the Tech Park Route 1 right-of-way would be reduced by approximately 3.7 acres. If Mt. Pony Alternative Route 2 is selected by the Commission, this 0.3-mile (3.7 acre) segment will be included. To ensure that all potential Project impacts are evaluated, this 0.3-mile segment is included in both the Mt. Pony Route 1 and Tech Park Route 1 impacts in this report.

the Company within the Culpeper Tech Campus data center campus. The substation would be directly adjacent to and south of the proposed Chandler Substation and will be designed to accommodate multiple network connections to allow for increased reliability and to serve load within the Culpeper Load Area. The proposed McDevitt Substation would require approximately 4.5 acres.

4.3.5 CHANDLER SUBSTATION

The proposed 230-34.5 kV Chandler Substation would be located 0.2 mile north of the intersection of Rt. 3 and the Norfolk-Southern Railroad within the Town of Culpeper, on land to be owned by the Company within the Culpeper Tech Campus data center campus. The substation would be located directly adjacent to and north of the proposed McDevitt Substation, and less than 200 feet south of the proposed Palomino Substation and will be designed to accommodate multiple network connections to allow for increased reliability and to serve load within the Culpeper Load Area. The proposed Chandler Substation would require approximately 4.7 acres.

4.3.6 PALOMINO SUBSTATION

The proposed 230-34.5 kV Palomino Substation would be located 0.1 mile east of the Norfolk-Southern Railroad and 0.2 mile south of the East Chandler Street within the Town of Culpeper, on an easement on land owned by the Copper Ridge Data Center campus. The substation would be located less than 200 feet north of the proposed Chandler Substation and will be designed to accommodate multiple network connections to allow for increased reliability and to serve load within the Culpeper Load Area. The proposed Palomino Substation would require approximately 4.4 acres.

4.4 OAK GREEN REBUILD AND RELOCATION

Figures 3.1-1 and 3.1-2 depict the Oak Green Rebuild and relocated Oak Green Switching Station.

4.4.1 OAK GREEN REBUILD

Oak Green Rebuild begins at a cut-in location on the Company's existing Lines #2/#2199 at Structure #2199/164 / #2/550 in Culpeper County. From the cut-in, the Oak Green Rebuild would follow the Company's existing Lines #2/#11 southeast for approximately 2.5 miles to the existing Oak Green Switching Station. This segment crosses the Rapidan River, enters Orange County, and crosses US 522 about 1.5 miles east of the County boundary. The Oak Green Rebuild passes through the existing Oak Green Switching Station (which would be partially removed, although the transmission structures within the existing substation site would be retained) and continues approximately 0.2 mile south to the relocated proposed Oak Green Switching Station site. In total, the Oak Green Rebuild measures approximately 2.7 miles long. The Oak Green Rebuild also includes an approximately 0.2-mile segment of new 100-foot right-of-way south of the relocated proposed Oak Green Switching Station to interconnect the existing 115 kV Line #153 to the relocated proposed Oak Green Switching Station.

The Oak Green Rebuild would be primarily within a 100-foot-wide right-of-way, which comprises the existing 75-foot right-of-way for existing Lines #2/#11, plus a 25-foot expansion. The

exceptions to this right-of-way expansion include a 0.2-mile segment west of the Rapidan River in Culpeper County and 0.3-mile segment south of River Road in Orange County that cross existing conservation easements and will be maintained within the existing 75-foot-wide rights-of-way. In addition, an approximately 0.2-mile segment south of the existing Oak Green Switching Station a new variable width right-of-way will be used to connect the existing Oak Green Switching Station to the relocated proposed Oak Green Switching Station.

4.4.2 RELOCATED OAK GREEN SWITCHING STATION

The relocated proposed Oak Green Switching Station would entail relocating and upgrading the existing 115-34.5 kV Oak Green Switching Station to 230-34.5 kV. The boundary of the new substation site would be less than 200 feet south of the boundary of the existing substation site (the Oak Green Rebuild transmission line between the existing and new substation sites would span approximately 0.2 mile). The proposed relocated Oak Green Switching Station site would require approximately 4.7 acres. Transformers and other substation equipment would be removed from the existing Oak Green Switching Station site; however, Dominion would retain the transmission structures within the existing substation site as part of the Oak Green Rebuild and Relocation.

4.5 REMINGTON REBUILD

The Remington Rebuild begins at a cut-in location on the Company's existing Lines #70/#535 at Structure #70/147 east of the Town of Remington in Fauquier County. From the cut-in, the Remington Rebuild heads east/northeast within the existing Line #70/#535 right-of-way for approximately 0.7 mile, where it terminates in the existing Remington Substation. The Remington Rebuild would occur entirely within existing variable width rights-of-way and across Dominion-owned lands. Figures 3.1-1 and 3.1-2 depict the Remington Rebuild.

4.6 ROUTES REJECTED FROM FURTHER CONSIDERATION

In developing routes for the Project, ERM identified and assessed route alternatives that were subsequently eliminated from further consideration for the Mt. Pony and Tech Park Lines. The remainder of this section provides descriptions of these alternatives and the rationale for rejecting them from additional review. Figure 4.6-1 depicts these rejected routes. Because the Oak Green Rebuild and Remington Rebuild components of the Project utilize existing Dominion rights-of-way, ERM did not identify any alternative routes for these components.

4.6.1 OVERHEAD ROUTES

4.6.1.1 MT. PONY ROAD ROUTE

The Mt. Pony Road Route originates at a cut-in location on the Company's existing Line #2/#2199 at Structure #2199/#154 / #2/#510. From the cut-in location, the route heads northwest adjacent to Mt. Pony Road through forested and agricultural land for approximately 3.9 miles. The route crosses Mt. Pony Road six times within this 3.9-mile segment. The route then crosses Rt. 3 and turns west and then north, parallel to the northeast side of Rt. 3 for approximately 0.4 mile to

the intersection with US 15/29, then turns northeast along the south side of US 15/29 for approximately 0.4 mile before terminating at the proposed Mt. Pony Substation.

ERM identified the following concerns with the Mt. Pony Road Route:

- **Impact on Residences**—There are approximately 40 residences within 500 feet of the centerline of the Mt. Pony Road Route, compared to 4 residences within 500 feet of the centerline of Mt. Pony Route 1 and 7 residences within 500 feet of the centerline of Mt. Pony Route 2.
- **Road Crossings**—This route crosses Mt. Pony Road six times to avoid direct impacts on existing residences and federal land. None of the crossings are perpendicular (the preferred crossing method).
- **Culpeper County Staff Preference**—Culpeper County staff stated a preference that new transmission lines avoid the area of scattered rural residences and agricultural uses along Mt. Pony Road (see Appendix C, Agency and Stakeholder Correspondence).

For these reasons, the Mt. Pony Road Route was eliminated from further consideration.

4.6.1.2 MT. PONY VOF ROUTE

The Mt. Pony VOF Route originates at a cut-in location on the Company's existing #2199 Line near Structure #70/53 / #2/1201. The route would follow the Company's existing Lines #2/#70 for 4.7 miles to the west to US 15/29, then parallels the south side of US 15/29 for 0.3 mile before terminating at the proposed Mt. Pony Substation, as shown on Figure 4.6-1. The route crosses an existing VOF easement (Rose Hill Farm) for approximately 0.5 mile near the beginning of its alignment. The Company held a meeting with VOF on May 1, 2024, to discuss the potential expansion of Dominion's existing right-of-way on the VOF easement parcel. During the meeting and in a follow-up email on May 28, 2024, VOF stated that they would not grant the Company a new or expanded right-of-way easement across the existing VOF easement at Rose Hill Farm due to the presence of viable routing alternatives (see Appendix C, Agency and Stakeholder Correspondence). Therefore, the Mt. Pony VOF Route was eliminated from further consideration.

4.6.1.3 TECH PARK GERMANNA HIGHWAY ROUTE

The Tech Park Germanna Highway Route originates at the proposed Mt. Pony Substation and then parallels the south side of US 15/29 for approximately 0.2 mile. The route then turns northwest, crosses US 15/29 and continues along the southwestern boundary of an existing data center, crosses open land on a second industrial parcel for 0.5 mile, and crosses McDevitt Drive. The route then follows the north side of McDevitt Drive and continues northwest along US 522/Rt. 3 (also signed as Germanna Highway in this location) for 0.8 mile, before turning north across proposed data center land for 0.2 mile and connecting to the proposed Palomino Substation. From the proposed Palomino Substation, the route heads south for 0.4 mile and connects the proposed Chandler and McDevitt Substations, then continues southeast for 0.3 mile along US 522 in a shared corridor with the segment of the route connecting to the Palomino Substation. From there, the route heads northeast for 1.1 mile along McDevitt Drive, crossing from the north to the south side of the road and terminating at the approved but not yet constructed Cirrus Substation.

ERM identified the following concerns with the Tech Park Germanna Highway Route:

- **Input from Town of Culpeper and Culpeper County**—Town of Culpeper and Culpeper County staff expressed concerns about the visual impact of the Tech Park Germanna Highway Route. The transmission line would run along a primary entrance roadway into the Town of Culpeper (US 522), introducing stronger visual impacts on this gateway than would be generated by alternatives that would run between proposed data center buildings.
- **Conflicts with Planned Developments**—The Tech Park Germanna Highway Route would cross a segment of open land on an industrial parcel located southeast of the intersection of US 522 and McDevitt Drive. While no plans have been formally submitted to the Town of Culpeper for this parcel, the landowner indicated that the location of the Tech Park Germanna Highway Route would directly impact a planned expansion of this existing facility.
- **Alternative Route Location Concurrence from Adjacent Data Centers**—The two landowners located northwest of McDevitt Drive (Culpeper Tech Campus and Copper Ridge Data Center Campus) both support a route that would be located along the parcel boundary between the two campuses (the location of the Tech Park Routes 1, 2, and 3) rather than a route along US 522 (see Appendix C, Agency and Stakeholder Correspondence).

For these reasons, the Tech Park Germanna Highway Route was eliminated from further consideration.

4.6.2 HYBRID OVERHEAD/UNDERGROUND ROUTES

4.6.2.1 MT. PONY HYBRID ROUTE 1

The Mt. Pony Hybrid Route 1 includes an approximately 3.9-mile underground component and an approximately 0.8-mile overhead component. The route originates from an underground transition station (the South Transition Station) adjacent to the Company's existing Line #2199. From the South Transition Station, the route heads northwest in an underground conduit through forested and agricultural land for approximately 3.9 miles, crosses Woolens Lane, and turns north before terminating at a second underground transition station (the North Underground Transition Station) adjacent to the east side of US 522. At the North Transition Station, the route transitions from an underground to an overhead configuration, and continues overhead north-northeast for approximately 0.8 mile, crossing Rt. 3 and terminating at the Proposed Mt. Pony Substation.

ERM identified the following concerns with Mt. Pony Hybrid Route 1:

- **Cost and Schedule**—An underground solution would significantly increase the construction cost and would increase the total construction timeline for the Project, compared to an entirely overhead solution.
- **Wetland and Waterbody Impacts**—A hybrid underground solution would require the placement of permanent fill along the underground segment (circuits, conduit, splicing vaults, and engineered fill) within wetlands, potentially impacting hydrology. The engineered fill, which protects the buried cables and distributes heat, is impervious, meaning it can block the movement of subsurface water across the right-of-way.

- **Transition Station and Other Permitting**—Transition Station permits and/or rezoning would be required for the two transition stations, neither of which is located on industrially zoned lands. In addition, the underground segment of the hybrid route would likely require increased wetland and waterbody permitting due to increased permanent impacts at wetland crossings, compared to an overhead option. This would increase the overall permitting risk and schedule for the Project.

For these reasons, the Mt. Pony Hybrid Route 1 was rejected from further consideration.

4.7 COLLOCATION OPPORTUNITIES

ERM identified existing and planned corridors within the study area through review of digital aerial photography; data from Dominion about its existing transmission system; the 2023 Culpeper County, Fauquier County, and Orange County Comprehensive Plans (Culpeper County Government 2023, Fauquier County Government 2023, Orange County Government 2023); mapping and GIS for the energy industry (Rextag 2024); and various publicly available data layers (Culpeper County 2024a; Fauquier County 2024; Orange County 2024a). Existing corridors within the study area include electric transmission and distribution lines; pipelines (e.g., natural gas, water, sewer); other utility easements; and major road corridors, each of which was assessed as a potential routing opportunity for the transmission line routes. Table 4.7-1 provides the miles of collocation, by collocation feature type for each route. The remainder of this section discusses the existing corridors used for collocation.

TABLE 4.7-1 ROUTE COLLOCATION ALONG EXISTING CORRIDORS (MILES)

Feature	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3
Collocation (total)	4.5	0.3	0.7	0.4	0.6
Utility Collocation	3.7	0.0	0.5	0.2	0.2
Road Collocation[1]	0.7	0.3	0.2	0.2	0.4

[1] This includes the future alignment of Frank Turnage Drive.

4.7.1 ELECTRIC TRANSMISSION AND DISTRIBUTION CORRIDORS

Dominion's existing Line #2199 forms the approximate eastern boundary of the Mt. Pony and Tech Park study area. Lines #2/#70 parallel each other in an existing 100-foot right-of-way generally running in a northwest to southeast orientation through the study area from the Culpeper Substation to Line #2199. Most lands crossed by Lines #2/#70 south of US 15/29 are open lands with limited or no existing or known planned developments that would prevent expanding the existing right-of-way. Other than the Rose Hill Farm VOF easement near the eastern part of the study area, Lines #2/#70 are generally free of constraints south of US 15/29 that would limit collocation opportunities. North and west of US 15/29 in the Tech Park area, collocation opportunities with Lines #2/#70 are much more limited. Lines #2/#70 cross public land owned by Germanna Community College immediately west of US 15/29. Tech Park routing options must also deviate from Lines #2/#70 to connect to the future Chandler, McDevitt, and Palomino

Substations. Planned data center development also limits the available area for right-of-way expansion and routing opportunities. Collocation is viable for an approximately 0.3-mile section of Lines #2/#70 along East Chandler Street.

The Oak Green Lines would be rebuilt within the existing and expanded right-of-way of Lines #2/#11, and thus would be collocated by definition. Most of Lines #2/#11 cross open land and forested lands and are generally not spatially constrained. However, Lines #2/#11 cross two existing VOF easements for a total of approximately 0.6 mile. The sections of the right-of-way of Lines #2/#11 that do not cross VOF easements can be expanded from 75 feet to 100 feet wide. Because the existing right-of-way can be utilized and expanded in most areas, the existing corridor for Lines #2/#11 was the only corridor considered for routing options in the Oak Green study area.

Similarly, the Remington Lines would be rebuilt within the existing right-of-way for Lines #2/#70 and #535. Because the existing right-of-way can be utilized, the existing corridor for Lines #2/#70 and #535 was the only corridor considered for routing options in the Remington study area.

4.7.2 ROAD CORRIDORS

Multiple significant roadways and traffic thoroughfares cross the Mt. Pony and Tech Park study area. The 2023 Culpeper County Comprehensive Plan (Culpeper County Government 2023) identifies US 15/29 as a freeway/expressway, Rt. 3 as a principal arterial road, US 522 as a minor arterial road, McDevitt Drive and East Chandler Street as major collector roads, and Mt. Pony Road (between US 522 and Kibler Road) as a minor collector road.

Road collocation opportunities south and east of US 15/29 include Mt. Pony Road and Rt. 3. Because Dominion's existing Lines #2/#70 are near Rt. 3 and are suitable for collocation, Rt. 3 was not considered for collocation. As discussed in Section 4.6.1, collocating with Mt. Pony Road was studied and subsequently eliminated from further consideration due to the rural residential nature of the road, impacts on residences, and the preference of Culpeper County staff to avoid constructing a transmission line along this road.

North and west of US 15/29, portions of Tech Park Routes 1, 2, and 3 collocate with roads. All of the Tech Park routes collocate with the future alignment of Frank Turnage Drive near the end of their alignments as they turn south and terminate at the future Cirrus Substation. A segment of Tech Park Route 3 also collocates with Technology Drive as it runs northwest and crosses McDevitt Drive.

Because the Oak Green and Remington Components would be built within existing transmission line easements, there are no road corridor collocation opportunities in either study area.

4.7.3 BURIED UTILITY EASEMENT CORRIDORS

No large pipeline corridors were identified in the study areas. In the CTZ, water and sewer lines run along Technology Drive, McDevitt Drive, and East Chandler Street. Portions of Tech Park Routes 1, 2, and 3 collocate with water lines along these roads. Due to the planned developments

in the Tech Park, collocation with these utilities is only feasible in limited areas. No buried utility easements are present in the Oak Green and Remington study areas.

5 RESOURCES AND IMPACTS

After defining the study area, ERM developed a list of features to consider and assess as part of the routing process and provide a basis for comparing routes (Table 5-1). These include constraints (e.g., land uses, planned developments, and biological resources) and opportunities (e.g., existing transmission lines, roads, and other linear features). ERM inventoried existing conditions, constraints, and opportunities using information from publicly available GIS and other databases; agency websites; published documents, such as county or municipal land use plans; communication with agency and county staff, stakeholders, and elected officials; and field reconnaissance. In cases where GIS data were not available for a particular environmental resource or other feature, ERM obtained the best available hard-copy or online version, and hand digitized the information needed to complete the study. In addition to the identification and discussion of the resources within the Project area, a Feature Crossing Table of the resources discussed throughout Section 5 is included as Appendix D.

TABLE 5-1 FEATURES CONSIDERED FOR ROUTING

Feature Type	Description
Existing Corridors	
Existing electric facilities	• Transmission or distribution lines and substations
Other utilities	• Water, sewer, or other pipelines
Transportation infrastructure	• Highways, roads, railroads, and related corridors
Land Uses	
Land ownership	• Federal, state, and local lands • Private lands
Land uses and cover types	• Cover types (e.g., forested, agricultural, developed, open) • Subdivisions, residential areas, and residences • Cemeteries, schools, and places of worship
Recreational areas	• Federal, state, county, or municipal parks and other managed recreation areas • Golf courses • Interpreted historic sites • Trails (e.g., for biking, hiking, birding, or wildlife viewing)
Land use planning and zoning	• Zoning districts • County Comprehensive Plans and related planning documents
Planned developments	• Planned, proposed, or conceptual residential, commercial, or industrial developments
Conservation lands and easements	• VDCR conservation lands and easements • VOF easements • Culpeper, Fauquier, and Orange County conservation easements • Wetland mitigation banks

Feature Type	Description
	• Other conservation lands
Transportation	• Road and railroad crossings • Public and private airport facilities
Natural Resources	
Surface waters	• Wetlands • Waterbodies
Protected or managed areas	• Resource protection areas • Conservation sites • Wildlife management areas • Ecological cores
Protected species	• Natural heritage resources • Threatened and endangered species • Bald eagles
Vegetation	• Vegetation characteristics • Forested land
Visual Resources	
Visual resources	• Viewsheds to and from visually sensitive areas • Scenic rivers and byways
Cultural Resources	
Cultural resources	• Archaeological sites • Historical or architectural sites and districts • NRHP listed and eligible properties • Battlefields • VDHR easements • Locally significant resources
Geological Resources	
Mineral resources	• Mines or quarries
Environmental Justice	• Low-income populations • Minority populations • Age groups (under age 5 and over age 64) • Linguistically isolated communities

NRHP = National Register of Historic Places; VDCR = Virginia Department of Conservation and Recreation; VDHR = Virginia Department of Historic Resources; VOF = Virginia Outdoors Foundation.

5.1 LAND USE

5.1.1 LAND OWNERSHIP AND PUBLIC LANDS

5.1.1.1 EXISTING CONDITIONS

ERM reviewed information about land ownership in the study area using digital parcel data obtained from the Town of Culpeper and from Culpeper, Fauquier, and Orange Counties. These data indicate that most of the parcels within the study area are privately owned. The route alternatives do not cross any federal-, county-, or municipal-owned lands. Tech Park Route 1 and Tech Park Route 2 cross state-owned land. Figure 5.1.1-1 depicts land ownership in the study area. The remainder of this section discusses public lands within 0.25 mile of or crossed by the Project. Visual impacts of the Project, including impacts on public lands, are addressed in Section 5.3.

Federal Lands

Culpeper National Cemetery and Annex

The National Cemetery Administration (part of the U.S. Department of Veterans Affairs) administers the Culpeper National Cemetery and Annex, located east of the Norfolk Southern Railroad along both sides of East Chandler Street. Purchased in 1867, the cemetery was originally six acres and featured four burial sections. Since then, the cemetery has expanded to over 29 acres and includes five monuments erected by various veterans' organizations. The Culpeper National Cemetery was listed on the National Register of Historic Places in 1996 (National Cemetery Administration 2023). The National Cemetery Annex is approximately 600 feet north of all Tech Park routes and approximately 300 feet from the proposed Palomino Substation.

Audio-Visual Conservation Center at the Library of Congress Packard Campus

The Packard Campus of the Library of Congress is a 45-acre campus built into the side of Mount Pony, featuring adaptive reuse and expansion of a previously existing underground Federal Reserve Bank facility. At the campus, the Library of Congress acquires, preserves, and provides access to a comprehensive collection of films, television shows, radio broadcasts, and sound recordings. The facility is approximately 0.5 mile south of Mt Pony Route 1 and approximately 600 feet west of Mt Pony Route 2 (Library of Congress n.d.).

State Lands

Germanna Community College, Daniel Technology Center

The Germanna Community College Daniel Technology Center is located along Technology Drive. The Daniel Technology Center was built in 2006 primarily for workforce development instruction and technical training (Germanna Community College 2024). The State Board for Community Colleges is responsible for establishing, controlling, and administrating the statewide system of publicly supported community colleges (Commonwealth of Virginia 2024). Tech Park Route 1 crosses the Daniel Technology Center along the western property line.

Germanna Real Estate Foundation

The Germanna Real Estate Foundation owns two adjacent parcels in the study area. The Germanna Real Estate Foundation supports the real estate needs of Germanna Community College. Tech Park Route 2 crosses diagonally through the property at Technology Drive, while the Tech Park Route 1 right-of-way follows the northern property boundary.

Virginia Department of Transportation

The VDOT Culpeper District Office is partially located between Orange Road and the Norfolk Southern Railroad, south of US 522. The eastern portion of this facility is within the Mt. Pony and Tech Park study area. The facility includes offices and other facilities associated with VDOT operations. The VDOT Culpeper District Office is approximately 0.25 mile southwest of the Tech Park Routes and the proposed Chandler and Palomino substations.

Local Lands

Culpeper County Human Services

The Culpeper County Department of Human Services operates the Culpeper Human Services Kid Central Childcare and Headstart program, located north of the intersection of Old Fredericksburg Road and Wolford Street. The facility was founded in 1990 to meet childcare needs in the county (Kid Central, n.d.). The childcare facility is approximately 300 feet west of the Tech Park Routes and approximately 500 feet from the proposed Chandler Substation.

Culpeper County Public Schools

The Culpeper Technical Education Center (CTEC) is administered by Culpeper County Public Schools on land owned by the State Board for Community Colleges. The facility offers vocational training and dual enrollment courses for high school students in Culpeper County. The facility is located on the northwest side of US 15/29 and is adjacent to and north of the Germanna Community College Daniel Technology Center. Tech Park Route 1 is less than 100 feet from the CTEC property line. Existing Lines #2/#70 are located between Tech Park Route 1 and the CTEC building.

Town of Culpeper

The Town of Culpeper operates various water well locations throughout the study area. In addition to these wells, the Town also owns and operates a wastewater treatment facility south of Nalles Mill Road and Keyser Road. The Town's Light and Power Department building is located near the intersection of Electric Ave and East Chandler Street, adjacent to the Culpeper National Cemetery. The Town wastewater treatment facility's property boundary is less than 100 feet east of all three Tech Park routes. The nearest water well to the Project is approximately 200 feet south of Tech Park Routes 1 and 2. The well is also approximately 100 feet north of Tech Park Route 3.

Encompass Community Supports

Encompass Community Supports (formally known as Rappahannock-Rapidan Community Services) owns and operates the S.E.E. Recovery Center, on U.S. Avenue, east of the Norfolk

Southern Railroad and adjacent to Culpeper National Cemetery. Encompass Community Services was formed in 1972 by the local governments of Planning District 9, which includes the counties of Culpeper, Fauquier, Madison, Orange, and Rappahannock. The facility provides services for individuals recovering from mental health and substance use challenges (NAMI 2024).

5.1.1.2 IMPACT ASSESSMENT

Mt. Pony Routes

Mt. Pony Route 1 is approximately 400 feet from the Germanna Community College Daniel Technology Center and CTEC. Route 1 is separated from these public lands by US 15/29. Construction and operation of Route 1 would not impact operations at either facility, because the route does not physically cross these lands.

Mt. Pony Route 2 is approximately 600 feet west of the Audio-Visual Conservation Center at the Library of Congress Packard Campus. Approximately 500 feet of existing vegetation between Route 2 and the Audio-Visual Conservation would provide buffer between the route and the facility. The construction and operation of Route 2 would not impact operations of the Audio-Visual Conservation Center, because the route does not physically cross the property.

Tech Park Routes

Route 1

Tech Park Route 1 runs along the Germanna Community College eastern property line for approximately 0.3 mile from MP 0.4 and MP 0.7. This segment of the route passes behind a parking lot along a grassy stretch of land. Although the route crosses state-owned property, operation of Route 1 would not impact operations of the Daniel Technology Center. The Germanna Community College did not identify any planned developments for the portion of the property within the Route 1 right-of-way. Construction of Route 1 would result in temporary noise and access impacts; however, Dominion would coordinate with Germanna Community College about these potential temporary impacts prior to construction. Visual impacts would be minimized due to Partial collocation with existing Lines #2/#70 would minimize visual impacts (see Section 5.3).

Near MP 0.8, the Route 1 right-of-way follows the boundary of (and would be within) a parcel owned by the Germanna Community College Real Estate Foundation. The Germanna Real Estate Foundation did not identify any planned developments for this area; therefore Route 1 would not impact use of this parcel as a part of the Germanna Community College campus.

Route 2

Tech Park Route 2 diagonally crosses the Germanna Community College Real Estate Foundation property along Technology Drive for approximately 500 feet. At MP 0.6, Route 2 would be approximately 0.3 mile from the Technology Center building. The Germanna Community College did not identify any planned developments for the portion of the property within the Route 2 right-of-way. Construction of Route 2 would result in temporary noise and access impacts; however, Dominion would coordinate with Germanna Community College about these potential temporary

impacts prior to construction. Visual impacts would be minimized due to Partial collocation with existing Lines #2/#70 would minimize visual impacts (see Section 5.3).

Route 3

Tech Park Route 3 does not cross any federal, state, county, or municipal lands.

Rebuild Segments

The Oak Green Rebuild and Relocation and the Remington Rebuild do not cross any federal, state, county, or municipal land.

5.1.2 LAND USE AND LAND COVER

5.1.2.1 EXISTING CONDITIONS

Table 5.1-1 summarizes land use and land cover within the study area, based on the VGIN Land Cover Dataset (VGIN 2024), other local and state-wide datasets, and aerial photo interpretation. Figure 5.1.2-1 depicts VGIN-classified land use/land cover within 0.25 mile of the route alternatives. Land use and land cover in the study area are broken down into the five main categories described below.[5]

- **Developed lands:** These are areas characterized by medium to high density constructed buildings, such as certain residential subdivisions, industrial uses, commercial areas, and impervious services.
- **Open space:** These are areas primarily covered by planted grasses, including vegetation planted in developed settings for erosion control or aesthetic purposes but also natural herbaceous vegetation and undeveloped land, parks, and open-space recreational facilities.
- **Forested lands:** These are areas where land cover consists of natural or semi-natural woody vegetation.
- **Agricultural lands:** These are areas used for commercial farming (e.g., commercial row crops or specialized agricultural activities) or grazing.
- **Open water:** These are open-water features, including rivers, streams, and natural and artificial ponds.

Land use and land cover types within the Mt. Pony and Tech Park study area consist predominantly of forested and agricultural land. Large areas of forested land and agricultural land with pockets of open space and developed residential land occur south and east of US 15/29. Land in the Tech Park north and west of US 15/29 is also predominantly forested and agricultural land, but more open space and developed land are present due to existing commercial and industrial development.

[5] For purposes of land use/land cover, wetland areas have been classified as open space, forested land, or open water depending on wetland type. Wetlands near the routes are discussed separately in Section 5.2.1.

Land use and land cover types within the Oak Green study area is predominantly agricultural land, with substantial areas of forested land and open space. Open space is the predominant land cover type in the Remington Rebuild study area.

TABLE 5.1-1 LAND USE/LAND COVER CROSSED BY THE ROUTES

Land Use/ Land Cover [a]	Unit	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3	Oak Green Rebuild and Relocation	Remington Rebuild
Forested	acres	11.8	39.8	24.1	24.6	24.4	4.5	<0.1
Agricultural	acres	37.2	21.1	24.2	18.3	15.9	24.1	1.6
Developed	acres	0.5	0.4	0.7	1.8	1.7	1.2	0.6
Open Space	acres	0.1	1.1	0.9	4.0	6.6	7.0	6.9
Open Water	acres	0.0	0.0	0.0	0.0	0.0	0.5	0.0

Sources: VGIN 2024 and ERM aerial photo interpretation (ESRI et al. 2024a).

[a] The Mt. Pony Lines are inclusive of the 230 kV Mt. Pony Lines and the Mt. Pony Substation. The Tech Park Lines are inclusive of the 230 kV Tech Park Lines, McDevitt Substation, Chandler Substation, and Palomino Substation. The Oak Green Rebuild and Relocation is inclusive of the Oak Green Rebuild existing and expanded rights-of-way and the relocated Oak Green Switching Station.

5.1.2.2 IMPACT ASSESSMENT

Except for land directly beneath transmission structures, Project operation would not affect the land use/land cover of agricultural, open space, developed land, and open water. Agricultural land uses are typically compatible with transmission line right-of-way; therefore, impacts on agricultural land would be minimal. In addition, all proposed substations would be converted to developed land.

Mt. Pony Lines

Mt. Pony Route 1 would cross 5.2 miles of land encompassing 49.7 acres of right-of-way. Mt. Pony Route 2 would cross 4.8 miles of land encompassing 62.3 acres of right-of-way. Land use and land cover types along the Mt. Pony routes consist predominately of agricultural and forested land with some areas of open space. The primary land use/land cover impact of either Mt. Pony route would be the conversion of forested lands to open space within the maintained right-of-way.

Tech Park Lines

Tech Park Route 1 would cross 3.7 miles of land encompassing 49.9 acres of right-of-way. Tech Park Route 2 would cross 3.5 miles of land encompassing 48.7 acres of right-of-way. Tech Park Route 3 would cross 3.5 miles of land encompassing 48.6 acres of right-of-way. Land use and land cover types along the Tech Park routes consist predominately of agricultural and forested land with some areas of open space; the Tech Park routes are primarily within the CTZ, which is planned for data center and similar development. The primary land use/land cover impact of either Tech Park route would be the conversion of forested lands to open space within the maintained right-of-way.

Oak Green Rebuild and Relocation

The Oak Green Rebuild and Relocation would cross 2.9 miles of land encompassing 37.4 acres of right-of-way. Land use and land cover types along the Oak Green Rebuild and Relocation consist predominately of agricultural and forested land with some areas of open space and water. The primary land use/land cover impact of the Oak Green Rebuild and Relocation would be the conversion of forested land to open space in the expanded right-of-way. The relocated substation area would also convert agricultural land to developed land.

Remington Rebuild

Because the Remington Rebuild would occur entirely within existing maintained right-of-way, this portion of the Project would have no impact on land use/land cover.

5.1.3 LAND USE PLANNING AND ZONING

5.1.3.1 LAND USE PLANNING

Section 15.2-2223 of the Va. Code requires each local planning commission to adopt a comprehensive plan that provides guidance for the physical development within its jurisdiction. Comprehensive plans assess existing and future land uses, anticipate development trends, and make recommendations for guiding the long-term development decisions of a city or county. Virginia also requires that a comprehensive plan be reviewed at least once every 5 years to adjust to actual or projected changes in land use conditions or needs (Va. Code Section 15.2-2230).

The Project is located partially in Culpeper County, the Town of Culpeper, Fauquier County, and Orange County, each of which has a comprehensive plan.

The Project is located partially in Culpeper County, the Town of Culpeper, Fauquier County, and Orange County, each of which has a comprehensive plan. The sections below describe the provisions of each comprehensive plan that could directly affect transmission line development.

Culpeper County Comprehensive Plan

Culpeper County's current Comprehensive Plan (Culpeper Plan) was adopted in March 2023. Future land uses for the study areas, as designated by the Culpeper Plan, include commercial, industrial, and mixed-use development along the north side of US 15/29 and agricultural and rural for the portions south of US 15/29 (Culpeper County Government 2023).

Chapter 7 of the Culpeper Plan addresses the goals, objectives, and action items concerning utility systems in Culpeper County. The plan specifically states that future development of new electrical transmission lines should be limited, and that expansion within existing rights-of-way must be the first option pursued when building new electric transmission line infrastructure (Culpeper County Government 2023). Chapter 7 also notes that utility providers should notify Culpeper County at least six months prior to filing with the SCC for review and comment. The Company met with Culpeper County staff beginning in Spring 2024 for review and comment on the route alternatives.

Other elements of the Culpeper Plan relevant to transmission line development in general and the Project specifically include designated Future Growth Areas and general guidelines on data center development. These plan provisions are discussed below.

Future Growth Areas

The Culpeper Plan identifies four Future Growth Areas as locations with existing infrastructure to support growth. The Project is partially located in the Braggs Corner/Eastern Business Area and the South Culpeper Future Growth Areas, both of which border US 15/29. These future growth areas delineate areas with existing industrial uses that are targeted for additional industrial development (Culpeper County Government 2023).

Data Centers

The Culpeper Plan's policies for data centers acknowledge the potentially disruptive nature of these facilities, including the large tracts of land required, noise, the need for electric transmission lines, impacts on rural viewsheds and agricultural lands, and demands on other utilities such as water and sewage. The Culpeper Plan further states that large developments (such as data centers) should not preempt other land use goals and should accommodate economic needs with the least possible disruption to surrounding land areas (Culpeper County Government 2023). The general guidelines for data center development are outlined within the Culpeper Plan and encourage data center development away from sensitive rural and agricultural areas to minimize impacts on these land use types. Other guidelines for data center development include construction in industrial zones and within 0.5 mile of existing electric transmission lines and/or construction in locations near similar facilities providing collocation opportunities (Culpeper County Government 2023).

The Culpeper Plan encourages the expansion of existing resources and related infrastructure before building new developments (Culpeper County Government 2023). Chapter 8 of the Culpeper Plan encourages the expansion of existing transmission infrastructure as a first option prior to the construction of new lines but recognizes that larger developments and increases in demand for services (e.g., electric, water, sewage, and transportation) will require new systems. The intent of this goal is to limit impacts on rural and agricultural areas.

Town of Culpeper

Comprehensive Plan

The Town of Culpeper Comprehensive Plan (Town Plan) was adopted in 2016 and amended in 2018. It's overarching theme is to promote development and investment to create long-term sustainability. The Town Plan's Future Land Use Map designates the Town portion of the Project as primarily employment center, low and medium residential uses north of East Chandler Street, and public institutional lands at and near the Culpeper National Cemetery. Maps showing the locations of the different designated areas described in the Town Plan are available online (Culpeper County Government 2023).

The Town Plan describes eight different Character Areas, each of which embodies a distinct combination of development form, architecture, and other physical characteristics (Town of Culpeper 2018). The portion of the study area within the Town is located in the Mixed Use Business Character Area, which includes East Chandler Street, a major corridor and gateway to the Town. Because the Project does not involve the construction of buildings, the Town Plan's development standards for the Mixed Use Business Character Area are not applicable to the Project. Nonetheless, the Project may contrast visually with the intended development characteristics of the Mixed Use Business Character Area. Section 5.3 discusses the Project's visual impacts.

The Town Plan also identifies six growth areas within the Town to potentially accommodate future growth. Most of the Town portions of the Project study areas are located in Growth Area 3, a 228-acre area east of downtown and south of East Chandler Street. The Town Plan's vision for the area is for industrial and business development.

Town of Culpeper Strategic Vision Plan

The Town of Culpeper Strategic Vision Plan (*Culpeper 2030*) examines provides an implementation strategy to help reach the long-term vision for six specific focus areas identified in the Town Plan. The Project study areas are partially located in the Eastern Gateway Focus Area, which has the largest number of undeveloped parcels in the Town and is positioned to grow into a technology and major industry employment center. *Culpeper 2030* also notes that more than 230 acres of land in the Focus Area was acquired by technology-based developers and rezoned for industrial uses. The Culpeper 2030 is available online (Town of Culpeper 2024b).

Fauquier County Comprehensive Plan

The Remington Rebuild component of the Project is entirely within Fauquier County. The Fauquier County Comprehensive Plan (Fauquier Plan) was adopted in August 2015. Chapter 9 of the Fauquier Plan discusses public facilities and utilities, including electric transmission lines (Fauquier County Government 2023a). The Fauquier Plan encourages the construction of new and improved electrical transmission lines that follow existing 230 kV and 500 kV corridors in the County, a preference for placing lines underground, and the widening of existing corridors only when necessary.

Fauquier County designates Service Districts—the County's urban growth areas—for more intensive uses and density as a way to guide growth. The Remington Rebuild is in the Remington Service District. Land associated with the existing Lines #535 and #2/#70 rights-of-way are designated as Open Space/Park (Fauquier County Government 2018).

Orange County Comprehensive Plan

The portion of the Oak Green Rebuild and Relocation south of the Rapidan River is in Orange County (the area north of the river is in Culpeper County). The Orange County Comprehensive Plan (Orange Plan) was adopted in October 2023. The Oak Green Rebuild and Relocation component of the Project is located in Orange County. Both the existing and future land use designations for the Oak Green Components study area are agricultural. The Future Land Use

Policy Designation section of the Orange Plan states that land currently designated as agricultural should remain substantially unchanged from its current pattern of uses and discourages development that significantly alters the prevailing characteristics of the area. The Community Infrastructure section of the Orange Plan discourages the construction of new utility transmission lines outside of the existing easements dedicated for such uses. The Oak Green Rebuild does not involve the construction of new transmission line corridor but instead a rebuild of the Company's existing Line #2/#11 with variable width expansion of the existing Line #2/#11 right-of-way and the relocation of the existing Oak Green Switching Station to a parcel adjacent to the existing Oak Green Switching Station.

The Orange Plan outlines proposed transportation improvement projects, including paving of Bushy Mountain Road between River Road and Clarks Mountain Road in the Oak Green study area, during fiscal years 2027 and 2028.

5.1.3.2 ZONING

Local governments use zoning to formally designate land use districts, identify intended and compatible land uses in those districts, establish standards to guide orderly and efficient land use and development, and implement the objectives of their comprehensive plan. A zoning ordinance can be modified by the local Board of Supervisors (BOS) and governing bodies or through requests from residents or businesses to change zoning designations or approve new uses.

Under Virginia law, public utilities planning to construct any transmission line of 138 kV or higher may either obtain a CPCN from the SCC or obtain the applicable local zoning ordinance approvals. The SCC's issuance of a CPCN preempts the local zoning ordinances. Although the Project would be exempt from local zoning pursuant to its CPCN, the zoning districts within the study area are described below, because they are important for understanding current and future land uses within the study area. Figure 5.1.3-1 shows the zoning districts crossed by the Project.

Culpeper County Zoning

The Culpeper County Zoning Ordinance is Appendix A of the Culpeper County Code of Ordinances. In addition to base zoning districts, portions of the Zoning Ordinance and the overall County Code establish overlay zones that add requirements to or identify additional permitted uses in the underlying base zoning district.

Base Zoning Districts

The Culpeper County portion of the study area is zoned primarily for light industrial uses, with some agricultural or rural zoning. The Mt. Pony and Tech Park study area overlaps the following zoning districts:

- Agricultural (A1)—This district implements the agricultural recommendations of the Culpeper Plan by conserving and protecting agricultural land from development, and encouraging the commercial production of agricultural products.
- Light Industry-Industrial Park (LI)—This district provides for light industry, research and development, and related uses in a planned park setting or at other appropriate locations.

- Rural Area (RA)—This district provides a transition between prime commercial agriculture, forest production, open space and conservation uses within the most rural areas of the County through orderly low-density development.
- Residential (R1)—This district designates low density, single-unit residential uses plus certain additional uses such as schools, parks, churches, and certain public facilities.

Technology Overlay Zones

In 2006, Culpeper County established technology overlay zones (Section 12, Article XVI of the County Code) to attract economic development to the County. The Culpeper Plan defines the intended technology zone occupants as "non-retail business that derives its gross sales revenue from research, development, manufacturing, advanced technological services, or other technology related products, processes and services" (Culpeper County Government 2023).

In March 2024, Culpeper County created the CTZ, a 950-acre campus primarily north of the US 15/29 / US 522 interchange that is designated to host data centers, public work entities, and educational institutions supporting the County's science, technology, engineering, and manufacturing initiatives (Culpeper County 2024). One of the purposes of the CTZ is the ability to consolidate the resources required for data centers while reducing the need for transmission line development across the County. Establishment of CTZ also signals the County's intent to limit data center development to the technology zone (Culpeper County Government 2024a). Portions of the Mt. Pony Routes and the Tech Park Routes (including the proposed Mt. Pony, Chandler, McDevitt, and Palomino substations) are located partially in this newly created technology zone.

Entrance Corridor Overlay District

The entrance corridor (EC) overlay district (Article 30 of the Culpeper County Zoning Ordinance) supports the Culpeper Plan's goals of preserving natural, scenic, historic, architectural, and cultural resources near major traffic corridors, including US 15/29, US 522, and Rt. 3 in the study areas. The ECs include the greater of either the full depth of all parcels of land contiguous to the road right-of-way or a depth of 500 feet from the road right-of-way if the adjacent parcel is less than 500 feet in depth. The Mt. Pony Lines cross the Rt. 3 and US 15/29 overlays, and Mt Pony Route 2 runs parallel to US 522 for approximately 0.3 mile. All Tech Park Routes cross US 15/29.

Town of Culpeper Zoning

The portion of the Mt. Pony and Tech Park study area within the Town is primarily zoned for industrial uses south of the railroad and along Rt. 3. The area north of East Chandler Street along Kingsbrook Road is zoned for low density residential. The Project itself crosses the following zoning districts:

- Limited Industrial M1—This district provides areas for and to encourage the development of intensive manufacturing, processing, and storage with limited retail and service uses.
- Heavy Industrial M2—The primary purpose of this district is to establish an area where the principal use is for heavy commercial and industrial operations.

In 2020, the Town of Culpeper began the process of rewriting its Zoning Ordinance (Chapter 22 of the Town Code). The new zoning ordinance will be a hybrid code that includes traditional zoning, which separates land uses into specific geographic districts, as well as "form based" zoning, which organizes land use based on physical form rather than land use (Town of Culpeper 2024b). The Zoning Ordinance update remains in progress. ERM found no major changes between the current and proposed zoning designations for the portion of the Project within the Town.

Fauquier County Zoning

Chapter 70 of the Fauquier County Code contains the county's Zoning Ordinance. The Remington Rebuild component of the Project crosses the following zoning districts in Fauquier County:

- Business Park (BP)—This district accommodates a mix of commercial business uses as well as clean industrial uses occurring primarily within structures.
- Residential (R1)—This district promotes single-family residential communities and non-residential uses that are consistent with the density, size, and character of the district.

Orange County Zoning

The Oak Green Rebuild and Relocation component of the Project crosses through the Agricultural zoning district in Orange County. The Agricultural district's purpose is to preserve the rural character of the county by protecting agriculture from conflicts with incompatible uses and promoting the traditional rural pattern of homes and small businesses.

5.1.3.3 IMPACT ASSESSMENT

Table 5.1-2 shows the centerline mileage of each zoning district by Project component within each jurisdiction. Project construction would not alter any planning designations or zoning districts, and the construction and operation of transmission lines is exempt from compliance with local comprehensive plans and zoning ordinances (Title 9, Section 25-830-150 of the Virginia Administrative Code [VAC-25-830-150]).

The Project components all primarily cross or occupy areas with agricultural and industrial land uses and designations. The Project does not impact existing or future land use designations.

Mt. Pony Lines

In general, Mt Pony Route 1 complies with the Culpeper Plan because the route follows existing transmission corridors as specified in Chapter 7 of the Culpeper Plan. Mt Pony Route 2 generally does not comply with Chapter 7 of the Culpeper Plan because the route would create a new transmission corridor through agricultural and rural lands in the County.

TABLE 5.1-2 ZONING DISTRICTS CROSSED (CENTERLINE MILES)

	Mt Pony Route 1	Mt Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3	Oak Green Rebuild and Relocation	Remington Rebuild
Culpeper County							
Agricultural	3.8	3.2	NA	NA	NA	0.2	NA
Light Industry-Industrial Park	0.1	0.4	1.6	1.9	1.7	NA	NA
Residential	NA	0.3	NA	NA	NA	NA	NA
Rural Area	1.2	0.8	0.5	NA	NA	NA	NA
Town of Culpeper							
Limited Industrial	NA	NA	NA	NA	0.2	NA	NA
Heavy Industrial	NA	NA	1.5	1.5	1.5	NA	NA
Fauquier County							
Business Park	NA	NA	NA	NA	NA	NA	0.4
Residential	NA	NA	NA	NA	NA	NA	0.3
Orange County							
Agricultural	NA	NA	NA	NA	NA	2.5	NA

NA = not applicable.

Tech Park Lines

The Tech Park Routes generally comply with the Town Plan and the Culpeper Plan because these routes are in industrial areas. The Town Plan's vision for Growth Area 3, where the routes are located, has been zoned for industrial and business development, which is compatible with the Project infrastructure.

Oak Green Rebuild and Relocation

The Oak Green Rebuild and Relocation generally comply with the Orange Plan because it does not involve the construction of new transmission line corridor but instead a rebuild of the Company's existing Line #2/#11 with variable width expansion of the existing Line #2/#11 right-of-way and the relocation of the existing Oak Green Switching Station to a parcel adjacent to the existing Oak Green Switching Station.

Remington Rebuild

The Remington Rebuild generally complies with the Fauquier Plan because the component is a rebuild of the Company's existing transmission lines entirely within existing Dominion right-of-way or on Dominion-owned lands and will not create any new utility corridors.

5.1.4 RESIDENTIAL AREAS AND RESIDENCES

5.1.4.1 EXISTING CONDITIONS

ERM identified dwellings within the right-of-way, and within 100 feet, 250 feet, and 500 feet of each route centerline through review of County and Town data (Culpeper County 2024; Town of Culpeper 2024a; Orange County 2024; Fauquier County 2024) and recent (2021–2023) digital aerial photography (ESRI et al. 2024a), as well as accessory buildings within the right-of-way. Table 5.1-3 lists the number of dwellings within these tiers for each route alternative. The tiers are cumulative, meaning the number of structures within 500 feet of each route centerline includes those within 250 feet, which includes those within 100 feet. Figure 5.1.4-1 shows the locations of these dwellings. The subsections below provide additional information on the residential areas and subdivisions within 0.25 mile of each route alternative. There are no dwellings or accessory buildings within the rights-of-way of any Project components.

Five residential subdivisions were identified within 0.25 mile of the Mt. Pony Lines or Tech Park Lines using the Culpeper County and Town of Culpeper webGIS services (Culpeper County 2024, Town of Culpeper 2024a). No residential subdivisions are crossed by the Mt. Pony Lines or Tech Park Lines. Within the Culpeper County, the existing Lovers Lane subdivision is located west of US 522 and south of Rt. 3. Four residential subdivisions were identified within 0.25 mile of the Project within the Town of Culpeper, including Mountain Brook Estates and Mountain Brook Townes subdivisions adjacent to Culpeper National Cemetery and north of East Chandler Street, the Madison Station subdivision along Rt. 3 west of the Norfolk Southern Railroad, and Lightfoot Apartments subdivision, along Old Fredericksburg Road west of the Norfolk Southern Railroad. In addition to these residential subdivisions, the portions of the study area within the Town of Culpeper east and north of the Norfolk Southern Railroad include a variety of housing unit types within and adjacent to the downtown core of Culpeper.

Lovers Lane, Mountain Brook Estates, and Madison Square subdivisions have existing single family or single family attached residences. The Lightfoot Apartments subdivision includes three multifamily buildings intended as affordable house, including two buildings with 24 units and one with 12 units. These buildings are currently under construction, but as of January 2025 do not have any occupied residences. Additional information on Lightfoot Apartments is included in Section 5.1.6. There are no existing dwellings within the Mountain Brook Towns subdivision.

Outside of residential subdivisions, residences in the study area are primarily single-family dwellings on privately owned parcels, most are scattered residential dwellings and accessory buildings for agricultural and commercial uses.

The Oak Green Rebuild and Relocation study area is in an area with scattered residential dwellings and accessory buildings integrated with agricultural and commercial uses. The seven dwellings identified within 500 feet of the centerline are also within 500 feet of existing Lines #2/#11.

The western edge of the Remington Rebuild study area includes a small portion of one residential subdivision, The Meadows. Most of the surrounding area comprises scattered residential dwellings and accessory buildings integrated with agricultural uses.

TABLE 5.1-3 RESIDENCES AND ACCESSORY BUILDINGS NEAR THE ROUTE ALTERNATIVES

	Unit	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3	Oak Green Rebuild and Relocation	Remington Rebuild
Dwellings within the right-of-way	Number	0	0	0	0	0	0	0
Dwellings within 250 feet of centerline	Number	1	0	0	0	0	3	1
Dwellings within 500 feet of centerline	Number	4	6	3[a]	3[a]	3[a]	7	2
Accessory buildings within right-of-way	Number	0	0	0	0	0	0	0

[a] Tech Park Routes 1, 2, and 3 include one single-family and two multifamily buildings within 500 feet. The two multifamily buildings are currently under construction and therefore unoccupied as of February 2025; they are located greater than 250 feet but less than 500 feet from all three Tech Park routes. One of these under construction buildings has 24 units and one has 12 units. As construction of these buildings is scheduled to be completed prior to construction of the Project, they are included as existing dwellings in this analysis. Additional information on these planned multifamily buildings is included in Section 5.1.6.

5.1.4.2 IMPACT ASSESSMENT

In accordance with the SCC Guidelines, routing through commercial and industrial areas, when practicable, is preferred to crossing residential areas to minimize potential conflicts with existing and planned land uses. Except for temporary impacts such as noise or traffic during construction, the Project would have no direct impacts on residential buildings.

In developing the route alternatives, the Company attempted to minimize visual impacts on residences and residential areas to the extent practicable by using existing tree cover and land features to visually obscure transmission infrastructure from existing residences. Section 5.3 discusses the Project's visual impacts.

The closest residential structures to each route alternative and potential impacts on residential buildings are discussed below. During construction, the Company will coordinate with local residents to mitigate impacts from daily construction activities.

Mt. Pony Route 1

The closest residence to Mt. Pony Route 1 is a single-family dwelling located off of Croftburn Farm Road near MP 4.5. Existing tree cover surrounds all sides of the residence, limiting visual impacts. Minimal visual impact is also expected for other residences located along Rt. 3 and Blackjack Road, due to distance and vegetative buffers. Mt. Pony Route 1 collocates with existing Line #2/#70 for most of the route. Two out of the four dwellings within 500 feet of Mt. Pony Route 1 are near collocated segments of the route, minimizing new impacts on these residences.

Mt. Pony Route 2

The closest residences to Mt. Pony Route 2 are located along US 522 and Woolens Lane. Two residences on the west side of US 522 lack dense vegetive buffers and thus may may experience visual impacts, although Route 2 does not cross these properties. Most other residences are surrounded by dense tree cover and would therefore experience minimal visual impacts from Mt. Pony Route 2.

Tech Park Routes

The closest existing residence to all three Tech Park routes is a single-family residence within Mountain Brook Estates, approximately 500 feet northwest of Tech Park Route 1 MP 3.2 (the same location as MP 3.0 for Tech Park Routes 2 and 3). This residence (and the Mountain Brook Estates subdivision) is separated from the proposed transmission line infrastructure by the existing transmission Line #2, East Chandler Street, and vegetated buffer areas along the back yard.

Because this portion of the Tech Park route alternatives collocate with existing Line #2 and the planned future data center development, construction of the route would not introduce substantial new visual impacts for residences.

Additional residences located within the Town of Culpeper are separated from the Tech Park Route Alternatives by vegetative buffers and the Norfolk Southern Railroad. This includes two future apartment buildings, one with 24 and one with 12 units, which are under construction and planned to be completed in February 2026. These two apartment buildings are located greater

than 250 feet but less than 500 feet from the Tech Park Routes. The Tech Park routes do not cross residential properties and thus would have no direct impacts on residences.

Oak Green Rebuild and Relocation

The Oak Green Rebuild and Relocation will not change the centerline (and thus the distance to the closest residences) for existing Lines #2/#11. The Oak Green Rebuild would not introduce new or substantially larger visual impacts for residences in the area. The relocated Oak Green Switching Station would be approximately 400 feet farther from the closest residence compared to the existing Oak Green Switching Station, located on True Blue Road, reducing visual impacts on the residence.

Remington Rebuild

The Remington Rebuild would occur entirely within the existing Line #2/#70 right-of-way and directly adjacent to other existing transmission lines. As a result, it would not introduce new physical impacts to nearby residences and would not introduce new or substantially larger visual impacts.

5.1.5 COMMERCIAL/INDUSTRIAL AREAS AND BUILDINGS

5.1.5.1 EXISTING CONDITIONS

ERM identified non-residential structures (e.g., structures used for commercial, office, industrial, and similar activities) within the right-of-way and within 500 feet of each route centerline (Table 5.1-4) through review of County and Town data (Culpeper County 2024; Town of Culpeper 2024a; Orange County 2024; Fauquier County 2024) and recent (2021–2023) digital aerial photography (ESRI et al. 2024a). The locations of commercial/industrial areas and buildings along the routes are depicted on Figure 5.1.5-1. There are no non-residential accessory structures (e.g., sheds, garages, or other outbuildings associated with a primary non-residential use) within the Project rights-of-way.

5.1.5.2 IMPACT ASSESSMENT

As stated in Section 5.1.4.2, the SCC Guidelines emphasize that routing through commercial and industrial areas, when practicable, is preferred to crossing residential areas to minimize potential conflicts with existing and planned land uses. The CTZ is a recently created industrial zone with planned data center development (see Section 5.1.3). Dominion has coordinated with all planned data center campus landowners in the CTZ to avoid impacts to planned non-residential buildings in this area.

As stated in Section 5.1.5.1, there are no non-residential accessory structures within any of the route rights-of-way; therefore, Project operations will have no impact on non-residential structures. Except for temporary impacts such as noise or traffic during construction, the Project would have no direct impacts on the operation or use of existing commercial and other non-residential buildings. Regardless of the route selected, in the event of temporary access impacts on commercial businesses, Dominion would coordinate directly with the affected business owners to plan for and mitigate effects.

TABLE 5.1-4 NON-RESIDENTIAL BUILDINGS NEAR THE ROUTE ALTERNATIVES

Location of Buildings	Unit	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3	Oak Green Rebuild and Relocation	Remington Rebuild
Commercial/Industrial within right-of-way	Number	0	0	0	0	0	0	0
Commercial/Industrial within 500 feet of centerline	Number	1	1	4	9	11	0	0
Accessory buildings within right-of-way	Number	0	0	0	0	0	0	0
Accessory buildings within 500 feet of centerline	Number	10	3	5	10	10	3	2

5.1.6 PLANNED DEVELOPMENTS

5.1.6.1 EXISTING CONDITIONS

ERM obtained information about planned future developments through publicly available data on county and Town websites and consultations with county planning officials and other stakeholders.[6] Dominion coordinated the location of the Mt. Pony Lines and Tech Park Lines across planned data center developments with the data center developers (see Appendix C). Planned developments within 0.25 mile of proposed Project facilities are shown on Figure 5.1.6-1 and are described below. Project facilities would not cross any of these planned developments, except where stated otherwise.

- Greenwood Solar is a utility scale solar facility on parcels spanning over 1,000 acres along Blackjack Road and Batna Road, south of Stevensburg, located east of Mt. Pony Route 1 MP 0.0. The site plan conditional use permit approval was granted in 2018, and site plan approval was granted in 2022.
- Piedmont Rod and Gun Club is a private shooting sports recreational facility for use by youth teams and local youth groups located north of Mt. Pony Route 2 MP 0.2. The Conditional Use Permit was approved by the Culpeper County BOS, but the construction start date is unknown.
- The Keyser Road Data Center Campus encompasses approximately 69 acres on three parcels along Keyser Road, west of Nalles Mill Road in Culpeper County, located north of all three Tech Park Routes at MP 3.2. According to a preliminary site plan shared with ERM from August 2024, the campus will include data center buildings, a substation, a guard house, stormwater facilities, a reforestation area, and a security fence. The applicant, Red Ace Capital, owns additional projects in Culpeper County.
- Copper Ridge is a planned data center campus within the Town of Culpeper in the northern portion of the CTZ. The data center campus spans approximately 70 acres on multiple parcels. The Copper Ridge Data Center Campus is referred to as Customer C, to be served by the proposed Palomino Substation. Dominion coordinated with the landowner regarding the location of the Tech Park Lines across this planned development.
- Cloud HQ Data Center is a planned data center campus in Culpeper County in the eastern portion of the CTZ. The approximately 100-acre campus will have three or four data center buildings, stormwater management facilities, future substations, and internal roadways. Cloud HQ Data Center is not a customer for the Project; however, Dominion coordinated with the landowner regarding the location of the Tech Park Lines across this planned development. The approved future Cirrus Switching Station, the terminus of the Tech Park Lines, is located on this data center campus parcel.
- Culpeper Databank is a planned data center campus in Culpeper County, in the portion of the CTZ south of US 15/29 and east of Rt. 3. The approximately 85-acre campus will have two data center buildings, entrance roads, parking areas, an equipment yard, vegetative buffers,

[6] "Planned developments" refers to projects that have been submitted to Culpeper, Fauquier, Orange County, and the Town of Culpeper for review/approval, or that have been shared with Dominion through stakeholder outreach, but where construction had not yet been completed as of January 2025.

fencing and a screening wall. The proposed Mt. Pony Substation would serve Culpeper Databank, referred to as Customer A. Dominion coordinated the location of the Mt. Pony Lines and Tech Park Lines across this planned development.

- Culpeper Tech Campus is a planned data center campus in the western portion of the CTZ, is being developed by Peterson Companies and planned to be owned by Stack Infrastructure, Inc. The approximately 125-acre campus is located mostly within the Town of Culpeper, with a portion in Culpeper County. A site plan from February 2024 includes eight data center buildings, two substations, stormwater management facilities, internal roadways, and security fencing. Culpeper Tech Campus is referred to as Customer B, to be served by the proposed Chandler and McDevitt Substations. Dominion coordinated with the landowner regarding the location of the Tech Park Lines across this planned development.
- The Town of Culpeper Water Reuse Tower will be built within the Culpeper County portion of the Culpeper Tech Campus property, south of East Chandler Street, near the intersection with McDevitt Drive. This facility will allow the data centers within the CTZ to use reclaimed water for cooling processes, thereby reducing energy and water demands. Culpeper County is currently reviewing the conditional use permit for this facility. Dominion coordinated with the landowner and Town of Culpeper regarding the location of the Tech Park Lines adjacent to this planned development.
- The Critzer development encompasses approximately 18 acres on one parcel at the southern tip of the CTZ, along Rt. 3 near US 522 in Culpeper County. While no formal site plan has been submitted to Culpeper County as of January 2025, ERM was made aware of a planned convenience store development at this site by the Culpeper County Planning and Zoning Department in August 2024.
- Lightfoot Apartments is an approved multifamily development by People Incorporated of Virginia on an approximately 4-acre parcel within the Town of Culpeper, west of the Norfolk Southern Railway. The affordable housing development will include four buildings and sixty apartments. Construction began in August 2024, with completion expected in February 2026.
- Sunfish Solar is planned utility-scale solar facility bordering the northern boundary of the existing Line #2/#11 corridor from MP 1.9 to (and surrounding) the relocated Oak Green Switching Station location in Orange County. On June 20, 2024, the Orange County Planning Commission determined that the Sunfish Solar project was not in substantial accordance with the Orange County Comprehensive Plan and recommended denial of the project. On August 27, 2024, the developer appealed the "substantial accordance" determination before the BOS; however, no vote on the conditional use permit has occurred as of January 2025. Discussions with the developer indicate the application may be revisited in the future; therefore, the Sunfish Solar project is discussed in this report.

5.1.6.2 IMPACT ASSESSMENT

Depending on when they are built, planned developments crossed by Project facilities could experience temporary impacts such as noise, dust, and traffic during construction, as well as visual impacts during operations. In general, residents of planned residential development would

be more sensitive to visual changes than users of planned commercial and especially industrial development. Section 5.3 discusses visual impacts in more detail.

Table 5.1-5 lists the acres of each applicable development within the right-of-way of the route alternatives for the Project. The remainder of this section addresses potential impacts—by route alternative—on planned developments that would be crossed by new Project rights-of-way.

Mt. Pony Lines

Mt. Pony Route 1 would cross the Customer A site to enter the Mt. Pony Substation, affecting approximately 1.2 acres between MP 5.1 and 5.2. Transmission lines are a compatible use with data center development. Mt. Pony Route 2 would cross the eastern portion of the development, between MP 4.3 and 4.7, affecting approximately 4.3 acres. Based on the site plan from June 2024, the Mt. Pony Route 2 would not directly impact any planned aboveground facilities; however, Customer A supports Mt. Pony Route 1 across their planned development (Appendix C). Dominion coordinated the location of both Mt. Pony routes—focusing on Route 1—with Customer A; therefore Route 1 would not impact the planned development.

Mt. Pony Route 2 would cross the Critzer site between MP 4.2 and 4.4, affecting approximately 2.0 acres. Based on the conceptual site plan shared by Culpeper County in August 2024, Route 2 minimizes impacts on the development by crossing vegetative buffer areas and the planned development's parking lot, and away from planned buildings. Dominion will coordinate with the landowner to determine allowable uses within the transmission line right-of-way (e.g., parking lot, access driveway, and stormwater management facilities) to further minimize potential impacts on the development.

The proposed Mt. Pony Substation was coordinated directly with Customer A and would encompass approximately 5.0 acres within the Customer A campus.

Tech Park Lines

Cloud HQ

Tech Park Route 1 would affect approximately 7.2 acres in the Cloud HQ development, including one segment between MPs 0.7 and 1.1 through the southern part of the development and one segment between MPs 3.4 and 3.7 through the northern portion of the development to the future Cirrus Switching Station (approved as a separate project to serve the Cloud HQ development). Route 1 crosses setback areas, internal roadways, and stormwater management facilities. The potential impact of the Tech Park Route 1 on the development potential of the property is minimized by the route's alignment parallel to the parcel boundaries and areas designated for future substations, as well as parallel overlap with the future relocated Frank Turnage Drive on the Cloud HQ parcel.

TABLE 5.1-5 ACREAGE WITHIN ROUTE ALTERNATIVE RIGHT-OF-WAY CROSSINGS OF PLANNED DEVELOPMENT SITES

Development Name	Unit	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3	Oak Green Rebuild and Relocation	Remington Rebuild
Data Center Total	acres (percent)	6.2 (12%)	9.3 (15%)	42.9 (86%)	41.4 (85%)	40.6 (83%)	NA	NA
Cloud HQ	acres	NA	NA	7.2	5.2	3.0	NA	NA
Copper Ridge Data Center Campus	acres	NA	NA	12.6	12.6	12.6	NA	NA
Culpeper Databank	acres	6.2	9.3	1.1	1.6	1.6	NA	NA
Culpeper Tech Campus	acres	NA	NA	12.8	12.8	14.2	NA	NA
Critzer	acres	NA	2.0	NA	NA	NA	NA	NA
Sunfish Solar (no active plan)	Acres	NA	NA	NA	NA	NA	8.3	NA

NA = not applicable (Project facility does not cross the planned development).

Tech Park Route 2 would affect approximately 5.2 acres in the Cloud HQ development, including one segment between MPs 0.8 and 0.9 (the same alignment as Route 1, MPs 1.0 to 1.1) and one segment between MPs 3.2 and 3.5 (the same alignment as Route 1, MPs 3.4 to 3.7). The potential impact of Route 2 on the development would be similar to but marginally smaller than the impacts of Route 1, due to the shorter crossing of the southern portion of the development (Route 2 MPs 0.8 to 0.9).

Tech Park Route 3 would affect approximately 3.0 acres within the Cloud HQ development between MPs 3.2 and 3.5 (the same alignment as Route 1, MPs 3.4 to 3.7). The potential impact of Route 3 on the development would be similar to but smaller than the impacts of Routes 1 and 2, due to the lack of a crossing of the southern portion of the property.

Dominion has coordinated the location of the Tech Park Lines with Cloud HQ to avoid direct impacts to this planned development.

Copper Ridge Data Center Campus (Customer C)

The proposed Palomino Substation would occupy approximately 4.4 acres in the western portion of the Copper Ridger Data Center Campus. The Tech Park routes all follow the same alignment within this property and would each affect approximately 7.6 acres along the eastern and southern boundaries of the campus. The routing of the Tech Park routes along the property boundary and away from planned aboveground structures minimizes the route's impact on the development potential of the property. Dominion has coordinated the specific location of the Tech Park Lines with Copper Ridge to avoid direct impacts to this planned development.

Culpeper Databank (Customer A)

Tech Park Route 1 would affect approximately 1.1 acres in the northern corner of the Customer A property, between MPs 0.0 (exiting the proposed Mt. Pony Substation) and 0.1. The route's alignment away from planned aboveground facilities, parallel to the northern parcel boundary, and collocated with US 15/29 minimizes its potential impact on the development potential of the property.

Tech Park Routes 2 and 3 would share the same alignment within the Customer A property. Each of these routes would affect approximately 1.6 acres along the northern site boundary, from MPs 0.0 (exiting the proposed Mt. Pony Substation) to 0.2. Routes 2 and 3 would be adjacent to a planned data center building. The alignment of these routes away from other planned aboveground facilities, parallel to the northern parcel boundary, and collocated with US 15/29 minimizes their potential impact on the development potential of the property.

Customer A informed Dominion that it supports Tech Park Route 1 as its preferred alignment across this planned development (see Appendix C).

Dominion coordinated the location of the Tech Park routes—particularly Route 1—with Customer A to avoid direct impacts to this planned development.

Culpeper Tech Campus (Customer B)

The Tech Park routes follow the same alignment across the Culpeper Tech Campus property, except for slight variations at the eastern edge of the property. Tech Park Routes 1 and 2 would affect approximately 3.6 acres of the property between MPs 1.1 and 2.1 and MP 2.8 and 3.4. Tech Park Route 3 would affect approximately 5.0 acres of the property between MPs 0.9 and 2.1 and MP 2.8 and 3.4. The route follows the parcel boundaries and is located away from planned aboveground facilities, to mitigate impacts on the development.

The proposed McDevitt and Chandler Substations would occupy 4.5 and 4.7 acres (respectively) within the western portion of the Culpeper Tech Campus property. Dominion has coordinated the location of the Tech Park Lines (including the transmission lines and substation sites) with Customer B to reduce impacts on this planned development. Customer B has informed Dominion that it supports Tech Park Route 1 (see Appendix C).

Oak Green Rebuild and Relocation

The Sunfish Solar project is located adjacent to the Oak Green Rebuild and Relocation. As of September 2024, the site plan shows the relocated Oak Green Switching Station will be located within the solar project boundary. The solar project applicant informed Dominion that they and the landowner prefer the relocated Oak Green Switching Station site rather than expanding the existing Oak Green Switching Station footprint, which would be more impacted on the planned development. The relocated Oak Green Switching Station and Rebuild would occupy approximately 4.7 acres and 3.4 acres (respectively) of the property. Dominion will continue to coordinate with the landowner and the developer to coordinate any potential impacts of the Oak Green Rebuild and the relocated Oak Green Switching Station to minimize impacts if the Sunfish Solar application is resubmitted.

Remington Rebuild

The Remington Rebuild would not cross any planned developments.

5.1.7 CONSERVATION EASEMENTS AND LANDS

5.1.7.1 EXISTING CONDITIONS

Land conservation easements help preserve Virginia's heritage, provide recreational opportunities, and improve water and habit quality and overall quality of life. In addition to managing lands under its jurisdiction, the VDCR helps landowners, land trusts, and localities by serving as a clearinghouse, keeping an inventory of protected lands, and providing grants and information on easements and land protection. The agency also helps by identifying important open space and lands rich with plant and animal diversity.

Based on VDCR's Managed Conservation Lands Database, ERM identified various conservation easements within the study area (VDCR 2024a). The subsections below provide descriptions of the easements in the study area and their proximity to the Project facilities. Figure 5.1.7-1 shows these easements.

Virginia Outdoors Foundation

VOF, which was created under the Virginia Open-Space Land Act, leads the Commonwealth in land conservation and holds more than 850,000 acres in easements (VOF n.d.). Most easements created under the Virginia Open-Space Land Act are held by the VOF, but any state agency is authorized to create and hold open space easements, which preserve and protect open space or other resources in perpetuity. Easements negotiated with private landowners allow the lands to remain in private ownership but with protections imposed to limit or restrict land uses on the property.

Four privately owned VOF easements are within the Project study areas, as described below.

- Easement CUL-VOF-723: The 209-acre Rose Hill Game Preserve easement is entirely within the Mt. Pony and Tech Park study area. Mt. Pony Route 1 (MPs 0.6 to 1.1) runs adjacent to but does not cross this easement.
- Easement CUL-VOF-1850: A 171-acre easement on the north bank of the Rapidan River, including approximately 102 acres that are within the Oak Green Rebuild study area. The Oak Green route crosses approximately 0.2 mile of this easement (MPs 0.0 to 0.2).
- Easement ORA-VOF-2214: A 46-acre easement on the south side of River Road, near the Rapidan River is entirely within the study area. The Oak Green route crosses approximately 0.3 mile of this easement (MPs 0.8 to 1.1).
- Easement ORA-VOF-436: A 24-acre easement on the west side of Bushy Mountain Road, adjacent to the 46-acre easement described above. Approximately 10 acres of this easement are within the Oak Green Rebuild study area. The Oak Green route does not cross this easement and is approximately 0.1 mile from the easement near MP 0.7.

Agricultural and Forestal Districts

The Virginia Agricultural and Forestal Districts (AFD) Act authorizes the creation of districts to conserve and protect a jurisdiction's agricultural and forested lands for the production of food and other products as well as natural and ecological resources (Va. Code § 15.2-4300 through 4314). The districts are voluntary agreements between landowners and the jurisdiction and offer benefits to landowners when they agree to keep their land in its current use for four to ten years. A district must contain at least 200 acres. As shown on Figure 5.1.7-1, the Project's route alternatives cross three AFDs, as described below.

- Stevensburg AFD: Agricultural pastureland crossed by approximately 2.2 miles of Mt. Pony Route 1 (MPs 2.9 to 5.1) and 0.2 mile of Tech Park Route 1 (MPs 0.2 to 0.4 in the same alignment as Mt. Pony Route 1, MPs 4.9 to 5.1). This crossing is collocated with existing Lines #2/#11 and US 15/29.
- Raccoon Ford AFD: Forested land crossed by Mt. Pony Route 2 from MPs 0.0 to 0.1.
- Brandywine AFD: Agricultural pastureland crossed by the Oak Green Rebuild from MPs 0.0 to 0.2. This AFD covers includes all of VOF easement CUL-VOF-1850 described above.

Fauquier County Conservation Easement

Fauquier County allows landowners to enter into permanent conservation easements to protect open space, historic resources, scenic vistas, and sensitive natural areas. Approximately 20 acres of a 33.8-acre Fauquier County conservation easement is within the Remington Rebuild study area. The easement is on the north side of Lucky Hill Road, across from of Dominion's existing Remington Gas Turbine Power Station (the eastern terminus of the Remington Rebuild).

5.1.7.2 IMPACT ASSESSMENT

Dominion understands that properties are placed under easements throughout the year, and that additional easements could be identified in the study area as the Project moves forward. Dominion will continue to consult with the various land managing entities and conservation agencies for the study area regarding potential new easements along the routes. The subsections below discuss the impacts of Mt. Pony Route 1 and 2, Tech Park Route 1, and the Oak Green Rebuild on conservation easements and lands. Tech Park Routes 2 and 3 and the Remington Rebuild would not cross any conservation easements or lands and therefore would have no impact on those resources.

Mt. Pony Route 1 and Tech Park Route 1

The Mt. Pony Route 1 crossing of the Stevensburg AFD would affect approximately 16.9 acres, all of which would be collocated with existing Lines #2/#11 or US 15/29. The entire crossing is within agricultural pasturelands. Transmission lines are generally compatible with agricultural lands. Except for the area of the transmission line structure foundations, the Mt. Pony Route 1 right-of-way within the Stevensburg AFD would remain in use as agricultural land. As a result, Mt. Pony Route 1 would have minimal impact on conservation easements and lands.

The impacts of Mt. Pony Route 1 on the Stevensburg AFD include the 0.2-mile and 2.5 acres impacted by Tech Park Route 1. As a result, Tech Park Route 1 would have minimal impact on conservation easements and lands.

Mt. Pony Route 2

The Mt. Pony Route 2 crossing of the Raccoon Ford AFD would convert approximately 1.0 acre of forested land at the edge of the 1,075-acre AFD to maintained open space within the right-of-way. This conversion would be adjacent and perpendicular to the cleared right-of-way for existing Lines #2/#2199 within the Raccoon Ford AFD. Due to the small extent of impact within the AFD and the presence of similar impacts from other transmission infrastructure, Mt. Pony Route 2 would have minimal impact on conservation easements and lands.

Oak Green Rebuild and Relocation

The Oak Green Rebuild and Relocation would affect approximately 4.8 acres within two VOF easements, one of which includes approximately 2.0 acres of land within the Brandywine AFD. Dominion would construct and operate the Oak Green lines across these easements within the existing 75-foot-wide right-of-way without the need for additional transmission line rights-of-way.

As a result, the Oak Green Rebuild and Relocation would have no impact on conservation easements and lands.

5.1.8 RECREATIONAL RESOURCES

5.1.8.1 EXISTING CONDITIONS

ERM collected information on recreational resources from digital datasets and maps, recent (2021–2023) digital aerial photography, publicly available information on County websites, and consultation with government officials and other stakeholders. Information on recreational resources in this section is from the Culpeper, Fauquier, and Orange County websites, local tourism and chamber of commerce websites, the VDCR website, and the Virginia Outdoors Plan Mapper. Figure 5.1.8-1 shows the recreational resources in the Project's study areas.

The existing or future recreational resources identified in the study areas are the Rapidan River, which forms the boundary between Culpeper and Orange counties, and the Rose Hill Game Preserve. The Rapidan River is a popular destination for fishing, canoeing, and other outdoor recreational activities. It qualifies for designation as a scenic river, although it is not currently designated as such (VDCR 2020). The Oak Green Rebuild crosses the Rapidan River near MP 0.2.

The Rose Hill Game Preserve is an approximately 209-acre private hunting preserve located just south of Germanna Highway and the community of Stevensburg in Culpeper County. The preserve offers clay shooting and guided and unguided bird hunting. The Rose Hill property is in the eastern portion of the Mt. Pony study area within a VOF easement. Dominion's existing Lines #2/#70 cross the Rose Hill Game Preserve.

Although ERM did not identify any other recreational resources in the study areas, multiple state and local parks and the Journey Through Hallowed Ground National Scenic Byway in Culpeper County and the Town of Culpeper are near the study area. The designated route of the byway follows US 15/29 Business (Brandy Road, Main Street, and Madison Road through the Town of Culpeper) (FHWA 2014, 2024), although some online resources incorrectly state that the byway follows US 15/29 (James Madison Highway). As such, this area scenic resource will not be impacted by the Project and is not discussed in further detail.

5.1.8.2 IMPACT ASSESSMENT

The Oak Green Rebuild would cross the Rapidan River within the existing Lines #2/#11 right-of-way. Project construction may result in noise impacts on users of the Rapidan River, but any such impacts would be temporary and limited to the period of active construction in the vicinity of the river. Operation of the Project would not alter or prevent the use of the Rapidan River for boating, fishing, or other recreational activities. The visual impacts of the Oak Green Rebuild on the Rapidan River would be similar to (and slightly larger than) the impacts of the existing transmission line. As such, the Project would not impact the use of the Rapidan River as a recreational resource.

Mt. Pony Route 1 parallels parts of the southern and western boundaries of the Rose Hill Game Preserve but does not cross the property. An existing tree buffer would remain along the property

boundaries, which would screen the line from view. Project construction may result in noise impacts on users of the Rose Hill Game Preserve, but any such impacts would be temporary and limited to the period of active construction in the vicinity of the Project. Because the Mt. Pony Route 1 right-of-way would not cross the Rose Hill Game Preserve, construction of the route would not impact the use of Rose Hill Game Preserve's functions as a recreational resource.

5.1.9 CEMETERIES, SCHOOLS, AND PLACES OF WORSHIP

ERM reviewed the following sources to identify cemeteries, schools, and places of worship within 0.25 mile of the right-of-way of each route alternative:

- US Geological Survey (USGS) topographic quadrangles (USGS 2024);
- Cemetery and burial data (Find a Grave 2024);
- Recent (2021–2023) digital aerial photography (ESRI et al. 2024a);
- Google Earth Aerial Imagery (Google LLC 2024); and
- Publicly accessible county data (Culpeper County 2024; Town of Culpeper 2024a; Orange County 2024; Fauquier County 2024).

Figure 5.1.9-1 shows existing cemeteries, schools, and places of worship within the study area. None of these resources are within the study area for, or within 0.25 mile of the Oak Green Rebuild and Remington Rebuild components of the Project. Accordingly, this section only evaluates cemeteries, schools, and places of worship within the Mt. Pony and Tech Park study area.

5.1.9.1 CEMETERIES

ERM identified 13 cemeteries within the Project study area, of which 4 are located within 0.25 mile of a Project component, each of which are described in Table 5.1.

5.1.9.2 SCHOOLS

Five schools are located in the study area: Germanna Community College Daniel Technology Center, CTEC, KEYS Academy, Banner Christian School, and Eastern View High School. Eastern View High School and KEYS Academy are more than 0.25 mile from the closest Project component; therefore, these resources are not further discussed. Table 5.1-7. Provides information about the remaining three schools and their proximity to Project components. no

In addition to the schools identified, one daycare center, Kids Central Day Care, is approximately 0.2 mile west of Tech Park Route 1 (MP 2.1) and Tech Park Routes 2 and 3 (MP 1.9). Kids Central provides daycare services for infants through age 5 and is operated by Culpeper Human Services. The Culpeper Human Services Head Start preschool program is located at the same facility as Kids Central.

TABLE 5.1-6 CEMETERIES WITHIN 0.25 MILE OF THE PROJECT ROUTES

Cemetery Name	Description	Approximate Distance and Direction from Route Alternatives
Culpeper National Cemetery	Culpeper National Cemetery was established in 1867 as a result of the National Cemetery Act of 1862, to house scattered Union army remains in the area. The original six-acre cemetery now covers more than 29 acres and has more than 14,000 graves. Veterans, service members, spouses, and dependents may be eligible for burial in a national cemetery. See Section 5.1.1, Land Ownership and Public Lands, for additional information.	0.1 mile north of Tech Park Route 1 (MP 2.2) and Routes 2 and 3 (MP 2.0)
Corbin-Bettie-Payne Cemetery	The private Corbin-Bettie-Payne Cemetery is not currently in use and is in fair condition.	0.25 mile north of Mt. Pony Route 2 (MP 3.3)
Guinn Colvin Cemetery	The status and condition of the private are unknown. The cemetery is located on a 15.7-acre parcel that has multiple dwellings, accessory buildings, and forested areas.	0.1 mile west of Mt. Pony Route 2 (MP 4.0)
Massey/Campbell Cemetery	The Massey/Campbell Cemetery is a family cemetery that is currently in use. It is located on a 113.9-acre parcel with agricultural fields, dwellings, and accessory buildings.	0.25 mile north of Mt. Pony Route 1 (MP 4.6)

MP = milepost.

TABLE 5.1-7 SCHOOLS WITHIN 0.25 MILE OF THE PROJECT ROUTES

Name	Description	Approximate Distance and Direction from Route Alternatives
Banner Christian School	Private, faith-based, accredited non-profit educational institution established in 2021. The school offers Pre-K through grade 12 and has approximately 100 students. The school is south of the intersection of McDevitt Drive and Rt. 3.	0.2 mile west of TP2 (MP 0.4) and TP3 (MP 0.4)
Germanna Community College Daniel Technology Center	Germanna Community College, part of the Virginia Community College System, serving 13,000 students annually both virtually and in person at five locations in Culpeper, Spotsylvania, and Stafford counties. The Daniel Technology Center is adjacent to US 15/29, accessed via Technology Drive and Frank Turnage Drive.	0.1 mile southwest of TP1 (MP 0.5) 0.1-mile north of MtP1 (MP 5.0)
Culpeper Technical Education Center	Culpeper Technical Education Center is a technical education center for high school students, operated by Culpeper County Public Schools on land owned by Germanna Community College, adjacent to the Daniel Technology Center.	0.1 mile northeast of TP1 (MP 0.5) 0.1-mile northeast of MtP1 (MP 4.9)

TP1 = Tech Park Route 1; TP2 = Tech Park Route 2; MtP1 = Mt. Pony Route 1.

5.1.9.3 PLACES OF WORSHIP

ERM identified nine places of worship located in the Project study area: St. Stephen' s Episcopal Church, Gospel Tabernacle Assembly of God Church, Open Door Baptist Church, Iglesia Pentecostal Fuente De Agua Vida, Mountain View Community Church, Providence Bible Church, St. Stevens Baptist Church, First Century Baptist Church, and Stevensburg Baptist Church. Of these resources, only Open Door Baptist Church is located within 0.25 mile of a route component. The church is south of the intersection of McDevitt Drive and Rt. 3, approximately 0.2 mile west of Tech Park Routes 2 and 3 (MP 0.4). No places of worship are within 500 feet of the Project.

5.1.9.4 IMPACT ASSESSMENT

The Mt. Pony and Tech Park route alternatives would not cross any cemeteries or places of worship. Mt. Pony Routes 1 and 2 and Tech Park Route 3 do not cross any school property. All of the Mt. Pony and Tech Park route alternatives would be potentially visible from cemeteries, schools, and places of worship. The Project's visual impacts (discussed in Section 5.3) would not prevent use of any of these facilities. The remainder of this section discusses the impacts of the route alternatives (Tech Park Routes 1 and 2) that cross school property.

Tech Park Route 1

Tech Park Route 1 crosses Germanna Community College Daniel Technology Center parcels from MPs 0.4 to 0.8, affecting approximately 3.3 acres within those parcels. The segment between MPs 0.4 and 0.6 is collocated with Dominion's existing Lines #2/#70 and is adjacent to but does not overlap the CTEC parcel. The segment within college property crosses an existing parking lot and open land along the northern parcel boundary. As discussed in detail in Section 5.1.1, Dominion has coordinated with Germanna Community College regarding this crossing and will continue to coordinate the relocation of any unallowable uses within the right-of-way, such as an existing storage shed and parking lot lighting (see Appendix C). Construction of this route alternative, if selected, would have temporary impacts on the community college, including noise and temporary changes to parking lots and access roads. Because Tech Park Route 1 is collocated with existing transmission lines and along property boundaries, and would not require structures within the parking lot, the Project would have minimal permanent impacts on the college and would not change the use and operation of the college. Due to distance from Tech Park Route 1 and the location of the existing transmission lines, Tech Park Route 1 would have no impacts on CTEC.

Tech Park Route 2

Tech Park Route 2 crosses approximately 0.1 mile of the Germanna Community College Daniel Technology Center parcel, affecting approximately 1.1 acres. This segment crosses open land and avoids existing or planned school facilities. Construction of this route alternative, if selected, would have temporary impacts on the college due to noise and access changes. As with Tech Park Route 1, Dominion would coordinate any such activities with Germanna Community College. Because Tech Park Route 2 crosses only a segment of open land, the route would have no permanent impacts on Germanna Community College and would not change the use and operation of the college.

5.1.10 TRANSPORTATION INFRASTRUCTURE

5.1.10.1 EXISTING CONDITIONS

Existing Transportation Infrastructure

Multiple major roads cross the Mt. Pony and Tech Park study area. Agencies that manage roads use Functional Classifications to identify the purpose and intended characteristics of roads and road segments. Freeways and arterials are intended for larger traffic volumes and longer-distance travel, while collectors and local roads are intended for lower traffic volumes, local access, and shorter trips. The Culpeper Plan (Culpeper County Government 2023) identifies US 15/29 as a freeway/expressway, Rt. 3 as a principal arterial, US 522 as a minor arterial, McDevitt Drive and East Chandler Street as major collectors, and Mt. Pony Road (between US 522 and Kibler Road) as a minor collector.

VDOT (2014) identifies the segment of US 522 (Zachary Taylor Highway) within the Oak Green study area as a minor arterial. Most other roads in the study area and all other roads crossed by Project facilities are local roads.

Future Transportation Projects

In addition to recommended transportation improvements in the comprehensive plans for Culpeper, Fauquier, and Orange Counties and the Town of Culpeper (Culpeper County Government 2023, Fauquier County Government 2023, Orange County Government 2023, Town of Culpeper 2018, VDOT 2022), VDOT maintains a Six-Year Improvement Program that lists transportation projects planned and/or funded by the state. ERM examined these plans to identify planned roadways in the study areas. Two planned road projects within the Mt. Pony and Tech Park study area are described below and shown on Figure 3.2-1. ERM identified no planned roads or improvements in the Oak Green and Remington study areas.

- Route 3 at McDevitt Drive Roundabout: VDOT plans to convert the intersection of Rt. 3 and McDevitt Drive to a roundabout, with a sidewalk along the southeast quadrant of the roundabout, adjacent to the northbound travel lanes on McDevitt Drive. The project is currently in the design phase, with an estimated start date in the Winter of 2025 and an estimated completion date in the Winter of 2026.
- Frank Turnage Drive: This approximately 0.3-mile local road will be realigned to accommodate the planned Cloud HQ data center campus (see Section 5.1.6). This project includes shifting the intersection of Frank Turnage Drive with McDevitt Drive approximately 0.1 mile northeast to align with the existing McDevitt Drive and East Chandler Street.

In addition to these planned projects, the Culpeper Plan identifies multiple future road projects in the Mt. Pony and Tech Park study area. None of these improvements are within 0.25 mile of the Project components; therefore, this analysis focuses on the funded projects and existing roads described above.

5.1.10.2IMPACT ASSESSMENT

Project construction would result in temporary road closures and possible increased traffic during construction. Section 5.3 discusses the Project's visual impacts on road users. Dominion would coordinate with the relevant county and VDOT in cases where construction activities require temporary road closures. Table 5.1-8 lists the roads crossed by each route alternative.

TABLE 5.1-8 ROADS CROSSED BY PROJECT COMPONENTS

Road Name	Route Alternatives and Approximate Crossing MPs	Lanes at Crossing	Crossing Type
Culpeper County			
Rt. 3 (Germanna Highway)	MtP1 (MP 4.3); MtP2 (MP4.2)	4	angled (MtP1), perpendicular (MtP2)
Alvere Road	MtP1 (MP 0.9)	1	perpendicular
Blackjack Road	MtP1 (MP 0.6)	2	angled
The Mountain Road	MtP1 (MP 3.8)	1	angled
Mt. Pony Road	MtP2 (MP 4.1)	2	perpendicular
Woolens Lane	MtP2 (MP 3.3)	2	perpendicular
US 15/29	TP1 (MP 0.4); TP2 (MP 0.2); TP3 (MP 0.2)	4	perpendicular (all)
Private Road [a]	TP1 (MP 0.5)	2	angled
McDevitt Drive [b]	TP1 (MP 1.1, MP 3.4); TP2 (MP 0.9, MP 3.2); TP3 (MP 0.8, MP3.2)	2	perpendicular (TP1 MP 1.1, TP2 MP 0.9, TP3 MP 0.8), angled (TP1 MP 3.4, TP2 MP 3.2, TP3 MP 3.2)
Technology Drive	TP2 (MP 0.5); TP3 (MP 0.7)	2	angled
Orange County			
River Road	OG (MP 0.7)	2	angled
US 522 (Zachary Taylor Highway)	OG (MP 1.8)	2	angled
True Blue Road	OG (MP 2.3)	2	perpendicular
Fauquier County			
Lucky Hill Road	RR (MP 0.5)	2	angled
Old Grassdale Road	RR (MP 0.6)	2	perpendicular

MP = milepost; MtP1 = Mt. Pony Route 1; MtP2 = Mt. Pony Route 2; OG = Oak Green Rebuild; Rt. = Virginia state route; RR = Remington Rebuild; TP1 = Tech Park Route 1; TP2 = Tech Park Route 2; TP3 = Tech Park Route 3; US = U.S. Route.

[a] Tech Park Route 1 crosses a private road off Frank Turnage Drive that provides access to the Daniel Technology Center.

[b] All Tech Park Routes cross McDevitt Drive twice: The routes first cross from the east side to the west side to connect to the future McDevitt, Chandler, and Palomino Substations, then cross from the west side to the east side to connect to the future Cirrus Substation.

VDOT guidelines indicate a preference for perpendicular road crossings, which reduce the distance spanned and the visual impacts of a crossing. VDOT also prefers that transmission structures are placed outside their rights-of-way to avoid conflicts with future road improvements. The route alternatives include perpendicular road crossings where possible. In some cases, perpendicular crossings are not possible, due to constraints associated with existing or planned development, collocation with existing transmission line crossings, natural resources, and landowner preferences for routes that follow parcel boundaries. Dominion would install transmission structures for the route alternatives outside of existing and planned road rights-of-way.

Of the two future road projects identified above, the Project would only cross the relocated Frank Turnage Drive. Tech Park Routes 1, 2, and 3 (in a common alignment), would each collocate and overlap with the future road right-of-way for approximately 0.2 mile near the approved future Cirrus Substation. This planned right-of-way overlap was coordinated with the landowner and with VDOT (Appendix C). As such, the overlap of the Tech Park Lines with the future Frank Turnage Drive will not prevent the development or operation of the planned roadway.

Regardless of the route alternatives selected, Project construction would require temporary closures of existing roads and/or travel lanes. The operational Project would not affect use of any existing or planned roads. Dominion will consult and comply with VDOT and county requirements for road crossings and access to the rights-of-way from public roads, as applicable. Dominion will also coordinate with landowners for crossings of private roads, where applicable.

5.1.11 AIRPORTS AND HELIPORTS

5.1.11.1 AIRPORT FACILITIES

Transmission structures have the potential to affect airspace in and around airports. The following sections describe the airports in the vicinity of the study area, the airspace regulations that could impact the Project, and potential impacts on airports and airspace.

5.1.11.2 AIRPORTS NEAR THE PROJECT AREA

ERM reviewed the Federal Aviation Administration's (FAA's) website to identify public use airports, airports operated by a federal agency or the US Department of Defense, airports or heliports with at least one FAA-approved instrument approach procedure, and public use or military airports under construction (FAA n.d.-a, FAA n.d.-b). Based on this review, 12 airports, private airstrips, or heliports are within 10 nautical miles (nm) of the Mt. Pony and Tech Park Lines, 8 are within 10 nm of the Oak Green Rebuild, and 14 are within 10 nm of the Remington Rebuild. Table 5.1-9, Table 5.1-10, and Table 5.1-11 provide information about these airports, heliports, and private airstrips. The locations of these facilities are shown on Figure 5.1.11-1.

5.1.11.3FEDERAL AVIATION ADMINISTRATION REGULATIONS

The FAA oversees air transportation in the U.S., focusing on air transportation safety, including the enforcement of safety standards for aircraft manufacturing, operation, and maintenance. The FAA also manages air traffic in the U.S. and evaluates physical objects that may affect the safety of aeronautical operations through an obstruction evaluation. The prime objective of an FAA

obstruction evaluation is to ensure the safety of air navigation and the efficient utilization of navigable airspace by aircraft.

The regulations that govern objects that may affect navigable airspace are codified in the Code of Federal Regulations (CFR), Title 14, Part 77 (14 CFR Part 77). A summary of the rule as it relates to the Project is provided below, and the full rule is available online at: https://www.ecfr.gov/current/title-14/chapter-I/subchapter-E/part-77.

The FAA only regulates public use and federally operated (military use) airports and heliports. Of the airports identified in Tables 5.1-9 through 11, the only public use airports within 10 nm of any route alternative are Culpepper Regional Airport, Warrenton/Fauquier Airport, and Orange County Airport. Private use airports without at least one instrument approach procedure do not require evaluation under 14 CFR Part 77.

5.1.11.4CIVIL AIRPORT IMAGINARY SURFACES

The FAA establishes civil airport imaginary surfaces (described below) for each airport and each runway, pursuant to 14 CFR Part 77. Imaginary surfaces are intended to prevent existing or proposed objects from extending from the ground into navigable airspace.

- **Horizontal surface:** This surface is a horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs by lines tangent to those arcs. The radius of the arc is 5,000 feet for all runways designated as utility or visual, and 10,000 feet for all other runways. The radius of the arc specified for each end of a runway will have the same arithmetical value. That value will be the highest determined for either end of the runway.
- **Conical surface:** This surface extends outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.
- **Primary surface:** This surface is longitudinally centered on a runway and extends 200 feet beyond the end of each runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. This surface is 250-feet-wide for visual approach runways, 500-feet-wide for runways with non-precision instrument approaches, and 1,000-feet-wide for precision instrument runways.
- **Approach surface:** This surface is longitudinally centered on the extended runway centerline and extends outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end, such as precision instrument approach, Non-Precision Approach, or visual approach.
- **Transitional surface**: These surfaces extend outward and upward at right angles to the runway centerline and the runway centerline extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces. Transitional surfaces for those portions of the precision approach surface that project through and beyond the limits of the conical surface extend 5,000 feet, measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

TABLE 5.1-9 AIRPORTS AND HELIPORTS WITHIN 10 NM OF MT. PONY AND TECH PARK ROUTES

Airport/Heliport Name	FAA ID	Approximate Distance and Direction from Nearest Project Facility [a]	Use	Maximum Runway Length (feet)	Runway, Part 77 Obstruction Category [b]
Kritter Runway (Unregistered)	NA	0.2 nm east of MtP2 (MP 1.7)	Private	3,200 [c]	NA
Maitland Runway (Unregistered)	NA	0.2 nm northeast of MtP2 (MP 0.0)	Private	2,200 [c]	NA
UVA Culpeper Medical Center heliport	VA29	1.2 nm west of TP1, TP2, TP3 (MP 1.8), Chandler Substation and McDevitt Substation	Private	NA	NA
The Greenhouse Airport	02VA	2.5 nm east of MtP1 (MP 0.6)	Private	3,000	NA
Belmont Farm Airport	88VA	2.7 nm southwest of MtP2 (MP 1.6)	Private	2,200	04/22, A(V)
Berryvale Airport	VA30	3.6 nm north of TP1, TP2, and TP3 (MP 3.2)	Private	2,300	NA
Simpsonville Airport	VG12	5.2 nm southeast of MtP2 (MP 0.0)	Private	1,900	01/19, A(V)
Culpepper Regional Airport	CJR	5.6 nm northeast of MtP1 (MP 2.4)	Public	5,000	04/22, C
Pleasantdale Field Airport	4VA9	6.8 nm north of TP1, TP2, and TP3 (MP 3.4)	Private	1,800	NA
Rular Airport	VG07	7.4 nm northeast of MtP1 (MP 2.4)	Private	1,500	14/32, A(V)
Arrowpoint Airport	VG43	9.3 nm southwest of MtP2 (MP 1.7)	Private	1,125	13/31, A(V)
Rhynalds Ranch Airport	29VA	9.8 nm northeast of MtP1 (MP 0.6)	Private	2,500	NA

FAA ID = Federal Aviation Administration airport identification number; MP = milepost; MtP1 = Mt. Pony Route 1; MtP2 = Mt. Pony Route 2; NA = not applicable; nm = nautical mile(s); TP1 = Tech Park Route 1; TP2 = Tech Park Route 2; TP3 = Tech Park Route 3; UVA = University of Virginia.

[a] Shows distance from the end or edge of the nearest runway to the nearest Project feature.

[b] Obstruction Categories: A(V) = Visual Approach (Utility Runway); C = Non-precision Approach with visibility minimums greater than ¾ statute mile.

[c] Estimated length.

TABLE 5.1-10 AIRPORTS AND HELIPORTS WITHIN 10 NAUTICAL MILES OF OAK GREEN REBUILD

Airport/Heliport Name	FAA ID	Approximate Distance and Direction from Nearest Project Facility [a]	Use	Maximum Runway Length (feet)	Runway, Part 77 Obstruction Category [b]
Belmont Farm Airport	88VA	1.1 nm northwest of MP 0.0	Private	2,200	04/22, A(V)
Maitland Runway (Unregistered)	NA	3.3 nm north of MP 0.0	Private	2,200	NA
Kritter Runway (Unregistered)	NA	3.5 nm north of MP 0.0	Private	3,200	NA
Simpsonville Airport	VG12	3.8 nm east of MP 2.6	Private	1,900	01/19, A(V)
UVA Culpeper Medical Center Heliport	VA29	6.0 nm north of MP 0.0	Private	NA	NA
Arrowpoint Airport	VG43	6.5 nm southwest of MP 0.0	Private	1,125	13/31, A(V)
Orange County Airport	OMH	6.7 nm southwest of MP 2.6	Public	3,200	08/26, A(NP)
The Greenhouse Airport	02VA	7.4 nm northeast of MP 2.3	Private	3,000	NA
Berryvale Airport	VA30	9.9 nm north of MP 0.0	Private	2,300	NA

FAA ID = Federal Aviation Administration airport identification number; MP = milepost; NA = not applicable; nm = nautical mile(s); UVA = University of Virginia.

[a] Shows distance from the end or edge of the nearest runway to the nearest Project feature.

[b] Obstruction Categories: A(V) = Visual Approach (Utility Runway); A(NP) = Non-precision Approach (Utility Runway).

TABLE 5.1-11 AIRPORTS AND HELIPORTS WITHIN 10 NAUTICAL MILES OF THE REMINGTON REBUILD

Airport/Heliport Name	FAA ID	Approximate Distance and Direction from Nearest Project Facility [a]	Use	Maximum Runway Length (feet)	Runway, Part 77 Obstruction Category [b]
Rular Airport	VG07	1.8 nm west of MP 0.0	Private	1,500	14/32, A(V)
Rhynalds Ranch Airport	29VA	1.9 nm east of MP 0.6	Private	2,500	NA
Flying Circus Aerodrome Airport	3VA3	3.0 nm northeast of MP 0.6	Private	2,000	NA
Culpepper Regional Airport	CJR	3.2 nm west of MP 0.0	Public	5,000	04/22, C
Warrenton/Fauquier Airport	HWY	4.2 nm northeast of MP 0.6	Public	5,000	15/33, C/D
Rambo Airfield Airport	0VA0	4.3 nm east of MP 0.6	Private	2,300	13/31, A(V)
Aviacres Airport	3VA2	5.0 nm north of MP 0.6	Private	2,100	NA
Horse Feathers Airport	53VA	5.7 nm north of MP 0.6	Private	2,600	NA
Pleasantdale Field Airport	4VA9	6.4 nm northwest of MP 0.0	Private	1,800	NA
Lost Griz Aerodrome Airport	7VG0	6.7 nm north of MP 0.6	Private	2,215	04/22, A(V) 15/33, A(V)
The Greenhouse Airport	02VA	6.9 nm southwest of MP 0.0	Private	3,000	NA
Walnut Hill Airport	58VA	7.0 nm northeast of MP 0.6	Private	2,490	NA
Berryvale Airport	VA30	8.0 nm west of MP 0.0	Private	2,300	04/22, A(V)
Maples Field Airport	VG57	9.9 nm northeast of MP 0.6	Private	2,450	04/22, A(V)

FAA = Federal Aviation Administration; MP = milepost; NA = not applicable; nm = nautical mile(s).

[a] Shows distance from the end or edge of the nearest runway to the nearest Project feature.

[b] Obstruction Categories: A(V) = Visual Approach (Utility Runway); C = Non-precision Approach with Visibility Minimums Greater Than Three-Fourths Statute Mile; D = Non-precision Approach with Visibility Minimums As Low As Three-Fourths Statute Mile.

Table 5.1-12 summarizes the imaginary surfaces that apply to the runways at each of the three public use airports identified in Tables 5.1-9 through 5.1-11. None of the route alternatives discussed in this report would overlap with the civil airport imaginary surfaces of the public airports identified in Table 5.1-12.

TABLE 5.1-12 RUNWAY IMAGINARY SURFACE CLASSIFICATIONS FOR PUBLIC AIRPORTS WITHIN 10 NAUTICAL MILES OF ALL PROJECT COMPONENTS

	Culpeper Regional Airport		Warrenton-Fauquier Airport		Orange County Airport	
Airport Code	CJR		HWY		OMH	
Runway ID	04/22		15/33		08/26	
Horizontal Surface						
Established Airport Elevation [a]	315.5		336.2		464.4	
Surface Elevation [a]	465.5		486.2		614.4	
Radius (feet)	10,000		10,000		5,000	
Conical Surface						
Slope Ratio, distance (feet)	20:1, 4,000		20:1, 4,000		20:1, 4,000	
Elevation Range [a]	465.5–665.5		486.2–686.2		614.4–814.4	
Primary Surface and Approach Surfaces						
Runway End, Heading	04: 28°	22: 208°	15: 139°	33: 319°	08: 66°	26: 246°
Runway elevation [a]	315.3	314.5	3132	336.2	445.3	464.4
Primary Surface Width	500	500	500	500	500	500
Obstruction Category [b]	C	C	D	C	A(NP)	A(NP)
Approach Distance (feet)	10,000	10,000	10,000	10,000	5,000	5,000
Surface end width (feet)	3,500	3,500	4,000	3,500	2,000	2,000
Slope Ratio	34:1	34:1	34:1	34:1	20:1	20:1
Maximum elevation [a]	609.4	608.6	607.3	630.3	695.3	714.4

AMSL = above mean sea level; CFR = Code of Federal Regulations; nm = nautical mile(s).
[a] All elevations are in feet AMSL.
[b] Obstruction Categories (14 CFR 77): A(NP) = Non-precision Approach (Utility Runway); C = Non-precision Approach with visibility minimums greater than ¾ statute mile; D = Non-precision Approach with visibility minimums as low as ¾ statute mile.

5.1.11.5 TERMINAL INSTRUMENT PROCEDURES

In addition to the civil and military airport imaginary surfaces, FAA Order 8260.3G establishes imaginary surfaces associated with Terminal Instrument Procedures (TERPs). TERPs are FAA guidelines that prescribe standardized methods for designing and evaluating airport-specific Instrument Flight Procedures (IFPs), including approach and departure procedures, for civil and

military airports. IFPs detail required flight paths, altitude restrictions, and maximum descent and takeoff gradients that guide aircraft through approach airspace and provide protocols for missed approaches. IFPs consider obstructions around the airport, including natural topography and manmade structures, to establish Minimum and Required Obstacle Clearance Surfaces. This facet of TERPs allows safe aeronautical navigation in poor visibility conditions.

Civil Airport Imaginary Surfaces are typically more restrictive than surfaces associated with TERPs, to ensure that developers seek FAA consultation prior to constructing structures within controlled airspace. If a structure were to penetrate imaginary surfaces and/or FAA imaginary "Notice" surfaces (described in the following section) of an airport, the IFP for that airport may be required to include that obstruction on navigation charts. If the FAA identifies a structure as an obstruction to air navigation, the FAA will issue determinations regarding options for design requirements, such as prescribed maximum height thresholds. In some cases, the FAA may prohibit the construction of a structure at the proposed location.

Pursuant to 14 CFR Part 77, an existing object (including a mobile object) is, and a future object would be an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:

- 499 feet above ground level (AGL) at the site of the object;
- 200 feet AGL or above the established airport elevation, whichever is higher, within 3 nm of the established reference point of an airport (excluding heliports) where the longest runway is more than 3,200 feet in actual length. That height increases in the proportion of 100 feet for each additional nm from the airport up to a maximum of 499 feet;
- A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required obstacle clearance;
- A height within an enroute obstacle clearance area, including turn and termination areas, of a Federal Airway or approved off-airway route, which would increase the minimum obstacle clearance altitude; or
- The surface of a takeoff and landing area of an airport or any imaginary surface established under 14 CFR §§ 77.19, 77.21, or 77.23.

None of the route alternatives discussed in this report would exceed surfaces or TERPs obstruction standards of the airports identified in Table 5.1-15.

5.1.11.6 FEDERAL AVIATION ADMINISTRATION NOTICE REQUIREMENTS AND TIMING

Construction of any structure that exceeds any of the surfaces or heights identified in the previous sections requires notice to the FAA. In addition, pursuant to 14 CFR Part 77.9, a notice must be filed with the FAA for the following:

- Any construction or alteration that is more than 200 feet AGL at its site;
- Any construction or alteration exceeding an imaginary "Notice" surface as defined in 14 CFR Part 77, including surfaces extending outward and upward at the following slopes:

- 25 to 1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and takeoff area of each heliport;
- 50 to 1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway that is no more than 3,200 feet in actual length; or
- 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway that is more than 3,200 feet in actual length; or

- If requested by the FAA.

Construction or alteration of any structure that meets the notification requirements set forth above requires submittal of an FAA Form 7460-1, Notice of Proposed Construction or Alteration, to the FAA regional office with jurisdiction over the area, or submitted electronically via the FAA website. The information that needs to be provided with the notice includes the coordinates, site elevation, and structure height AGL for each pole/structure and the height of construction equipment, such as cranes.

5.1.11.7STATE AND LOCAL AVIATION REGULATIONS

Va. Code §5.1-25.1 prohibits erection of any structure that penetrates into or through any licensed airport's clear zone, approach zone, imaginary surface, obstruction clearance surface, obstruction clearance zone, or surface or zone (as defined by the FAA or the regulations of the Virginia Department of Aviation) without first securing a permit from the Board of Aviation. This requirement does not apply to structures erected in a jurisdiction that has an ordinance regulating the height of such structures to prevent the penetration of zones and surfaces established in 14 CFR Part 77 and Rule 19 of the Virginia Department of Aviation.

State law (Va. Code §§15.2-2280, 15.2-2282, 15.2-2293, and 15.2-2294) gives local jurisdictions the power to establish and regulate zoning districts, make airspace subject to their zoning ordinance, and establish airport safety zoning.

Culpeper County's Airport Safety Zones (Article 8D, Culpeper County Code of Ordinances), Orange County's Airport Zoning overlay district (Article 70-X, Orange County Code of Ordinances), and Fauquier County's Airport Safety and Impact Overlay District (APSID, Article 4, Part 5, Fauquier County Code of Ordinances) regulates and restricts structure height and land use around Culpeper Regional Airport, Orange County Airport, and Warrenton-Fauquier Airport, respectively. The boundaries of these overlay zones match the boundaries of the FAA Civil Airport Imaginary Surfaces described in Section 5.1.11.4 and summarized in Table 5.1-15. The Fauquier County overlay also regulates the portion of the County within the FAA Civil Airport Imaginary Surfaces for Culpeper Regional Airport.

5.1.11.8 IMPACT ASSESSMENT

Public Airports

ERM conducted an airport analysis to review the height limitations associated with the FAA-defined imaginary surfaces for all runways at the public airports identified in Tables 5.1-9 through 11. As part of a typical airport analysis, ERM conducts preliminary evaluations of transmission infrastructure heights and locations using the FAA-defined Civil and Department of Defense airport

imaginary surfaces, and applies standard GIS tools, including ESRI's ArcGIS Pro software with Spatial Analyst, 3D Analyst, and Aviation Airports Extensions, to create and georeference imaginary surfaces in space and in relationship to transmission structures.

All Project components are outside of the civil airport imaginary surfaces of the public airports identified in Table 5.1-12 and are thus are outside of the relevant airport safety overlay zones for Culpeper Regional Airport, Orange County Airport, and Warrenton-Fauquier Airport.

The proposed transmission line structures for the Project would not exceed 200 feet AGL. Dominion would likely use cranes to install the Project's transmission structures. Based on the typical maximum crane height needed for construction (approximately 35 feet above the structure height), these cranes would not exceed the FAA notification thresholds.

Unless specifically requested by the FAA, notification to the FAA would not be required for any component. If the FAA were to request additional information regarding the proposed project for any reason, Dominion may be required to submit FAA Form 7460-1, Notice of Proposed Construction or Alteration, pursuant to 14 CFR Part 77 for FAA notification. Any such submittal would occur after a route is selected by the SCC during the permitting phase of the Project.

Private Airports

The FAA does not regulate the private airports and heliports listed in Tables 5.1-9 through 5.1-11. Two private runways listed in Table 5.1-9 are near Mt Pony Route, as described below.

One runway, located on Mt Pony Road was formerly used by Kritter Cropdusting, Inc. The site is referred to as the "Kritter Runway" in this review. Based on available aerial imagery, the Kritter Runway is an approximately 3,200-foot-long turf airstrip that is surrounded by mature oak forest and managed timber, assumed to be approximately 60 feet tall or taller. Based on telephone communication between Dominion and the property owner in October and November 2024, the site ceased crop dusting operations in 2020; however, the runway is currently utilized infrequently to conduct private aerial tours with a dual engine aircraft. Although the site is not a public use facility and does not appear to be registered with the FAA, the path of Mt. Pony Route 2 was designed with landowner approval to minimize conflicts with this site. The Kritter Runway is located approximately 0.2 nm (1,100 feet) east of Mt. Pony Route 2 (MP 1.7). Maximum structure heights near this location of the route would be up to 110 feet AGL, which would maintain a 20:1 imaginary slope above the trees at the end of the runway. Based on landowner communication, this placement would accommodate their runway; therefore, the Project would have no impact on this runway.

The second runway is referred to as the "Maitland Runway" in this review, due to the name of the property owner. At least one fixed-wing, single-engine aircraft uses the Maitland Runway (FAA n.d.-c). Based on available aerial imagery, the single east-west oriented runway on site is approximately 2,200 feet long and is surrounded by fields and forested areas. Dominion's existing Lines #2/#2199 and existing 90-foot-tall Structures #2/#516 / #2199/#130 are located on the western boundary of the runway clearing, approximately 400 feet from the estimated end of the turf airstrip. Mt Pony Route 2 (MP 0.0) is less than 0.3 mile southwest of the estimated end of the turf runway. An aircraft taking off from this airport to the west would first encounter the existing

transmission lines before passing over the Mt Pony Route 2 alignment. The structures associated with Mt Pony Route 2 would not be taller than the existing structures near the runway; therefore, the Project would not pose a greater obstacle risk than the existing infrastructure. As a result, the Project would have no impact on this runway.

5.2 NATURAL RESOURCES

5.2.1 SURFACE WATERS

ERM identified and mapped watersheds, wetlands, and waterbodies (e.g., lakes, streams, ponds, and stormwater features) within the study areas using publicly available desktop sources, including:

- Culpeper County Interactive Data Portal GIS datasets (Culpeper County 2024);
- Aerial imagery from June 2021 (NAIP 2021);
- Google Earth aerial imagery (Google LLC 2024);
- ESRI World Imagery from 2021-2023 (ESRI et al. 2024a);
- ESRI World Elevation Terrain 5-foot contours (ESRI et al. 2024b);
- NWI maps from the USFWS online data mapping portal (USFWS 2024);
- The National Hydrography Dataset (NHD) Plus High Resolution (USGS 2024); and
- Soil Survey Geographic Database soils data from the U.S. Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS 2024).

Figure 5.2.1-1 shows the locations of NWI-mapped wetlands, NHD-mapped waterbodies, and watershed boundaries in the study areas.

5.2.1.1 WATERSHEDS

Watersheds are used to define the geographic area within the boundaries of drainage divides throughout the country. For purposes of classifying watersheds, the U.S. is divided into hydrologic units in four levels—regions, subregions, accounting units, and cataloging units—which may each contain all or part of a watershed. Each level is identified by a hydrologic unit code (HUC), beginning with major geographic areas or regions. The first level of the code, the 2-digit HUCs, identifies a major geographic area or region containing either several rivers or the drainage area of a major river. Subsequent levels encompass progressively smaller areas based on the drainage divides of lower order waterbodies.

The study areas are within the following HUC areas:

- The Mid-Atlantic HUC 2-digit (02) region, which discharges into the Atlantic Ocean, Long Island Sound, and the Riviere Richelieu, a tributary of the St. Lawrence River.
- The Lower Chesapeake HUC 4 (0208) subregion, which drains about 18,500 square miles in Virginia (including most of Virginia's portion of the Delmarva Peninsula) into the Chesapeake Bay, south of the Maryland-Virginia state line.

- The Lower Chesapeake HUC 6 (020801) watershed, which drains 8,320 square miles in Virginia (including most of Virginia's portion of the Delmarva Peninsula) into the Chesapeake Bay south of the Maryland-Virginia state line.
- The Rapidan-Upper Rappahannock HUC 8 (02080103) watershed, which drains 1,530 square miles into the into the Rapidan River and the Rappahannock River (USGS 2023).

The three study areas are further split into four smaller HUC 10-digit watersheds, described below for each of the Project components.

Mt. Pony and Tech Park Study Area

The Mt. Pony and Tech Park study area is split between two HUC 10 watersheds. The northern half of the study area is within the Mountain Run watershed (0208010305), while the southern half is within the Cedar Run-Rapidan River watershed (0208010310). The watershed divide approximately follows Rt. 3, Lovers Lane, and US 15/29.

Surface waters within the northern half of the study area, in the Mountain Run watershed, generally flow east into perennial Mountain Run and ultimately to the Rappahannock River to the northeast. Surface waters within the southern half of the study area, in the Cedar Run-Rapidan River watershed, generally flow southeast into named perennial waterbodies Dry Run, Meadowbrook Run, Sumerduck Run, and Potato Run, and ultimately to the Rapidan River to the southeast.

Oak Green Rebuild and Relocation Study Area

The Oak Green Rebuild and Relocation study area is split between two HUC 10 watersheds, with approximately 83% within the Cedar Run-Rapidan River watershed (0208010310) in the north and the remaining 17% within the Mine Run-Rapidan River watershed (0208010311) in the southern portion of the study area. Surface waters in the Cedar Run-Rapidan River watershed generally flow north into the Rapidan River via named, perennial waterbodies including Long Branch and Raccoon Branch. Surface waters within the Mine Run-Rapidan River watershed generally flow northeast into Mountain Run to the east of the study area.

Remington Rebuild Study Area

The Remington Rebuild study area is entirely within the Marsh Run-Rappahannock River watershed (0208010306). Surface waters in this watershed generally flow southeast into the Rappahannock River; however, surface waters within the study area flow southwest to Tinpot Run, southwest of the study area. There are no named waterbodies within this study area.

5.2.1.2 WETLANDS

Existing Conditions

ERM identified wetlands within the rights-of-way for the route alternatives and the footprints of the proposed substations based on a desktop wetland and waterbody probability analysis, described in the Wetland and Waterbody Desktop Summary (Appendix E). ERM did not conduct an

onsite delineation of wetlands or waterbodies along the route alternatives. Wetlands and waterbodies have been classified based on the Cowardin classification system as described below.

- Palustrine emergent (PEM) wetlands: characterized by erect, rooted, herbaceous hydrophytes (i.e., aquatic plants) and woody species less than 3 feet in height, excluding mosses and lichens;
- Palustrine scrub-shrub (PSS) wetlands: characterized by woody vegetation, excluding woody vines, approximately 3 to 20 feet in height;
- Palustrine forested (PFO) wetlands: characterized by woody vegetation, excluding woody vines, approximately 20 feet or more in height and 3 inches or larger diameter at breast height;
- Palustrine unconsolidated bottom (PUB) open waters: characterized by bottom substrate particles smaller than stones (less than 10 inches in diameter) covering greater than 25% of the area, with plants covering less than 30% of the area; and
- Riverine streams: channels containing periodically or continuously moving water (USFWS 2013).

Wetlands provide a wide range of ecological functions, including flood storage and groundwater recharge, nutrient and sediment capture, erosion control, filtration of pollutants from adjacent waterbodies, and diverse fish and wildlife habitat. PFO wetlands are of especially high value because of their habitat biodiversity and carbon sequestration functions, as well as their increased filtration capabilities.

Most wetlands in the study areas are adjacent to or contiguous with streams and associated tributaries that may be regulated by the U.S. Army Corps of Engineers (USACE) and Virginia Department of Environmental Quality (VDEQ) under Sections 404 and 401 of the Clean Water Act (CWA), respectively. ERM calculated acreages within the study areas that have high, medium-high, or medium probability of containing wetlands or waterbodies, based on the probability analysis described in Appendix E. Table 5.2-1 summarizes the acres of wetlands identified within the right-of-way of each route alternative. Maps depicting the identified wetlands and waterbodies and their probabilities are provided in Attachment 3 of Appendix E. Riverine (stream) and PUB (open water) features are described in Section 5.2.1.4, Waterbody Crossings.

Impact Assessment

Wetlands in the study areas are predominantly forested. Within the Mt. Pony and Tech Park study area, wetlands are associated with Mountain Run, Sumerduck Run, Dry Run, and Potato Run, with large areas of PFO located in the central and southern portion of the study areas. Within the Oak Green Rebuild and Relocation study area, most wetlands are PEM wetlands associated with tributaries to the Rapidan River, including Long Branch and unnamed tributaries, and PFO wetland associated with an unnamed, intermittent tributary to Mountain Run. Wetlands within the Remington Rebuild study area are mainly PFO associated with an unnamed, intermittent tributary to Tinpot Run.

TABLE 5.2-1 HIGH, MEDIUM-HIGH, AND MEDIUM PROBABILITY WETLANDS WITHIN THE PROJECT FOOTPRINT

Surface Waters	Unit [a, b]	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3	Oak Green Rebuild and Relocation	Remington Rebuild Route
Total	**Acres**	**6.8**	**8.7**	**1.4**	**1.1**	**1.2**	**1.1**	**3.1**
Palustrine Forested	Acres	5.7	5.5	1.0	1.0	1.1	0.0	NA
Palustrine Scrub-shrub	Acres	0.2	NA	NA	NA	NA	NA	NA
Palustrine Emergent	Acres	0.8	2.9	0.3	NA	NA	0.4	3.0
Palustrine Unconsolidated Bottom	Acres	NA	NA	NA	NA	NA	0.2	NA
Riverine	Acres	0.2	0.3	0.1	0.1	0.1	0.5	0.1

NA = Not applicable due to absence of a wetland type within the Project footprint.

[a] Wetland acreages have been rounded to the tenths place; as a result, the totals may not reflect the sum of the addends. A value of 0.0 acres indicates less than 0.05 acre of the wetland is present.

[b] The Mt. Pony Routes are inclusive of the 230 kV Mt. Pony Lines and the Mt. Pony Substation. The Tech Park Routes are inclusive of the 230 kV Tech Park Lines, McDevitt Substation, Chandler Substation, and Palomino Substation.

Mt. Pony Route 1

The Mt. Pony Substation footprint (included in the footprint of the Mt. Pony Lines) does not overlap any wetlands.

The Route 1 right-of-way encompasses approximately 6.8 acres of wetlands. Larger areas of wetlands along each route are described below.

- PFO and PEM wetlands associated with tributaries to Potato Run at approximate MP 0.8, between MPs 1.0 and 1.2, and between MPs 1.6 and 2.1;
- PFO, PSS, and PEM wetlands associated with tributaries to Mountain Run between MPs 3.1 and 3.2, 3.4 and 3.6, and at approximate MPs 4.1; and
- PFO and PEM wetlands associated with tributaries to Mountain Run at approximate MP 4.4 and between MPs 4.6 and 4.7.

If this route is selected for the Project, construction and operation of the transmission lines would convert the approximately 5.7 acres of PFO wetlands within the maintained right-of-way to PSS/PEM-type wetlands.

Mt. Pony Route 2

The Mt. Pony Route 2 right-of-way encompasses approximately 8.7 acres of wetlands. Larger areas of wetlands along each route are described below.

- PFO and PEM wetlands associated with intermittent tributaries to Sumerduck Run between MPs 0.0 and 0.6, 0.8 and 0.9, 1.4 and 1.5, and at approximate MP 1.9;
- PFO wetlands associated with intermittent tributaries to Dry Run between MPs 3.0 and 3.3, and 3.6 and 3.7; and
- PFO and PEM wetlands associated with intermittent tributaries to Mountain Run between MPs 3.8 and 3.9, 4.2 and 4.5, and 4.6 and 4.7.

If this route is selected for the Project, construction and operation of the transmission lines would convert the approximately 5.5 acres of PFO wetlands within the maintained right-of-way to PSS/PEM-type wetlands.

Tech Park Route 1

The McDevitt, Chandler, and Palomino Substation footprints (included in the footprint of the Tech Park Lines) do not contain any wetlands.

The Tech Park Route 1 right-of-way encompasses approximately 1.4 acres of wetlands. Larger areas of wetlands along the route consist of PFO and PEM wetlands associated with intermittent tributaries to Mountain Run between MPs 0.4 and 0.9 and MPs 2.1 and 2.2. If this route is selected for the Project, construction and operation of the transmission lines would convert the approximately 1.0 acres of PFO wetlands within the maintained right-of-way to PSS/PEM-type wetlands.

Tech Park Route 2

The Tech Park Route 2 right-of-way encompasses approximately 1.1 acres of wetlands. Tech Park Route 2 shares an alignment with Tech Park Route 1 from MP 0.8 to the future Cirrus Substation. Wetlands crossed by Tech Park Route 2 in these locations would be the same as those identified above between Tech Park Route 1 MP 0.9 and the future Cirrus Substation. The route crosses PFO wetlands associated with intermittent tributaries to Mountain Run between MPs 0.4 and 0.5 and 0.7 and 0.8. If this route is selected for the Project, construction and operation of the transmission lines would convert the approximately 1.0 acre of PFO wetlands within the maintained right-of-way to PSS/PEM-type wetlands.

Tech Park Route 3

The Tech Park Route 3 right-of-way encompasses approximately 1.2 acres of wetlands. Tech Park Route 3 shares alignments with Tech Park Route 1 from MP 1.0 to the future Cirrus Substation, and Tech Park Route 2 from MPs 0.0 to 0.5. Wetlands crossed by Tech Park Route 3 in these locations would be the same as those identified above between Tech Park Route 1 MP 1.1 and the future Cirrus Substation, and Tech Park Route 2 MPs 0.0 and 0.5. From MPs 0.5 to 1.0, locations of the wetlands along Tech Park Route 3 include PFO wetlands associated with intermittent tributaries to Mountain Run between MPs 0.9 and 1.0. If this route is selected for the Project, construction and operation of the transmission lines would convert the approximately 1.1 acres of PFO wetlands within the maintained right-of-way to PSS/PEM-type wetlands.

Oak Green Rebuild and Relocation

As described in Section 5.1.2, the Oak Green Rebuild and Relocation right-of-way (inclusive of the Oak Green Switching Station site) encompasses approximately 37.7 acres, with most (22.1 acres) within the Company's existing Lines #2/#11 rights-of-way, and only approximately 10.3 acres of proposed new expanded right-of-way. The total right-of-way for the Oak Green Rebuild and Relocation (inclusive of the proposed Relocated Oak Green Switching Station) encompasses approximately 1.1 acres of wetlands. Larger areas of wetlands along the route include PEM wetlands associated with intermittent tributaries to the Rapidan River near MP 0.3 and PEM wetlands associated with Long Branch near MP 0.8, 1.4, and 1.8. Of the 1.1 acres of wetlands encompassed by this route, only 0.2 acre are within the proposed expanded right-of-way. Construction and operation of the Oak Green Rebuild route would convert less than 0.1 acre of PFO wetlands within the maintained right-of-way to PSS/PEM-type wetlands.

Remington Rebuild

The Remington Rebuild right-of-way encompasses approximately 3.1 acres of wetlands, all within the Company's existing Line #70/#535 right-of-way. Areas of wetlands along the route include PEM wetlands between MPs 0.0 and 0.3. Construction and operation of the Remington Rebuild route would require no conversion of PFO type wetlands, and there would be no new wetland impacts.

Summary

To minimize impacts on wetland areas, the Project has been designed to span or avoid wetlands, keeping transmission structures outside of wetland boundaries to the extent practicable. Most direct impacts on wetlands from Project construction would be temporary in nature. The Company would use temporary timber matting for construction equipment to travel over wetlands, as appropriate. Due to the absence of an existing right-of-way, some new access roads may be necessary along the route. If a section of line cannot be accessed from existing roads, Dominion may need to install a culvert, ford, or temporary bridge along the right-of-way to cross small streams. In such cases, some temporary fill material in wetlands adjacent to such crossings may be required. This fill would be placed on erosion control fabric and removed when work is completed, returning ground elevations to preexisting conditions.

Permanent direct impacts to wetlands would be limited to placement of structures within wetlands, if unavoidable, and, due to the necessity of removing trees and shrubby vegetation from the right-of-way, the permanent conversion of PSS/PFO wetlands within the right-of-way to PSS or PEM type wetlands. Forested wetlands and riparian buffers provide functions such as peak flood flow reduction, nutrient and sediment capture, filtration of pollutants to adjacent waterbodies, and habitat diversity. The conversion of forested wetlands would reduce or eliminate some of these functions.

Where the removal of trees or shrubby vegetation occurs within wetlands, Dominion would use the least intrusive method reasonably possible to clear the corridor. Hand cutting of vegetation would be conducted, where needed, to avoid and minimize impacts on streams and/or wetlands.

No change in contours of wetlands and waterbodies, or redirection of the flow of water, is anticipated and the amount of spoil from foundation and structure placement would be minimal. Excess spoil in wetlands generated through foundation construction would be controlled through construction best management practices (BMPs) (e.g., the implementation erosion and sediment controls).

Upon SCC approval of a route and final line engineering, Dominion will obtain the appropriate permits from the USACE and VDEQ for work within wetlands and waterbodies to ensure full compliance with Section 404 and 401 of the CWA and minimize potential impacts on aquatic resources within the approved transmission line corridor.

5.2.1.3 WATERBODIES

ERM identified and mapped waterbodies, including streams, rivers, and other open waterbody features (e.g., reservoirs, lakes, impoundments, ponds, and stormwater features) within the study areas using the publicly available GIS databases identified above. Waterbodies crossings are regulated by the USACE and VDEQ under Sections 404 and 401 of the CWA and the Virginia Water Protection permit program. No navigable waters are crossed by the route alternatives; therefore, no Rivers and Harbors Act Section 10 authorization from the USACE would be required for the Project.

Named waterbodies crossed by the routes and route variations include the perennial Rapidan River, Long Branch, and Raccoon Branch (Oak Green Rebuild and Relocation) and Mountain Run

(Mt Pony Route 1 and Tech Park Route 1). The routes also cross unnamed perennial and intermittent tributaries to Mountain Run, Dry Run, Sumerduck Run, Potato Run, Raccoon Branch; intermittent streams associated with Tinpot Run; and open waterbody features. ERM identified no waterbodies within the footprint of the proposed Mt. Pony, McDevitt, Chandler, or Palomino Substations; therefore, those facilities are not further discussed in this section. Table 5.2-2 summarizes the number of NHD-mapped and unmapped waterbody crossings for each route alternative. Maps depicting the identified waterbodies are provided in Attachment 3 of Appendix E.

Mt. Pony Lines

Mt. Pony Route 1

Mt. Pony Route 1 crosses 12 waterbodies, of which 10 are NHD-mapped unnamed, intermittent streams. Additionally, ERM also identified two unnamed, unclassified streams within the right-of-way using recent aerial imagery (NAIP 2021; Google LLC 2024). Based on ERM's desktop wetland and waterbody analysis, the Mt. Pony Route 1 right-of-way would encompass approximately 0.2 acre of riverine features. Waterbody crossing locations are summarized below:

- Unnamed, intermittent tributaries to Potato Run between MPs 0.8 and 0.9 and at approximate MP 1.8; and
- Unnamed, intermittent tributaries to Mountain Run between MPs 3.1 and 3.2, 3.4 and 3.6, 3.8 and 3.9, 4.0 and 4.2, and 4.6 and 4.7.

Mt. Pony Route 2

Mt. Pony Route 2 crosses 10 waterbodies, of which eight are NHD-mapped unnamed, intermittent streams. Additionally, ERM identified two unnamed, unclassified streams within the right-of-way using recent aerial imagery (NAIP 2021; Google LLC 2024). Based on ERM's desktop wetland and waterbody analysis, the Mt. Pony Route 2 right-of-way would encompass approximately 0.3 acre of riverine features and 0.1 acre of PUB open water features. Waterbody crossing locations are summarized below:

- Unnamed, intermittent tributaries to Sumerduck Run at approximate MP 0.3, between MPs 0.8 and 0.9, 1.2 and 1.3, and at approximate MPs 1.5 and 1.9;
- Unnamed, intermittent tributaries to Dry Run between MPs 2.2 and 2.3, 2.9 and 3.1, and at approximate MP 3.2; and
- Unnamed, intermittent tributaries to Mountain Run between MPs 4.3 and 4.5, and at approximate MP 4.7.

TABLE 5.2-2 WATERBODIES CROSSED BY THE ROUTE ALTERNATIVES

Waterbodies Crossed	Unit	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3	Oak Green Rebuild and Relocation	Remington Rebuild Route
Total	**Number**	**12**	**10**	**4**	**4**	**4**	**6**	**2**
Perennial Streams	Number	0	0	3	0	0	3	0
Intermittent Streams	Number	10	8	0	3	3	1	0
Perennial Lakes/Ponds	Number	0	0	0	0	0	1	0
Non-NHD Mapped Waterbodies [a]	Number	2	2	1	1	1	1	2

Source: USGS 2024.

[a] Identified via aerial imagery during desktop analysis using recent (2024) aerial imagery (Google LLC 2024). These are also identified in Culpeper County stream data (Culpeper County 2024).

Tech Park Lines

Tech Park Route 1

Tech Park Route 1 crosses four waterbodies, of which three are NHD-mapped waterbodies, including two separate crossings of an unnamed perennial tributary to Mountain Run. ERM also identified two unnamed, intermittent streams within the right-of-way using recent aerial imagery and county stream data (NAIP 2021; Google LLC 2024; Culpeper County 2024). Based on ERM's desktop wetland and waterbody analysis, the Tech Park Route 1 right-of-way would encompass approximately 0.1 acre of riverine features. Waterbody crossing locations include an unnamed, perennial tributary to Mountain Run between MPs 0.6 and 0.7, and 0.8 and 0.9, and an unnamed, intermittent tributary to Mountain Run between MPs 2.1 and 2.2.

Tech Park Route 2

Tech Park Route 2 crosses four waterbodies, of which three are NHD-mapped unnamed, intermittent streams. ERM also identified one unnamed, intermittent stream within the right-of-way using recent aerial imagery and county stream data (NAIP 2021; Google LLC 2024; Culpeper County 2024). Based on ERM's desktop wetland and waterbody analysis, the Tech Park Route 2 right-of-way would encompass approximately 0.1 acre of riverine features. Tech Park Route 2 shares an alignment with Tech Park Route 1 from MP 0.8 to the future Cirrus Substation. Waterbodies crossed by Tech Park Route 2 in these locations would be the same as those identified above between Tech Park Route 1 MP 0.9 and the future Cirrus Substation. From MPs 0.0 to 0.8, waterbody crossing locations include unnamed, intermittent tributaries to Mountain Run between MPs 0.1 and 0.2, at approximate MP 0.4 and between MPs 0.7 and 0.8.

Tech Park Route 3

Tech Park Route 3 crosses four waterbodies, of which three are NHD-mapped unnamed, intermittent streams. ERM also identified one unnamed, intermittent stream within the right-of-way using recent aerial imagery and county stream data (NAIP 2021; Google LLC 2024; Culpeper County 2024). Based on ERM's desktop wetland and waterbody analysis, the Route Tech Park Route 3 right-of-way would encompass approximately 0.2 acre of riverine features. Tech Park Route 3 shares alignments with Tech Park Route 1 from MP 1.0 to the future Cirrus Substation, and Tech Park Route 2 from MPs 0.0 to 0.5. Waterbodies crossed by Tech Park Route 3 in these locations would be the same as those identified above between Tech Park Route 1 MP 1.1 and the future Cirrus Substation, and Tech Park Route 2 MPs 0.0 and 0.5. From MPs 0.5 to 1.1, Tech Park Route 3 would cross an unnamed, intermittent tributary to Mountain Run between MPs 0.9 and 1.0.

Oak Green Rebuild and Relocation

The Oak Green Rebuild and Relocation crosses six waterbodies, of which five are NHD-mapped waterbodies, including two perennial waterbodies (the Rapidan River and one lake/pond) and three unnamed, intermittent streams. ERM also identified one unnamed, unclassified stream within the right-of-way using recent aerial imagery (NAIP 2021; Google LLC 2024). Based on

ERM's desktop wetland and waterbody analysis, the Oak Green Rebuild right-of-way would encompass approximately 0.5 acre of riverine features and 0.2 acre of PUB open water features. Waterbody crossing locations are summarized below:

- A perennial lake/pond associated with Rapidan River at approximate MP 0.1;
- The perennial Rapidan River between MPs 0.2 and 0.3 and an intermittent tributary to Rapidan River between MPs 0.4 and 0.5;
- The perennial Long Branch at approximate MP 0.8; and
- An intermittent tributary to Raccoon Branch at approximate MP 1.4 and perennial Raccoon Branch between MPs 1.7 and 1.8.

Remington Rebuild

The Remington Rebuild does not cross any NHD-mapped waterbodies; however, ERM identified two unnamed, unclassified streams within the right-of-way using recent aerial imagery and county stream data (NAIP 2021; Google LLC 2024; Culpeper County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for the Remington Rebuild would encompass approximately 0.1 acre of riverine features. Waterbody crossing locations include intermittent streams associated with Tinpot Run between MPs 0.1 and 0.3.

Impact Assessment

Dominion would span the waterbodies crossed by the Project's route alternatives, with permanent impacts to waterbodies limited to riparian buffer transition from tree cover to herbaceous vegetation within the maintained right-of-way.

As noted above, most of the Oak Green Rebuild and Relocation is within Company-owned and maintained existing transmission line rights-of-way. Most of each of the riverine features crossed by the Oak Green Rebuild and Relocation route are within the existing maintained corridor, with vegetation/riparian buffer only along the proposed expanded right-of-way segments of the features.

Tree removal adjacent to waterbodies would reduce riparian buffer functions such as stream bank stabilization and erosion control, nutrient and sediment filtration, floodwater storage and peak flow reduction, and water temperature changes due to loss of shading. The right-of-way would be maintained with a cover of herbaceous vegetation during operations, which would provide some filtration and stabilization to protect waterbodies from runoff.

Where removal of trees and/or woody shrubs is required, clearing within 100 feet of a stream would be conducted by hand. Vegetation would be cut at or slightly AGL and there would be no grubbing of stumps. Dominion would use sediment barriers along waterways and steep slopes during construction to protect waterways from soil erosion and sedimentation.

Temporary, minor impacts on water quality could occur during construction from disturbed soils transported by stormwater into adjacent surface waters during rain events. Increased turbidity and localized sedimentation of stream bottoms may occur because of runoff. Potential impacts would be mitigated by the implementation of erosion control measures.

Waterways crossed by the Project would be maintained for proper drainage using culverts or other crossing devices in accordance with Dominion's standard policies. If a section of line cannot be accessed from existing roads, Dominion may need to install a culvert or temporary bridge to cross small streams. In such cases, temporary fill may be required. The fill would be placed on erosion control fabric and removed when work is completed, returning the surface to original contours.

Upon SCC approval of a route and final line engineering, Dominion will obtain the appropriate permits from the USACE and VDEQ for work within wetlands and waterbodies to ensure full compliance with Section 404 and 401 of the CWA and minimize potential impacts on aquatic resources within the approved transmission line corridor.

5.2.2 NATURAL HERITAGE RESOURCES

The Virginia Natural Area Preserves Act of 1989 defines natural heritage resources (NHRs) as habitats of rare, threatened, or endangered plant and animal species; rare or state-significant natural communities or geologic sites; and similar features of scientific interest benefiting the welfare of the citizens of the Commonwealth (Va. Code § 10.1-209 through 217). VDCR assigns a state rank (an "S-ranking") to the species, natural communities, and geologic features categorized by NHRs to indicate their conservation status and rarity within the Commonwealth of Virginia. State rankings range from S1 to S5, as follows (VDCR 2021a):

- Critically imperiled (S1);
- Imperiled (S2);
- Vulnerable (S3);
- Apparently secure (S4); or
- Secure (S5).

ERM consulted the VDCR's Natural Heritage Program (NHP) and requested an environmental review of the routes to identify NHRs along and near each alternative. ERM also reviewed the NHP's ecological datasets for the area within 1.0 mile of the rights-of-way for each route alternative. The requested NHP review included natural area preserves, conservation sites, stream conservation sites (SCSs), and ecological cores (VDCR 2024b).

The VDCR responded to ERM's request for environmental review of the Project in a letter dated October 28, 2024 (attached as Appendix F). The VDCR letter indicates that no natural area preserves or state-listed insects are present along the routes; therefore, no further discussion of these resource types is provided in this study. The VDCR's review identified conservation sites, SCSs, karst resources, threatened and endangered species waters (T&E Waters), diabase soils, and ecological cores along the route alternatives. The conservation sites, SCSs, karst resources, and ecological cores are described below, while the T&E Waters and rare plant species associated with diabase soils are described in Section 5.2.3.

5.2.2.1 CONSERVATION SITES

Conservation sites identify a planning boundary delineating the NHP's best determination of the land and water area occupied by one or more rare, threatened, or endangered species; rare or

significant natural communities, or geologic sites and are necessary to maintain ecological processes that will facilitate long-term survival of these resources. The size and dimensions of a conservation site are based on the habitat requirements of the rare, threatened, or endangered plant and animal species or natural communities present and the physical features of the surrounding landscape. Features taken into consideration include hydrology, slope, aspect, vegetation structure, current land uses, and potential threats from invasive species. Conservation sites do not necessarily preclude human activities, but a site's viability may be greatly influenced by human activities. Conservation sites may require ecological management, such as invasive species control or water management, to maintain or enhance their viability.

Each conservation site is given a biodiversity significance ranking (a "B-ranking") by VDCR based on rarity, quality, and number of NHRs it contains. Conservation site rankings range from B1 to B5 as follows (VDCR 2021a):

- Outstanding significance (B1);
- Very high significance (B2);
- High significance (B3);
- Moderate significance (B4); or
- General significance (B5).

Rankings for conservation sites can also include indicators of the presence/absence of federal-listed species, state-listed species, or no listed species.

VDCR identified two conservation sites within the Project study areas, including Southern Culpeper Diabase Flatwoods Conservation Site and Mount Pony Conservation Site. Descriptions of each conservation site are provided below. Figure 5.2.2-1 depicts the locations of the sites.

Southern Culpeper Diabase Flatwoods Conservation Site

The Southern Culpeper Diabase Flatwoods Conservation Site consists of 1,692 acres of land with a B2 ranking, indicating a site of very high significance. Approximately 1,379 acres of the conservation site are within the southern portion of the Mt. Pony and Tech Park Components study area. According to historic aerial imagery, approximately 510.0 acres of the conservation site within the study area have been cleared and left as open land or cleared and recently revegetated (Google LLC 2024). The resources associated with the Southern Culpeper Diabase Flatwoods Conservation Site include the Piedmont Mafic Barren and the Downy phlox (*Phlox pilosa)* plant. Section 5.2.3 provides additional information on Downy phlox.

The Piedmont Mafic Barren natural community occupies xeric bedrock exposures and is characterized as herbaceous with scattered and stunted trees. White ash (*Fraxinus americana)* and Eastern red cedar (*Juniperus virginiana)* are typical woody plants associated with this community. Low strata plants include Eastern prickly pear (*Opuntia humifusa),* Quill fameflower *(Phemeranthus teretifolius),* Polygonum tenue *(Polygonum tenue),* Dwarf dandelion *(Krigia virginica),* Pennsylvania sledge *(Carex pensylvanica)*, and Poverty grass (*Danthonia spicata)*. This natural community is classified as S1 (Critically Imperiled) in Virginia (NatureServe 2024a).

Mount Pony Conservation Site

The Mount Pony Conservation Site consists of 1,013 acres of land with a B2 ranking, indicating a site of very high significance. The conservation site is in the central portion of the Mt. Pony and Tech Park Components study area. Most of the conservation site comprises unfragmented forested land with smaller sections of cleared land along the southern boundary of the site. The resources associated with the Mount Pony Conservation Site include the Piedmont Mafic Barren (described above), Northern Hardpan Basic Oak–Hickory Forest, and Narrow-leaf blue curls (*Trichostema setaceum)* plant. Section 5.2.3 provides additional information on Narrow-leaf blue curls.

The Northern Hardpan Basic Oak–Hickory Forest natural community type inhabits submesic to subxeric uplands over basic igneous and metamorphic rocks (e.g., diabase, gabbro, amphibolite, and metabasalt). The mixed forest canopy includes mostly white oak (*Quercus alba*), northern red oak (*Quercus rubra*), black oak (*Quercus velutina*), chestnut oak (*Quercus montana*), post oak (*Quercus stellata*), pignut hickory (*Carya glabra*), red hickory (*Carya ovalis),* shagbark hickory (*Carya ovata*), mockernut hickory (*Carya tomentosa*), white ash, and tulip-tree (*Liriodendron tulipifera*). Herbaceous plants such as Eastern redbud (*Cercis canadensis var. canadensis),* eastern hop-hornbeam (*Ostrya virginiana*), and flowering dogwood (*Cornus florida*) are common in the understory. Herb layers are typically patchy but species-rich and support diverse mixtures of both mesophytic and dry-site species (VDCR 2021b). This community is classified as S2 (Imperiled) in Virginia (NatureServe 2024b).

Impact Assessment

Approximately 2.1 miles (encompassing approximately 25.5 acres of right-of-way) of Mt. Pony Route 2 crosses through the center of the Southern Culpeper Diabase Flatwoods Conservation Site, between approximate MPs 0.0 and 2.1. The portion of the conservation site crossed by the line consists of forest fragments between open fields. Approximately 1.5 miles (70% of the total site crossing) of the Mt. Pony Route 2 crossing of this conservation site is through recently cleared land.

Based on historic aerial photography, silviculture and agricultural activities have historically occurred within the Southern Culpeper Diabase Flatwoods Conservation Site (Google LLC 2024). Due to these prior land disturbances, it is unlikely that the Project would cause additional impacts to the conservation site or the resources associated with the site (i.e., Piedmont Mafic Barren natural community and the Downy phlox).

No Project route alternatives cross the Mount Pony Conservation Site; therefore, the Project would have no impacts on this site.

5.2.2.2 STREAM CONSERVATION SITES

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-kilometer stream distance from the aquatic resources" (VDCR 2024c). The VDCR considers hydrology of the waterway and surrounding landscape, dam locations, and delineation of tidal waterways to determine the size and dimensions of a SCS. The

SCS can be used to identify land management needs, protection priorities, and potential conflicts with development activities.

VDCR assigns a B-ranking to SCSs using the same scale as described for conservation sites in Section 5.2.2.1. VDCR identified three SCSs within the Project study areas, which are described below: Sumerduck Run SCS, Rapidan River at Rt. 522 SCS, and Rappahannock River–Hubbard Run SCS. Figure 5.2.2-1 depicts the location of these sites.

Sumerduck Run Stream Conservation Site

The Sumerduck Run SCS consists of 538 acres of land with a B3 ranking, indicating a site of high significance. Approximately 65.6 acres of this SCS are in the southern portion of the Mt. Pony and Tech Park Components study area. Most of the SCS within the study area comprises forest and forested wetlands. No Project route alternatives cross this SCS.

The natural community type associated with this NHR is designated as an Aquatic Natural Community (Northern Piedmont-Rapidan-Upper Rappahannock Second Order Stream) in Virginia Commonwealth University's (VCU) Interactive Stream Assessment Resource (INSTAR) database (VDCR 2024c). The INSTAR database represents over 2,000 statewide aquatic collections of fish and macroinvertebrates, and allows for analysis of fish and macroinvertebrate assemblages, instream habitat, and stream health assessments (VDCR 2024c). VCU has classified the streams within the SCS as Grade B (indicating relative regional significance) with a "Healthy" stream designation per the INSTAR Virtual Stream Assessment score. VDCR also indicated evidence that streams within this SCS contribute to high biological integrity at the watershed level (6th order), due to the presence of multiple native/non-native, pollution-tolerant/intolerant and rare, threatened or endangered fish and macroinvertebrate species (VDCR 2024b).

Rapidan River at Rt. 522 Stream Conservation Site

The Rapidan River at Rt. 522 SCS consists of 1,016 acres of land with a B3 ranking, indicating a site of high significance. Approximately 91.4 acres of this SCS are located within the northern portion of the Oak Green Components study area. Most of the SCS within this study area comprises agricultural lands and smaller forested tracts of land. The Oak Green Rebuild Route crosses this SCS from approximately MP 0.0 to 0.3. No additional right-of-way would be needed for the rebuild between approximate MPs 0.0 and 0.2; however, additional right-of-way would be required between MPs 0.2 and 0.3, where the route crosses the Rapidan River.

The natural community type associated with this NHR is designated as an Aquatic Natural Community (Northern Piedmont-Rapidan-Upper Rappahannock Fifth Order Stream) in the INSTAR database (VDCR 2024c). VCU has classified the streams within the SCS as Grade B (indicating relative regional significance) with a "Healthy" stream designation per the INSTAR Virtual Stream Assessment score. VDCR also indicates evidence that streams within this SCS contribute to high biological integrity at the watershed level (6th order), due to the presence of multiple native/non-native, pollution-tolerant/intolerant and rare, threatened or endangered fish and macroinvertebrate species (VDCR 2024b).

The Yellow lance (*Elliptio lanceolata*) is also associated with this SCS. Section 5.2.3 provides additional information on this species.

Rappahannock River–Hubbard Run Stream Conservation Site

The Rappahannock River–Hubbard Run SCS consists of 1,010 acres of land with a B3 ranking, indicating a site of high significance. Approximately 51.4 acres of this SCS is located within the northwestern portion of the Remington Components study area. Most of the SCS within the study area comprises forested wetlands and agricultural lands. The Remington Rebuild Route crosses this SCS from approximately MPs 0.0 to 0.2. No additional right-of-way would be needed for the rebuild within this SCS.

The Yellow lance is associated with this SCS. Section 5.2.3 provides additional information on this species.

Impact Assessment

No Project route alternatives cross the Sumerduck Run SCS; therefore, the Project would have no impacts on this SCS.

The existing transmission line to be rebuilt by the Oak Green Rebuild and Relocation Project crosses the Rapidan River at Rt. 522 SCS for approximately 0.3 mile. The Project would require no instream construction; however, the existing right-of-way will be expanded from 75 feet to 100 feet where the transmission line crosses the Rapidan River, requiring tree/vegetation clearing along both riverbanks. To the degree that this clearing reduces shade along the streambanks, the Project could result in increased water temperatures and sediment in the area adjacent to the tree clearing, which could adversely impact resources associated with this SCS, including the Yellow lance and the Northern Piedmont-Rapidan-Upper Rappahannock Fifth Order Stream aquatic natural community. The Company would coordinate with VDCR to determine if surveys are warranted for these clearing activities.

The Remington Rebuild Route crosses the Rappahannock River–Hubbard Run SCS for approximately 0.1 mile. Because the rebuild does not require additional right-of-way, this element of the Project would require no tree clearing and would therefore have no impact on this SCS or the resource associated with it.

5.2.2.3 KARST LANDSCAPE

Existing Conditions

Karst is a landscape developed in marble, dolomite, limestone, or other soluble rocks that is characterized by sinking or lost streams, sinkholes, springs, caves, and subsurface drainage systems. In Virginia, karst topography typically occurs in the Valley and Ridge Provinces in the western portion of the state; however, smaller areas also occur in Coastal Plain, Cumberland Plateau, and Piedmont provinces (VDCR n.d.). Portions of the Project intersect karst bedrock and have the possibility to encounter undocumented caves, sinkholes, or other sensitive karst features in the area (VDCR 2024c). Table 5.2-3 summarizes the karst bedrock areas crossed by the

Project's route alternatives. Figure 5.2.2-1 shows the locations of each karst bedrock area crossed by the Project route alternatives.

TABLE 5.2-3 KARST BEDROCK CROSSED BY ROUTE ALTERNATIVE RIGHTS-OF-WAY

	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3	Oak Green Rebuild Route	Remington Rebuild Route
Acreage	12.5	8.6	28.3	32.2	32.9	3.4	0.0

Impact Assessment

Mt. Pony Route 2 intersects less karst bedrock than Mt. Pony Route 1, while Tech Park Route 1 intersects less karst bedrock than the other Tech Park routes. The Remington Rebuild Route is the only Project Component that does not intersect karst bedrock. Most karst bedrock areas crossed by the route alternatives contain existing infrastructure (i.e., roads, existing transmission lines, and buildings); therefore, the Project is unlikely to have additional impacts on karst bedrock in these areas.

To reduce potential impact on karst geology, as well as groundwater, surface water, and any associated fauna and flora, VDCR suggests construction with minimal surface disturbance, strict use of erosion and sediment control measures, and adherence to BMPs appropriate (VDCR 2024c). The Project's ground disturbance will be limited to transmission structure placement, tree clearing, or temporary heavy equipment usage during construction.

If karst features such as sinkholes, caves, disappearing streams, and large springs are encountered during the Project, the Company will coordinate with the VDCR DNH to document and minimize adverse impacts.

5.2.2.4 ECOLOGICAL CORES

Existing Conditions

Ecological cores are areas comprising at least 100 acres of continuous interior, natural cover (e.g., forests or woodlands) that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists. Interior ecological core areas begin 100 meters inside the nearest core edges and continue to the deepest parts of the ecological core. Smaller areas of continuous interior cover (i.e., 10 to 99 acres), called habitat fragments, support ecological cores and provide similar functions and values. Ecological cores and habitat fragments together provide the natural and economic benefits of open space, recreation, water quality (including erosion prevention and drinking water recharge and protection), and air quality (including carbon sequestration and oxygen production). VDCR ranks the integrity of ecological cores from C1 to C5 (see description below) using nine prioritization criteria, including the NHR habitats within the cores. Habitat fragments are similarly classified, although none are ranked above C3 (VDCR 2023a, 2024c).

The VDCR ranking system for the integrity of ecological cores includes the following categories:

- Rank C1—Outstanding
- Rank C2—Very High
- Rank C3—High
- Rank C4—Moderate
- Rank C5—General

Generally, VDCR assigns a higher ranking (e.g., C1 or C2) to larger and more biologically diverse ecological cores. Ecological integrity can be considered enhanced if the core is part of a larger complex of natural lands, or if the core contributes to water quality enhancement. Ecological cores ranked C1 and C2 are typically connected by extended landscape corridors with forests that comprise a statewide network of natural lands. Therefore, the VDCR recommends avoidance of ecological cores ranked C1 or C2 and a formal impact analysis to minimize impacts if they are unavoidable (Gustafson 2024). Lower ranked ecological cores may have smaller fragments of forested habitat (10 to 99 acres of contiguous landcover); however, the VDCR notes that habitat fragments can also provide important ecological functions and values and recommends avoiding impacts to habitat fragments when feasible.

Impact Assessment

Impacts on ecological cores occur when their natural cover is partially or completely converted to developed land uses. Habitat conversion can result in changes that reduce ecosystem processes, biodiversity, population viability, and habitat quality (VDCR 2024c). The VDCR review of the Project found that Mt. Pony Route 2 is the only route alternative that intersects ecological cores (one core ranked C2 and three cores ranked C5). Table 5.2-4 lists the total acres and miles of ecological cores impacted by Mt. Pony Route 2. Based on the recommendation of VDCR, this section provides a formal impact analysis of the affected C2-ranked core but does not discuss the C5-ranked cores (Gustafson 2024, VDCR 2024c, see Appendix F). Figure 5.2.2-2 shows the locations of the ecological core units crossed by this route alternative.

TABLE 5.2-4 SUMMARY OF ECOLOGICAL CORE IMPACTS FOR MT. PONY ROUTE 2

Core Rank	Core IDs	Acres Impacted	Miles Crossed
C2	43569	19.9	1.6
C5	43310, 43867, 43989	11.5	0.9
Total [a]		**31.5**	**2.6**

[a] Totals may not match the sum of the addends due to rounding.

Mt. Pony Route 2 crosses 1.6 miles of Core ID 43569 (ranked C2), with a right-of-way footprint of approximately 19.9 acres within the core. Approximately 51% of the affected acreage within Core ID 43569 is cleared or was recently disturbed, while the remainder of the affected acreage is forested. Approximately 0.6 mile (35% of the total core crossing) of the crossing in the northern portion of Core ID 43569 is through land that is currently deforested and was cleared between

2011 and 2013. Approximately 0.3 mile (16% of the total core crossing) of the crossing in the southern portion of the core is through land within the core that is currently deforested and was cleared between 2013 and 2017. According to historical and recent (2024) aerial imagery, a significant amount of land (approximately 482 acres, 36% of the core) within this C2 core has been altered by land clearing and has likely lost ecological value since the initial ranking of C2 (Google LLC 2024). Additionally, the route would not intersect Sumerduck Run, which is a significant resource within the core.

The Company will work with the appropriate jurisdictional agencies to minimize impacts on ecological cores during implementation of the Project.

5.2.3 PROTECTED SPECIES

Protected species are generally defined as animal and plant species that are protected under state or Federal law. ERM reviewed protected species according to regulations under the following state and Federal laws:

- Federal- and state-listed T&E species protected under the federal Endangered Species Act (ESA) enacted in 1973 and administered by the USFWS and The National Oceanic and Atmospheric Administration, in cooperation with the Virginia Department of Wildlife Resources (VDWR), and also protected under the Virginia Endangered Plant and Insect Species Act administered by the Virginia Department of Agriculture and Consumer Services in cooperation with the VDCR;
- Bald eagles (*Haliaeetus leucocephalus*) protected under the federal Bald and Golden Eagle Protection Act enacted in 1940 and administered by the USFWS; and
- Migratory birds protected under the Migratory Bird Treaty Act enacted in 1918 and administered by the USFWS.

ERM identified protected species along and near the Project using the following sources:

- USFWS Information for Planning and Consultation System (IPaC) online system (USFWS n.d.)
- VDCR NHP (VDCR 2024b)
- VDCR Environmental Review (VDCR 2024c)
- VDWR Wildlife Environmental Review Map Service (WERMS) (VDWR 2024a)
- Virginia Fish and Wildlife Information Service (VaFWIS) (VDWR 2024b)
- Center for Conservation Biology (CCB) Eagle Nest Locator (CCB 2022)
- VDWR Little Brown Bat and Tricolored Bat Winter Habitat and Roost Tree Application (VDWR 2024c)

ERM obtained database query results from the VDCR NHP, the VDWR VaFWIS, the VDWR WERMS, and the USFWS IPaC to identify federal- and state-listed species that may occur within the study areas. ERM obtained digital data from the VDCR to identify locations within potential rights-of-way of the route alternatives and substations (along with an associated 100-foot buffer) that potentially support protected species. Query results from the VDCR include species known to

occur in the area and communities known to historically or currently contain protected species (VDCR 2024c).

Query results from IPaC include species that may occur in the study areas (USFWS n.d.). Query results from VaFWIS include species known to occur or likely to occur within a 2.0-mile radius of the Project study areas (VDWR 2024b). Bald eagle nest data and migratory bird information is provided in the CCB database (CCB 2022). Data for species known to occur within the Project route alternatives rights-of-way were retrieved using queries of the VDWR WERMS.

5.2.3.1 FEDERAL- AND STATE-LISTED ENDANGERED AND THREATENED SPECIES

To protect and recover imperiled species and the ecosystems they depend on, Congress passed the federal ESA in 1973, which states that T&E plant and animal species are of aesthetic, ecological, educational, historic, and scientific value to the U.S., and protection of these species and their habitats is required. The ESA is administered by both The National Oceanic and Atmospheric Administration and USFWS. It protects fish, wildlife, plants, and invertebrates that are federally listed as endangered or threatened by prohibiting the "take" of these species and the interstate or international trade of the species, including their parts and products, unless federally permitted.

To take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct" (33 U.S.C. §1532). A federally endangered species is any species that is in danger of extinction throughout all or a significant portion of its range, with exceptions for certain insect pests (33 U.S.C. §1532). A federally threatened species is any species that is likely to become endangered in the near future throughout all or a significant portion of its range (33 U.S.C. §1532).

Virginia has adopted separate codes for protecting animals and plants in the state. The Virginia ESA (Va. Code §§ 29.1-563 through -570) designates the VDWR as the state agency with jurisdiction over state-listed endangered or threatened fish and wildlife. The Virginia ESA authorizes the Board of the VDWR to adopt the federal list of endangered and threatened species and to identify and protect state-listed wildlife. The Virginia ESA prohibits the taking, transportation, processing, sale, or offer for sale of those species.

Under the Virginia Endangered Plant and Insect Species Act (2 VAC 5-320-10), the taking or possession of endangered or threatened plant and insect species is prohibited. The VDCR represents the Virginia Department of Agriculture and Consumer Services, which is responsible for state-listed plants and insects, in providing comments regarding potential impacts on these species.

ERM database queries identified multiple federal- and state-listed T&E species within and adjacent to the study areas. Federal-listed and federal-proposed species (which are also state-listed) include Tricolored bat (TCB; *Perimyotis subflavus*), Dwarf wedgemussel (*Alasmidonta heterodon*), Green floater (*Lasmigona subviridis*), and Yellow lance. Two additional state-listed species (which are not also federally listed) identified by the queries include Loggerhead shrike (*Lanius ludovicianus)* and Torrey's mountain-mint (*Pycnanthemum torreyi*).

ERM reviewed the potential for each federal- and state-listed species to occur within and adjacent to the route alternatives. Table 5.2-5 provides information on the federal- and state-listed species with potential to occur in the study areas and/or within a 2.0-mile buffer around the study areas.

TABLE 5.2-5 FEDERAL- AND STATE-LISTED SPECIES POTENTIALLY OCCURING IN THE STUDY AREAS

Common Name	Scientific Name	Status [a]	Global Rank [b]	Habitat	Source	Confirmed Presence [c]
Mammals						
Tricolored bat	*Perimyotis subflavus*	FPE, SE	G3	Typically roost in trees near forest edges during summer. Hibernate deep in caves or mines in areas with warm, stable temperatures during winter.	IPaC VDWR—Winter Habitat and Roost Tree Map	No
Invertebrates						
Dwarf wedgemussel	*Alasmidonta heterodon*	FE, SE	G1	Large rivers and small streams, often burrowed into clay banks among the root systems of trees; also associated with mixed substrates of cobble, gravel, and sand.	IPaC	No
Green floater	*Lasmigona subviridis*	FPT, ST	G3	Small to medium streams in quiet pools and eddies with gravel and sand substrates.	IPaC VaFWIS	Yes
Yellow lance	*Elliptio lanceolata*	FT, ST	G2	Depend on clean, moderately flowing water with high dissolved oxygen and found in medium-sized rivers to smaller streams. Bury deep into coarse to medium sand substrate and sometimes gravel. Move with shifting sand and settles in downstream end of stable sand and gravel bars.	IPaC VDCR VaFWIS	Yes
Birds						
Loggerhead shrike	*Lanius ludovicianus*	ST	G4	Prefer grazed pastures for nesting purposes and shrub/open forest habitats during winters. For breeding season, the species prefers open country with shrubs, scrub, and scattered trees.	VaFWIS VDCR	Yes
Plants						
Torrey's mountain-mint	*Pycnanthemum torreyi*	ST	G2	Dry, rocky or sandy woodlands and clearings. Occur on both extremely acidic and strongly basic substrates.	VDCR	No

Sources: USFWS n.d.; VDCR 2024c; VDWR 2024b, 2024c; Digital Atlas of the Virginia Flora 2024.

IPaC = Information for Planning and Consultation; VaFWIS = Virginia Fish and Wildlife Information Service; VDCR = Virginia Department of Conservation and Recreation; VDWR = Virginia Department of Wildlife Resources.

[a] Federal/State Status:

FE	Federally listed as endangered	SE	State listed as endangered	FPE	Federally proposed as endangered
FT	Federally listed as threatened	ST	State listed as threatened	FPT	Federally proposed as threatened

[b] Global Rank:

G1 Critically Imperiled: At very high risk of extinction due to extreme rarity (often five or fewer populations), very steep declines, or other factors

G2 Imperiled: At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors

G3 Vulnerable: At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors

G4 Apparently Secure: Uncommon but not rare; some cause for long-term concern due to declines or other factors

G5 Secure: Common, widespread, and abundant

[c] Indicates whether there is confirmed presence of the species within the Project's study areas or within the 2.0-mile buffer from those study areas.

Federal-Listed Species

As shown in Table 5.2-5, ERM identified two federal-listed species and two species with a proposed federal-listing, each of which is also state-listed, that may potentially occur within the study areas. While all four of these species were identified by either the IPaC database or VaFWIS database as having potential occurrence within a 2.0-mile search radius of the study area boundaries, only the Green floater and Yellow lance have occurrences confirmed within a 2.0-mile radius of the study areas. Both the Green floater and Yellow lance have been documented within the Rappahannock and Rapidan Rivers (VDWR 2024b). Due to the documented occurrences of these listed species, the Rapidan River has been classified as T&E Waters for the Green floater, and the Rappahannock River has been classified as T&E Waters for both the Green floater and Yellow lance. This designation classifies streams and rivers that contain documented occurrences of federal- or state-listed species and their habitat.

Potential summer foraging habitat for the TCB in the study areas includes multiple forested areas along each route. VDWR's online mapping of winter habitat and roost trees shows no summer habitat (i.e., maternity roosts), winter habitat (i.e., hibernacula), or roost trees for TCB within the rights-of-way for the Project's route alternatives (VDWR 2024c). Additionally, the VaFWIS and WERMS database showed no confirmed occurrences of the TCB within the route alternatives (VDWR 2024a, 2024b).

State-Listed Species

As shown in Table 5.2-5, ERM identified two state-listed species that are not also federal-listed species (Loggerhead shrike and Torrey's mountain-mint) that may potentially occur within the study areas. The Loggerhead shrike has documented occurrences within the 2.0-mile search radius around the study areas. Specifically, the Loggerhead shrike was observed outside of the study areas, along the southwest boundary of the 2.0-mile search radius of the Mt. Pony and Tech Park Components study area and within the northwest portion of the 2.0-mile search radius of the Oak Green Component study area. Additionally, per the VDCR's predicted suitable habitat modeling, potential breeding populations of this species may occur in the Mt. Pony and Tech Park Components study area if suitable habitat exists (VDCR 2024c).

Impact Assessment

Table 5.2-6 provides information on the six federal-listed and/or state-listed species identified as potentially occurring within the study areas and/or within a 2.0-mile radius of the study areas. Potential habitat exists for all six species along the route alternatives; however, the VDWR, VaFWIS, WERMS, and VDCR data show that only the Loggerhead shrike, Green floater, and Yellow lance have been confirmed within the study areas or 2.0-mile radius of the study area boundaries.

VDWR data do not document any occurrences of federal- and state-listed bat hibernaculum (winter habitat) within a 2.0-mile radius of the study areas, although summer foraging habitat for these species is likely present within forested habitats crossed by each route. The Project would have no impacts on TCB, assuming trees are cleared during the winter, according to VDWR time-of-year restrictions (TOYRs).

The review accounted for regulatory changes and requirements associated with TCB and the proposed USFWS listing of this species as federally endangered. The Company is anticipating the TCB will be listed; therefore, it assumes any regulatory changes associated with the potential listing of the TCB will affect this Project. On September 14, 2022, the TCB was proposed to be listed as Endangered by the USFWS (USFWS 2022). USFWS extended its Final Rule issuance target from September 2023 to the end of 2024. At this time, the TCB Final Rule has not been issued.

In October 2024 USFWS issued a final Northern long-eared bat ("NLEB," *Myotis septentrionalis*) and TCB Range-wide Determination Key (DKey) to allow project proponents to assess project impacts, practicable avoidance and minimization measures, and consultation requirements under the final NLEB guidance and the eventual TCB listing ahead of the final decision. The Company will utilize the DKey to further assess project impacts and determine appropriate avoidance and minimization measures to ensure compliance with state and federal regulations when the Project enters permitting.

The VDCR reported multiple areas of predicted suitable habitat for the Loggerhead shrike (VDCR 2024c). According to the VDCR predicted suitable habitat modeling, Mt. Pony Route 1 would cross 13.9 acres of predicted Loggerhead shrike habitat, and the Oak Green Rebuild and Relocation would cross 0.4 acre of Loggerhead shrike habitat. Impacts to open or agricultural areas that may provide habitat for the Loggerhead shrike would be limited to potential structure placement. Outside of structures, open space and agricultural lands would continue to function as they had prior to construction; therefore, no impact is anticipated for the Loggerhead shrike.

While no instream construction would be required for any project component, the Oak Green Route crosses the Rapidan River, where both the Green floater and Yellow lance have documented occurrences. According to the VDCR's predicted suitable habitat modeling, the Oak Green Route would cross approximately 2.3 acres of Yellow lance predicted habitat. The Dwarf wedgemussel also has the potential to occur in these waterways, according to the IPaC database (USFWS n.d.). To the degree that Project-related tree and vegetation clearing reduces shade along the streambanks, the Project could result in increased water temperatures in these areas, which could adversely impact the Green floater, Yellow lance, and Dwarf wedgemussel. The Company will employ BMPs before, during, and after construction to control erosion and sediment runoff, prevent stream and groundwater flow changes, and reduce adverse impacts on the Green floater, Yellow lance, and Dwarf wedgemussel habitat.

The presence of Torrey's mountain-mint was not confirmed within 2.0 miles of the study areas. Due to development in the region, it is unlikely that suitable habitat is present for this species; therefore, the Project would have no impacts on Torrey's mountain-mint.

Regardless of the route alternative selected for the Project, Dominion will coordinate with state and federal agencies as needed to determine if surveys, construction TOYRs, or other mitigation would be required to mitigate potential impacts on threatened or endangered species.

5.2.3.2 BALD EAGLE MANAGEMENT

Multiple large river tributary systems that flow into Chesapeake Bay host large populations of Bald eagles during winter and summer seasons. Eagles across the Atlantic Coast are attracted to habitat in the Chesapeake Bay watershed due to the temperate climate and abundance of fish and waterfowl prey. Eagles from the southeastern U.S. migrate north to the Chesapeake Bay every spring, and Bald eagles from the northeastern U.S. (and Canada) migrate south to the Bay for the winter. As a result, the Chesapeake Bay watershed supports three populations of Bald eagles, including Chesapeake Bay residents, southeast migrants, and northeast migrants.

While the Bald eagle is no longer federally listed under the ESA and was de-listed from the Virginia List of T&E Species in 2013, the species remains protected under the federal Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act, as well as Va. Code § 29.1-521 and VDWR regulations (4 VAC 15-30-10). *The Management of Bald Eagle Nests, Concentration Areas, and Communal Roosts in Virginia: A Guide for Landowners*, issued by the then Virginia Department of Game and Inland Fisheries (now VDWR) identifies management practices for avoiding the take of Bald eagles and outlines restrictions on construction activities within defined management zones. Proposed activities that have the potential to affect Bald eagles are evaluated by the VDWR on a case-by-case basis (Virginia Department of Game and Inland Fisheries 2012).

ERM reviewed current eagle datasets in Virginia, including Eagle Concentration Areas and individual Bald eagle nests, available from the CCB VaEagles website (CCB 2022) and the CCB's annual eagle nest survey. ERM also reviewed Bald eagle data provided through the VaFWIS and WERMS databases. Current CCB and VDWR data show that the study areas are not within an Eagle Concentration Area. The eagle nest nearest to the Project (Nest ID CU9701) is approximately 5.1 miles west of the Oak Green Route (MP 0.0) and was last observed to be occupied in 2003 (CCB 2022).

The VDWR provides activity-specific guidelines for work within 330-foot and 660-foot buffer zones surrounding a known Bald eagle nest. If eagle nests are identified within 660 feet of the right-of-way approved by the SCC, Dominion will work with VDWR and other appropriate jurisdictional agencies to minimize any impacts on the species.

5.2.3.3 OTHER SPECIES OF INTEREST (RARE PLANT SPECIES)

Other species of interest when evaluating projects typically include rare plants and animals that are not afforded the same level of protection as federal- and state-listed T&E species. NatureServe, an international network of NHPs, assigns a global rank to species based on their rarity and conservation status (NatureServe 2024c). Species ranked "G1" (global rank 1 / critically imperiled) or "G2" (global rank 2 / imperiled) are most at risk. State rankings are similar (S1 and S2), but only indicate the status of the species within Virginia. The VDCR continually catalogues, gathers, and analyzes geographic information about Virginia's rare species to develop land conservation data, provide online mapping tools, and help resource agencies make conservation decisions.

As part of their October 2024 review of the Project, the VDCR concluded that the Project as planned would not affect any documented state-listed insects and does not cross any state natural area preserves under VDCR's jurisdiction. The VDCR indicated a potential for six rare plant species

to occur in the study areas if suitable habitat is present (VDCR 2024c). Table 5.2-6 summarizes these species and their habitat.

TABLE 5.2-6 RARE SPECIES WITH THE POTENTIAL TO OCCUR IN THE STUDY AREAS

Common Name	Scientific Name	Status	Global Rank	State Rank	Habitat
American bluehearts	*Buchnera americana*	None	G5?	S1/S2	Seasonally moist to dry soils of barrens, clearings, old fields, meadows, and roadsides. In the Piedmont region, species occurs on calcareous or mafic substrates.
Downy phlox	*Phlox pilosa*	None	G5	S1	Dry to less often mesic open forests, clearings, and road banks. Occurs in rocky or clay hardpan soils.
Earleaf false foxglove	*Agalinis auriculata*	None	G3	S1	Clearings and old fields on soils weathered from diabase. Known only from the Culpeper Basin of Fairfax and Prince William counties.
Hairy hedge-nettle	*Stachys arenicola*	None	G4?	S1	Fens, wet meadows, power-line clearings, and depression swamps on soils weathered from carbonate or basic intrusive rocks. Moderately shade-intolerant.
Stiff goldenrod	*Solidago rigida var. rigida*	None	G5	S2	Dry, rocky woodlands, barrens, and outcrops. Also located in clearings and old fields in areas that once supported vegetation with prairie affinities. Strictly located on calcareous or mafic substrates (limestone, dolostone, metabasalt, amphibolite, diabase, and calcareous shales).
Narrow-leaf blue curls	*Trichostema setaceum*	None	G5	S2	Shale, sandstone, and mafic barrens and outcrops in the mountains and Piedmont; sandy woodlands and clearings in the Coastal Plain.

Source: VDCR 2024c, Digital Atlas of the Virginia Flora 2024.

Global Rank:

G1 Critically Imperiled: At very high risk of extinction due to extreme rarity (often five or fewer populations), very steep declines, or other factors

G2 Imperiled: At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors

G3 Vulnerable: At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors

G4 Apparently Secure: Uncommon but not rare; some cause for long-term concern due to declines or other factors

G5 Secure: Common, widespread, and abundant

* Global ranks followed by a question mark denote inexact or uncertain ranking by the VDCR

State Rank:

S1 Critically Imperiled: At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors

S2 Imperiled: At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors

S3 Vulnerable: At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors

S4 Apparently Secure: At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors
S5 Secure: At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats

5.2.3.4 IMPACT ASSESSMENT

Six rare plants could potentially occur within the study areas (VDCR 2024c). Habitat requirements for all six species are typically associated with prairie vegetation and semi-open diabase glades. Table 5.2-7 summarizes the diabase soil impacts of the route alternatives. Site-specific field investigations are necessary for detailed habitat and impact analyses. In suitable habitat types that meet specific habitat requirements for any of these rare plant species, the VDCR recommends conducting detailed plant inventories and coordinating with VDCR biologists to minimize habitat impacts. If suitable habitat conditions for these species are identified within the Project, the Company will work with the VDCR and appropriate regulatory agencies to minimize impacts on rare plants and/or rare plant habitat.

TABLE 5.2-7 DIABASE SOILS CROSSED BY ROUTE ALTERNATIVES

Diabase Soils	Unit	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3	Oak Green Rebuild Route	Remington Rebuild Route
Total	acres	2.9	40.5	0.0	0.0	0.0	0.0	2.3

Mt. Pony Route 2 would have the largest impact on diabase soil, while Mt. Pony Route 1 and the Remington Rebuild route would affect smaller acreages of diabase soils. The Tech Park Routes and Oak Green Rebuild and Relocation would not cross diabase soils. Due to the history of silviculture and agricultural land use in the area, it is unlikely that the land crossed by the routes is suitable for these rare plant species.

5.2.4 VEGETATION

5.2.4.1 LOCAL VEGETATION CHARACTERISTICS

The study areas are situated within the Northern Piedmont physiographic province. Upland forest vegetation in this province has been extensively altered by clearing as part of ongoing agricultural and silvicultural practices as well as residential and non-residential development occurring since European settlement. As a result, the characteristics of plant species or community types present prior to European settlement are difficult to determine.

More recently, the effects of human development activities on the landscape have resulted in a patchwork of early and late-successional forests, pastures, and agricultural fields. The study areas contain tracts of developed land along major roadways (i.e., US 15/29, and US 522, and Rt. 3). Forest clearing has occurred across a large portion of land within the study areas in the last 20 years; thus, much of the vegetation in the study areas consists of immature mixed pine (*Pinus spp.*), hardwood forest communities, and forested "edge" communities that border larger forested

tracts. Small areas of open space within the study areas are generally associated with lawns on residential and commercial parcels.

As noted in Section 5.1.2, ERM used the VGIN Land Cover data to classify land use and land cover along the route alternatives. Table 5.2-8 summarizes the acreage of vegetation types crossed by the route alternatives. Figure 5.1.2-1 depicts land use/land cover, including forested areas, along the routes.

TABLE 5.2-8 VEGETATION TYPES CROSSED BY THE PROJECT

Vegetation Cover Type	Unit	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3	Oak Green Rebuild Route	Remington Rebuild Route
Forest	acres	11.8	39.8	24.1	24.6	24.4	4.5	<0.1
Agriculture	acres	37.2	21.1	24.2	18.3	15.9	24.4	1.6
Open Space	acres	0.1	1.1	0.9	4.0	6.6	7.0	6.9
Total [a, b, c]	**acres**	**49.1**	**61.9**	**49.2**	**46.9**	**46.8**	**35.9**	**8.5**

Sources: VGIN Land Cover data with aerial photo interpretation by ERM (VGIN 2024; ESRI et al. 2024a).

[a] Totals may not match the sum of the addends due to rounding.

[b] The Mt. Pony Routes are inclusive of the 230 kV Mt. Pony Lines and the Mt. Pony Substation.

[c] The Tech Park Routes are inclusive of the 230 kV Tech Park Lines, McDevitt Substation, Chandler Substation, and Palomino Substation.

Forested vegetation in the study area is generally associated with relatively small contiguous tracts of trees found in upland forests. These forests contain both deciduous hardwood stands and evergreen/mixed forests that include stands of shortleaf pine (*Pinus echinata*), loblolly pine (*Pinus taeda*), and Virginia pine (*Pinus virginiana*) where the land has been altered by human activities. Fallow farmlands, when left unattended, undergo a successional regeneration process that generally results in a prevalence of early successional tree stands of pines, oaks, American sweetgum (*Liquidambar styraciflua*), and red maple (*Acer rubrum*). Late-successional forests in the Southern Piedmont include stands of mixed oaks, American beech (*Fagus grandifolia*), and tulip-poplar (*Liriodendron tulipifera*) (VDCR 2021b).

5.2.4.2 FOREST CONSERVATION VALUES

The Forest Conservation Values (FCV) model is a tool designed by the Virginia Department of Forestry to strategically identify the highest priority forestland for conservation in Virginia (VDCR 2023b, VDOF 2020). The intent is to maximize the efficiency of limited resources by focusing conservation efforts on the highest quality, most productive, and most vulnerable forestland statewide. The FCV model identifies five conservation values:

- 5: Outstanding
- 4: Very High
- 3: High

- 2: Moderate
- 1: Average

ERM reviewed FCV data to assess the value of forest vegetation along the route alternatives. Upon reviewing recent aerial photography, ERM found that many recently cleared areas have been ranked using the FCV model data; therefore, the model may be outdated and not reflective of current conditions. Table 5.2-9 summarizes the area of FCV within the right-of-way for each route alternative.

TABLE 5.2-9 FCV CROSSED BY THE PROJECT

FCV	Mt. Pony Route 1	Mt. Pony Route 2	Mt. Pony Route 1	Mt. Pony Route 2	Mt. Pony Route 3	Oak Green Rebuild Route	Remington Rebuild Route
Average (1)	2.0	20.6	11.4	11.7	11.5	6.2	1.0
Moderate (2)	2.0	9.7	0.6	0.5	0.5	1.5	1.7
High (3)	0.6	0.7	0.0	0.0	0.0	2.1	0.0
Very High (4)	0.0	10.3	0.0	0.0	0.0	0.5	0.0
Outstanding (5)	0.0	9.5	0.0	0.0	0.0	0.0	0.0
Total [a]	**4.6**	**50.8**	**12.0**	**12.2**	**12.0**	**10.3**	**2.7**

FCV = Forest Conservation Value.
[a] The sum of the addends may not equal the totals due to rounding.

5.2.4.3 IMPACT ASSESSMENT

The Company would clear forested vegetation from the right-of-way, which would be subsequently maintained with an herbaceous cover during Project operations. Vehicle movement associated with construction of the transmission line in open areas would temporarily impact herbaceous vegetation. Impacts on vegetation within open space or agricultural land would be limited to required structure footprints along the routes, temporary construction impacts, and intermittent mowing required for maintenance access. Disturbed areas resulting from use of temporary workspace would revert to preconstruction vegetative conditions.

Forested Land and Forest Conservation Values

As shown in Table 5.2-8, Mt. Pony Route 2 would impact more forested land than Mt. Pony Route 1. Of the Tech Park Routes, Tech Park Route 2 would impact the largest extent of forested land; however, the difference in forested acreage impacts between the Tech Park Routes is small.

Mount Pony Route 2 is the only route that would impact forested land with an Outstanding FCV rating. This route would also affect substantially more overall forested land with any FCV rating than any other route alternative.

Fragmentation

Loss of habitat presents the greatest risk to biodiversity (VDCR 2023a). When development alters the landscape and fragments large natural tracts of land into smaller, scattered pieces, the

biodiversity of the area declines. Large, contiguous patches of land have more benefits than the same area of land among smaller fragmented pieces, including:

- A progressive increase in the number and diversity of species as contiguous habitat size increases;
- Increased habitat diversity and protection from disturbance in adjacent developed areas; and
- Greater ecosystem services (i.e., any direct or indirect benefits that ecosystems provide to people) (VDCR 2023a).

ERM assessed the potential for each route to create new fragments in the forested areas they cross by measuring the length of each route centerline where it crosses the interior of a forest stand and therefore would create a new fragment. Table 5.2-10 lists the location of Project-related forest fragmentation along the Mt. Pony and Tech Park routes.

TABLE 5.2-10 LOCATIONS OF FOREST FRAGMENTATION ALONG ROUTE ALTERNATIVES

	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3
Locations	None	MPs 0.0 to 0.1 MPs 0.4 to 0.9 MP 1.5 MPs 1.7 to 2.9 MPs 3.1 to 3.9 MPs 4.3 to 4.6 MP 4.7	MP 0.3 MPs 0.8 to 0.9 MPs 1.3 to 1.4 MPs 1.6 to 2.1 MP 2.3 MPs 2.5 to 2.6	MPs 0.0 to 0.1 MPs 0.1 to 0.2 MPs 0.7 to 0.8 MPs 1.2 to 1.3 MPs 1.5 to 1.9 MPs 2.1 to 2.2 MPs 2.3 to 2.4 MPs 2.4 to 2.5	MPs 0.0 to 0.1 MPs 0.1 to 0.2 MPs 0.9 to 1.0 MPs 1.2 to 1.3 MPs 1.5 to 1.9 MPs 2.1 to 2.2 MPs 2.3 to 2.4 MPs 2.4 to 2.5
Total Miles of Fragmentation	**0.0**	**3.1**	**0.8**	**0.8**	**0.9**

MP = milepost.

The Remington Rebuild and Oak Green Rebuild and Relocation Components of the Project would be constructed within previously cleared rights-of-way, and thus would not create additional forest fragmentation. Of the Mt. Pony route alternatives, Route 1 is the only route that would not cause forest fragmentation, because it would primarily cross agricultural lands and collocate with existing cleared corridors. Route 2 would create the greatest amount of fragmentation and would cross areas of intact mature and young forest. Of the Tech Park route alternatives, Route 3 would cause the longest span of total fragmentation but would create the same number of fragments as Route 2. Tech Park Route 1 would create the fewest forest fragments of the Tech Park Routes.

5.3 VISUAL RESOURCES

Visual resources capture the combination of natural landforms, vegetation, water features, and human modifications that characterize and contribute to a landscape's visual quality. This section identifies important visible features (e.g., natural and/or cultural resources that contribute to scenic quality) and elements (i.e., forms, lines, colors, textures, etc.) of the surrounding landscape as the basis for determining how and to what degree the Project will affect visual

resources. Appendix G provides more detailed information about existing visual conditions and visual impacts.

5.3.1 METHODOLOGY

ERM conducted a visual resource assessment to characterize the existing scenic/landscape conditions and understand the potential impact of Project components on these conditions. This assessment included the following activities:

- Identification of VSRs through the review of recent (2021–2023) digital aerial photography and other available mapping resources;
- Site reconnaissance and local outreach;
- Descriptions of existing conditions from key observation points (KOPs) along the route alternatives;
- Definition of potential user groups (i.e., groups of people, such as residents or tourists who experience views) within the study area;
- Description of the likely sensitivity of user groups to visual changes in the landscape;
- Preparation and review of visual simulations or renderings of the proposed transmission infrastructure from KOPs in the study area; and
- Evaluation of the Project's visual impacts.

The visual impact approach in this section draws on established techniques for describing existing landscape characteristics and identifying the potential changes or contrasts created by proposed surface-disturbing activities, including (but not limited to) the Bureau of Land Management's Visual Resource Management system (BLM 1984), U.S. Forest Service's Scenery Management System (USFS 1995), and Federal Highway Administration's Visual Impact Assessment for Highway Projects (FHWA 2015).

5.3.2 EXISTING CONDITIONS

The Project study areas include portions of Culpeper, Fauquier, and Orange Counties. These largely rural areas are within the Piedmont physiographic province, which is characterized by highland and forest ecosystems (VDCR 2021b). The Mt. Pony and Tech Park study area is characterized by rolling hills and wooded areas in a suburban setting east of the Culpeper town center. Some previously forested areas have been cleared for lower density development (e.g., residential, agricultural, commercial, and industrial uses). The Oak Green and Remington study areas are characterized by gently rolling hills and forested areas (see Section 5.1.2). Existing forested areas and the absence of substantial topographic relief limits panoramic views in the study area and generally constrains most views to the foreground (up to 0.5 miles from the viewer) and middle ground (0.5 to 2 miles from the viewer). Appendix G provides additional detail on the existing visual resource setting in the three Project study areas.

5.3.2.1 REGULATORY SETTING

The Virginia Outdoors Plan includes guidance on scenic resources in the state (VDCR 2018). In general, VDCR defers to local governments for the protection and management of scenic

resources; however, VDCR works with local governments and other stakeholders on scenic resources with statewide importance through the Virginia Scenic Rivers Program and Virginia's Byways. The Project study area does not include any designated Scenic Rivers. The closest designated scenic river is the Rappahannock River, which is more than one mile from (and not visible from) the Remington Rebuild.

One National Scenic Byway and two Virginia Scenic Byways are near but outside of the Mt. Pony and Tech Park Study Area. The Journey Through Hallowed Ground National Scenic Byway is a 180-mile route from Gettysburg, Pennsylvania, to Monticello, Virginia. As described in Section 5.1.8, this byway follows US 15/29 Business through the Town of Culpeper (FHWA 2014, 2024) and is approximately 0.3-mile northeast of the closest Project infrastructure. The BUS(4) US-15N Virginia Byway follows the same route as the national byway through Culpeper along Main Street. The Remington Rebuild (near MP 0.0) is approximately 1.6 miles southeast of the Journey Through Hallowed Ground National Scenic Byway, 0.9 mile east of the BUS(4) US-15N state byway and approximately 0.8 mile east of SC-651N state byway. The Oak Green Rebuild components are more than 5 miles from any byway.

As mentioned above, the three project areas are located in different counties: Mt. Pony and Tech Park is located in Culpeper County, Green Oak in Culpeper and Orange County, and Remington in Fauquier County. All three counties emphasize the importance of preserving and enhancing visual and scenic resources in their respective comprehensive plans (Culpeper County Government 2023, Fauquier County Government 2023, Orange County Government 2023). Visual concerns that are shared by the counties include scenic byways and rivers, community spaces, historic resources, and general rural character. New development in the counties is generally subject to setbacks, vegetative buffering, and in some cases, architectural design plan reviews, pursuant to corresponding county Zoning Ordinances (Culpeper County Government 2024b, Fauquier County Government 2024, Orange County Government 2024).

In addition to any regulations defined in Zoning Ordinances, ERM's assessment of the Project's impacts on visual resources reflects the commonly used federal systems and best practices described in Section 5.3.1.

5.3.2.2 VISUALLY SENSITIVE RESOURCES

VSRs are sites or areas where existing scenic qualities are susceptible to and could be impacted by a proposed project. Common examples of VSRs include designated scenic resources (e.g., scenic byways, rivers, overlooks, and landscapes), residential areas, parks and other recreational sites, historic sites, conservation areas and other open spaces, natural features, cultural destinations, road corridors, and areas of high public concentration. VSRs are typically identified based on designated scenic protections and/or the expectation of scenic quality, public visibility, and the level of viewer sensitivity to change.

Table 5.3-1 (Mt. Pony and Tech Park) and Table 5.3-2 (Oak Green) list (and Figure 5.3.2-1 shows the location of) each VSR in the study areas. ERM identified no VSRs for the Remington Rebuild study area. These VSRs include locations or features where views contain unique scenic qualities, sensitive viewsheds, and/or areas where Project infrastructure and any associated vegetation clearing would likely contrast with the surrounding landscape. Section 5.4 addresses cultural

resources. The VSR tables also include the primary viewer groups at each VSR. Section 5.3.3 defines Viewer groups.

TABLE 5.3-1 VSRs AND USER GROUPS (MT. PONY AND TECH PARK)

	VSR # and Name	VSR Description	Primary Viewer Group(s)
Educational Resources (Schools)			
1	Germanna Community College Daniel Technology Center	Community college with typical enrollment of 13,000 students	Local residents
2	Culpeper Technical Education Center	Education facility providing vocational training in multiple industries to high school students	Local residents
Places of Worship & Cemeteries			
3	Culpeper National Cemetery and Cemetery Annex	Cemetery located on the south side of East Chandler Street east of the intersection with Sout Main Street	Local residents, tourists
4	Open Door Baptist Church	Faith gathering site on the northeast side of Rt. 3/US 522, south of the intersection with McDevitt Drive	Local residents
Recreational Resources			
5	Rose Hill Game Preserve	A 210-acre hunting ground open to guided and non-guided groups and their dogs to hunt pheasants, chukar, and quail. Accessed via Blackjack Road or Batna Road, south of Rt. 3	Local residents, workers, recreationists
Road Corridors			
6	Mt. Pony Road	Two-lane paved and striped road running west to east-southeast with AADT of approximately 460 VPD (east of US 522) to 2,000 vehicles per day (west of US 522)	Local residents, commuters
7	US 522	Two-lane divided highway with at-grade intersections and AADT of approximately 9,700 VPD	Local residents, commuters
8	US 15/29	Four-lane divided highway with at-grade intersections and grade-separated interchanges and AADT of approximately 26,000 VPD	Local residents, commuters
9	Rt. 3	Four-lane divided highway with at-grade intersections and AADT of approximately 3,100 VPD	Local residents, commuters
Residential Areas and Areas of High Public Concentration			
10	Lovers Lane	A 72-acre unincorporated residential neighborhood situated between US 522 and Lovers Lane	Local residents

	VSR # and Name	VSR Description	Primary Viewer Group(s)
11	Mountain View Estates	A 45-acre subdivision of single-family homes on the north side of East Chandler Street between the Norfolk Southern Railroad and Keyser Road	Local residents
12	Woolens Lane Residences	A 2.5-acre unincorporated area along the southeast side of Woolens Lane with four residential properties, 0.4 mile northeast of the intersection with Cedar Grove Road	Local residents, through travelers
13	Rt. 3 Residences	An 18-acre unincorporated residential strip on the north side of Rt. 3 with 10 properties, beginning approximately 0.1 mile east of the intersection with US 522	Local residents, through travelers, commuters
14	Blackjack Road Residences	A 12-acre unincorporated area along the southeast side of Blackjack Road near Carolina Road containing two rural residential properties	Local residents, through travelers
15	Town of Culpeper	Incorporated town with a population of 21,012	Local residents, workers, commuters, through travelers

Sources: U.S. Census Bureau 2024f, 2024g (population data); VDOT 2023 (AADT data).

AADT = annual average daily traffic; Rt. = Virginia State Route; US = U.S. Route; VPD = vehicles per day; VSR = visually sensitive resource.

TABLE 5.3-2 VSRs AND USER GROUPS (OAK GREEN REBUILD AND RELOCATION)

	VSR # and Name	VSR Description	Primary Viewer Group(s)
Road Corridors			
16	Twin Mountains Road	Two-lane paved, unstriped road running west to east with AADT of approximately 130 VPD	Local residents
17	US 522	Two-lane, paved, striped roadway running south to north-northwest with AADT of approximately 6,000 VPD south of the Rapidan River	Local residents, commuters
Areas of High Public Concentration			
18	True Blue Road Residences	Several residential parcels for single-family homes approximately 0.2 mile south of Oak Green Road	Local residents

Sources: U.S. Census Bureau 2024f, 2024g (population data); VDOT 2023 (AADT data).

AADT = annual average daily traffic; Rt. = Virginia State Route; US = U.S. Route; VPD = vehicles per day; VSR = visually sensitive resource.

5.3.3 VIEWER GROUPS

The way that viewer groups perceive visual resources provides additional context for assessing a project's visual impacts. Viewer groups identified for the study area (and included in Table 5.3-1 and Table 5.3-2) are described below. Individuals may fall into one or more viewer group categories, depending on the context of the view. For example, a local resident may also be considered a commuter when they travel to their job.

- **Local/area residents:** These viewers live in the study area. They are more likely to be highly sensitive to potential changes in landscape characteristics, because they tend to value the scenic integrity of the landscape and may have more frequent and longer duration views from their residences. In addition, area residents tend to be most familiar with the area landscape and are therefore more perceptive of changes over time.
- **Workers:** These viewers work in the area and thus have a higher degree of awareness of the landscape compared to some other viewing groups (e.g., motorists). While more aware (based on time spent in the project region), the sensitivity of workers varies depending on the type and location of work being done (e.g., office workers may be less sensitive to landscape change than employees who primarily work outdoors).
- **Motorists, commuters, and other travelers:** These viewers primarily travel through the study area and have multiple opportunities to view the area landscape as they travel along the primary travel corridors. This means that their potential exposure to views of a proposed project changes based on speed, direction of travel, and length of trip, as well as viewing angles and screening, among other factors. Due to this variability, these viewers (particularly along high-speed roadways) are typically less sensitive to changes in scenic conditions.
- **Recreationists and tourists:** These viewers select area parks, recreation areas, and other tourist attractions in part based on the scenic setting and quality of these areas. As such, they also tend to be more sensitive to changes in the landscape.

Sensitivity and potential impacts tend to vary by setting and viewer group. Many factors influence viewer sensitivity and the perception of impacts. In general, users with static, direct, frequent, or longer duration views (e.g., area residents, some workers, etc.), as well as those viewers engaged in setting-dependent activities (e.g., some types of recreation, tourism, etc.) tend to have higher levels of sensitivity to change compared to others.

5.3.4 KEY OBSERVATION POINTS

In addition to considering the existing landscape characteristics across broader geographic areas through the lens of VSRs, ERM identified 21 KOPs to document location-specific existing conditions and anticipated changes due to Project construction and operation. Table 5.3-3, Table 5.3-4, and Table 5.3-5 describe the KOPs. These KOPs for the Project were selected because they:

- Illustrate visibility from specific VSRs (not every VSR has a corresponding KOP);
- Illustrate representative views that would be available to identified user groups;
- Illustrate the route alternatives and substations; and
- Provide views of Project structures and vegetative clearing.

TABLE 5.3-3 KOPs (MT. PONY AND TECH PARK LINES)

KOP #	Location	Reason for Inclusion	Viewer Groups Represented	Project Components Represented
101	View looking southwest from Blackjack Road	Example of proposed right-of-way through a rural mixed forested and agricultural landscape. Representative of common rural road views and VSR Blackjack Road Residences.	L, M	MtP1
102 NW	View looking northwest from Rt. 3	Example of proposed right-of-way crossing a highway through a rural landscape of wooded areas (with clearing), agricultural fields, and residences. Representative of VSR Rt. 3.	L, M	MtP1
102 E	View looking east from Rt. 3	Example of proposed right-of-way crossing a rural landscape of wooded areas (with clearing), and agricultural fields. Representative of VSR Rt. 3 and rural views.	L, M	MtP1
104	View looking west from Rt. 3	Example of proposed right-of-way crossing a highway through a rural wooded landscape with residences. Representative of VSR Rt. 3.	L, M	MtP1
108 CR	View looking north from Blackjack Road	Example of proposed right-of-way crossing a local road through open fields and wooded areas (with clearing). Representative of common rural road views.	L, M	MtP1
123	View looking east from the intersection of Rosson Lane and South East Street	Example of proposed right-of-way crossing near an urban residential neighborhood. Representative of VSR Town of Culpeper.	L, M, W	TP1, PS
125	View looking southeast from East Chandler Street	Example of proposed right-of-way crossing and proposed substation near a local roadway with residents in an urban setting. Representative of VSR Town of Culpeper.	L, M, R, W	TP1, PS
140	View looking northeast from intersection of Wolford Street and Old Fredericksburg Road	Example of proposed right-of-way crossing and proposed substation in an urban to rural area with wooded areas (with clearing), residential area, and commercial area. Representative of VSR Town of Culpeper.	L, M, W	TP1, MS, CS
141	View looking northeast from the parking lot for Open Door Baptist Church	Example of the proposed right-of-way crossing through the urban to rural area transition of the Town of Culpeper area. Representative of VSRs Open Door Baptist Church and Town of Culpeper.	L, W, R	TP2, TP3

KOP #	Location	Reason for Inclusion	Viewer Groups Represented	Project Components Represented
143	View looking south from the Culpeper National Cemetery Annex	Example of proposed right-of-way crossing a rural landscape of open fields and trees. Representative of VSR Culpeper National Cemetery and Cemetery Annex.	L, R, W	TP1
144 SW	View looking southwest from McDevitt Drive at the intersection with East Chandler Street	Example of proposed right-of-way crossing a divided roadway lined by trees (with clearing) and open fields in a rolling rural landscape. Representative of common rural road views.	L, M, W	TP1
144 W	View looking west from McDevitt Drive at the intersection with East Chandler Street	Example of proposed right-of-way crossing a divided roadway lined by trees (with clearing) and open fields in a rolling rural landscape. Representative of common rural road views.	L, M, W	TP1
146	View looking northeast from Rt. 3 at the off-ramp from US 15	Example of the proposed right-of-way crossing a rural landscape with wooded areas (with clearing), open fields, and a divided highway. Representative of VSR Rt 3.	M	TP2, TP3, MtPS
154	View looking east from the intersection of US 522 and Lovers Lane	Example of proposed right-of-way paralleling a divided highway lined with trees (with clearing) in a rural wooded rolling landscape. Representative of VSRs Mt Pony Road and VSR US 522.	L, M	MtP2
155	View looking east from the intersection of US 522 and Rt. 3	Example of proposed right-of-way crossing the intersection of two divided through-corridor highways lined with open fields and wooded areas (with clearing) in a rural rolling landscape. Representative of VSRs Rt. 3 and US 522.	L, M, W	MtP2
156	View looking northwest from Germanna Community College Daniel Technology Center parking lot	Example of proposed right-of-way crossing a rural area with rolling hills, open fields, and wooded areas (with clearing). Representative of VSR Germanna Community College Daniel Technology Center.	L, W	TP1, TP2, TP3
157 NW	View looking northwest from Germanna Community College Daniel Technology Center	Example of proposed right-of-way crossing a rural rolling landscape next to a community college, with wooded areas (with removal) and open areas. Representative of VSR Germanna Community College.	L, W	TP1, TP2, TP3

KOP #	Location	Reason for Inclusion	Viewer Groups Represented	Project Components Represented
157 SW	View looking southwest from Germanna Community College Daniel Technology Center	Example of proposed right-of-way crossing a rural landscape of open fields, trees (with removal), local community college, and industrial area. Representative of VSR Germanna Community College.	L	MtP1, MtP2; MtPs, TP1
158	View looking northeast from Woolens Lane	Example of proposed right-of-way crossing a local rural roadway through a landscape of dense woodlands (with removal). Representative of common rural road views and VSR Woolens Road Residences.	L	MtP2
161	View looking southeast from Kingsbrook Road	Example of proposed right-of-way along a rural roadway with rolling hills, wooded areas (with clearing), and open fields. Representative of common rural road views and VSR Mountain Brook Estates.	L	TP1, TP2, TP3
163 E	View looking northeast from Alvere Road	Example of proposed right-of-way paralleling and crossing a rural road with open fields and dense wooded areas (with removal). Representative of common rural road views.	L	MtP1
163 N	View looking north from Alvere Road	Example of proposed right-of-way open fields and wooded areas (with removal). Representative of common rural road views.	L	MtP1
165 NE	View looking northeast from the intersection of McDevitt Drive and Technology Boulevard	Example of proposed right-of-way crossing local roadway with open fields and woodland (with removal). Representative of common rural road views.	L, W	TP3
166 A	View looking northeast from Blackjack Road	Example of proposed right-of-way paralleling a local rural roadway through an open rural landscape of open fields and woodland (with removal). Representative of common rural road views.	L	MtP1

CS = Chandler Substation; L = local/area residents viewer group; KOP = key observation point; M = motorists, commuters, and other travelers viewer group; MS = McDevitt Substation; MtP1 = Mt. Pony Route 1; MtP2 = Mt. Pony Route 2; MtPS = Mt. Pony Substation; PS = Palomino Substation; R = recreationists and tourists viewer group; TP1 = Tech Park Route 1; TP2 = Tech Park Route 2; TP3 = Tech Park Route 3; VSR = visually sensitive resource.

TABLE 5.3-4 KOPs (OAK GREEN REBUILD)

KOP #	Location	Reason for Inclusion	Viewer Groups Represented	Project Components Represented
135	View looking southeast from the intersection of Bushy Mountain Road and River Road	Example of proposed right-of-way in the viewshed of a culturally significant aboveground resource.	L	Oak Green Rebuild
149	View looking south from US 522 south of the intersection with True Blue Road	Example of proposed right-of-way crossing a highway through open fields and dense woodland (with clearing). Representative of common rural road views.	M	Oak Green Rebuild
150 B	View looking southeast from Twin Mountains Road northeast of the intersection with Somerville Road	Example of proposed right-of-way crossing a rural landscape with open fields and trees (with clearing). Representative of common rural road views.	L	Oak Green Rebuild
151	View looking south from US 522	Example of proposed right-of-way crossing a rural landscape with open fields, trees (with clearing), and agricultural structures. Representative of VSR US 522.	L, M	Oak Green Rebuild

L = local/area residents viewer group; KOP = key observation point; M = motorists, commuters, and other travelers viewer group; VSR = visually sensitive resource.

TABLE 5.3-5 KOPs (REMINGTON REBUILD)

KOP #	Location	Reason for Inclusion	Viewer Groups Represented	Project Components Represented
164	View looking northeast from private road southeast of the intersection with Lucky Hill Road	Example of proposed right-of-way in the viewshed of a culturally significant above ground resource. Representative of common rural road views.	L	Remington Rebuild

L = local/area residents viewer group; KOP = key observation point; VSR = visually sensitive resource.

Appendix G provides a more detailed description of existing conditions at these KOPs, an assessment of changes in visual conditions due to the Project, photographs of existing conditions, and photographic simulations of the proposed Project. Figure 5.3.4-1 shows KOP locations.

5.3.5 IMPACT ASSESSMENT

The degree to which overhead transmission lines influence and are visible on a landscape depends on a number of factors, including (but not limited to) structure height and color, existing landscape features (e.g., topography, vegetation, human-made development), duration of the view, and distances from the viewer. The specific combination of these factors changes from location to location, contributing to a range of potential influences and impacts across the study area. Appendix G provides photographic simulations and a description of visual changes from the proposed Project at each KOP.

5.3.5.1 IMPACT ASSESSMENT FOR KEY OBSERVATION POINTS AND VISUALLY SENSITIVE RESOURCES

Table 5.3-6 and Appendix G describe the Project's impacts on visual resource conditions and indicates the anticipated degree of visual change, viewer sensitivity to changes in visual resource conditions, and an overall impact rating for each VSR (negligible, minor, moderate, major). The degree of visual change and viewer sensitivity are based in part on the assessment of visual change and sensitivity at each KOP (see Appendix G).

5.3.5.2 IMPACT ASSESSMENT BY ROUTE ALTERNATIVE

Table 5.3-6 summarizes the anticipated impacts of each route alternative on visual conditions. This table also provides a potential impact rating (major, moderate, minor, or negligible) for each route.

Mt. Pony and Tech Park Lines

Mt. Pony Route 1

Residents and motorists along Blackjack Road (MPs 0.0 to 0.6) would have direct views of the route. Motorists on Rt. 3 (MPs 2.2 to 4.6) would have intermittent views across wide, flat, open agricultural fields where screening vegetation is absent; however, the route would be collocated with existing Lines #2/#70 (which has been approved to be upgraded from 115 kV to 230 kV as a part of a separate project) in this area. The route would be more visible where it crosses Rt. 3, where it parallels northbound US 15/29, and at the proposed Mt. Pony Substation adjacent to US 15/29. Tree removal along US 15/29 would reduce vegetated screening along the highway and create new opportunities to view of the Project and surrounding landscape. The Mt. Pony Substation would add multiple new elements to the landscape in this area, including low, linear, geometric forms, tall vertical and repeating horizontal lines, and gray hues. The route itself would also add tall, vertical poles and long, linear conductors.

TABLE 5.3-6 ANTICIPATED PROJECT VISUAL IMPACTS ON VSRs

VSR # and Name		KOP #	Approximate Distance to Relevant Project Features [a]	Summary of Impacts	Impact Assessment
Educational Resources (Schools)					
1	Germanna Community College Daniel Technology Center	156; 157 NW; 157 SW	All measurements are from the entrance on the west side of the Daniel Technology Center building. • Mt. Pony Substation is 0.3 mile south • Mt. Pony Route 1: 0.1 mile southeast (MP 5.0) on far side of US 15/29 • Mt. Pony Route 2: 0.3 mile south (MP 4.8 at Mt. Pony Substation) • Tech Park Route 1: 0.1 mile north (MP 0.6) Tech Park Routes 2 and 3: 0.3 mile west (MP 0.5); 0.3 mile north (MP 3.5)	The Daniel Technology Center building sits on an open parcel with maintained lawns, a parking lot to the east, and a treeline to the north that screens views to the north. • Mt. Pony Route 1: Transmission poles and conductors prominently visible above the treeline on the far side of US 15/29. • Mt. Pony Route 2: Minimal visibility due to topography, vegetation, and buildings. • Mt. Pony Substation: Screened by topography, vegetation, and buildings. Some infrastructure may be visible during leaf-off season. • Tech Park Route 1: Noticeable vegetation removal from the treeline that would increase views of both the route corridor and the future Cirrus and Kyser Switching Stations. • Tech Park Routes 2 and 3: Transmission poles and conductors visible to the north above the existing treeline. Vegetation and data center buildings would screen views of the routes to the west.	Degree of Visual Change: Small to Medium Viewer Sensitivity: Medium Overall Impact: Moderate
2	Culpeper Technical Education Center	NA	All measurements are from the front entrance of the building. • Mt. Pony Substation: 0.4 mile southwest • Mt. Pony Route 1: 0.2 mile south (MP 4.9) • Mt. Pony Route 2: 0.5 mile southwest (MP 4.7) • Tech Park Route 1: 200 feet west (immediately adjacent) Tech Park Routes 2 and 3: 0.3 mile north (MP 3.5 and 3.7, respectively); 0.4 mile west (MP 0.5)	The building is on an open parcel east of VSR 1. The existing treeline screens views to the north. Existing Lines #2/#70 are dominant in views to the west. • Mt. Pony Substation: Existing topography and vegetation screen all but the upper portions of the poles. • Mt. Pony Route 1: Transmission poles and conductors prominently visible above the treeline on the far side of US 15/29. • Mt. Pony Route 2: Views would be fully screened by existing vegetation and topography. • Tech Park Route 1: Prominently visible on the far side of upgraded Lines #2/#70. The combined	Degree of Visual Change: Small to Medium Viewer Sensitivity: Medium Overall Impact: Minor to Moderate

VSR # and Name		KOP #	Approximate Distance to Relevant Project Features [a]	Summary of Impacts	Impact Assessment
				transmission corridor would be a dominant visual feature in the landscape. • Tech Park Routes 2 and 3: Some structures may be partially visible above the treeline.	
Places of Worship & Cemeteries					
3	Culpeper National Cemetery and Cemetery Annex	143	Tech Park Lines (all routes): 0.2 mile southwest (MP 2.3) of walkway in front of the columbaria.	Existing treelines and topography screen direct views of the Chandler and Palomino substations and most of the transmission infrastructure. The angle structure near MP 2.2 (Tech Park Route 1) is potentially partially visible to the southwest above the hillside.	Degree of Visual Change: Negligible to Small Viewer Sensitivity: Medium Overall Impact: Minor
4	Open Door Baptist Church	141	All measurements are from the front door of the church. • Tech Park Route 1: 0.4 mile northeast (MP 1.1) • Tech Park Route 2: 0.2 mile east (MP 0.4) Tech Park Route 3: 0.3 mile northeast (MP 0.8)	The church building itself, mature trees, and the data center campus to the east screen views of the route corridor, except for the upper portion of several poles, particularly angle structures and associated conductors.	Degree of Visual Change: Negligible Viewer Sensitivity: Low Overall Impact: Negligible
Recreational Resources					
5	Rose Hill Game Preserve	NA	• Mt. Pony Route 1: 0.6 mile southwest of main house (route is adjacent to the southern and western property lines).	Existing vegetation and topography screen direct views of the Project corridor from the house and property entrance. The route would be prominent or dominant in some views from the southern portion of the property.	Degree of Visual Change: Negligible Viewer Sensitivity: Low Overall Impact: Negligible
Road Corridors					
6	Mt. Pony Road	154	• Mt. Pony Route 2: Crosses the VSR less than 0.1 mile east of the intersection with US 522	Dense trees on either side of the roadway would be partially cleared, expanding views to either side of the road. Dense woodland east of the crossing would continue to screen views to the north and	Degree of Visual Change: Negligible to Medium Viewer Sensitivity:

VSR # and Name		KOP #	Approximate Distance to Relevant Project Features [a]	Summary of Impacts	Impact Assessment
				south. Additional views may be possible southeast of Woolens Lane where the route corridor will be southwest of the VSR.	Low to Medium Overall Impact: Minor to Moderate
7	US 522	154; 155	• Mt. Pony Route 2: Parallels and adjacent to the east side of the VSR (MPs 3.9 to 4.2) • Tech Park Routes 2 and 3: 0.3 mile northeast (MP 0.2)	Planned data center construction and associated grading and vegetation removal in the Tech Park would provide additional potential views of Mt. Pony Substation, the Mt. Pony Lines, and the Tech Park Lines near the bridge over US 15/29.	Degree of Visual Change: Medium to Large Viewer Sensitivity: Low to Medium Overall Impact: Moderate
8	US 15/29	NA	Distances are from the Rt. 3/ US 522 bridge over the VSR. • Mt. Pony Substation: 0.4 mile northeast. • Mt. Pony Route 1: Parallels the south side of the VSR (MPs 4.9 to 5.2) • Mt. Pony Route 2: Parallels the south side of the VSR (MPs 4.7 to 4.8) • Tech Park Route 1: Parallels the VSR (MPs 0.0 to 0.4); crosses the VSR (MP 0.4) Tech Park Routes 2 and 3: Parallels the VSR (MPs 0.0 to 0.2); Crosses the VSR (MP 0.2)	Planned data center construction and associated grading and vegetation removal in the Tech Park would provide direct view of the Project within an open area. The Mt. Pony Routes and Substation would be prominent to dominant features along the VSR. The Tech Park Lines would be prominent where they cross the VSR (collocation of the Route 1 crossing with existing Lines #2/#70 would mitigate this contrast). The overall change in visual character (due to Tech Park development and Project installation) from rural agricultural to industrial would be a substantial visual change.	Degree of Visual Change: Medium Viewer Sensitivity: Medium Overall Impact: Moderate

VSR # and Name		KOP #	Approximate Distance to Relevant Project Features [a]	Summary of Impacts	Impact Assessment
9	Rt. 3	102 NW; 102 E; 104; 146; 155	For the segment of Rt. 3 east of US 522: • Mt. Pony Route 1: Crosses the VSR (MP 4.2 to 4.3), collocated with Lines #2/ #70; generally parallel to the VSR from MPs 2.3 to 4.2 Mt. Pony Route 2: Crosses the VSR (MP 4.2)	• Mt. Pony Route 1: The project corridor would expand the existing corridor for Lines #2/ #70 and require vegetation clearing. Intermittently visible along the VSR east of the crossing at MPs 4.2–4.3. • Mt. Pony Route 2: This crossing would require vegetation clearing that would widen views to the south and north.	Degree of Visual Change: Medium to Large Viewer Sensitivity: Medium Overall Impact: Moderate to Major
Residential Areas and Areas of High Public Concentration					
10	Lovers Lane Subdivision		• Mt. Pony Route 2: Parallels the east side of US 522, adjacent to the subdivision (MPs 3.9 to 4.1)	Views would be limited to existing vegetation breaks in the treeline on the west side of the road. Structures may be visible from homes and properties with eastern views.	Degree of Visual Change: Medium Viewer Sensitivity: Medium to High Overall Impact: Moderate to Major
11	Mountain Brook Estates Subdivision	161	• Tech Park Lines: 0.1 mile southeast (MP 3.2), collocated with existing Line #70.	Vegetation clearing for the Project would increase views to the southeast. Existing topography and treelines within the subdivision would screen most views to the south of the VSR.	Degree of Visual Change: Moderate Viewer Sensitivity: Medium to High Overall Impact: Moderate to Major
12	Woolens Lane Residences	158	• Mt. Pony Route 2: Crosses Woolens Lane (MP 3.3) approximately 0.1 mile northeast of the closest residences.	Vegetation clearing would on both sides of the road and conductors would be visible across the roadway. Structures would potentially be visible above the treeline from some residences. The remaining dense woodland on both sides of the corridor would provide screening.	Degree of Visual Change: Small Viewer Sensitivity: High Overall Impact: Moderate
13	Rt. 3 Residences		All measurements are from the Grasslands Road/Rt. 3 Intersection.	• Mt. Pony Route 1: The route crosses open agricultural land and Rt. 3 northeast of the	Degree of Visual Change: Small

VSR # and Name		KOP #	Approximate Distance to Relevant Project Features [a]	Summary of Impacts	Impact Assessment
			• Mt. Pony Route 1: 0.5 mile northeast (MP 5.2/Mt. Pony Substation). Mt. Pony Route 2: 0.2 mile west (MP 4.3)	residential cluster. The upper portions of structures could be visible above treelines and topography. • Mt. Pony Route 2: Some vegetation clearing and grading for the CTZ would potentially open views of Route 2 structures above the treelines to the northwest.	Viewer Sensitivity: High Overall Impact: Moderate
14	Blackjack Road Residences	101; 108 CR; 166 A	• Mt. Pony Route 1: Across Blackjack Road from several residences.	Residents would have a full direct view of the route due to the open landscape and close distance. The route would be prominent to dominant from these views.	Degree of Visual Change: Medium to Large Viewer Sensitivity: High Overall Impact: Major
15	Town of Culpeper	123; 125; 140; 141	Tech Park Lines: 0.3 mile southeast of the East Chandler Street crossing of the Norfolk Southern Railroad.	Grading and vegetation removal for planned development in the CTZ would open some views of the Chandler, McDevitt, and Palomino Substations, as well as the Tech Park Lines in the eastern portion of the town. Screening trees, topography and dense urban infrastructure screen most potential views from other portions of the VSR.	Degree of Visual Change: Negligible to Small Viewer Sensitivity: Medium to High Overall Impact: Minor to Moderate

KOP = key observation point; MP = milepost; NA = not applicable; Rt. = Virginia State Route; US = U.S. Route; VSR = visually sensitive resource.

[a] Except where specified, mileposts cited for Tech Park Lines are for Tech Park Route 1.

TABLE 5.3-7 ANTICIPATED PROJECT VISUAL IMPACTS ON VSRs (OAK GREEN REBUILD AND RELOCATION)

VSR # and Name		KOP #	Approximate Distance to Relevant Project Features [a]	Summary of Impacts	Impact Assessment
Road Corridors					
16	Twin Mountains Road	150 B	200 feet south (MP 0.0)	Due to the open agricultural landscape, new structures would be clearly visible along the VSR between Somerville Road and US 522.	Degree of Visual Change: Negligible Viewer Sensitivity: Low Overall Impact: Negligible
17	US 522	149	Crosses the VSR (MP 1.8); parallel to and 0.2 to 0.3 mile from the VSR (MPs 0.0 to 1.6)	Widening of the existing corridor will require additional vegetation clearing on both sides of the road, but west side due to required tree clearing.	Degree of Visual Change: Low Viewer Sensitivity: Low Overall Impact: Negligible
Areas of High Public Concentration					
18	True Blue Road Residences	NA	Adjacent to and south of the route (MP 2.3)	Tree clearing on the far side of the existing Lines #2/#11 right-of-way may be perceptible but would not substantially change views, except for the northernmost home. The relocated switching station site would not be visible.	Degree of Visual Change: Low Viewer Sensitivity: High Overall Impact: Minor

KOP = key observation point; MP = milepost; NA = not applicable; US = U.S. Route; VSR = visually sensitive resource.

TABLE 5.3-8 IMPACT ASSESSMENT

Route Alternative	Impacted VSRs	Impacted Areas and Viewer Groups	Impact Rating
Mt. Pony and Tech Park Lines			
Mt. Pony Route 1	**Total VSRs: 7** 1, 2, 5, 8, 9, 13, and 14	Road crossings—3 total: • Alvere Road • Blackjack Road • Rt. 3 VSRs with impacts minor or greater: • Blackjack Road Residences • Culpeper Technical Education Center • Germanna Community College Daniel Technology Center • Rt. 3 • Rt. 3 Residences • US 522 • US 15/29 Impacted Viewer Groups: • Local Residents • Motorists	**Degree of Visual Change:** Small to Medium **Viewer Sensitivity:** Low to Medium **Overall Impact:** Minor to Moderate
Mt. Pony Route 2	**Total VSRs: 8** 1, 2, 6, 7, 8, 9, 10, 12, and 13	Road crossings—3 total: • Mt. Pony Road • US 522/Rt. 3 Intersection • Woolens Lane VSRs with impacts minor or greater: • Culpeper Technical Education Center • Germanna Community College Daniel Technology Center • Lovers Lane Subdivision • Mt. Pony Road • Rt. 3 • US 522 • US 15/29 Impacted Viewer Groups: • Local Residents • Motorists	**Degree of Visual Change:** Negligible to Medium **Viewer Sensitivity:** Low to Medium **Overall Impact:** Negligible to Moderate

Route Alternative	Impacted VSRs	Impacted Areas and Viewer Groups	Impact Rating
Tech Park Route 1	**Total VSRs: 6** 1, 2, 3, 8, 11, and 15	Road crossings—3 total: • McDevitt Drive • US 15/29 VSRs with impacts minor or greater: • Culpeper Technical Education Center • Germanna Community College Daniel Technology Center • Mountain Brook Estates Subdivision • Town of Culpeper • US 15/29 Impacted Viewer Groups: • Local Residents • Motorists	**Degree of Visual Change:** Medium to Large **Viewer Sensitivity:** Medium **Overall Impact:** Moderate
Tech Park Route 2	**Total VSRs: 9** 1, 2, 3, 4, 7, 8, 9, 11, and 15	Road crossings—4 total: • McDevitt Drive • Technology Drive • US 15/29 VSRs with impacts minor or greater: • Culpeper Technical Education Center • Germanna Community College Daniel Technology Center • Mountain Brook Estates Subdivision • Rt. 3 • Town of Culpeper • US 15/29 • US 522 Impacted Viewer Groups: • Local Residents • Motorists	**Degree of Visual Change:** Small to Large **Viewer Sensitivity:** Low to Medium **Overall Impact:** Moderate

Route Alternative	Impacted VSRs	Impacted Areas and Viewer Groups	Impact Rating
Tech Park Route 3	**Total VSRs: 9** 1, 2, 3, 4, 7, 8, 9, 11, and 15	Road crossings—4 total: • McDevitt Drive • Technology Drive • US 15/29 VSRs with impacts minor or greater: • Culpeper Technical Education Center • Germanna Community College Daniel Technology Center • Mountain Brook Estates Subdivision • Rt. 3 • Town of Culpeper • US 15/29 • US 522 Impacted Viewer Groups: • Local Residents • Motorists	**Degree of Visual Change:** Small to Large **Viewer Sensitivity:** Low to Medium **Overall Impact:** Moderate
Oak Green Rebuild and Relocation			
Oak Green Rebuild and Relocation	**Total VSRs: 3** **16, 17, and 18**	Road crossings—2 total: • US 522 • True Blue Road VSRs with impacts minor or greater: • True Blue Road Residences • US 522 Impacted Viewer Groups: • Motorists	**Degree of Visual Change:** Low to moderate **Viewer Sensitivity:** Medium **Overall Impact:** Minor to moderate

Route Alternative	Impacted VSRs	Impacted Areas and Viewer Groups	Impact Rating
Remington Rebuild			
Remington Rebuild	**None**	Road crossings—2 total: • Lucky Hill Road • Old Grassdale Road VSRs with impacts minor or greater: • None Impacted Viewer Groups: • Motorists	**Degree of Visual Change:** Negligible **Viewer Sensitivity:** Low **Overall Impact:** Negligible

Rt. = Virginia State Route; US = U.S. Route; VSR = visually sensitive resource.

Motorists on these roads would have dynamic views of the new project infrastructure. The duration of these views would be dependent on the direction and speed of travel of the motorists. US 15/29 in this area is a high-speed roadway with limited shoulders and thus requires more driver attention than other roads; therefore, views of the route from US 15/29 would typically be limited. The new project infrastructure would be prominent on the landscape when it is in the foreground of motorists and other viewers.

The route would look similar to existing transmission lines in the area and would be generally compatible with the planned industrial development in the Tech Center on both sides of US 15/29 but would contrast with agricultural and rural views in other parts of the area. Collocation with existing Lines #2/#70 would moderate this contrast. In addition, grading and vegetation removal for the planned data center development south of US 15/29 would change the visual character of this area from an agricultural to industrial setting. Overall, Mt. Pony Route 1 would have minor to moderate impacts on visual resources in the Project study area.

Mt. Pony Route 2

Most of Mt. Pony Route 2 crosses agricultural fields and forested areas. Due to the distance from public roads and vegetative screening from tall trees, most of the proposed route would not be visible to the public, except potentially from some private residences along the proposed route. Vegetation removal within the right-of-way would generally not be perceptible and would not change existing visual conditions, except near and north of Woolens Lane. The northern portion of the route would be more visible, particularly approaching the proposed Mt. Pony Substation. Where visible, the southern portion of the route would add new tall, vertical poles and long, thin, horizontal overhead conductors to an area where similar structures are rare. The visual impacts of the substation and the relationship of the Mt. Pony Lines to the proposed Tech Center development are discussed above for Mt. Pony Route 1. Overall, Mt. Pony Route 2 would have negligible to moderate impacts on visual conditions along the route, with moderate impacts focused on the northern portion of the route, where the changes in visual conditions would be greatest and most perceptible to the public.

Tech Park Route 1

Tech Park Route 1, including the proposed Chandler, McDevitt, and Palomino Substations primarily cross existing rural, agricultural, and forested landscapes east of the Town of Culpeper. Development of the CTZ will include substantial tree clearing and grading, completely changing the visual character of this area to an industrial setting. Except at road crossings or at gaps in screening vegetation and structures, the upper portions of transmission poles may rise above the remaining treetops. The Route 1 crossing of US 15/29 would be collocated with the segment of existing Lines #2/#70 that has been approved for upgrade from 115 kV to 230 kV, which would mitigate the visual contrast of this crossing.

Where visible, Route 1 and the associated substations would add multiple new elements to the landscape in this area including low, linear, geometric forms, tall vertical, and repeating horizontal lines, and metallic gray hues. These changes would be most perceptible to viewers on adjacent roadways (e.g., US 15/29, McDevitt Drive, East Chandler Street). Remaining vegetation and planned data center and other industrial buildings in the CTZ will provide screening from most

portions of nearby VSRs including the Culpeper National Cemetery and Cemetery Annex and Town of Culpeper, as well as (to a lesser degree) roads and residential areas.

Overall, Tech Park Route 1 would result in moderate impacts on visual resources and would contribute to the changing landscape (from primarily rural, agricultural to light industrial) in in the Project study area.

Tech Park Routes 2 and 3

The impacts of Tech Park Routes 2 and 3 would be the same as Tech Park Route 1, except for the first 0.7 miles, where Routes 2 and 3 cross US 15/29 in a new alignment (east of existing Lines #2/#70) and runs around the edge of the existing Equinix data center. The Route 2/3 highway crossing would introduce more contrast than the Route 1 crossing. This additional crossing would not meaningfully change the overall impact compared to Route 1; therefore, Tech Park Routes 2 and 3 would each result in moderate impacts on visual resources and would contribute to the changing landscape in in the Project study area.

Oak Green Rebuild and Relocation

Tree removal for expansion of the existing Lines #2/#11 right-of-way, combined with the replacement of existing structures with taller structures would increase visibility of the Oak Green Rebuild (compared to the existing lines) in certain areas and would marginally decrease the aesthetic contribution of vegetation to the landscape along the route. While the new transmission infrastructure would generally be compatible with the existing level of development in the area, the height and scale of the new structures would make them more prominent on the landscape, especially when viewed in the foreground. Vegetation clearing would increase visibility of the route. The relocated Oak Green Switching Station would be marginally more visible from private residences, due to its location in the middle of open fields (whereas the existing switching station is partially bordered by tall trees; however, opportunities to view the relocated site would be extremely limited. Overall, the Oak Green Rebuild and Relocation would have minor to moderate impacts on visual resources in the Project study area.

Remington Rebuild

Visibility of the new, taller structures along the Remington Rebuild would generally be limited to locations where the line crosses local roads (e.g., Lucky Hill Road, Old Grassdale Road). This Project component would require no additional vegetation clearing. Although taller, the new structures would mimic the types of visual elements (e.g., forms, lines, colors) already on the landscape. The new transmission infrastructure would generally be compatible with the existing level of development and visual intrusions in the Remington Rebuild study area, including existing 230 kV and 500 kV transmission lines. As such, the Remington Rebuild would have negligible impacts on visual resources in the area.

Summary

Mt. Pony Routes 1 and 2 would both have moderate impacts on visual resources. Route 2 would only meaningfully impact visual resources in the northern portion of the route, while most of the

Route 1 corridor would have visual impacts, although the stronger impacts would be closer to the Tech Park and proposed Mt. Pony Substation.

All Tech Park Routes would have moderate impacts on visual resources. Tech Park Routes 2 and 3 would have smaller impacts on Germanna Community College Daniel Technology Center and the Culpeper Technical Education Center, due to distance and screening by existing and future data center and industrial buildings. These routes would have larger impacts on US 15/29 due to a new, non-collocated crossing (whereas Route 1 crosses collocated with existing Lines #2/#70). The Mt. Pony Lines and especially the Tech Park Lines would contrast substantially with existing primarily rural and agricultural uses in the CTZ area but would contrast less with the planned data center and industrial uses in the CTZ.

The Oak Green Rebuild and Relocation would have minor impacts due to taller structures and some tree clearing. The Remington Rebuild would have negligible impacts due to the absence of tree clearing and the limited opportunities to view the route.

In general, the visual changes from all route alternatives and substations would be most perceptible to the greatest number of viewers where they cross and/or are adjacent to major road corridors or are visible from nearby residential areas.

Overall, while the Project would contrast with existing visual conditions, visual impacts would range from low to moderate because:

- Existing topography, vegetation (especially tall trees), and structures, combined with the general sparseness of VSRs limits extended viewing opportunities of new Project infrastructure especially along the southern and eastern portions of both Mt. Pony Routes, the Oak Green Rebuild and Relocation, and Remington Rebuild;
- Human influences and built structures (modifications to the landscape), including existing utility infrastructure, are common in some areas;
- The portion of the study areas near (and including) the CTZ, continues to grow with a mix of commercial and industrial development and related infrastructure (e.g., roads, distribution lines, lights, signs, fences); and
- As noted previously, foreground views of the route alternatives—where transmission structures are most noticeable--typically occur along major travel corridors. These areas already have a higher level of visual disturbance (i.e., human development) and lower viewer sensitivity, to additional changes in visual conditions.

5.4 CULTURAL RESOURCES

ERM conducted a pre-application analysis (the analysis) of potential impacts on known cultural resources along and near the proposed Project under consideration in accordance with The Virginia Department of Historic Resources' (VDHR's) *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (VDHR Guidelines) (VDHR 2008). For each route alternative, the analysis identified and

considered previously recorded resources within the following study tiers as specified in the VDHR Guidelines:

- National Historic Landmarks (NHLs) within a 1.5-mile radius of the route centerline;
- Properties listed on the National Register of Historic Places (NRHP), NHLs, battlefields, and historic landscapes within a 1.0-mile radius of the route centerline;
- NRHP-eligible and NRHP-listed properties, NHLs, battlefields, and historic landscapes within a 0.5-mile radius of the route centerline; and
- All of the above qualifying resources and archaeological sites within the right-of-way of each route alternative.

The "route centerlines" and "route alternatives" described in this section include any related substations or other aboveground sites.

ERM obtained data on previously recorded cultural resources within each study tier from VCRIS. ERM also collected information from Preservation Virginia (2024), Historical Marker Database (2021), Visit Culpeper (n.d.), American Battlefield Protection Program (ABPP 2024), American Battlefield Trust (ABT 2024a), and Historic Germanna (2013) to find locally significant resources within a 1.0-mile radius of each Project facility.

Many of the previously recorded aboveground cultural resources near the route alternatives have not been assessed to determine NRHP eligibility and therefore are not included in the analysis, per the VDHR Guidelines. These resources should be considered potentially eligible for listing in the NRHP until they are assessed, and a determination of eligibility is made by the VDHR. Additionally, there may be unreported historic and archaeological resources that could be affected by construction or operation of the Project. Any such resources would be addressed during an intensive cultural resources survey to be conducted along the route certificated by the SCC in a subsequent phase of investigation to support Project permitting.

Along with the records review, ERM conducted field assessments of the applicable previously recorded architectural resources and historic districts for the Project, in accordance with the VDHR Guidelines. ERM captured digital photographs of each architectural resource with views toward the applicable route alternatives. ERM then prepared visual simulations (Appendix G) depicting the proposed Project infrastructure as it would appear in views from the architectural and historic resources to assess potential visual effects on those resources. For the previously recorded archaeological sites under consideration, ERM examined aerial photographs to assess the current land condition and spatial relationship between the sites and any existing or planned transmission lines. The remainder of this section presents the results of these assessments.

As discussed in more detail below, ERM identified a total of seven previously recorded archaeological sites within the route alternative rights-of-way. Of these, six have not been formally evaluated for the NRHP and are thus unevaluated, while one has been determined not eligible for the NRHP.

In addition, ERM identified thirty-four previously recorded historic architectural resources and/or districts within the study tiers described above. Of these, 17 are listed on the NRHP, 8 are eligible for listing on the NRHP, 4 are potentially eligible for listing on the NRHP, 1 is listed on only the

Virginia Landmarks Register, 1 is not eligible, and three have not been evaluated for the NRHP. The resource determined to be not eligible and three unevaluated resources are considered locally significant for the purposes of this Project.

5.4.1 ARCHAEOLOGICAL SITES AND FINDINGS

ERM considered crossings of archaeological sites to be a routing constraint, due to the potential for the installation of electric transmission line infrastructure to impact archaeological deposits through transmission structure placement, tree clearing, or heavy equipment usage within a site. Table 5.4-1 lists and describes the known archaeological sites within the rights-of-way for each route alternative, including the proposed Mt. Pony, McDevitt, Chandler, and Palomino Substations and the proposed relocated Oak Green Switching Station.

TABLE 5.4-1 ARCHAEOLOGICAL RESOURCES IN THE RIGHT-OF-WAY FOR EACH ROUTE ALTERNATIVE

Site Number	Site Type	Temporal Context	NRHP Status	Route Alternative(s)
44CU0135	Dwelling	Colony to Nation, Early National Period, Antebellum Period	Unevaluated	Mt. Pony Route 1 Mt. Pony Route 2
44CU0137	Road bed	Contact Period, Colony to Nation, Early National Period)	Unevaluated	Mt. Pony Route 1 Tech Park Route 1
44CU0188	Temporary camp	Early Archaic Period, Middle Archaic Period, Late Archaic Period	Not Eligible	Mt. Pony Route 1
44CU0219	Artifact scatter	Pre-Contact	Unevaluated	Tech Park Route 3
	Artifact fragment	Early National Period, Antebellum Period, Civil War, Reconstruction and Growth, World War I to World War II		
44CU0220	Multi-component artifact scatter	Pre-Contact, Early National Period, Antebellum Period, Civil War, Reconstruction and Growth	Unevaluated	Tech Park Route 3
44CU0221	Dwelling	Antebellum Period, Civil War, Reconstruction and Growth	Unevaluated	Tech Park Route 1 Tech Park Route 2 Tech Park Route 3
44CU0222	Multi-component artifact scatter	Pre-Contact, Antebellum Period, Civil War, Reconstruction and Growth	Unevaluated	Tech Park Route 1 Tech Park Route 2 Tech Park Route 3

Source: VDHR 2024

NRHP = National Register of Historic Places.

Because portions of some route alternatives share common alignments, the same sites may occur in the same tier for more than one route. Of the seven known archaeological sites proximate to the routes, three are located along Mt. Pony Route 1 (44CU0135, 44CU0137, and 44CU0188), one is located along Mt. Pony Route 2 (44CU0135), three along Tech Park Route 1 (44CU0137,

44CU0221, and 44CU0222), two along Tech Park Route 2 (44CU0221 and 44CU0222), and four along Tech Park Route 3 (44CU0219, 44CU0220, 44CU0221, and 44CU0222).

No previously recorded archaeological sites were identified within the right-of-way of the Oak Green Rebuild and Relocation or Remington Rebuild; therefore, these Project facilities are not further discussed. Because the location of archaeological sites is privileged information, this document provides no map showing archaeological sites.

A confident and complete evaluation of the nature of archaeological deposits at each site and impacts from prior land use activities would require a field survey to verify the desktop analysis. These investigations would be conducted along the route certified by the SCC in a subsequent phase of investigation to support permitting of the Project.

5.4.1.1 MT. PONY LINES

Two archaeological sites (44CU0137 and 44CU0188) are within the Mt. Pony Route 1 right-of-way and one archaeological site (44CU0135) is directly adjacent to the right-of-way.

Site 44CU0135 is a late-18th-to-early-19th-century single dwelling site, currently unevaluated for the NRHP. Initially recorded in 2006 during a Phase I archaeological survey, the site is classified as a single dwelling; however, the VCRIS form only mentions a concentration of domestic and architectural artifacts, with no standing structures or structural ruins (Tyrer 2006). Mt. Pony Route 1 and Route 2 (which share the same alignment in this area) are directly adjacent to the site.

Site 44CU0137 is an 18th-century road, currently unevaluated for the NRHP. The road alignment is approximately 0.3 mile long and intersects with US 15/29. Initially recorded during a site walk in 2006, it was not formally surveyed at that time. In 2009, a site reconnaissance, including a pedestrian survey, confirmed that the road had remained unchanged since its initial recording. Approximately 40 feet of the Mt. Pony Route 1 centerline would bisect the northern portion of the site. Dominion's existing Lines #2/#70 currently intersect approximately 20 feet of the site's northeasternmost boundary; however, no proposed structures are in the site boundary.

Site 44CU0188 is an Archaic Period temporary camp site that is ineligible for the NRHP. The site was recorded in 2017 during a Phase I archaeological survey (Tyrer 2017). The site was determined ineligible based on the frequency of the site type in the area and low density of artifacts. The centerline would not intersect the resource, but approximately 40 feet of the site is located within the right-of-way.

5.4.1.2 TECH PARK LINES

Tech Park Route 1

Three archaeological sites are located within the right-of-way for Tech Park Route 1, including Sites 44CU0137, 44CU0221, and 44CU0222.

Site 44CU0137 is described in Section 5.4.1.1 for the Mt. Pony Lines. The portion of Site 44CU0137 within the right-of-way for Tech Park Route 1 is the same as described for Mt. Pony

Route 1 (the two route alternatives would share the same alignment in this area, if both are selected for construction).

Site 44CU0221 is a late-19th-to-early-20th-century single dwelling site featuring structural ruins and an artifact scatter of domestic and architectural items. The site has experienced ground disturbance since its abandonment by residents in 2006 and remains unevaluated for the NRHP. As documented during a 2023 Phase I survey, the site was recommended not eligible due to post-2006 ground disturbance and low artifact density (Gollup 2023). The easternmost part of the site intersects with 0.1 mile of Tech Park Route 1 and approximately 0.8 acre of the site is located within a proposed substation boundary. One proposed structure is located within the site boundary.

Site 44CU0222 is a multi-component prehistoric (unknown temporal affiliation) and historic (19th and 20th century). Located 75 feet from site 44CU0220, it is likely that the two sites are related or possibly the same. The site is unevaluated for the NRHP. The site was recorded during a 2023 Phase I survey (Masters 2023a) and was recommended ineligible due to low artifact density and lack of diagnostic artifacts. Approximately 0.9 acre of the 1.5-acre site is located within the Tech Park Route 1 right-of-way. One proposed structure would be located within the site's southernmost extent.

Tech Park Route 2

Two archaeological sites are located within the right-of-way for Tech Park Route 2, including Sites 44CU0221 and 44CU0222. The Tech Park Route 2 crossing of Sites 44CU0221 and 44CU0222 would be the same as described above for Tech Park Route 1 (the routes share the same alignment in these areas).

Tech Park Route 3

Four archaeological sites are located within the right-of-way for Tech Park Route 3, including Sites 44CU0219, 44CU0220, 44CU0221, and 44CU0222. The Tech Park Route 3 crossing of Sites 44CU0221 and 44CU0222 would be the same as described above for Tech Park Route 1 (the routes share the same alignment in these areas).

Site 44CU0219 is a multi-component prehistoric artifact scatter site with an unknown temporal affiliation, as well as a historic (1900–1949) isolated find. The site has not been evaluated for the NRHP. It was documented during a 2023 Phase I survey (Masters 2023b) and was recommended as ineligible due to the low density of artifacts and the absence of diagnostic artifacts. Approximately 500 feet of the route centerline would intersect the site's easternmost corner. No proposed structures are located within the site boundary.

Site 44CU0220 is a multi-component prehistoric (unknown temporal affiliation) and historic (19th and 20th century) artifact scatter. The site has an irregular shape and is located near sites 44CU0219 and 44CU0222, indicating a potential relationship among these sits. The site is unevaluated for the NRHP. The site was recorded during a 2023 Phase I survey (Masters 2023c) and was recommended ineligible due to low artifact density and lack of diagnostic artifacts. Approximately 35 feet of Tech Park Route 3 would intersect the eastern portion of the site; however, no proposed structures are located within the site boundary.

5.4.2 ABOVEGROUND HISTORIC RESOURCES AND ARCHITECTURAL SITES AND FINDINGS

Each route alternative reviewed in this study has the potential to affect historic architectural sites and districts. This section presents information on known aboveground cultural resources near each route alternative, using VDHR's tiered study area model described above. Figure 5.4.2-1 depicts the locations of resources relevant to the route alternatives. Appendix H, the Pre-application Report, provides a description and location of each resource. Some of these resources could be affected regardless of the route selected by the SCC for the Project. None of the route alternatives would affect a National Historic Landmark; therefore, these resources are not further discussed.

Table 5.4-2 provides a comparison of the number of resources impacted and the degree of impact on these resources for each route alternative.

TABLE 5.4-2 COMPARISON OF PROJECT IMPACTS ON HISTORIC RESOURCES IN THE STUDY TIERS FOR EACH ROUTE

Route	Number of Considered Resources in Each Impact Category				
	No Impact	Minimal Impact	Moderate Impact	Severe Impact	Total
Mt. Pony Route 1	3	1	6	0	10
Mt. Pony Route 2	4	2	0	0	6
Tech Park Route 1	13	3	0	0	16
Tech Park Route 2	12	3	0	0	15
Tech Park Route 3	12	3	0	0	15
Oak Green Rebuild and Relocation	1	3	0	0	4
Remington Rebuild	5	2	0	0	7

Mt. Pony Route 2 would impact fewer resources than Mt. Pony Route 1 and would not have more than minimal impact on any resource, whereas Mt. Pony Route 1 would have moderate impacts on six resources. All three Tech Park route alternatives (including the McDevitt, Chandler, and Palomino Substations) would have approximately the same impact on aboveground cultural resources, including a minor impact on three resources.

ERM conducted a field reconnaissance of aboveground architectural resources to assess their condition and take photographs to support the preparation of simulations. The subsections below discuss the specific resources affected by each route alternative.

5.4.2.1 MT. PONY LINES

Mt. Pony Route 1

Table 5.4-3 provides information on the considered resources within the VDHR study tiers for Mt. Pony Route 1. This route alternative would have no impact on three resources (023-5161, 023-

5162, and 204-0070) due to intervening vegetation, infrastructure, or distance. As discussed below, Route 1 would have a minimal impact on one resource (023-5055), and a moderate impact on six resources (023-0018, 023-0084, 023-5023, 023-5040, 023-5494, and 068-5007).

TABLE 5.4-3 HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR MT. PONY ROUTE 1

Buffer (miles)	Resource Category	Resource Number	Description	Distance and Direction from Route Alternative	Impact
0.5 to 1.0	National Register Properties (Listed)	204-0070	Greenwood	0.9 mile west (MP 5.2)	None
	Locally Significant	023-5161	St. Steven's Baptist Church	0.7 mile north (MP 1.1)	None
		023-5162	Zimmerman's Tavern	0.7 mile northeast (MP 1.1)	None
0.0 to 0.5	National Register Properties (Listed)	023-0018	Rose Hill	Adjacent to south and west (MPs 0.6 to 1.1)	Moderate
	National Register—Eligible	Not applicable	None identified	NA	NA
	Battlefields (Potentially Eligible)	023-5055	Brandy Station Battlefields	600 feet north (MP 1.1)	Minimal
0.0 (within right-of-way)	National Register Properties (Listed)	023-5023	Mount Castle	0.2 mile within resource (MPs 0.6 to 0.8)	Moderate
		023-5040	Croftburn Farm	0.4 mile within resource (MPs 4.5 to 4.9)	Moderate
	National Register—Eligible	023-0084[a]	Mount Pony Rural Historic District	2.1 miles within resource (MPs 2.4 to 4.9)	Moderate
		023-5494	House	1.1 miles within resource (MPs 0.9 to 2.0)	Moderate
	Battlefields (Potentially Eligible)	068-5007	Battle of Morton's Ford	0.7 mile of route within resource	Moderate

Source: VDHR 2024.

MP = milepost; NA = not applicable; VDHR = Virginia Department of Historic Resources.

Brandy Station Battlefields (023-5055)

Mt. Pony Route 1 near this resource would be collocated with Dominion's Lines #2/#70, which already cross the battlefield in other locations, and which have been approved by the SCC for upgrade from 115 to 230 kV. The area between the resource and the route consists of an aggregate quarry and plant. The route would not be visible from publicly accessible portions of the battlefield but would likely be visible from within the aggregate plant, where ERM was not able to gain access. This area of visibility would comprise a small portion of the overall resource. Mt. Pony Route 1 would be more prominent in the landscape than existing (115 kV) Lines #2/#70. Due to potential visibility from the aggregate plant, ERM recommends that Mt. Pony Route 1 would have a minimal impact on 023-5055.

Rose Hill (023-0018)

Mt. Pony Route 1 and its right-of-way are directly adjacent to (but entirely outside of) the southwestern border of 023-0018. The route would be visible from along the resource's southern and western boundaries. Mt. Pony Route 1 would add a modern element to the southern viewshed that currently consists of open fields; however, the route would likely not be visible from the resource's historic dwelling. In addition, the resource is bisected by existing Line #2/#70, which is visible from throughout the resource. Nonetheless, due to the introduction of a modern element to a rural landscape, ERM recommends that Mt. Pony Route 1 would have a moderate impact on 023-0018.

Mount Pony Rural Historic District (023-0084)

Mt. Pony Route 1 crosses approximately 2.1 miles of 023-0084. The proposed Mt. Pony Substation is also approximately 0.2 mile to the west of the district. The segment of the route through the resource would be collocated with the segment of existing Lines #2/#70 that have been approved for upgrade from 115 to 230 kV. Mt. Pony Route 1 would be visible from the western and southern portions of the resource for observers driving along Rt. 3 (as well as from private lands to the south of Rt. 3). Due to collocation, Route 1 would be difficult to distinguish from the upgraded Lines #2/#70. Nonetheless, Mt. Pony Route 1 would add another modern element to the resource and would expand the current transmission footprint where it is collocated with Lines #2/#70. Accordingly, ERM recommends that Mt. Pony Route 1 would have a moderate impact on 023-0084.

Mount Castle (023-5023)

Mt. Pony Route 1 bisects 023-5023 for approximately 0.2 mile, all of which would be collocated with the segment of Dominion's existing Lines #2/#70 that have been approved for upgrade from 115 to 230 kV. The route would not be visible from publicly accessible areas, due to intervening vegetation, but would be prominent from areas within the resource. Mt. Pony Route 1 would be less visible from the northern portion of the resource, where Lines #2/#70 would be more prominent, and more visible from the southern portion of the resource. Mt. Pony Route 1 would increase the transmission line footprint within the resource boundary; therefore, ERM recommends that Mt. Pony Route 1 would have a moderate impact on 023-5023.

Croftburn Farm (023-5040)

Mt. Pony Route 1 bisects 023-5040 for approximately 0.4 mile, all of which would be collocated with the segment of Dominion's existing Lines #2/#70 that have been approved for upgrade from 115 to 230 kV. The proposed Mt. Pony Substation is also approximately 0.2 mile west of the resource. Mt. Pony Route 1 would be visible from US 15/29 adjacent to the resource and from within the resource. Although the route would be collocated with Lines #2/#70, it would add additional modern elements to the southeastern viewshed, as well as through the resource itself. Thus, ERM recommends that Mt. Pony Route 1 would have a moderate impact on 023-5040.

House (023-5494)

Approximately 1.1 miles of Mt. Pony Route 1 is within and along the northern and eastern parcel boundaries of resource 023-5494. Approximately 0.9 mile of the route (along the resource's northern boundary) is collocated with the segment of Dominion's existing Lines #2/#70 that have been approved for upgrade from 115 to 230 kV. Mt. Pony Route 1 would be visible from the resource when looking north and east. Although existing Lines #2/#2199 are approximately 0.2 mile to the east of the resource, Mt. Pony Route 1 would be more prominent in the landscape because of its closer proximity to the resource. Thus, ERM recommends that Mt. Pony Route 1 would have a moderate impact on 023-5494.

Battle of Morton's Ford (068-5007)

Mt. Pony Route 1 crosses approximately 0.7 mile of 068-5007. Existing Lines #2/#70, #2/#2199, and #70/#2199 already intersect portions of the battlefield and have affected the battlefield's viewshed to the north and east of Mt. Pony Route 1. The route intersects approximately 13 acres of the battlefield's total 6,710 acres and would introduce modern elements that would be more prominent than the existing lines when traversing Blackjack Road; therefore, ERM recommends that Mt. Pony Route 1 would have a moderate impact on 068-5007.

Mt. Pony Route 2

Table 5.4-4 provides information on the considered resources within the VDHR study tiers for Mt. Pony Route 2. This route is predicted to have no impact on four resources (023-5041, 068-5007, 068-5033, and 204-0070), due to intervening vegetation, infrastructure, or distance. As discussed below, the route would have a minimal impact on two resources (023-5040 and 023-0084).

TABLE 5.4-4 HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR MT. PONY ROUTE 2

Buffer (miles)	Resource Category	Resource Number	Description	Distance and Direction from Route Alternative	Impact
0.5 to 1.0	National Register Properties (listed)	023-5041	Eckington School	1.0 mile northeast (MP 0.0)	None
		204-0070	Greenwood	0.9 mile northwest (MP 4.7)	None
	National Register—Eligible	068-5033	Rapidan River and Clark Mountain Rural Historic District	1.0 mile southeast (MP 0.0)	None
	Battlefields (Potentially Eligible)	068-5007	Battle of Morton's Ford	1.0 mile southeast (MP 0.0)	None
0.0 to 0.5	National Register Properties (Listed)	023-5040[a]	Croftburn Farm	0.3 mile east (MP 4.6)	Minimal
	National Register—Eligible	023-0084[a]	Mount Pony Rural Historic District	0.3 mile west (MP 4.6) 0.2 mile west (proposed Mt. Pony Substation)	Minimal
0.0 (within the right-of-way)	National Historic Landmarks, National Register Properties (listed and eligible)	NA	None identified	NA	NA

Source: VDHR 2024.

MP = milepost; NA = not applicable VDHR = Virginia Department of Historic Resources.

Mount Pony Rural Historic District (023-0084)

The top of one Route 2 structure would be visible from the resource's western boundary. Other portions of the route may also be visible further north, depending on vegetation, topography, and intervening structures. The route would not be visible from any other areas of the district. Dominion's existing Lines #2/#70 bisect the resource and would thus be more prominent that Route 2. Because the route would not be visible from most of the resource, ERM recommends that Mt. Pony Route 2 would have a minimal impact on 023-0084.

Croftburn Farm (023-5040)

The top of one Route 2 structure would be visible from the resource's southwestern boundary. The route may also be visible further north along the western edge of the resource boundary depending on vegetation, topography, and intervening structures. Furthermore, Dominion's existing Lines #2/#70 bisect the resource and would thus be more prominent than Route 2. Accordingly, ERM recommends that Mt. Pony Route 2 would have a minimal impact on 023-5040.

5.4.2.2 TECH PARK LINES

Because the majority of Tech Park Routes 1, 2, and 3 (including the McDevitt, Chandler, and Palomino Substations) share the alignment, the impacts of these routes on aboveground historic resources are identical except for one resource. The resource descriptions and impact assessments below are therefore applicable for all three Tech Park Routes, except where noted. Tech Park Route 1 mileposts are used as the reference point when describing each resource.

Table 5.4-5 provides information on the considered resources within the VDHR study tiers for the Tech Park Lines. Construction and operation the Tech Park Lines is predicted to have no impact on 13 resources (023-5023 [Tech Park Route 1 only], 204-0002, 204-0003, 204-0005, 204-0006, 204-0020, 204-0020-0140, 204-0021, 204-0069, 204-0070, 204-5053, 204-5067, and 204-5097), due to intervening vegetation, infrastructure, or distance. As described below, the Tech Park Routes would have a minimal impact on three resources (023-0084, 023-5040, and 204-0064).

Mount Pony Rural Historic District (023-0084)

Less than 200 feet of Tech Park Route 1 is within westernmost corner of Mount Pony Rural Historic District. Route 1 in this area is collocated with the segment of Dominion's existing Lines #2/#70 that have been approved for upgrade from 115 to 230 kV (these existing lines already bisect the district). The top of one Route 1 structure would be visible during leaf-off season (late fall, winter, and early spring) at the western corner of the district along Rt. 3. Tech Park Route 1 would introduce modern elements to the viewshed of the northwestern corner of the resource. This addition would be minor in comparison to the district as a whole.

TABLE 5.4-5 HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR TECH PARK ROUTE 1

Buffer (miles)	Resource Category	Resource Number	Description	Distance and Direction from Route Alternative [a]	Impact
0.5 to 1.0	National Register Properties (Listed)	023-5023[b]	Mount Castle	0.9 mile southeast (MP 0.3)	None
		204-0006	A.P. Hill Boyhood Home	0.5 mile northwest (MP 2.2)	None
		204-0021	Corrie Hill House	0.7 mile northwest (MP 2.2)	None
		204-0070	Greenwood	0.6 mile south (MP 1.8)	None
		204-5097	Culpeper Light & Power	0.6 mile northwest (MP 2.2)	None
	Locally Significant	204-0020-0140	Antioch Baptist Church	0.5 mile northwest (MP 2.2)	None
0.0 to 0.5	National Register Properties (Listed)	204-0002	Hill Mansion	0.3 mile north (MP 2.2)	None
		204-0003	Saint Stephen's Episcopal Church	0.5 north (MP 2.2)	None
		204-0005	Burgandine House	0.3 northwest (MP 2.2)	None
		204-0020	Culpeper Historic District	0.3 mile northwest (MP 2.2)	None
		204-0064	South East Street Historic District		Minimal
		204-0069	Culpeper National Cemetery	0.2 mile northeast (MP 2.2)	None
		204-5053	Pitts Theater	0.4 mile northwest (MP 2.2)	None
		204-5067	Lord Culpeper Hotel	0.4 mile northwest (MP 2.2)	None
	National Register- Eligible	NA	None identified	NA	NA
0.0 (within right-of-way [c]	National Register Properties (Listed)	023-5040	Croftburn Farm	< 0.1 mile within resource (MPs 0.3 to 0.4)	Minimal
	National Register- Eligible	023-0084	Mount Pony Rural Historic District	< 0.1 mile within resource (MPs 0.3 to 0.4)	Minimal

Source: VDHR 2024.

MP = milepost; NA = not applicable; VDHR = Virginia Department of Historic Resources.

[a] Referenced mileposts are for Tech Park Route 1.

[b] Resource is only within the designated tiers for Tech Park Route 1 and is not within a study tier of Tech Park Routes 2 and 3.

[c] Resource is within right-of-way for Tech Park Route 1 only and within the 0.0-to-0.5-mile tier for Tech Park Routes 2 and 3.

Tech Park Routes 2 and 3 do not cross the Mount Pony Rural Historic District but would be approximately 0.3 mile west of the district at MP 0.0 (the routes share an alignment in this area). The top of one Route 2/Route 3 structure would be visible during leaf-off season at the northwestern corner of the district along Rt. 3. Other portions of the route could be visible from the western edge of the district. Tech Park Routes 2 and 3 would introduce modern elements to the viewshed from the far western portion of the resource, which is currently is open field.

Accordingly, ERM recommends that the Tech Park Lines would have a minimal impact on 023-0084.

Croftburn Farm (023-5040)

The impacts on Croftburn farm, which occupies the northwestern corner of the Mount Pony Rural Historic District (023-5040), would be the same as described above for that resource. Accordingly, ERM recommends that the Tech Park Routes would have a minimal impact on 023-5040.

South East Street Historic District (204-0064)

The Tech Park Lines (MP 2.2) are approximately 100 feet southeast of the southeastern corner of the South East Street Historic, in an area where all three routes share the same alignment. The route alternatives and the proposed Palomino Substation would be visible from southern and eastern portions of the district, especially where gaps in existing trees allow more distant views. The areas of the resource closest to the routes are privately owned; therefore, most visitors to the resource would only have a view of the routes from East Chandler Street, near Dominion's existing Culpeper Substation. This substation, which connects to Dominion's existing Line #70, is directly adjacent to and visible from (but not within) the district and has already diminished the historic viewshed in this part of the district. The Tech Park Lines would not be visible other publicly accessible views within the district, due to intervening vegetation and/or distance. Because the view of the Tech Park Lines within the district is small compared to the district as a whole, ERM recommends that Tech Park Routes would have a minimal impact on 204-0064.

5.4.2.3 OAK GREEN REBUILD AND RELOCATION

Table 5.4-6 provides information on the considered resources that lie within the VDHR study tiers for the Oak Green Rebuild and Relocation. Construction and operation of new transmission infrastructure along this route is predicted to have no impact on one resource (068-0473) due to intervening vegetation and distance. As described below, the Oak Green Rebuild and Relocation would have a minimal impact on three resources (068-0031, 068-0131, and 068-5033).

TABLE 5.4-6 HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR OAK GREEN REBUILD AND RELOCATION

Buffer (miles)	Resource Category	Resource Number	Description	Distance and Direction from Route Alternative	Impact
0.5 to 1.0	National Register Properties (Listed)	NA	None identified	NA	NA
	Locally Significant	068-0473	Mt. Holy Baptist Church	0.7 mile southwest (MP 2.6)	None
0.0 to 0.5	National Register Properties (Listed)	068-0131	Lessland	0.3 mile southwest (MP 1.0)	Minimal
	National Register—Eligible	NA	None identified	NA	NA
0.0 (within the Right-of-way)	National Register—Eligible	068-0031	Morton Hall	0.2 mile within resource (MPs 2.3 to 2.5)	Minimal
		068-5033	Rapidan River and Clark Mountain Rural Historic District	Entire route is within resource	Minimal

Source: VDHR 2024.

MP = milepost; NA = not applicable; VDHR = Virginia Department of Historic Resources.

Morton Hall (068-0031)

The Oak Green Rebuild and Relocation is within and follows the northwestern boundary of 068-0031, within the right-of-way of existing Lines #2/#11. The relocated Oak Green Switching Station is less than 100 from the southwest resource boundary. The Project would replace the current Line #2/#11 structures and would remove the existing switching station, which is inside the resource boundary. Dense trees would remain in place along transmission line route within the resource, except for the area occupied by the current switching station. These trees would block most views of the Project from the resource itself. Due to this screening and the removal of the existing switching station from the resource itself, ERM recommends that the Oak Green Rebuild and Relocation would have a minimal impact on 068-0031.

Lessland (068-0131)

Two new transmission structures installed as part of the Oak Green Rebuild and Relocation would be visible from the easternmost corner of the resource where one structure is currently visible. The resource is surrounded by dense vegetation and the Project would not be visible from any other portion of the resource. As a result, ERM recommends that the Oak Green Rebuild and Relocation would have a minimal impact on 068-0131.

Rapidan River and Clark Mountain Rural Historic District (068-5033)

The entire Oak Green Rebuild and Relocation is located within the Rapidan River and Clark Mountain Rural Historic District. Structures installed for the Project would be visible and be more prominent in the landscape than the existing transmission line, due to increased structure height and the expanded right-of-way. Furthermore, the Project would impact 37.4 acres, less than 0.1% of the district's 44,150-acre total area. Thus, ERM recommends that the Oak Green Rebuild and Relocation would have a minimal impact on 068-5033.

5.4.2.4 REMINGTON REBUILD

Table 5.4-7 provides information on the considered resources within the VDHR study tiers for the Remington Rebuild. The Project is predicted to have no impact on five resources (023-5049, 030-5593, 030-5607, 030-5852, and 288-5001), due to intervening vegetation, infrastructure, or distance. As described below, the Project is predicted to have a minimal impact on two resources (023-5050 and 030-5587).

Rappahannock Station Battlefield II (023-5050)

The entire Remington Rebuild is located within the Rappahannock Station Battlefield II. The route would not be visible from public rights-of-way within the resource due to intervening vegetation, although the route's new structures (which would be taller than the existing structures) would be visible on privately owned land in the resource. The Remington Rebuild would replace a transmission line and would affect 9.1 acres—less than 0.1% of the resource's 11,800 acres. Accordingly, ERM recommends that the Remington Rebuild would have a minimal impact on 023-5050.

TABLE 5.4-7 HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR REMINGTON REBUILD

Buffer (miles)	Resource Category	Resource Number	Description	Distance and Direction from Route Alternative	Impact
0.5 to 1.0	National Register Properties (Listed)	288-5001	Remington Historic District	0.8 mile west (MP 0.0)	None
	National Register—Eligible	030-5593	Rappahannock River 1862 Northern Virginia Campaign Rural Historic District	0.8 mile west (MP 0.0)	None
	Locally significant	030-5607	Hedgeman-Rappahannock Rural Historic District	0.7 mile northwest (MP 0.0)	None
		030-5852	Piney Ridge School	0.6 mile south (MP 0.0)	None
0.0 to 0.5	National Register—Eligible	NA	None identified	NA	NA
	Battlefields (Potentially Eligible)	023-5049	Freeman's Ford Battlefield	0.4 mile northwest (MP 0.0)	None
0.0 (within the Right-of-way)	Battlefield (Potentially Eligible)	023-5050	Rappahannock Station Battlefield II	Entire route is within resource	Minimal
	Rural Historic District (Potentially Eligible)	030-5587	Mt. Holly Ridge-Marsh Run Rural Historic District	<0.1 mile (MP 0.6)	Minimal

Source: VDHR 2024.
MP = milepost; NA = not applicable; VDHR = Virginia Department of Historic Resources.

Mt. Holly Ridge-Marsh Run Rural Historic District (030-5587)

Less than 200 feet of the Remington Rebuild at MP 0.6 is within the Mt. Holly Ridge Marsh Run Rural Historic District 6. The route would not be visible from the closest public right-of-way at Lucky Hill Road due to distance and intervening vegetation. The route's new structures (which would be taller than the existing structures) would be visible from private land within the district. The amount of Project right-of-way within the district would be less than 0.1 percent of the district's 15,809 total acres and the Remington Rebuild would contribute a small extent of new transmission infrastructure compared to Dominion's existing Lines #183, #535, #580, #2039, and #2040 within the district. Accordingly, ERM recommends that the Remington Rebuild would have a minimal impact on 030-5587.

5.4.3 SUMMARY OF EXISTING DATA COLLECTED UNDER SECTION 106 OR 110 OF THE NATIONAL HISTORIC PRESERVATION ACT

Portions of the Project have previously been surveyed for cultural resources. Table 5.4-8 summarizes the 22 previous surveys within one mile of the Project, including the 6 (in gray shading) that include portions of at least one of the routes under consideration for the Project. Because the route alternatives share some common segments, many of the previous surveys have covered portions of multiple routes.

TABLE 5.4-8 CULTURAL RESOURCE SURVEYS WITHIN 1 MILE OF THE PROJECT

VDHR Survey #	Author, Date, and Title
CU-002	Snyder, K.A. 1979. A Preliminary Archeological Resources Reconnaissance of Proposed Improvements of a Section of the Floodplain of Mountain Run in the Town of Culpeper, Culpeper County, Virginia
CU-005	Carr, K.W. 1980. A Preliminary Archeological Resources Reconnaissance of the Charlottesville-Remington 230 kV Transmission Line Where It Intersects with the Rapidan River in Culpeper and Orange Counties, Virginia
CU-006	Walker, J.M. A Preliminary Archeological Resources Reconnaissance of the Proposed Expansion of the Virginia National Cemetery in Culpeper, Culpeper County, Virginia
CU-009	Robinson, G.G, D. Pezzoni, M.W. McCartney, B.B. Sterling. 1989. A Phase I Cultural Resource Survey of the Proposed Route 522 Widening, Culpeper County, Virginia
CU-016	Gardner, W.M. and J.M. Walker. 1996. A Phase I Cultural Resources Reconnaissance of the Proposed Mitchell Substation and Mitchell Transmission Line in Culpeper County, Virginia
CU-026	Fernandez-Sardina, R. and E. Griffitts. 1998. An Archaeological Survey for the Proposed Route 3 Improvements and Stevensburg Bypass Project, Culpeper County, Virginia
CU-034	Bamann, S.E., J.B. Stewart, B. Hall. 2005. Cultural Resources Identification Survey, Proposed Western Inner Loop, Town of Culpeper, Culpeper County, Virginia
CU-042	Maroney, S. 2009. Cost-Share Cultural Resource Survey of 23 Areas of Historic Interest Within Culpeper County, Virginia
CU-043	Kosalko, K., B. Duplantis, and M. Yengling. 2009. Archaeological Survey of the Proposed Bristers-Appalachian Trail 500kV Transmission Line, Culpeper, Fauquier, and Rappahannock Counties, Virginia

VDHR Survey #	Author, Date, and Title
CU-046	Kosalko, K. and M. Yengling. 2009. Cultural Resource Survey in Association with the Proposed Widening of Route 3, Stevensburg, Culpeper County, Virginia
CU-069	Tyrer, C.D. and D.M. Muir. 2018. Phase I Archaeological Survey of Greenwood Solar I, Culpeper County, Virginia
CU-074	González, K.S., K. Merli, D. Dilks. 2021. Phase I Archaeological Survey of the Culpeper National Cemetery Expansion Area, Culpeper County, Virginia
CU-082	Taylor, R.J., H. Smith, D. Friedberg. 2023. Phase I Cultural Resource Survey for the Parkside Apartments Project, Culpeper, Virginia
CU-083	Taylor, R.J., H. Smith, D. Friedberg. 2024. Phase I Cultural Resources Survey for the Lightfoot Apartments Project, Culpeper, Virginia
FQ-005	Carr, K.W. 1980. A Preliminary Archeological Resources Reconnaissance of a Proposed Sewer Line Between Bealeton and Remington, Fauquier County, Virginia
FQ-040	Balicki, J. and J.S. Stevens. 1991. Phase I Archaeological Survey for the Meadows of Remington, Fauquier County, Virginia
FQ-043	Gannon, T. N. 2000. A Phase I Cultural Resources Survey of 250.534 Acres for a Proposed Power Generation Plant near the Town of Remington, Fauquier County, Virginia
FQ-072	Klein, M., S. DeChard, D. Magoon. 2010. Cultural Resources Survey, Proposed Tin Pot Run Bridge Replacement, Fauquier County, Virginia
FQ-085	Moore, W.H. and S.M. Clarke. 2014. Cultural Resources Survey of the Pierce Elementary School Connector Trail Project, Fauquier County, Virginia
FQ-097	Tyrer, C.D. and D.M. Muir-Frost. 2015. Phase I Cultural Resources Survey of Virginia Dominion Power Remington Site, Fauquier County, Virginia
FQ-119	Victor, M., S. DeChard, B. Stewart. 2019. A Phase I Cultural Resources Survey of Approximately 233.8 Acres for the Proposed Remington Data Center in Fauquier County, Virginia
FQ-129	Martin, A., J Schnur, M. Tawney. 2021. Phase I Cultural Resource Survey of the Warrenton Training Center, Station C, Fauquier County, Virginia

VDHR = Virginia Department of Historic Resources.
* Gray shaded rows denote surveys that overlap portions of the route alternatives.

5.5 ENVIRONMENTAL JUSTICE

5.5.1 ENVIRONMENTAL JUSTICE METHODOLOGY

Federal guidelines for environmental justice (EJ) analyses (USEPA 2016a) require identification and evaluation of disproportionately high or adverse impacts on populations of color (i.e., who are non-white, or who are white but have Hispanic ethnicity) when these populations represent over 50% of the population of an affected area; or when the percentage of populations of color or low-income populations in the affected area is "meaningfully greater" than the population of color percentage or low-income population percentage in the "reference population." Low-income populations are those that fall within the annual statistical poverty thresholds from the U.S. Bureau of the Census, Population Reports, Series P-60 on Income and Poverty (USEPA 2016b).

The "meaningfully greater" criterion is usually interpreted as a population 10–20% greater than the minority or low-income population of the state or county (the "reference" population) where the subject population resides.[7]

The Commonwealth of Virginia has its own EJ guidelines, which supersede federal guidelines. The guidelines established in The Virginia Environmental Justice Act (VEJA) of 2021 (Va. Code § 2.2-234 through 2.2-235) are more stringent than federal guidelines. As such, this report uses the Commonwealth's guidelines. The VEJA defines "Environmental Justice" and "Environmental Justice Community" as follows (Va. Code § 2.2-234):

- "Environmental Justice" means the fair treatment and meaningful involvement of every person, regardless of race, color, national origin, income, faith, or disability, regarding the development, implementation, or enforcement of any environmental law, regulation, or policy.
- "Fair treatment" means the equitable consideration of all people whereby no group of people bears a disproportionate share of any negative environmental consequence resulting from an industrial, governmental, or commercial operation, program, or policy.
- "Meaningful involvement" means the requirements that (i) affected and vulnerable community residents have access and opportunities to participate in the full cycle of the decision-making process about a proposed activity that will affect their environment or health and (ii) decision makers will seek out and consider such participation, allowing the views and perspectives of community residents to shape and influence the decision. "Environmental Justice Community" means any low-income community, population of color, or community of color.

Based on the VEJA guidelines, EJ communities are identified in this report using the criteria described below.

Racial/Ethnic Composition:

- The percent of population of color in the analysis area is over the Commonwealth average of 41% (i.e., "community of color"); or
- The percent of any racial or ethnic group that is not "white alone" in the population for the analysis area is greater than the Commonwealth average for that racial or ethnic group (i.e., "population of color"); or
- The percent of the population in the analysis area considered linguistically isolated is greater than the Commonwealth average of 3%.

Low-Income:

- The share of households making less than 200% of the Federal Poverty level and less than or equal to 80 percent of the median household income of the analysis area is greater than 30% (Va. Code § 2.2-234).

ERM used the Census Block Group (CBG) as the primary geographic unit for this EJ analysis, because it is the smallest unit for which U.S. Census Bureau demographic data are available,

[7] For more information on the federal guidelines for EJ analysis, please see the March 2016 report from the Federal Interagency Working Group on Environmental Justice and The National Environmental Policy Act (NEPA) Committee "Promising Practices for EJ Methodologies in NEPA Reviews" accessible at: https://www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf.

providing information at a sub-county level. ERM collected demographic data from the U.S. Census Bureau American Community Survey, 5 Year Estimates (2019–2023) (U.S. Census Bureau 2023d and 2022e). Demographic and socioeconomic data for CBGs in the study area are depicted on Figure 5.5-1.

While the Commonwealth of Virginia is the reference population for this analysis, ERM also considered data for Culpeper, Orange, and Fauquier counties in the review to assess regional demographic variations. ERM compared Commonwealth-wide demographic data with individual CBGs to help identify the presence of potential EJ communities. For example, if the reported percentage of population of color within an individual CBG is greater than the percentage of population of color in Virginia as a whole (41%), then ERM identified a potential EJ community in that CBG.

This EJ analysis also assesses the potential for other socioeconomic indicators to identify areas that may have higher environmental burdens and vulnerable populations when considered in combination with demographic and socioeconomic information meeting the EJ criteria and definition under the VEJA. These other indicators include education attainment (the percent of people over age 25 in a CBG with less than a high school education) and age-based vulnerabilities (i.e., the percent of people in a CBG under age 5 or over age 64). There is no equivalent VEJA definition for these groups; therefore, ERM used the Federal guidance of a meaningfully greater threshold to identify these communities. Specifically, a CBG is considered to contain a potential age-based vulnerable community (or community with low education attainment) when the percentage of the population either below age 5 or above age 64 (or with less than a high school education) exceeds twice the corresponding state averages.

5.5.2 EXISTING CONDITIONS

Based on the EJ criteria thresholds identified above, 14 of the 16 CBGs within 1.0 mile of Project components meet EJ criteria (Figure 5.5.1-1). Table 5.5-1 provides population and demographic information for each of the CBGs crossed and within 1 mile of the route alternatives and rebuilds. CBGs are identified first according to the census tract that contains them.

All but two of the 16 CBGs in the EJ study area have at least one population that meets the EJ criteria described above (referred to as EJ communities), including 9 that have overall populations of color that meet the EJ criteria. The Project route alternatives cross 8 CBGs, 7 of which are potential EJ communities, including two along the Remington Rebuild and one along the Oak Green Rebuild.

The route evaluation relies on the VEJA criteria; however, some CBGs that are not officially classified as EJ communities may still contain smaller pockets of these populations. For example, a CBG may not exceed the VEJA thresholds but could come very close to them. These communities may also warrant consideration as the project progresses.

TABLE 5.5-1 DEMOGRAPHIC AND SOCIOECONOMIC CHARACTERISTICS WITHIN THE ENVIRONMENTAL JUSTICE STUDY AREA

Geography	Population	Total Populations of Color (%)	White, non-Hispanic (%)	Black or African American (%)	American Indian and Alaska Native (%)	Asian (%)	Native Hawaiian and Other Pacific Islander (%)	Some Other Race Alone (%)	Two or More Races (%)	Hispanic or Latino (%)	Low-Income Population (%)	Limited English-Speaking Household (%)	Population with Less than High School Education (%)	Population Under Age 5 (%)	Population Over Age 64 (%)	Route or Site Crossing CBG
Virginia	8,657,499	41	59	18	0.0	7	0	1	4	11	23	3	9	6	16	NA
Culpeper County	53,563	34	66	13	0.3	1	0.1	0.5	5	15	23	2	12	6	17	NA
CT 9301.01 BG 2	2,262	35	65	13	0.0	0	0.0	0.0	5	17	32	2	17	9	15	NA
CT 9302.01 BG 1	1,551	16	84	5	0.0	3	0.0	0.0	1	6	8	0	11	1	44	NA
CT 9302.03 BG 1	1,366	71	29	25	0.0	0	0.0	0.0	29	17	26	4	18	5	0	NA
CT 9302.03 BG 2	2,513	47	53	18	0.0	1	0.0	2.9	3	22	28	3	3	6	7	NA
CT 9303 BG 1	1,035	67	33	18	0.0	0	0.0	0.0	3	46	67	18	12	9	0	NA
CT 9303 BG 2	2,286	52	48	8	0.0	0	0.0	0.0	3	42	53	16	23	13	11	NA
CT 9303 BG 4	2,399	54	46	32	0.0	2	0.0	3.0	6	11	18	0	10	10	21	NA
CT 9304 BG 2	1,494	35	65	14	0.3	11	1.9	0.4	5	2	26	0	15	6	15	MtP1, MtP2; TP1, TP2, TP3
CT 9304 BG 3	2,463	25	75	2	0.4	0	0.0	0.0	14	10	23	0	15	6	18	MtP1
CT 9305.01 BG 1	1,670	47	53	29	0.0	1	0.0	0.0	5	12	37	0	16	0	10	OG
CT 9305.02 BG 1	993	22	78	16	0.0	6	0.0	0.0	0	1	12	0	11	4	31	MtP1, MtP2

Geography	Population	Total Populations of Color (%)	White, non-Hispanic (%)	Black or African American (%)	American Indian and Alaska Native (%)	Asian (%)	Native Hawaiian and Other Pacific Islander (%)	Some Other Race Alone (%)	Two or More Races (%)	Hispanic or Latino (%)	Low-Income Population (%)	Limited English-Speaking Household (%)	Population with Less than High School Education (%)	Population Under Age 5 (%)	Population Over Age 64 (%)	Route or Site Crossing CBG
CT 9305.02 BG 3	3,498	45	55	18	0.0	1	0.0	0.0	3	22	26	3	11	10	12	NA
Orange County	37,208	25	75	10	0.0	1	0.0	0.9	6	7	19	0	9	6	20	NA
CT 1101.05 BG 3	1,167	14	86	0	0.0	0	0.0	0.0	6	9	18	0	0	9	30	OG
CT 1101.06 BG 1	1,995	31	69	10	0.0	0	0.0	0.0	15	6	8	0	4	10	13	OG
Fauquier County	73,935	24	76	6	0.0	2	0.0	0.5	4	12	15	2	8	6	17	NA
CT 9307.06 BG 1	1,652	50	50	4	0.0	0	0.0	0.0	2	43	68	25	35	18	10	RR
CT 9307.06 BG 2	2,734	44	56	17	0.0	0	0.0	0.0	6	21	24	0	19	6	5	RR

Sources: U.S. Census Bureau 2023a, 2023b, 2023c, 2023d, and 2023e (Tables B01001, B3002, B15002, C17002, C16002).

CBG = Census block group; CT = Census tract; EJ = environmental justice; MtP1 = Mt. Pony Route 1; MtP2 = Mt. Pony Route 2; NA = not applicable; OG = Oak Green Rebuild; RR = Remington Rebuild; TP1 = Tech Park Route 1; TP2 = Tech Park Route 2; TP3 = Tech Park Route 3.
Gray shaded cells include reference population.
Pink shaded cells indicate populations of color.
Blue shaded cells indicate that the analysis area has a greater percentage of a community of color than the state as a whole.
Green shaded cells indicate low-income populations.
Yellow shaded cells indicate sensitive populations with language barriers.

5.5.3 IMPACT ASSESSMENT

Based on the EJ criteria thresholds for race, ethnicity, income, and limited English-speaking households described in Section 5.5.1, ERM identified potential EJ communities crossed by or within the EJ study area for each of the Project's route alternatives.

The Oak Green Rebuild and Remington Rebuild each have only one feasible route, both of which are within potential EJ communities. Mt. Pony Routes 1 and 2 cross the same two CBGs, one which is a potential EJ community, and Mt. Pony Route 1 crosses an additional CBG, which is also a potential EJ community. Tech Park Routes 1, 2, and 3 are all within the same CBG, which is also a potential EJ community.

All of the Project lines and their route variations, where they exist, largely cross through agricultural or forested areas devoid of structures and residences. As described in Section 5.1.4, no residences are within the rights-of-way for any of the route alternatives and no more than 7 dwellings are within 500 feet of any route's centerline (Oak Green Rebuild).

To ensure that stakeholder concerns regarding the potential direct and indirect impacts of the Project are understood and considered in routing decisions, Dominion designed and implemented a comprehensive outreach program early in the Project's development phase to identify and engage with all community stakeholders regardless of EJ community status, including federally recognized tribes. As part of the outreach program, the Company shared Project materials through written and in-person methods (e.g., letters and open houses), documented comments provided by stakeholders, and responded to feedback by seeking ways to mitigate or avoid identified impacts, including any potential disproportionate impacts on vulnerable communities. As part of outreach, Dominion held community meetings on January 13, 2025, and January 14, 2025, at The Refinery in the Town of Culpeper and at Unionville Elementary School in Orange County, respectively.

In assessing whether a community would bear a disproportionate and adverse impact of the Project, ERM considered temporary construction impacts (specifically, noise and ground disturbance), visual impacts, effects on property value, and health impacts related to electromagnetic fields (EMF), as discussed below.

Overall, while all Components cross at least one potential EJ community and most CBGs within the 1-mile radius of the Project are potential EJ communities, the Project would not have adverse or significant impacts, primarily due to the limited number of homes and businesses near the route alternatives and the limited degree to which the Project would impact communities, regardless of EJ status.

5.5.3.1 CONSTRUCTION ACTIVITIES

Impacts associated with Project construction would be temporary, lasting less than a year. Regardless of the route selected, Construction activity and crews would be present at a particular location during daytime hours for a few to several days at a time, on multiple

occasions throughout the construction period between initial right-of-way clearing and final restoration.

Various regulations, industry standards, and BMPs will guide construction and restoration of the right-of-way. The short-term impacts of construction could include equipment noise, dust, potential changes in traffic patterns, and general ground disturbance. All these impacts would be short term and temporary.

Noise is generally defined as unwanted sound. The primary noise receptors in the study area would be the residences that are within 500-feet of the route centerlines (see Section 5.1.4). The Germanna Community College Daniel Technology Center and Culpeper Technical Education Center are within 500 feet of Tech Park Route 1 in an area collocated with existing transmission lines. Otherwise, there are no schools within 500 feet of any of the other route alternatives. Section 5.1 (Land Use) provides additional details on distances and locations of potentially sensitive resources from route alternatives. Exceedances of daytime noise limits are not expected; if they occur, they would be temporary.

During construction, Dominion would minimize ground-disturbing activities to the extent practicable. Following construction, Dominion would remove construction-related equipment and debris from the right-of-way and restore the land within the right-of-way as closely as possible to preconstruction conditions. Dominion would maintain the right-of-way with herbaceous cover during operations.

5.5.3.2 VISUAL IMPACTS

Section 5.3 assesses the Project's visual impacts. Because nearly all of the CBGs in the EJ study area contain potential EJ populations, most of the KOPs used in the analysis of visual impacts represent views from potential EJ communities. Dominion minimized visual impacts by identifying route alignments that are most compatible with the landscape. Mitigation measures include avoiding unique viewsheds, placing structures to take advantage of natural screening (e.g., tall trees), collocating with existing transmission lines, and avoiding the placement of structures directly in front of residences. Overall, visual impacts from the Project would be minor to moderate along any of the routes, due to existing and proposed infrastructure in the area and foreground views along all routes that are limited to already disturbed travel corridors.

5.5.3.3 PROPERTY VALUES

Affected communities and landowners often express concern that the presence of transmission lines in the viewshed of homes could adversely affect aesthetics, resulting in the reduction of property values and deterring potential buyers. Indirect impacts on property values caused by direct visual impacts from high-voltage transmission lines (i.e., lines carrying more than 69 kV) depend on proximity, visibility, size, and type of transmission structures; easement landscaping; and surrounding topography. Peer-reviewed articles and industry research published in peer-reviewed journals and trade journals find that residential property values and sales prices are primarily affected by factors unrelated

to the presence of a transmission line. Specifically, this research found that factors such as location, type, and condition of improvements to the property; neighborhood characteristics; and broader local real estate market conditions have a greater influence on the value of residential property than the presence of a transmission line (Jackson and Pitts 2010; Anderson et al. 2017).

No more than seven residences are within 500 feet of the centerline of any route alternative. The landscapes that the routes cross are predominantly rural and wooded, except for the existing residential communities that are located near to but not crossed by all the Tech Park Routes within the industrially zoned CTZ, and a small residential community along US 522 adjacent to Mt. Pony Route 2. The route alternatives do not cross any major urban or suburban population centers.

5.5.3.4 HEALTH IMPACTS

The conclusions of multidisciplinary scientific review panels assembled by national and international scientific agencies during the past three decades are the foundation of Dominion's opinion that no adverse health impacts are anticipated to result from the operation of transmission infrastructure, including the Project. The general scientific consensus of agencies that have reviewed this research, relying on generally accepted scientific methods, is that common sources of EMFs in the environment, including from transmission lines and other parts of the electric system, appliances, etc., are not a cause of any adverse health impacts. More information on Dominion's opinion can be found at https://www.dominionenergy.com/projects-and-facilities/electric-projects/emf (Dominion Energy 2024).

Dominion relies on information about EMF from state, federal, and international health and scientific agencies. Research on EMF and human health varies widely in approach. Some studies evaluate the impacts of high, short-term EMF exposures not typically found in people's day-to-day lives on biological responses, while others evaluate the impacts of common, lower EMF exposures found throughout communities. Studies also have evaluated the possibility of impacts (e.g., cancer, neurodegenerative diseases, and reproductive impacts) of long-term exposure. Altogether, this research includes well over 100 epidemiologic studies of people in their natural environment, and many more laboratory studies of animals (in vivo) and isolated cells and tissues (in vitro).

Numerous scientific and health agencies have conducted reviews of EMF-related biological and health research, such as the European Health Risk Assessment Network on Electromagnetic Fields Exposure, the International Commission on Non-Ionizing Radiation Protection, the World Health Organization, the Institute of Electrical and Electronics Engineers International Committee on Electromagnetic Safety, the Scientific Committee on Emerging and Newly Identified Health Risks of the European Commission, and the Swedish Radiation Safety Authority (formerly the Swedish Radiation Protection Authority) (WHO 2007; SCENIHR 2009, 2015; ICNIRP 2010; SSM 2015, 2016, 2018, 2019, 2020, 2021, 2022; ICES 2019).

Expert panels, such as those above, that are assembled by agencies to identify, review, and summarize the result of this large and diverse research use standard scientific procedures, such as weight-of-evidence methods. The general scientific consensus of the agencies and panels that have reviewed this research, relying on generally accepted scientific methods, is that the scientific evidence does not confirm that common sources of EMF in the environment—including electric transmission lines and other parts of the electric system, appliances, etc.—are a cause of any adverse health impacts (WHO 2007; SCENIHR 2009, 2015; ICNIRP 2010; SSM 2015, 2016, 2018, 2019, 2020, 2021, 2022; ICES 2019).

All of the routes in this study contain EJ communities. While this consensus suggests that EMF exposure from transmission infrastructure does not pose health hazards, Dominion recognizes the importance of addressing community concerns, particularly in EJ communities. These communities may face heightened sensitivity to infrastructure projects due to historical inequities of cumulative environmental burdens.

5.6 GEOLOGICAL AND MINERAL RESOURCES

5.6.1 EXISTING CONDITIONS

The study area is within the Piedmont geologic province, which lies between the mountainous Blue Ridge province to the west and the terraced slopes of the Coastal Plain province to the east. The Piedmont province is characterized by rolling topography, thick soils, and heavily weathered bedrock primarily caused by the region's humid climate. The Piedmont province consists of several complex geologic terranes where faults separate the rock units with variable igneous and metamorphic histories. Based on review of the Geologic Map of Virginia, the route alternatives are located approximately on the transitional boundary between the Western Piedmont-Potomac Terrane and a Mesozoic basin (William and Mary Department of Geology 2024; USGS 2005).

Mt. Pony Lines

Mt. Pony Route 1

Mt. Pony Route 1 crosses a sedimentary bedrock unit consisting of conglomerate rock with greenstone clasts dating back to the Upper Triassic from MP 0.0 to 0.8. The remaining 4.4 miles of the route cross an interbedded sedimentary rock unit consisting of shale and siltstone, belonging to the Newark Supergroup (William and Mary Department of Geology 2024; USGS 2005).

Mt. Pony Route 2

Mt. Pony Route 2 crosses a unit of mafic volcanic rocks, which primarily consists of Jurassic-age diabase bedrock from MP 0.0 to 3.3. The remaining 1.5 miles of the route cross the interbedded sedimentary rock unit consisting of shale and siltstone, belonging to the Newark Supergroup (William and Mary Department of Geology 2024; USGS 2005).

Tech Park Lines

Tech Park Routes 1, 2, and 3, all cross interbedded sedimentary rock units consisting of shale and siltstone, belonging to the Newark Supergroup, and a Triassic-age sedimentary bedrock unit consisting of conglomerate bedrock with greenstone clasts Each route is approximately half located within each of these differing geologic units, with multiple crossings of each due to the up-and-back looping of the Tech Park Routes (William and Mary Department of Geology 2024; USGS 2005).

Oak Green Rebuild and Relocation

The Oak Green Rebuild crosses a unit of interbedded shale and siltstone belonging to the Newark Supergroup from MP 0.0 to 0.1. It then crosses through a series of sedimentary bedrock units consisting of sandstone and conglomerate from MP 0.1 to 1.1, prior to passing through a unit of volcanic bedrock unit consisting of metabasalt from MP 1.1 to 1.6. The remaining 1.0 mile of the segment terminates within a metamorphic rock unit containing Cambrian-age phyllite and schist (William and Mary Department of Geology 2024; USGS 2005).

Remington Rebuild

The Remington Rebuild crosses the interbedded shale and siltstone unit of the Newark Supergroup for from MP 0.0 to 0.3, then transects a unit of diabase bedrock from MP 0.3 to 0.6, prior to reencountering the interbedded shale and siltstone unit of the Newark Supergroup. (William and Mary Department of Geology 2024; USGS 2005).

Mineral Resources

ERM reviewed publicly available Virginia Energy (2024) datasets, USGS topographic quadrangles, and recent (2024) digital aerial photographs to identify mineral resources in the study area. The only active permitted mining site within 0.25 mile of the Project is the Culpeper Plant, a sandstone quarry owned by Luck Stone Corporation and has been active since 2002. Mt. Pony Route 1 follows the southern boundary of the quarry parcels along the south side of the existing Dominion Lines #2/#70 from MPs 1.1 to 1.8, which also cross this active quarry parcel. Mt. Pony Route 1 is collocated south of the existing transmission lines across forested areas, while the quarry is located north of the existing transmission lines.

In addition to the active quarry site, Mt. Pony Route 1 crosses multiple Luck Stone Corporation parcels comprising open land west of the Culpeper Plant. Mt. Pony Route 1 is also collocated with existing Lines #2/#70 across these parcels.

One mineral resource prospect is within 0.25 mile of the Project: a shale deposit adjacent to the Oak Green Rebuild from MPs 0.7 to 0.8 (Virginia Energy 2024).

5.6.2 IMPACT ASSESSMENT

While Mt. Pony Route 1 crosses parcels owned by Luck Stone Corporation, the route does not cross active quarry areas or access roads. In addition, existing Lines #2/#70 lies

between Mt. Pony Route 1 and the active quarry and Route 1 is collocated with these existing lines across adjacent undeveloped Luck Stone Corporation parcels. As a result, it is unlikely that Mt. Pony Route 1 would cross any future expansion of the quarry. Should expansion occur near Mt. Pony Route 1, its collocation with existing Lines #2/#70 would minimize impacts on expanded quarry operations.

Dominion is not aware of plans to develop the potential shale resource near the Oak Green Rebuild route. Should development of the site occur, Dominion would work with the landowner and developers to minimize the impact of transmission lines on that activity.

6 COMPARISON OF ALTERNATIVES

ERM identified the route alternatives discussed in this report based on the major constraints and routing opportunities in the study area relative to the Project's purpose and need. ERM evaluated two alternatives for the Mt. Pony Lines and three alternatives for the Tech Park Lines. Because the Oak Green Rebuild and Relocation and Remington Rebuild components utilize existing rights-of-way, no alternative routes were considered, and these components are not included in this comparison of alternatives.

The complete Features Crossing Table, provided as Appendix D, lists the resources crossed by each Project component, including the Oak Green and Remington Rebuilds. The following subsections provide a comparative discussion of relevant resource impacts by route alternatives of the Mt. Pony and Tech Park Project components. ERM determined that no meaningful differences existed among the impacts of route alternatives on residential areas and residences, commercial/industrial areas and buildings, planned developments, recreational resources, cemeteries, schools (these are discussed under public lands), places of worship, transportation infrastructure, airports and heliports, visual resources, environmental justice, and geological and mineral resources. As a result, these resources are not further discussed in this section.

6.1 LAND USE

The Project's impacts on land use would include the placement of transmission structures on public and private property, tree clearing within the right-of-way, visual impacts (particularly on residences and recreational resources), and temporary road closures associated with construction at road crossings. Table 6.1-1 summarizes the length, footprint, and length of collocation for the Mt. Pony and Tech Park Lines. The remainder of this section discusses the potential land use impacts of these route alternatives.

While Mt. Pony Route 1 is 0.4 mile longer than Mt. Pony Route 2, it shares the right-of-way with collocated existing transmission lines and therefore requires 12.6 fewer acres of new right-of-way than Mt. Pony Route 2. In addition, Mt. Pony Route 1 has 4.5 miles (87%) of collocation with existing linear features, including 3.7 miles (71%) with existing transmission lines, compared to 0.3 mile (6%) of collocation for Mt. Pony Route 1, none of which is with transmission lines.

Tech Park Routes 2 and 3 have approximately the same length and construction footprint, both of which are slightly smaller than Tech Park Route 1. However, if both Mt. Pony Route 1 and Tech Park Route 1 are selected by the Commission, Tech Park Route 1 would start at future Structure #2437/168 / #2438/126 rather than the proposed Mt. Pony Substation. In this situation, Tech Park Route 1 would be the shortest Tech Park route alternative at 3.4 miles (0.1 mile less than Routes 2 and 3) and would have the smallest footprint at 46.2 acres (approximately 2.4 acres less than Routes 2 and 3). Tech Park Route 1 also has more total collocation than Tech Park Routes 2 and 3, including 0.3 mile more transmission line collocation.

TABLE 6.1-1 LENGTH, FOOTPRINT, AND COLLOCATION FOR MT. PONY AND TECH PARK LINES

Feature	Unit	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1[b]	Tech Park Route 2	Tech Park Route 3
Centerline Length	miles	5.2	4.8	3.7	3.5	3.5
Construction Footprint [a]	acres	49.7	62.3	49.9	48.7	48.6
Total Collocation	miles (percent)	4.5 (87%)	0.3 (6%)	0.7 (19%)	0.4 (11%)	0.6 (17%)
Transmission Line Collocation	miles	3.7	0.0	0.5	0.2	0.2
Existing Road Collocation	miles	0.8	0.3	0.0	0.0	0.2
Future Road Collocation	miles	0.0	0.0	0.2	0.2	0.2

[a] The Construction Footprint includes the acreages of the substations associated with each Project component.
[b] If both Mt. Pony Route 1 and Tech Park Route 1 are selected by the Commission, then Tech Park Route 1 would start at future Structure #2437/168 / #2438/126 rather than the proposed Mt. Pony Substation. In this scenario, Tech Park Route 1 would be 3.4 miles long (rather than 3.7 miles if Mt. Pony Route 2 is selected), and would have a footprint of 46.2 acres (rather than 49.9 acres). The length of collocation would not change.

6.1.1 LAND OWNERSHIP AND PUBLIC LANDS

Mt. Pony Lines

Neither Mt. Pony Route 1 nor Mt. Pony Route 2 cross any public lands. While both routes cross a similar number of parcels (25 and 26, respectively), Route 1 crosses land owned by 9 total landowners, compared to 17 for Route 2.

Tech Park Lines

The Tech Park route alternatives each cross similar numbers of parcels and landowners. Tech Park Route 1 crosses four public land parcels, including two owned by Germanna Community College and two owned by the Germanna Real Estate Foundation, whose goal is to support the Germanna Community College. Tech Park Route 2 crosses one public land parcel owned by the Germanna Real Estate Foundation, and Tech Park Route 3 does not cross any public lands. While Route 1 crosses more public land than Routes 2 or 3, these crossings are collocated with existing transmission lines (including allowing a collocated crossing of US 15/29), and along property boundaries. In addition, as expressed through ongoing coordination with Dominion, Germanna Community College recognizes that Route 1 will not have permanent impacts on the operation of the college, acknowledges the overall

benefit to the larger community by allowing the additional transmission line collocation, and thus does not oppose the Route 1 crossing of college land.

6.1.2 LAND USE AND LAND COVER

Mt. Pony Lines

Mt. Pony Route 1 requires 12.6 fewer acres of new right-of-way than Mt. Pony Route 2, due to the significant amount of collocation with existing transmission line rights-of-way. In addition to less overall new right-of-way, Mt. Pony Route 1 will have significantly less impact on land use and land cover than Mt. Pony Route 2, because it crosses primarily agricultural lands (37.2 acres agricultural and 11.8 acres forested), whereas Mt. Pony Route 2 crosses primarily forested lands (21.1 acres agricultural and 39.8 acres forested). Agricultural uses are permitted within transmission line rights-of-way, resulting in no significant change in land use in agricultural areas. By comparison, forested land within transmission rights-of-way is permanently converted to open space or shrub/grassland.

Tech Park Lines

The Tech Park Lines all have similar total footprint acreage and cross similar amounts of forested lands. While Tech Park Route 1 crosses more agricultural land than Routes 2 or 3 (24.2 acres compared to 18.3 and 15.9 acres, respectively), most of the Tech Park Lines are within planned data center campuses (86% for Route 1, 85% for Route 2, and 83% for Route 3). As a result, all three Tech Park route alternatives will primarily cross future open space or developed (industrial) land. The Tech Park Routes would therefore have a similar impact on land use and land cover.

6.1.3 LAND USE PLANNING AND ZONING

Mt. Pony Lines

Mt. Pony Routes 1 and 2 each cross similar acreages of agricultural and rural area lands. Mt. Pony Route 1 complies with the direct intent of the Culpeper County Comprehensive Plan, which directs new or expanded transmission infrastructure first to existing rights-of-way. Mt. Pony Route 1 collocates with existing transmission lines for 3.7 miles out of a total 5.2 miles (71%), whereas Mt. Pony Route 2 does not have any collocation (0%) with existing transmission lines or other existing utility corridors, and thus does not satisfy the Comprehensive Plan's intent.

Tech Park Lines

All three Tech Park Routes are entirely within industrial zoning districts and the CTZ, except for 0.5 mile (5.8 acres) of Rural Agricultural zoning crossed by Tech Park Route 1. As described above, if the Commission selects both Tech Park Route 1 and Mt. Pony Route 1, Tech Park Route 1 would only cross 0.3 mile (4.0 acres) of Rural Agricultural zoning. This crossing would be entirely within the CTZ on Germanna Community College property and

would be collocated with existing transmission lines. As such, all three Tech Park Lines would have a similar, minimal impact on planning and zoning, and all would be consistent with Culpeper County's and the Town of Culpeper's intended land uses.

6.1.4 CONSERVATION EASEMENTS AND LANDS

Mt. Pony Routes 1 and 2 both avoid existing conservation easements. Route 1 runs adjacent to but does not cross or directly impact an existing VOF easement. Mt. Pony Route 1 crosses significantly more AFD lands (16.9 acres of the Stevensburg AFD) than Mt. Pony Route 2 (1.0 acre of Raccoon Ford AFD). The intent of an AFD is to preserve the use of the land for either agricultural or forest product uses and to support the local agricultural economy. The entire 16.9 acres of AFD that Route 1 crosses is agricultural land collocated with existing transmission lines. Route 1 would not change the agricultural use of this land; therefore, Route 1 would not have a significant impact on the AFD or its intended agricultural protections. Construction and operation of Route 2 would permanently convert 1.0 acre of forested land within the AFD to non-forest uses.

The Tech Park Lines do not cross any land with conservation easements.

6.2 NATURAL RESOURCES

Project construction would have temporary, direct impact on natural resources. The Project's permanent impacts on natural resources would include the placement of transmission structures and equipment and required tree clearing within the right-of-way of the selected routes. Except for structure placement locations, areas of non-forested vegetation would return to normal function after Project construction. Tree-clearing within the maintained right-of-way would result in the conversion of PFO/PSS wetlands to PSS/PEM type wetlands, which would reduce or eliminate functions such as peak flow reduction, water filtration, and riparian buffer functions at waterbody crossings. Tree-clearing would also eliminate forested habitat and bisecting ecological cores. Forested land provides habitat for many species, such as the federally and state-threatened NLEB and the federally potentially listed endangered and state-endangered TCB, Bald eagles, and other non-protected species.

6.2.1 WETLANDS AND WATERBODIES

Table 6.2-1 summarizes the wetlands and waterbodies potentially impacted by each route.

Mt. Pony Route 1 would affect approximately 1.9 acres less wetlands than Mt. Pony Route 2; however, both Mt. Pony routes have similar forested wetland impacts (5.7 and 5.5 acres). Mt. Pony Route 1 would cross more waterbodies (12) than Route 2 (10), but wetland and waterbody impacts from Mt. Pony Route 1 are primarily in areas collocated with existing transmission lines.

Tech Park Route 1 would affect slightly more total wetlands (1.4 acres) than Tech Park Routes 2 or 3 (1.1 acres and 1.2 acres, respectively), but all three routes have a similar

impact on forested wetlands (1.0, 1.0, and 1.1 acres, respectively). The Tech Park Routes would all cross the same number of waterbodies.

TABLE 6.2-1 WETLANDS AND WATERBODIES CROSSED BY THE PROJECT

Natural Resource	Unit	Mt. Pony Route 1	Mt. Pony Route 2	Tech Park Route 1	Tech Park Route 2	Tech Park Route 3
Wetlands Total	acres	6.8	8.7	1.4	1.1	1.2
PFO Wetlands	acres	5.7	5.5	1.0	1.0	1.1
Waterbodies Total	number	12	10	4	4	4

PFO = palustrine forested.

6.2.2 NATURAL HERITAGE RESOURCES

Each route alternative crosses NHRs, including habitat with forested vegetation, areas ranked as ecological cores by the VDCR, and both VDCR-designated conservation sites and SCSs.

Mt. Pony Route 1 does not cross any VDCR-designated conservation sites or ecological cores, while Mt. Pony Route 2 crosses 2.1 acres of the Southern Culpeper Diabase Flatwoods Conservation Site and 31.5 acres of ecological cores. Mt. Pony Route 1 crosses 11.8 acres of forested land, while Mt. Pony Route 2 crosses 39.8 acres of forested land. In addition, Mt. Pony Route 1 does not create any new forest fragmentation, because it is collocated with existing transmission lines in all forested land crossings, while Mt. Pony Route 2 has no collocation and thus creates new forest fragmentation.

The Tech Park Routes do not cross any conservation sites or ecological cores and each cross similar extents of forested land (24.1, 24.6, and 24.4 acres for Tech Park Routes 1, 2, and 3, respectively).

6.3 CULTURAL RESOURCES

Mt. Pony Lines

ERM identified three archaeological sites within or adjacent to the Mt. Pony Route 1 right-of-way, compared to one archaeological site adjacent to Mt. Pony Route 2.

ERM identified 10 previously recorded historic architectural resources within VDHR study tiers for Mt. Pony Route 1, compared to six resources for Mt. Pony Route 2. Route 1 would have no impact on three resources (one NRHP-listed, two locally significant), minimal impact on one resource (potentially eligible battlefield), and a moderate impact on six resources (three NRHP-listed resources, two NRHP-eligible resources, and a potentially eligible battlefield). Mt. Pony Route 2 would have no impact on four historic architectural resources (two NRHP-listed properties, one NRHP-eligible resource, and one potentially eligible battlefield) and minimal impact on two resources (one NRHP-listed property and one

NRHP-eligible resource). Neither route would have a significant impact on any previously recorded historic architectural resources.

Tech Park Lines

ERM identified three archaeological sites within the right-of-way for Tech Park Route 1, two for Tech Park Route 2, and four for Tech Park Route 3.

ERM identified 16 previously recorded historic architectural resources within the VDHR study tiers for Tech Park Route 1 and 15 each Tech Park Routes 2 and 3. Tech Park Route 1 would have no impact on 13 resources (12 NRHP-listed, one locally significant) and minimal impact on three resources (two NRHP-listed and one NRHP-eligible). Tech Park Routes 2 and 3 would each have no impact on 12 resources (11 NRHP-listed and one locally significant) and a minimal impact on three resources (two NRHP-listed and one NRHP-eligible).

Overall, all three Tech Park Routes would have similar impacts on cultural resources. Tech Park Route 1 has one more archaeological resource than Routes 2 and 3, but all three routes would have a minimal impact on three architectural resources, with no minor, moderate, or severe impacts on cultural resources.

7 CONCLUSION

In conclusion, the Company selects Mt. Pony Route 1, Tech Park Route 1, the Oak Green Rebuild and Relocation, and the Remington Rebuild as the preferred alternative for the Project, after evaluating numerous routing constraints and opportunities identified through desktop study, stakeholder outreach, and fieldwork.

Overall, Mt. Pony Route 1 has less impact than Route 2 on existing and future land uses. Mt. Pony Route 1 requires less new right-of-way and maximizes collocation with existing transmission lines, in accordance with the Culpeper County Comprehensive Plan. It has fewer impacts to natural resources, including wetlands, VDCR conservation sites, ecological cores, and forested lands. Mt. Pony Route 1 has slightly greater impacts on visual resources (minor to moderate overall impacts of Route 1 and negligible to moderate impacts of Route 2) and cultural resources (more architectural and archaeological impacts, although none are severe). Both routes would have similar impacts on EJ and geological resources. Based on these factors and local land use plans, the Company recommends Mt. Pony Route 1 as the Mt. Pony Proposed Route.

Tech Park Route 1, if selected in addition to Mt. Pony Route 1, is the shortest Tech Park route and requires the least new right-of-way. It also maximizes collocation, has the support of local governments and most landowners crossed, and has the least impact on existing and future land uses. While Tech Park Route 1 crosses public land, Dominion coordinated with the agency that manages this land (Germanna Community College) to minimize impacts on current and future public land uses, including use of existing transmission line collocation and following parcel boundaries. The Company has obtained support from Germanna Community College for Tech Park Route 1. Tech Park Route 1 also has similar overall impacts as Routes 2 and 3 on natural, visual, cultural, EJ, and geological resources. Based on these factors and especially considering local land use plans, and support of affected landowners, the Company recommends Tech Park Route 1 as the Tech Park Proposed Route.

The Company did not identify or consider alternatives for the Oak Green Rebuild and Relocation and the Remington Rebuild, due to the use of existing rights-of-way and the preference by Dominion, the SCC, and local jurisdictions crossed (Culpeper, Fauquier, and Orange Counties) to use existing transmission line rights-of-way for new infrastructure. While the Oak Green Rebuild and Relocation would require a 25-foot expansion of the existing rights-of-way (except for crossings of conservation easements) and 0.4 mile of new variable-width rights-of-way, as well as replacement of existing structures with taller structures, it would not have a significant impact on existing or future land use, or natural, visual, cultural, EJ, or geologic resources. Because the Remington Rebuild will be entirely within existing Dominion rights-of-way or on Dominion-owned lands, it will not have a significant impact on existing or future land use, or natural, visual, cultural, EJ, or geologic resources.

Accordingly, the Company selected the Mt. Pony Route 1, Tech Park Route 1, Oak Green Rebuild and Relocation, and Remington Rebuild as the Proposed Route. These routes meet the Project purpose and need and avoid or reasonably minimize adverse impacts to the greatest extent reasonably practicable on the scenic assets, historic and cultural resources, and environment of the area concerned.

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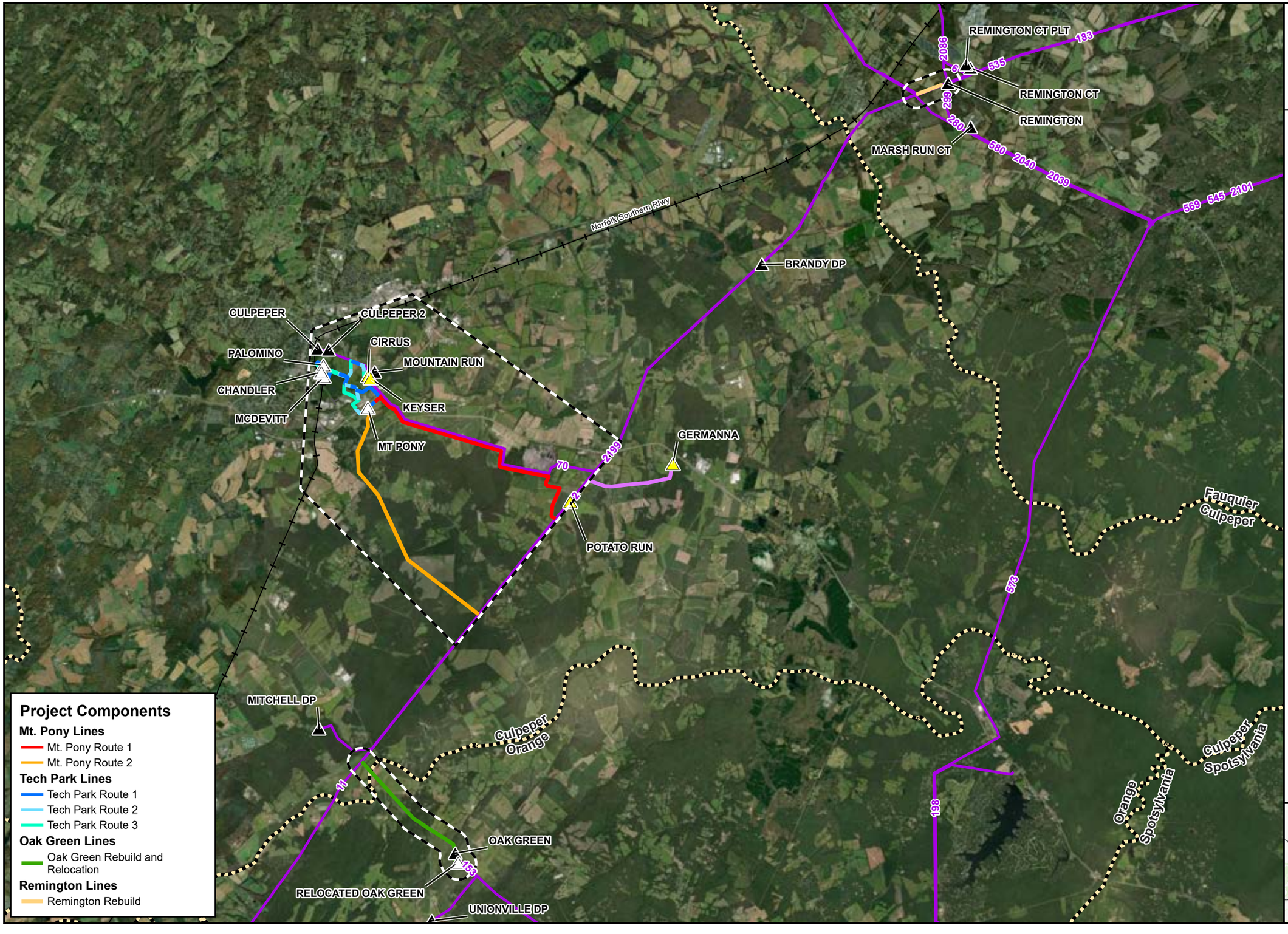
APPENDIX A FIGURES



Project Components

Mt. Pony Lines
- Mt. Pony Route 1
- Mt. Pony Route 2

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

Oak Green Lines
- Oak Green Rebuild and Relocation

Remington Lines
- Remington Rebuild

Dominion Energy®

Figure 1.1-1
Project Aerial Overview

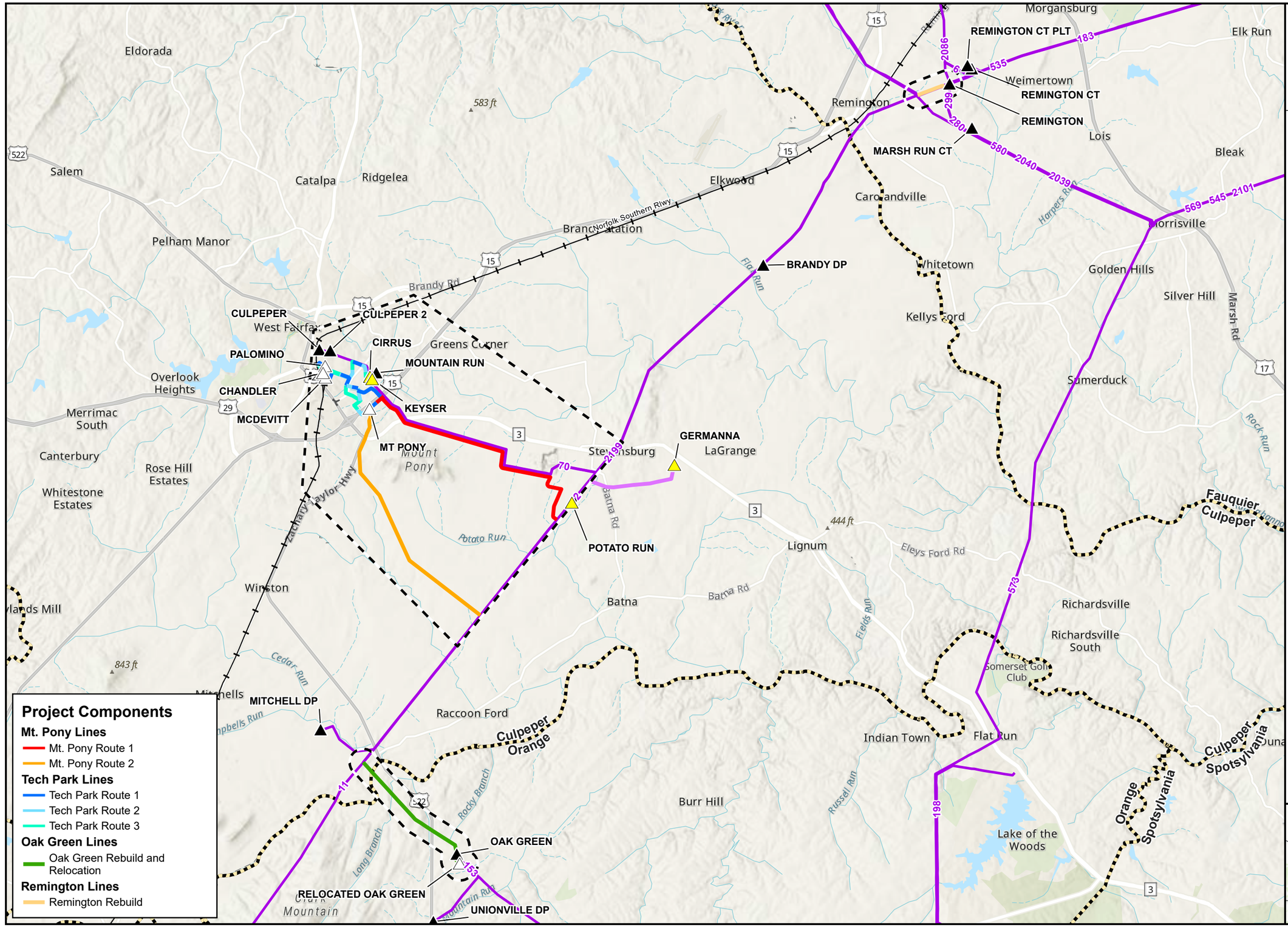
Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper, Fauquier, and Orange County, Virginia

- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary
- Study Area

0 6,000 12,000
Feet

1:108,000

ERM



Dominion Energy®

Figure 1.1-2
Project Topographic Overview

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper, Fauquier, and Orange County, Virginia

- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary
- Study Area

0 6,000 12,000 Feet

1:108,000

ERM

Dominion Energy®

Figure 3.1-1
Study Area Aerial Overview

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper, Fauquier, and Orange County, Virginia

Index Map

- Index Page
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary

0 6,000 12,000
Feet

1:108,000

ERM

Project Components

Mt. Pony Lines
- Mt. Pony Route 1
- Mt. Pony Route 2

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

Oak Green Lines
- Oak Green Rebuild and Relocation

Remington Lines
- Remington Rebuild

Project Location

Dominion Energy

Figure 3.1-1
Study Area Aerial Overview

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County, Virginia

CULPEPER
CULPEPER 2
PALOMINO
CHANDLER
MCDEVITT
CIRRUS
KEYSER
MOUNTAIN RUN
MT PONY
GERMANNA
POTATO RUN
Orange Rd
James Monroe Hwy N
James Madison Hwy
Zachary Taylor Hwy
Germanna Hwy
Norfolk Southern Rwy
Stevensburg Rd
York Rd
Batna Rd
15
522
3
70
2
2199

Project Components

Mt. Pony Lines
- Mt. Pony Route 1
- Mt. Pony Route 2

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary
- Culpeper Tech Zone
- Study Area

0 2,000 4,000
Feet

1:42,000

ERM

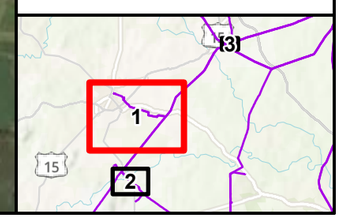


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Figure 3.1-1
Study Area Aerial Overview

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper and Orange County, Virginia

- ▲ Existing Substation/Switching Station
- △ Proposed Substation/Switching Station
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- County Boundary
- Right-of-Way (Existing and Proposed)
- Study Area

0 925 1,850
Feet

1:16,000

ERM

N W E S

Project Components
Oak Green Lines
- Oak Green Rebuild and Relocation

OAK GREEN
RELOCATED OAK GREEN
Culpeper County
Orange County
Somerville Rd
Twin Mountains Rd
Bushy Mountain Rd
Zachary Taylor Hwy
Raccoon Ford Rd
True Blue Rd
Oak Green Rd
Old Office Rd
Meadow Dr
River Rd
2199
2
11
153
193
15

Dominion Energy

Figure 3.1-1
Study Area Aerial Overview

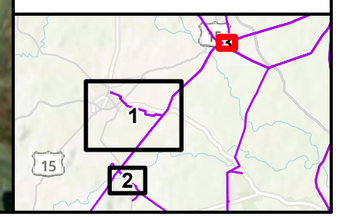
Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Fauquier County, Virginia

- Existing Substation/Switching Station
- Existing Dominion Transmission Line
- Railroad
- Right-of-Way (Existing)
- Study Area

0 430 860
Feet

1:7,200

ERM



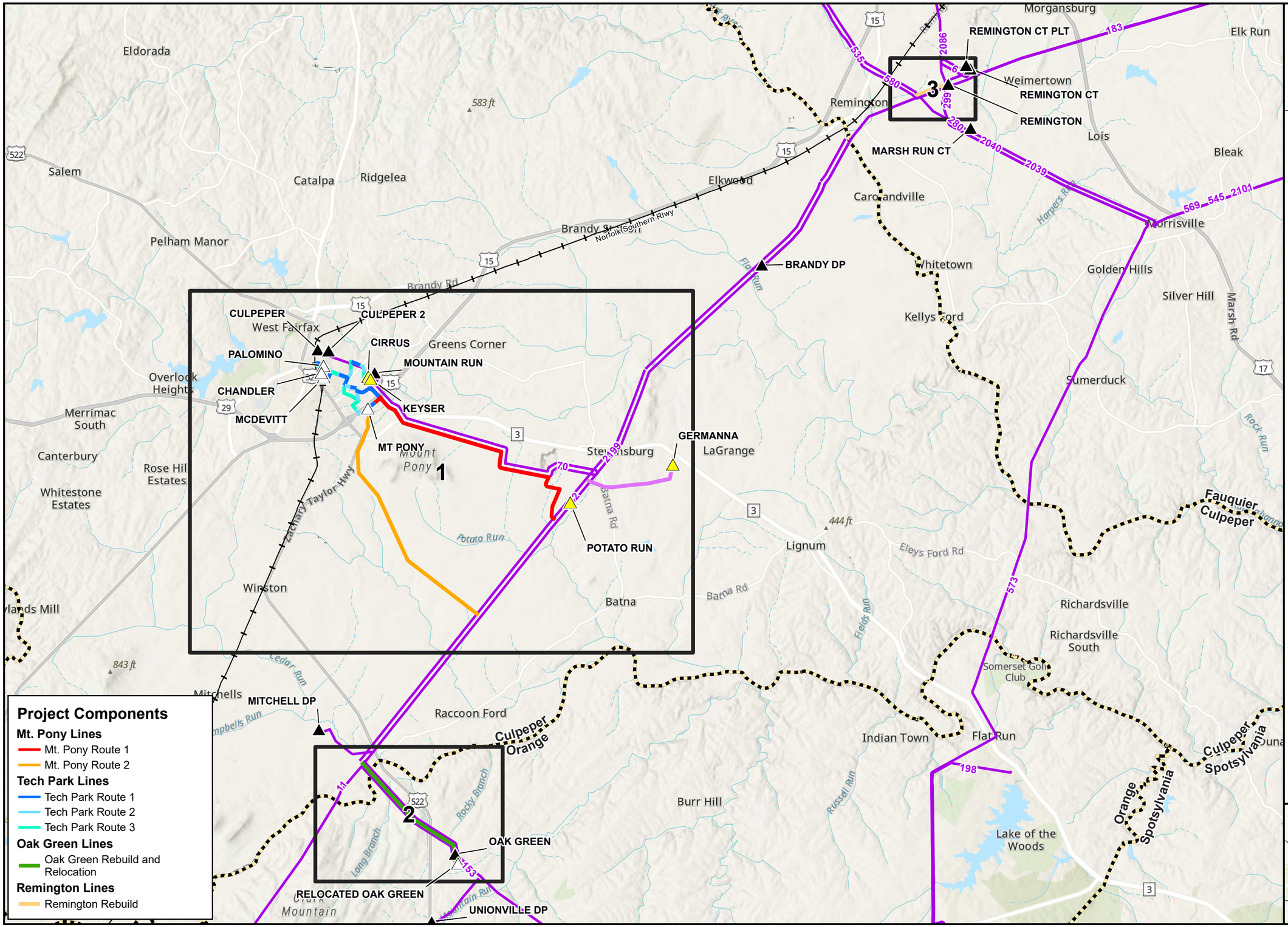


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Figure 3.1-2
Study Area Topographic Overview

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper, Fauquier, and Orange County, Virginia

Index Map

- Index Page
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary

0 6,000 12,000
Feet

1:108,000

N
W E
S

ERM

Dominion Energy

Figure 3.1-2
Study Area Topographic Overview

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County, Virginia

- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary
- Right-of-Way
- Culpeper Tech Zone
- Study Area

0 2,000 4,000
Feet

1:42,000

ERM

N W E S

Project Components

Mt. Pony Lines
- Mt. Pony Route 1
- Mt. Pony Route 2

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

CULPEPER
CULPEPER 2
PALOMINO
CHANDLER
MCDEVITT
CIRRUS
KEYSER
MOUNTAIN RUN
MT PONY
POTATO RUN
GERMANNA
West Fairfax
Culpeper
Greens Corner
Country Club of Culpeper
Winfrey
Stevensburg
Rotherwood
Acres
Fairview Estates
Winston
Batna
Germanna Hwy
James Monroe Hwy N
James Madison Hwy
Orange Rd
Zachary Taylor Hwy
Stevensburg Rd
Batna Rd
Norfolk Southern Rlwy
Mount Pony
Stony Point
Coles Hill
Mountain Run
Potato Run
Kibler Rd
Mt Pony Rd
Cedar Grove Rd
Raccoon Ford Rd
Wilson Rd
Cedar Run Church Rd
Buck Run
Sumerduck Run
Winston Rd
Laurel St
Sunset Ln
Teleios Ln
Glen Ella Rd
Coles Hill Rd
Brook Run
753 ft
546 ft
511 ft
472 ft
384 ft
349 ft
70
2
2199
15
522
3
29

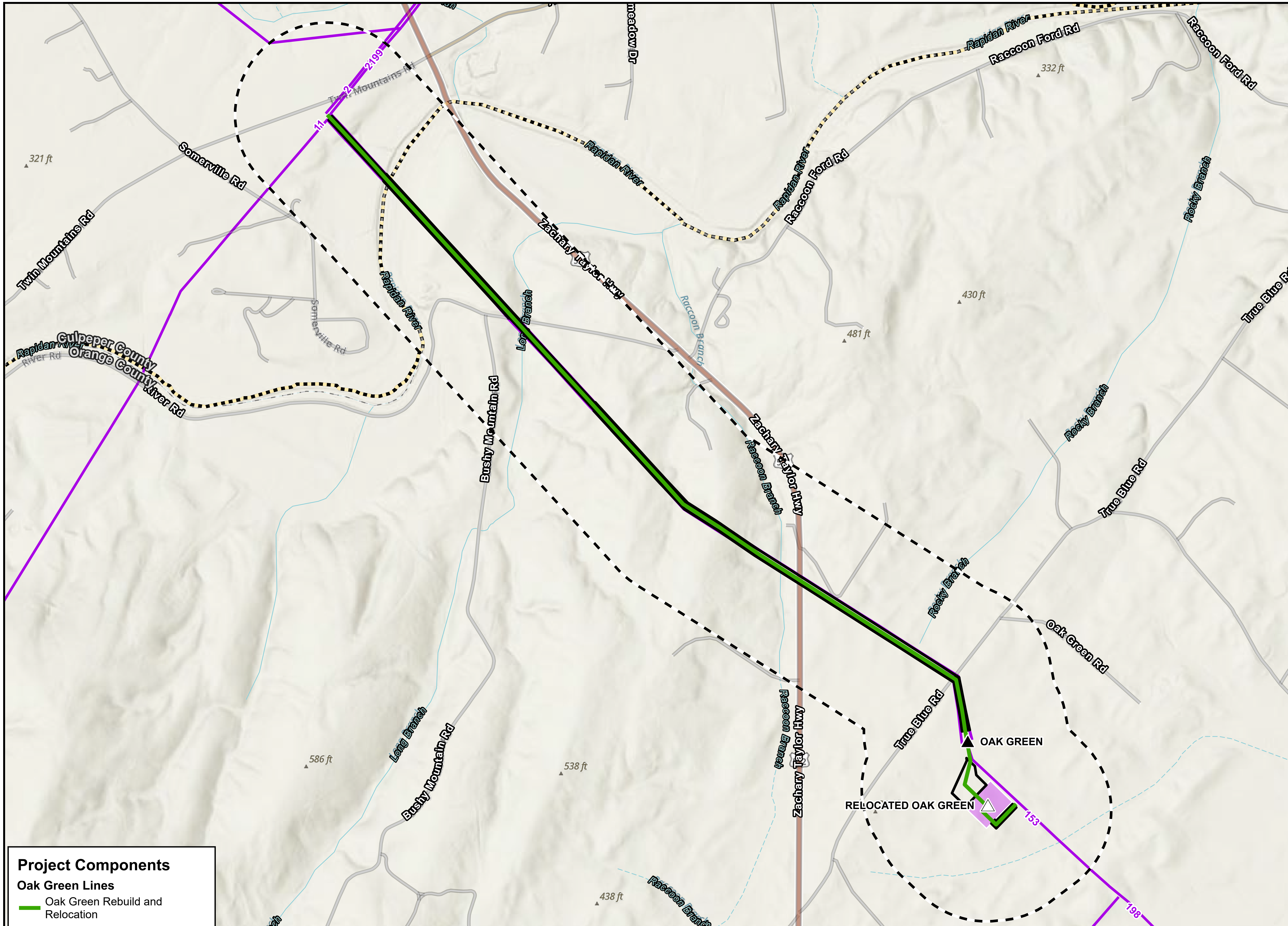

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Figure 3.1-2
Study Area Topographic Overview

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper and Orange County, Virginia

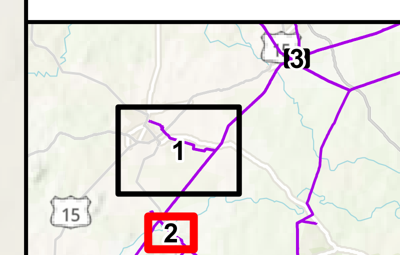
Page 2 of 3

- Existing Substation/Switching Station
- Proposed Substation/Switching Station
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- County Boundary
- Right-of-Way (Existing and Proposed)
- Study Area

0 925 1,850
Feet
1:16,000

ERM

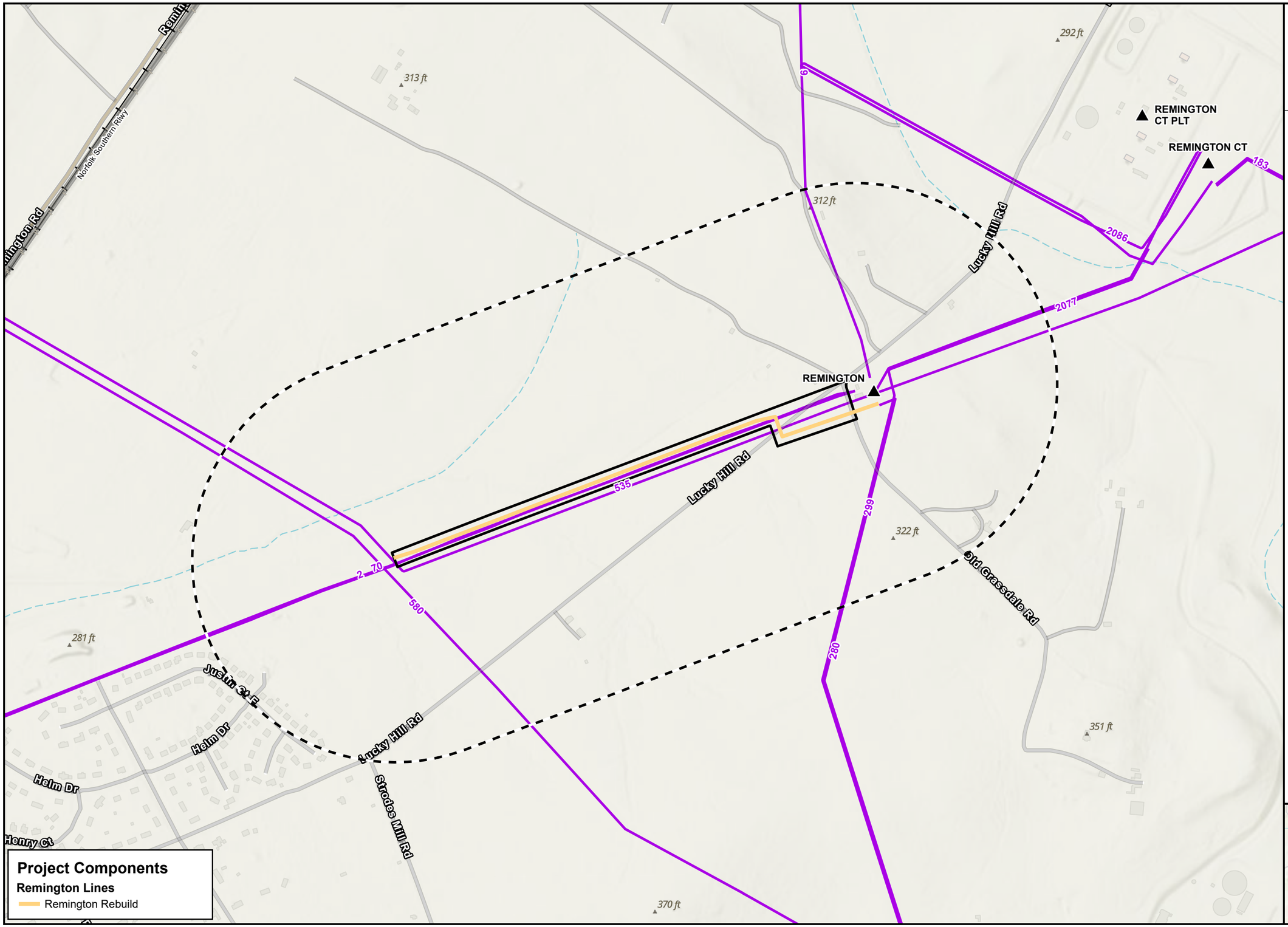
N W E S



Dominion Energy

Figure 3.1-2
Study Area Topographic Overview

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Fauquier County, Virginia



- Existing Substation/Switching Station
- Existing Dominion Transmission Line
- Railroad
- Right-of-Way (Existing)
- Study Area

0 430 860
Feet

1:7,200

N
W E
S

ERM

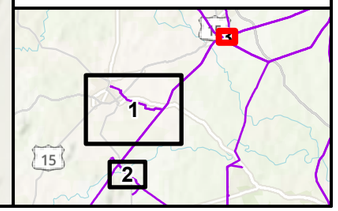


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Figure 3.2-1
Major Routing Constraints and Opportunities

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper, Fauquier, and Orange County, Virginia

Index Map

Project Components

Mt. Pony Lines
- Mt. Pony Route 1
- Mt. Pony Route 2

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

Oak Green Lines
- Oak Green Rebuild and Relocation

Remington Lines
- Remington Rebuild

- Index Page
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary

0 6,000 12,000
Feet

1:108,000

ERM

Project Location

Dominion Energy®

Figure 3.2-1
Major Routing Constraints and Opportunities

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County, Virginia

- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Right-of-Way
- Cemetery
- Place of Worship
- School
- Customer Data Center
- Planned Development
- Proposed Data Center Building
- VDOT Road Alignment
- VDOT Virginia Scenic Byways
- County Boundary
- Airport/Airstrip
- Heliport
- VA Outdoors Foundation Easement
- Federal Lands
- State Lands
- Local Lands
- Other Electric Transmission Lines
- Natural Gas Pipeline
- NHD Stream

0 2,000 4,000
Feet

1:36,000

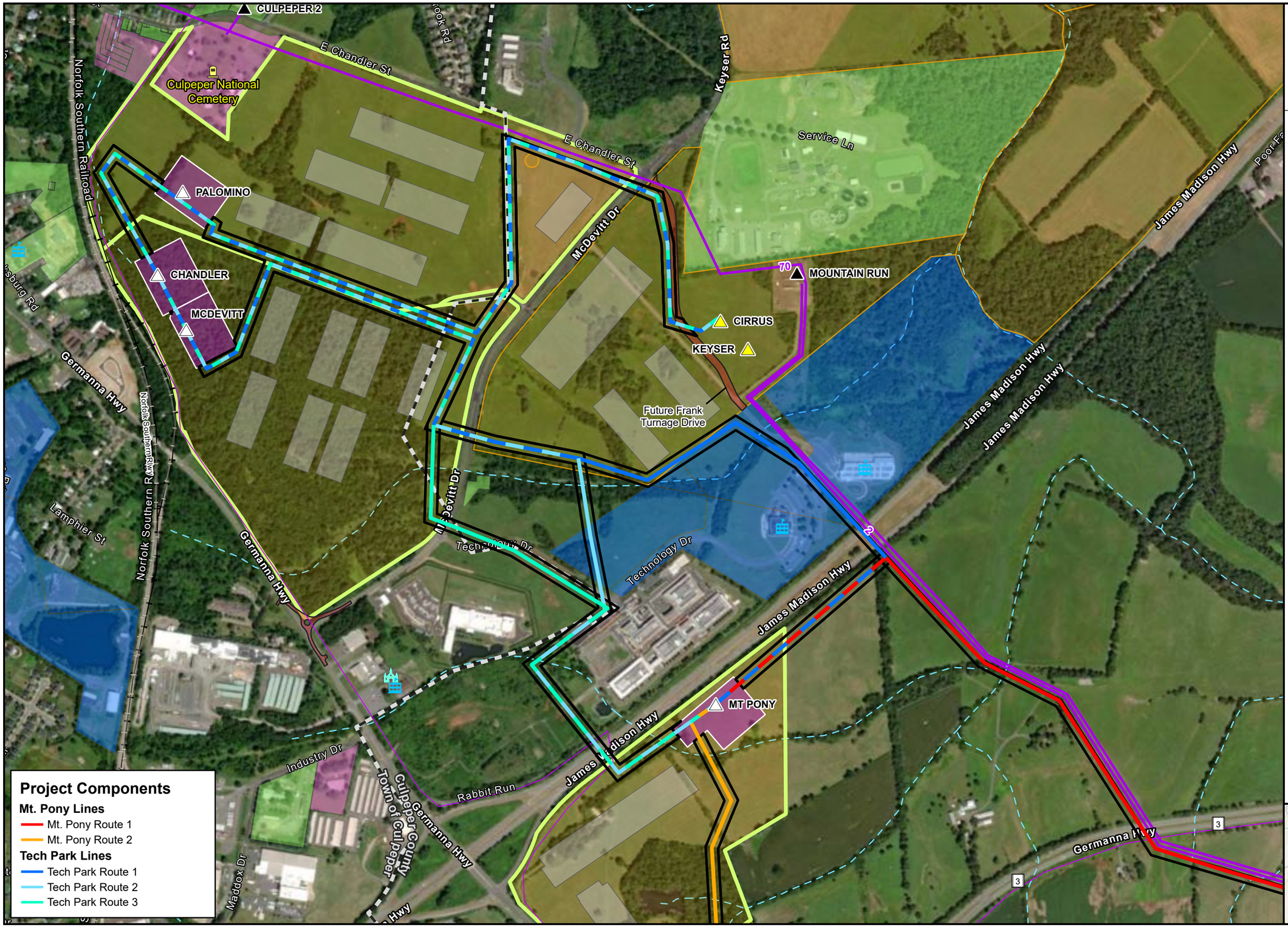
ERM

N W E S

Project Components

Mt. Pony Lines
- Mt. Pony Route 1
- Mt. Pony Route 2

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3



Dominion Energy®

Figure 3.2-1
Major Routing Constraints and Opportunities

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County, Virginia

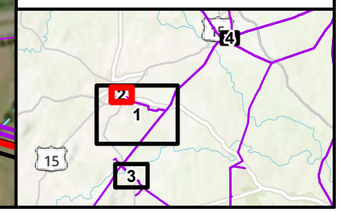
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way
- Cemetery
- Place of Worship
- School
- Customer Data Center
- Planned Development
- Proposed Data Center Building
- VDOT Road Alignment
- Town - County Boundary
- Federal Lands
- State Lands
- Local Lands
- Other Electric Transmission Lines
- NHD Stream

0 525 1,050
Feet

1:9,000

N
W E
S

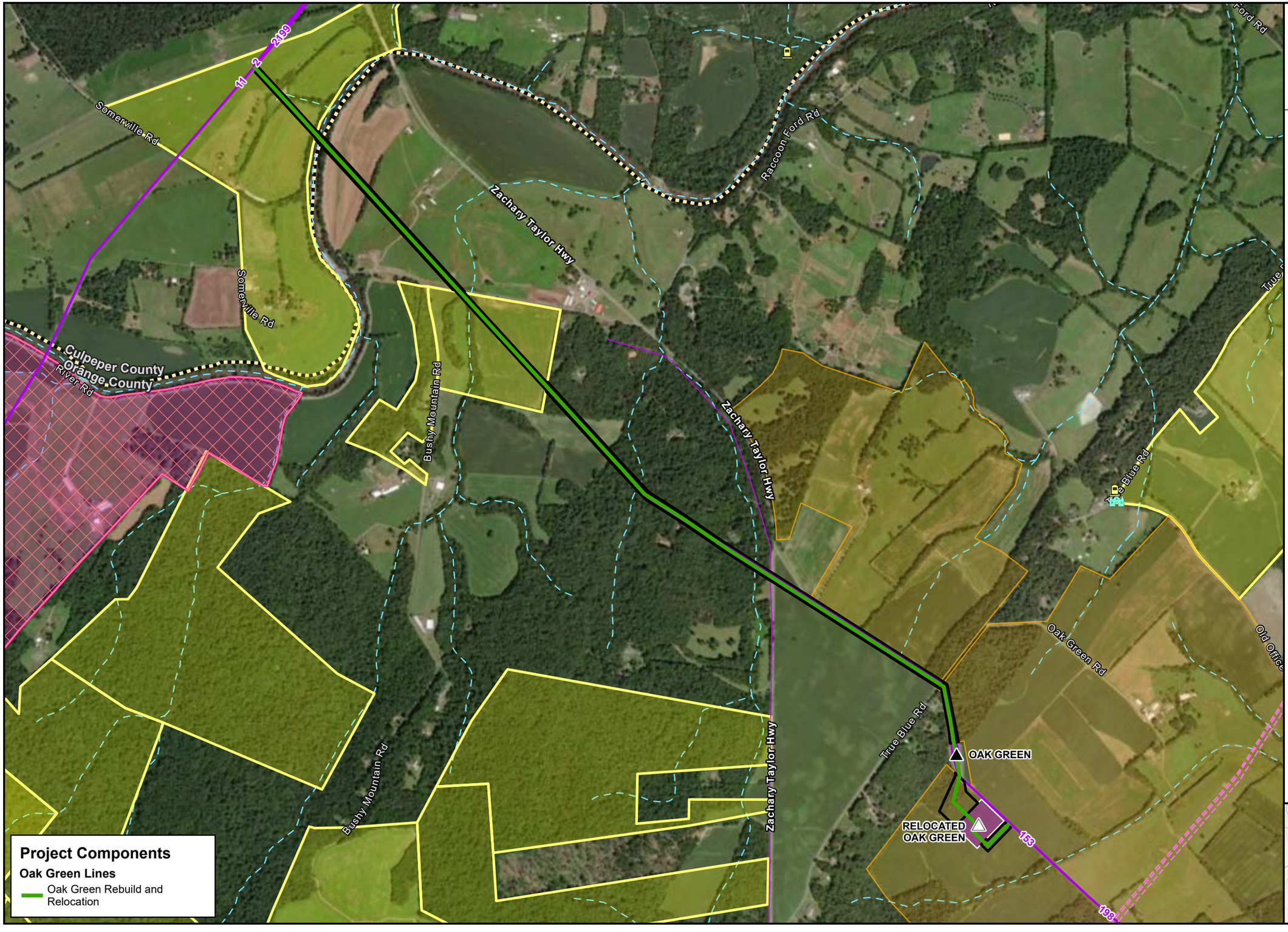
ERM



Dominion Energy

Figure 3.2-1
Major Routing Constraints and Opportunities

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper and Orange County, Virginia



- Existing Substation/Switching Station
- Proposed Substation/Switching Station
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way (Existing and Proposed)
- Cemetery
- Place of Worship
- Planned Development
- County Boundary
- Natural Resource Conservation Service Easement
- Piedmont Environmental Council Easement
- VA Outdoors Foundation Easement
- Other Electric Transmission Lines
- Natural Gas Pipeline
- NHD Stream

0 840 1,680
Feet

1:14,400

N W E S

ERM

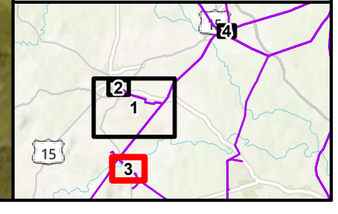


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Figure 3.2-1
Major Routing Constraints and Opportunities

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Fauquier County, Virginia

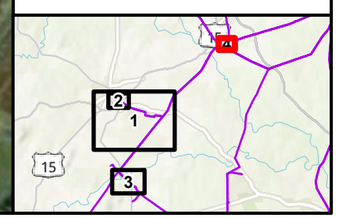
- Existing Substation/Switching Station
- Existing Dominion Transmission Line
- Right-of-Way (Existing)
- Fauquier County BOS Easement
- Natural Gas Pipeline
- NHD Stream

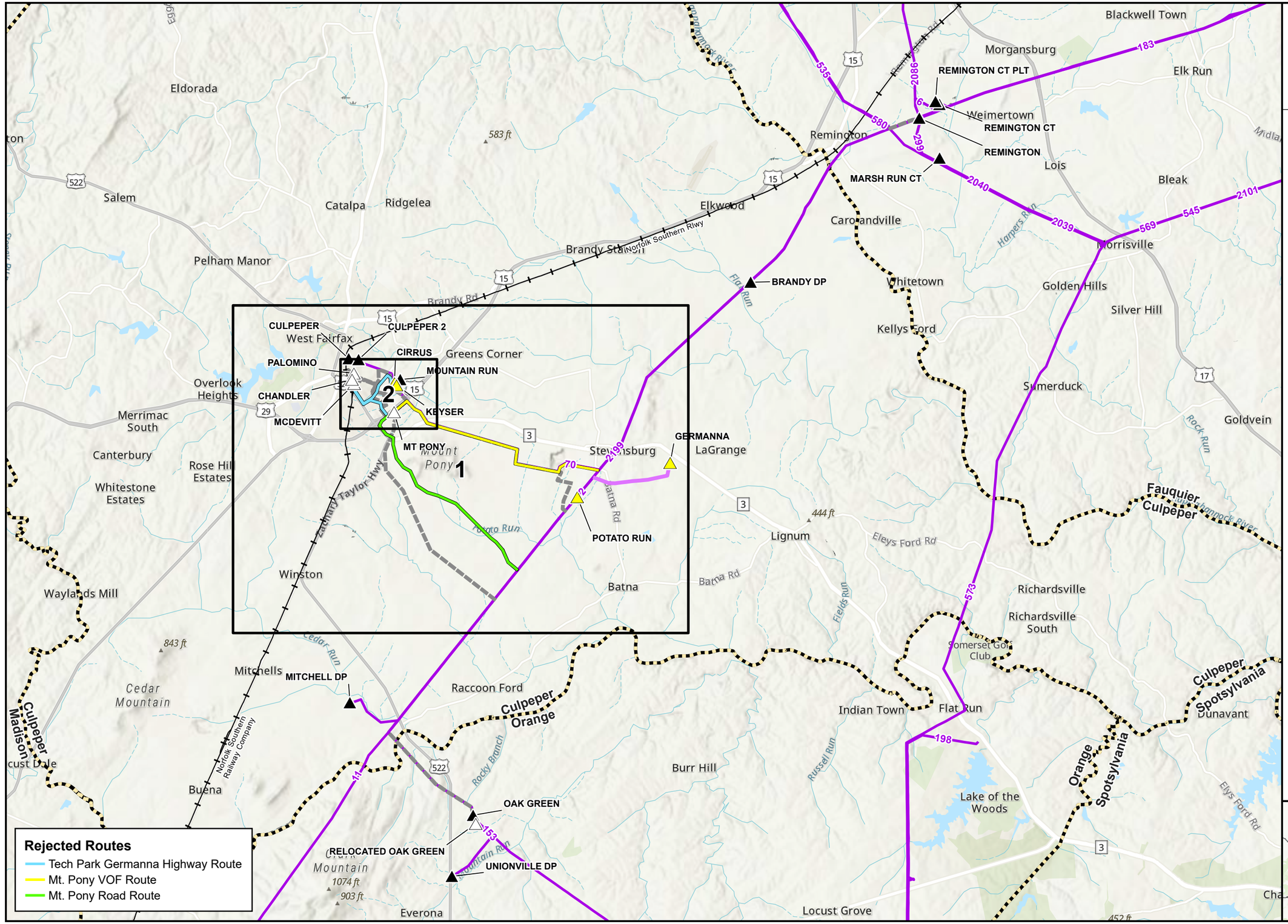
0 430 860
Feet

1:7,200

ERM

N W E S





Dominion Energy®

Figure 4.6-1
Routes Rejected from Further Consideration

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper, Fauquier, and Orange County, Virginia

Index Map

- Page Index
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Filed Routes
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary
- Right-of-Way

0 6,000 12,000
Feet

1:119,000

ERM

Dominion Energy

Figure 4.6-1
Routes Rejected from Further Consideration

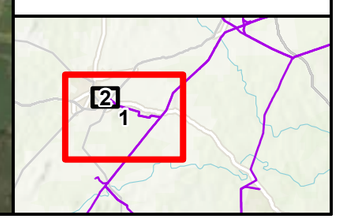
Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County, Virginia

- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Filed Routes
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary
- Right-of-Way

0 2,000 4,000
Feet

1:42,000

ERM



Dominion Energy®

Figure 4.6-1
Routes Rejected from Further Consideration

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County, Virginia

CULPEPER
CULPEPER 2
PALOMINO
CHANDLER
MCDEVITT
MOUNTAIN RUN
CIRRUS
KEYSER
MT PONY
E Chandler St
S Main St
S East St
Orange Rd
Keyser Rd
Service Ln
James Madison Hwy
Old Fredericksburg Rd
Norfolk Southern Rwy
Germanna Hwy
Maddox Dr
Standpipe Rd
522
3
15
70
2

Rejected Routes
- Tech Park Germanna Highway Route
- Mt. Pony VOF Route
- Mt. Pony Road Route

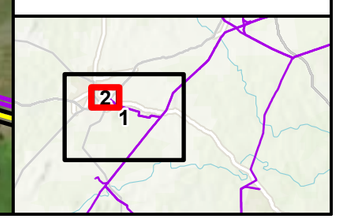
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Filed Routes
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Railroad
- Right-of-Way

0 580 1,160
Feet

1:10,000

N
W E
S

ERM



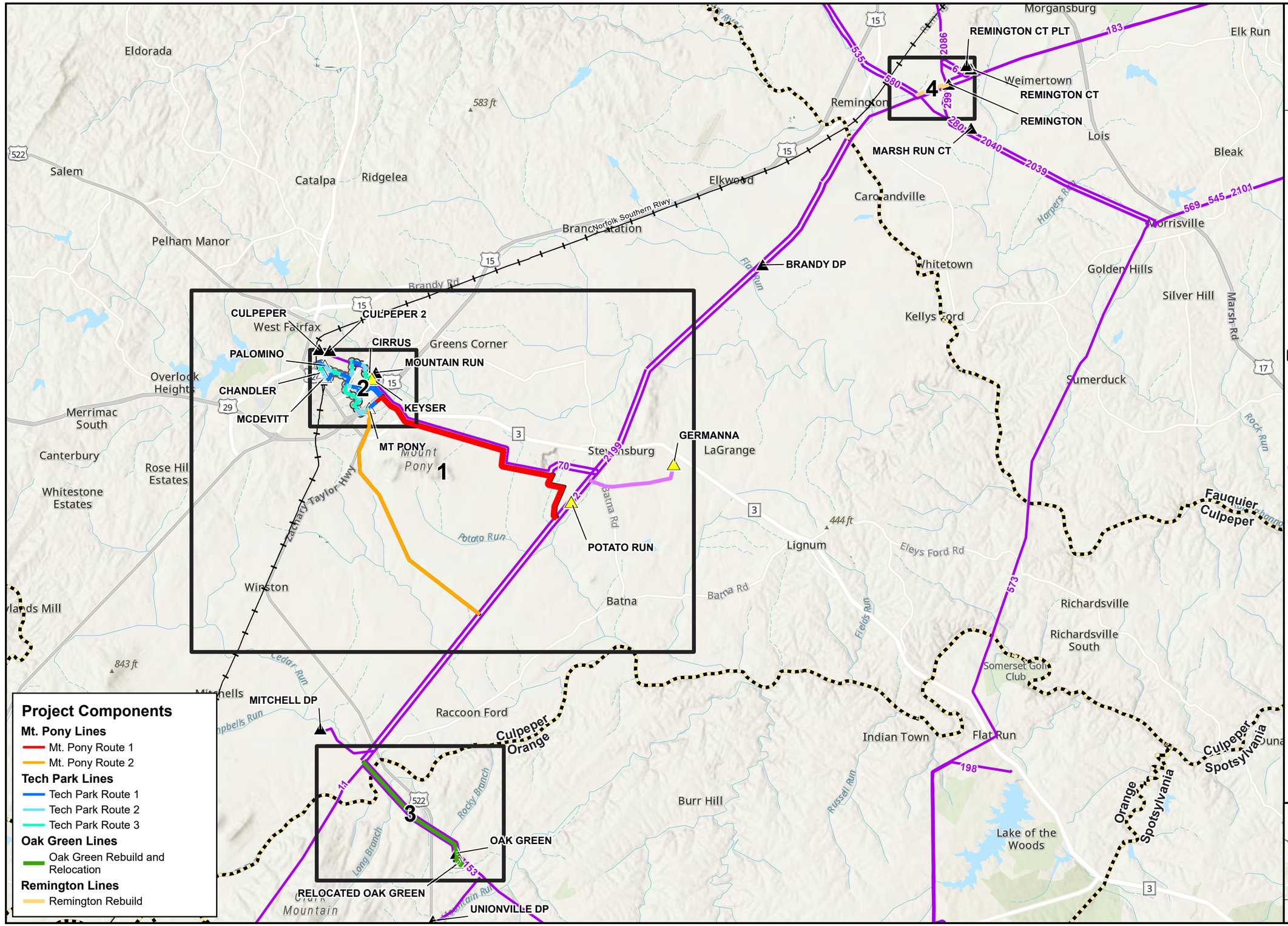
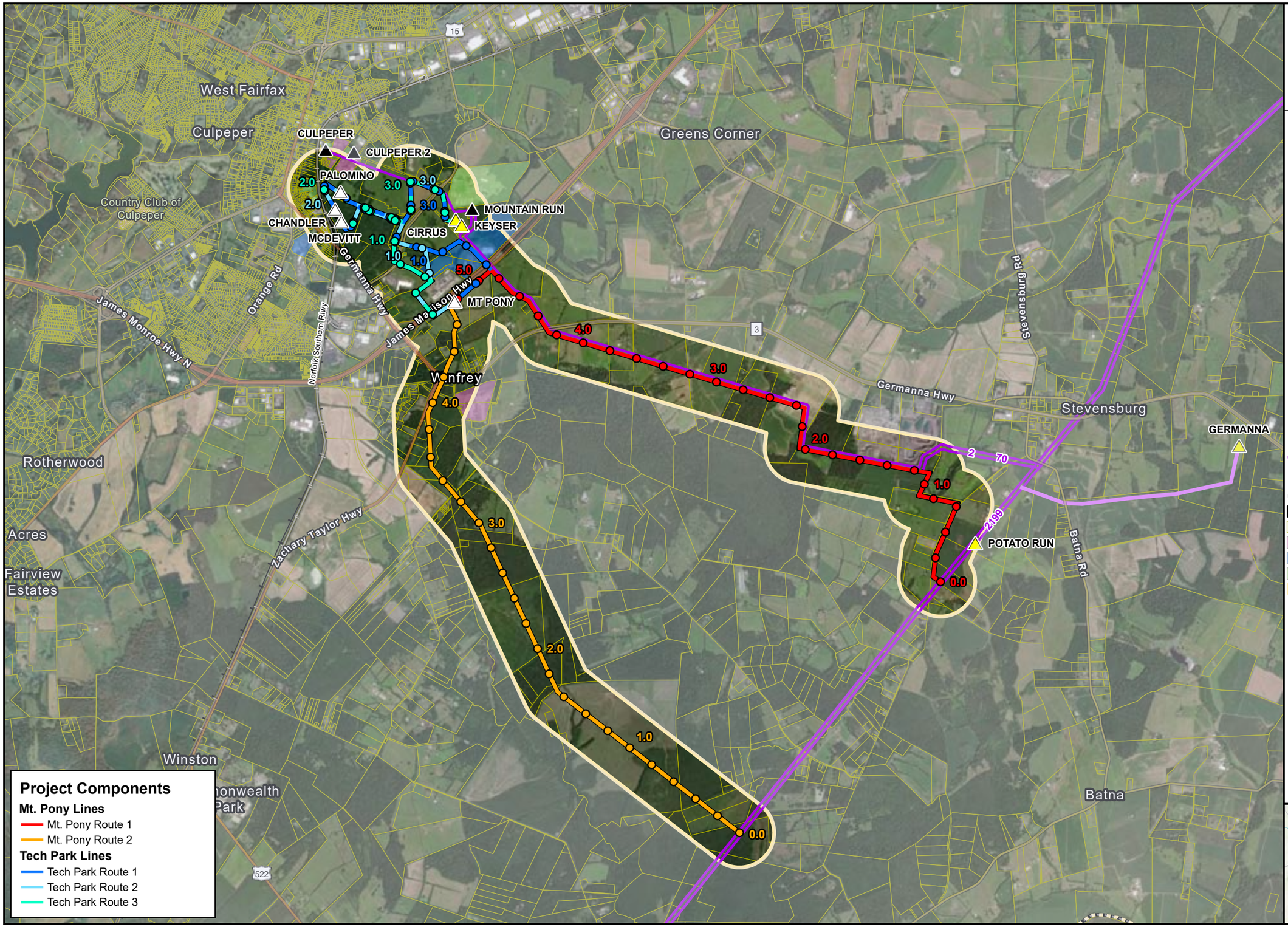


Figure 5.1.1-1
Land Ownership within 0.25 mile of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper, Fauquier, and Orange County, Virginia

Index Map



Project Components

Mt. Pony Lines
- Mt. Pony Route 1
- Mt. Pony Route 2

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

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Figure 5.1.1-1
Land Ownership within 0.25 mile of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Virginia

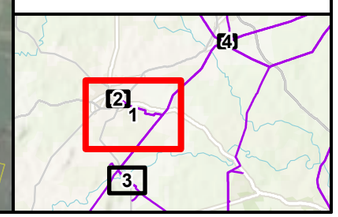
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Milepost
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- County Boundary
- Right-of-Way
- Parcel Boundary
- Federal Lands
- State Lands
- Local Lands
- 0.25-Mile Buffer

0 2,000 4,000
Feet

1:42,000

ERM

N
W E
S



Dominion Energy

Figure 5.1.1-1
Land Ownership within 0.25 mile of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Virginia

- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way
- Parcel Boundary
- Federal Lands
- State Lands
- Local Lands
- 0.25-Mile Buffer

0 580 1,160
Feet

1:10,000

ERM

Project Components

Mt. Pony Lines
- Mt. Pony Route 1
- Mt. Pony Route 2

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

Dominion Energy®

Figure 5.1.1-1
Land Ownership within 0.25 mile of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
County, Virginia

- ▲ Existing Substation/Switching Station
- △ Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- County Boundary
- Right-of-Way (Existing and Proposed)
- Parcel Boundary
- 0.25-Mile Buffer

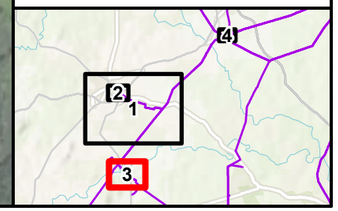
** No public lands are located within the map extent

0 925 1,850
Feet

1:16,000

N
W E
S

ERM



Dominion Energy

Figure 5.1.1-1
Land Ownership within 0.25 mile of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Virginia

- Existing Substation/Switching Station
- Milepost
- Existing Dominion Transmission Line
- Right-of-Way (Existing)
- Parcel Boundary
- 0.25-Mile Buffer

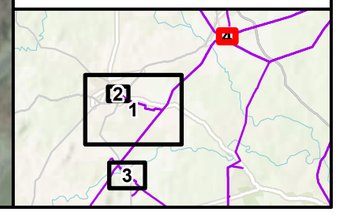
** No public lands are located within the map extent

0 430 860
Feet

1:7,200

N
W E
S

ERM



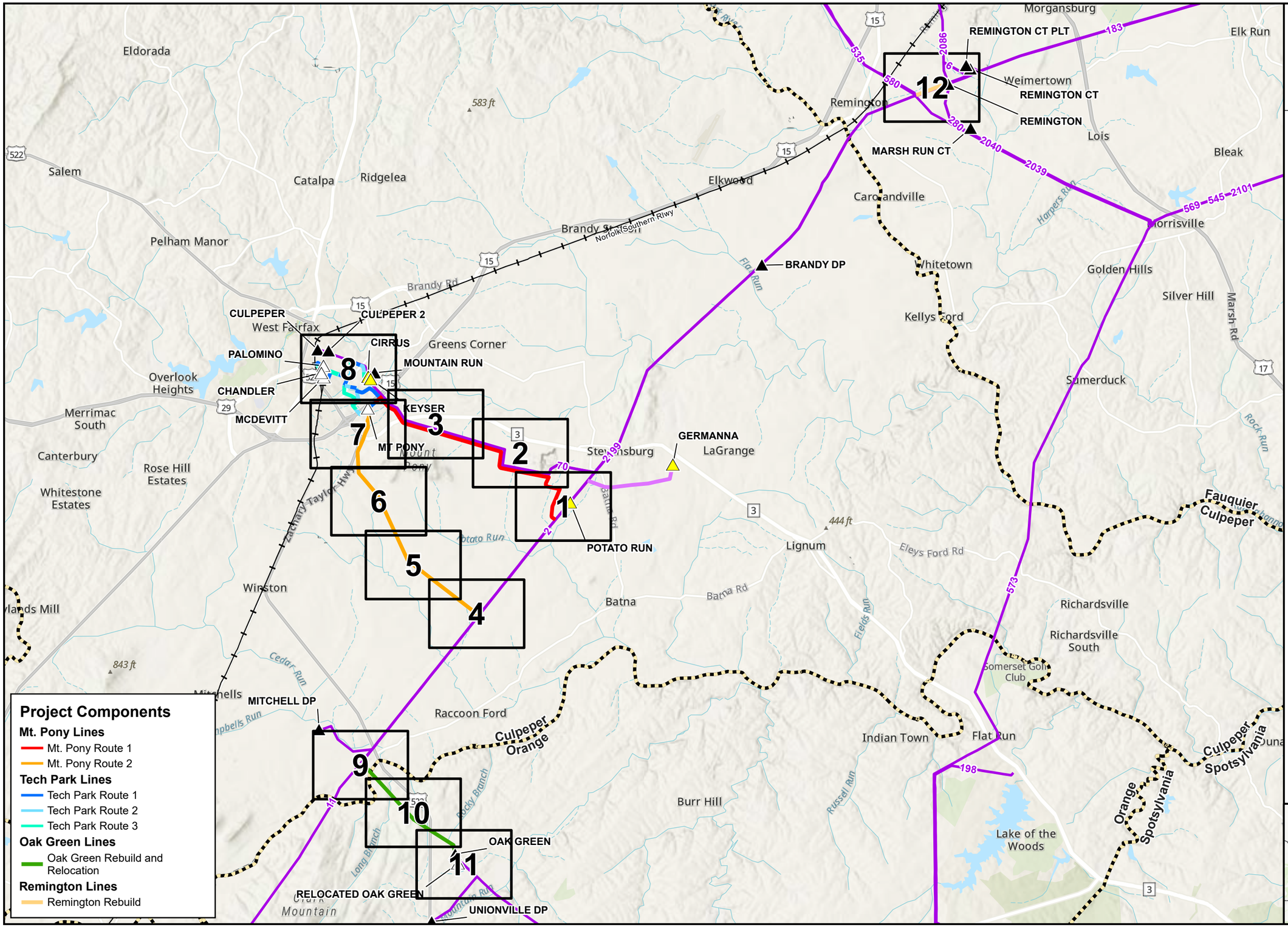


Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper, Fauquier, and Orange County, Virginia

Index Map

- Page Index
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary

0 6,000 12,000 Feet

1:108,000

ERM

Dominion Energy

Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia

70
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Alvere Rd
Alvere Rd
Blackjack Rd
Blackjack Rd
Batna Rd
POTATO RUN
2-2199
Carolina Ln
Kibler Rd

Project Components
Mt. Pony Lines
Mt. Pony Route 1

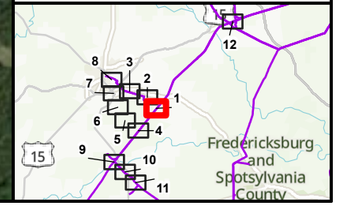
- Approved Future Substation/ Switching Station
- Milepost
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Right-of-Way
- 0.25-Mile Buffer

Land Use ERM Type
- Agricultural
- Developed
- Forested
- Open Space
- Open Water

0 480 960
Feet
1:8,000

ERM

N
W E
S



Dominion Energy

Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia

Windy Acres Rd
Germanna Hwy
Clover Hill Rd
Ivere Rd
Mack Rd
2.8
2.6
2.4
2.2
2.0
70
1.8
1.6
2
1.4
1.2
1.0
0.8

Project Components
Mt. Pony Lines
Mt. Pony Route 1

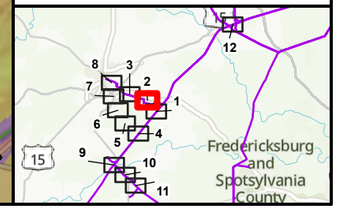
Milepost
Existing Dominion Transmission Line
Right-of-Way
0.25-Mile Buffer

Land Use ERM Type
Agricultural
Developed
Forested
Open Space
Open Water

0 480 960
Feet

1:8,000

ERM



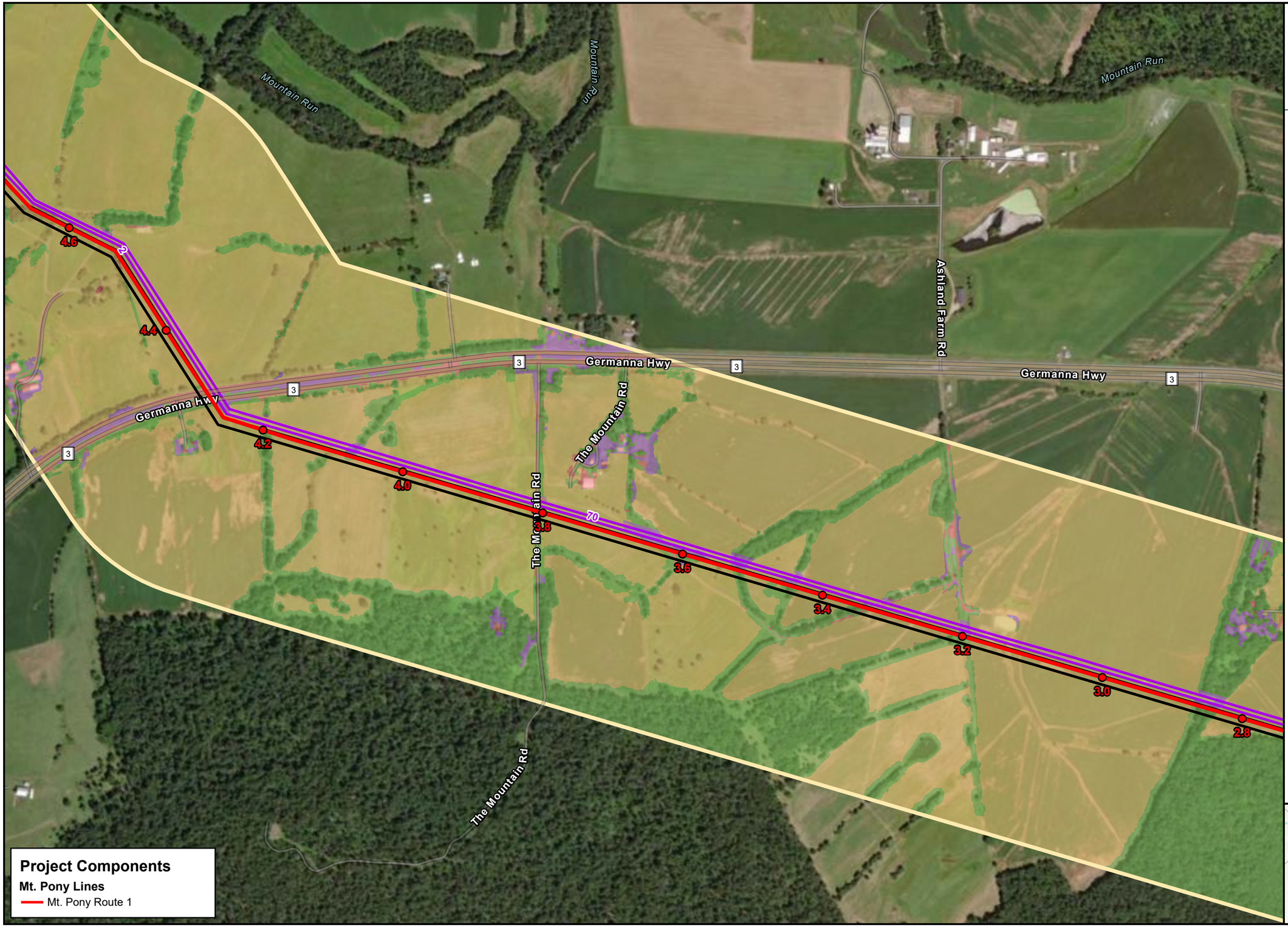


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Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia

- Milepost
- Existing Dominion Transmission Line
- Right-of-Way
- 0.25-Mile Buffer

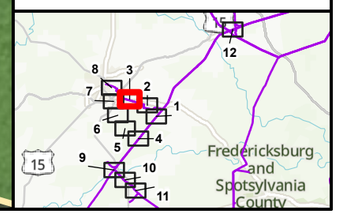
Land Use ERM Type
- Agricultural
- Developed
- Forested
- Open Space
- Open Water

0 480 960
Feet

1:8,000

ERM

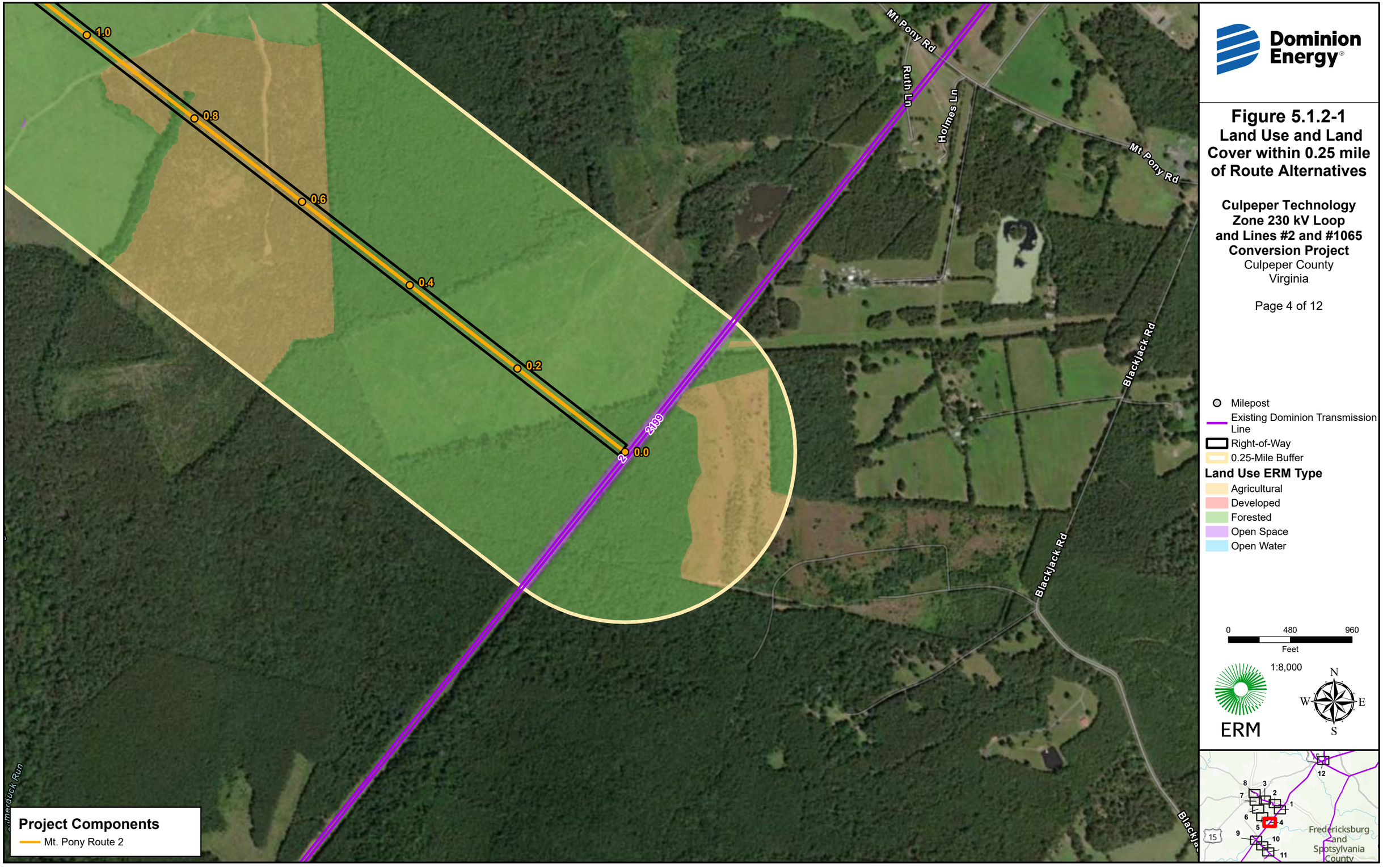
N
W E
S

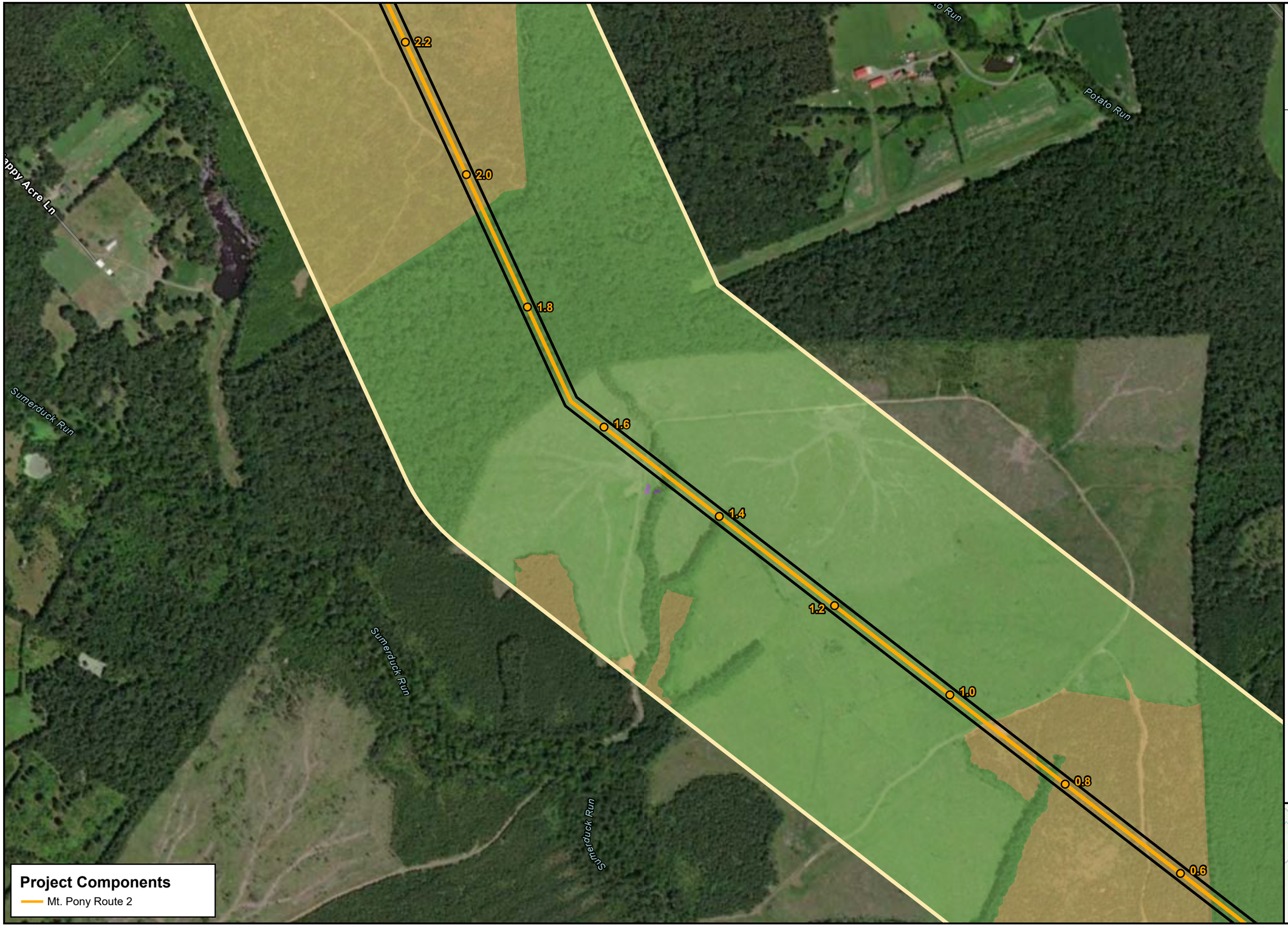


Dominion Energy

Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia





Dominion Energy

Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia

- Milepost
- Right-of-Way
- 0.25-Mile Buffer

Land Use ERM Type
- Agricultural
- Developed
- Forested
- Open Space
- Open Water

0 480 960
Feet

1:8,000

ERM

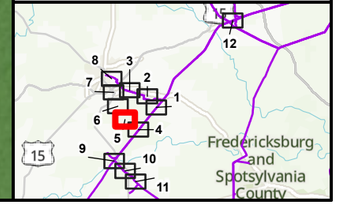


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Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia

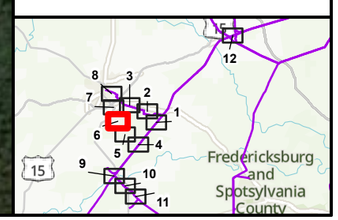
- Milepost
- Right-of-Way
- 0.25-Mile Buffer

Land Use ERM Type
- Agricultural
- Developed
- Forested
- Open Space
- Open Water

0 480 960
Feet

1:8,000

ERM



Dominion Energy®

Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia

- Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way
- 0.25-Mile Buffer

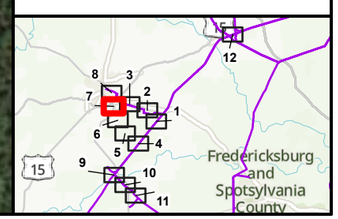
Land Use ERM Type
- Agricultural
- Developed
- Forested
- Open Space
- Open Water

0 480 960
Feet

1:8,000

ERM

N
W E
S



Dominion Energy

Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia

- ▲ Existing Substation/Switching Station
- △ Approved Future Substation/ Switching Station
- △ Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way
- 0.25-Mile Buffer

Land Use ERM Type
- Agricultural
- Developed
- Forested
- Open Space
- Open Water

0 480 960
Feet

1:8,000

ERM

N W E S

Project Components

Mt. Pony Lines
- Mt. Pony Route 1

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

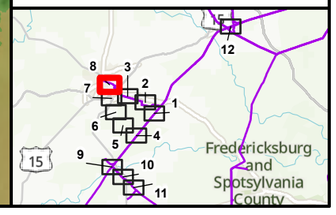


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Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper and Orange Counties
Virginia

- Milepost
- Existing Dominion Transmission Line
- County Boundary
- Right-of-Way (Existing and Proposed)
- 0.25-Mile Buffer

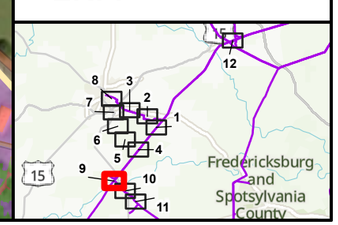
Land Use ERM Type
- Agricultural
- Developed
- Forested
- Open Space
- Open Water

0 480 960
Feet

1:8,000

ERM

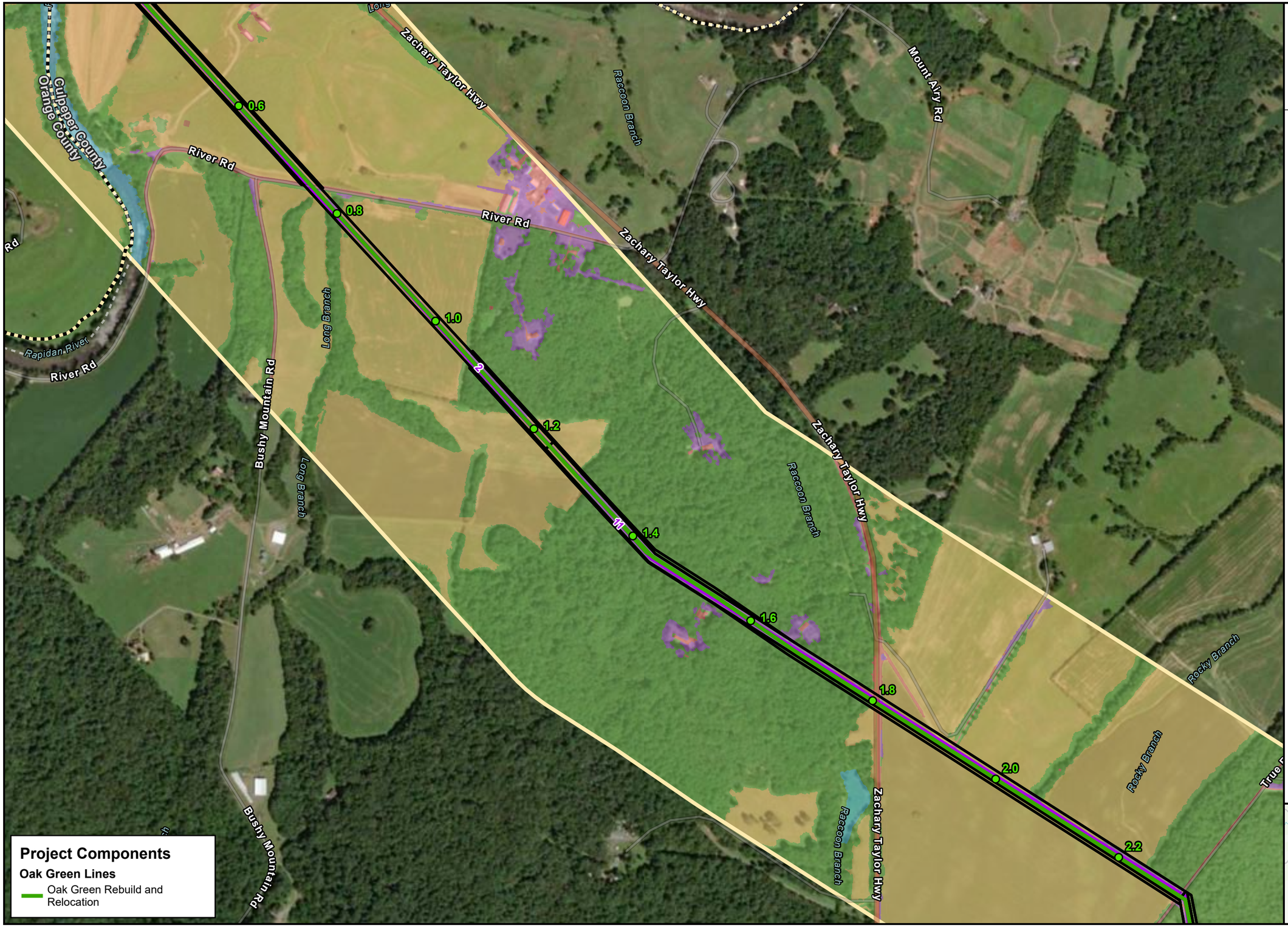
N W E S



Dominion Energy

Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Orange County
Virginia



- Milepost
- Existing Dominion Transmission Line
- County Boundary
- Right-of-Way (Existing and Proposed)
- 0.25-Mile Buffer

Land Use ERM Type

- Agricultural
- Developed
- Forested
- Open Space
- Open Water

0 480 960
Feet

1:8,000

ERM

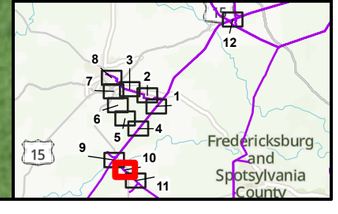


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Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Orange County
Virginia

- Existing Substation/Switching Station
- Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way (Existing and Proposed)
- 0.25-Mile Buffer

Land Use ERM Type

- Agricultural
- Developed
- Forested
- Open Space
- Open Water

0 480 960
Feet

1:8,000

ERM

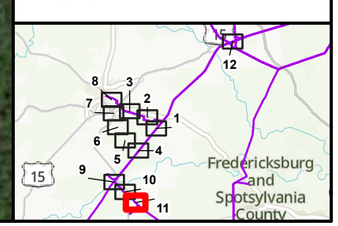

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Figure 5.1.2-1
Land Use and Land Cover within 0.25 mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Fauquier County
Virginia

- Existing Substation/Switching Station
- Milepost
- Existing Dominion Transmission Line
- Right-of-Way (Existing)
- 0.25-Mile Buffer

Land Use ERM Type

- Agricultural
- Developed
- Forested
- Open Space
- Open Water

0 480 960
Feet

1:8,000

ERM

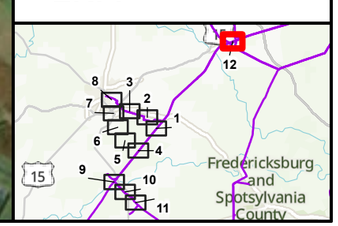

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Figure 5.1.3-1
Zoning Districts

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper, Fauquier, and Orange County, Virginia

Index Map

- Page Index
- Existing Substation
- Future Substation
- Proposed Substation
- Existing Dominion Transmission Line
- Approved Germanna Lines
- Railroad
- County Boundary

0 6,000 12,000
Feet

1:108,000

ERM

Project Components

Mt. Pony Lines
- Mt. Pony Route 1
- Mt. Pony Route 2

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

Oak Green Lines
- Oak Green Rebuild and Relocation

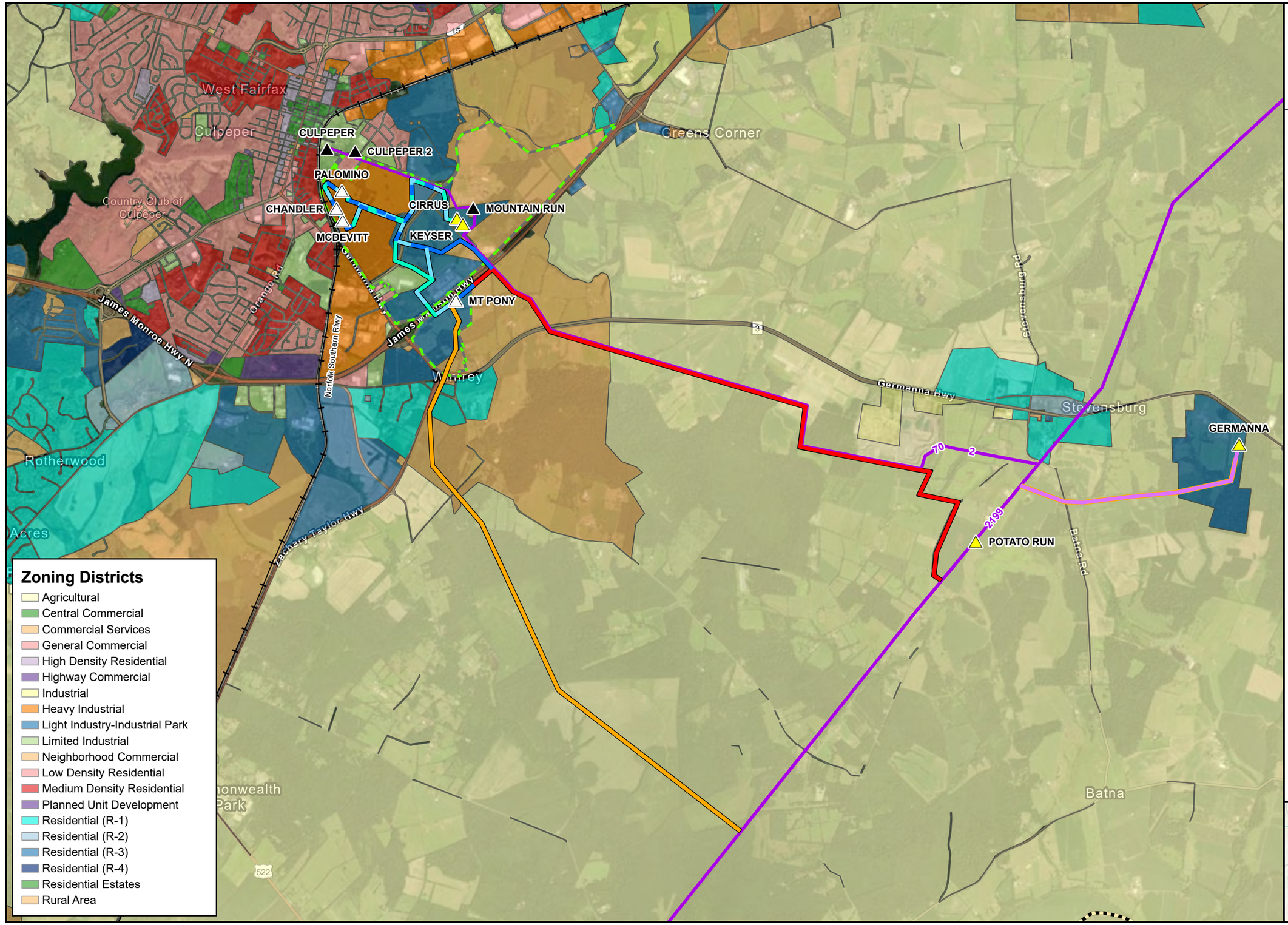
Remington Lines
- Remington Rebuild

Project Location

Dominion Energy

Figure 5.1.3-1
Zoning Districts

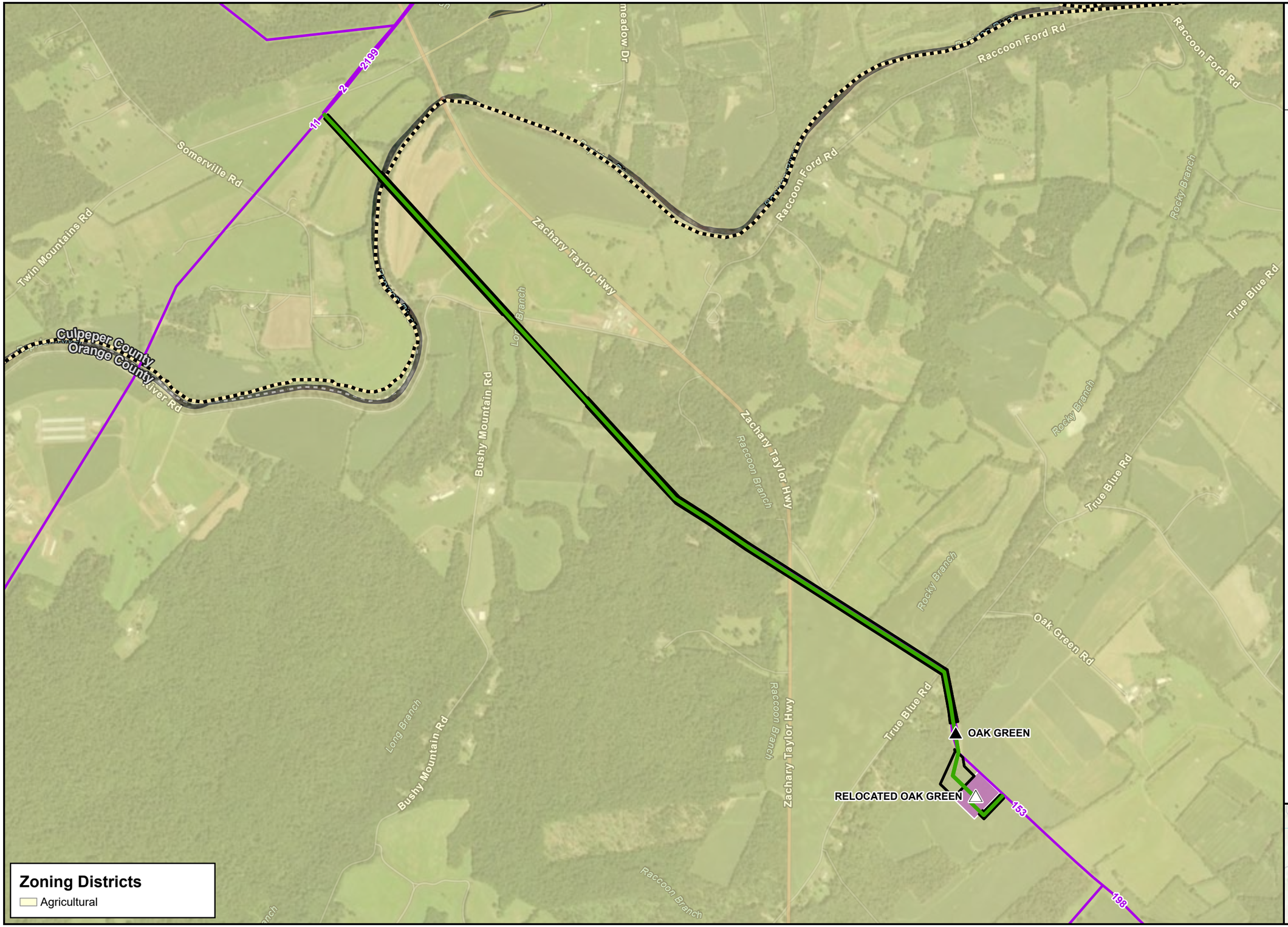
Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County, Virginia



Dominion Energy

Figure 5.1.3-1
Zoning Districts

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper and Orange County, Virginia



- ▲ Existing Substation/Switching Station
- △ Proposed Substation/Switching Station
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way (Existing and Proposed)
- County Boundary

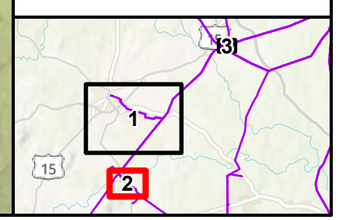
Oak Green Lines

- Oak Green Rebuild and Relocation

0 925 1,850
Feet

1:16,000

ERM



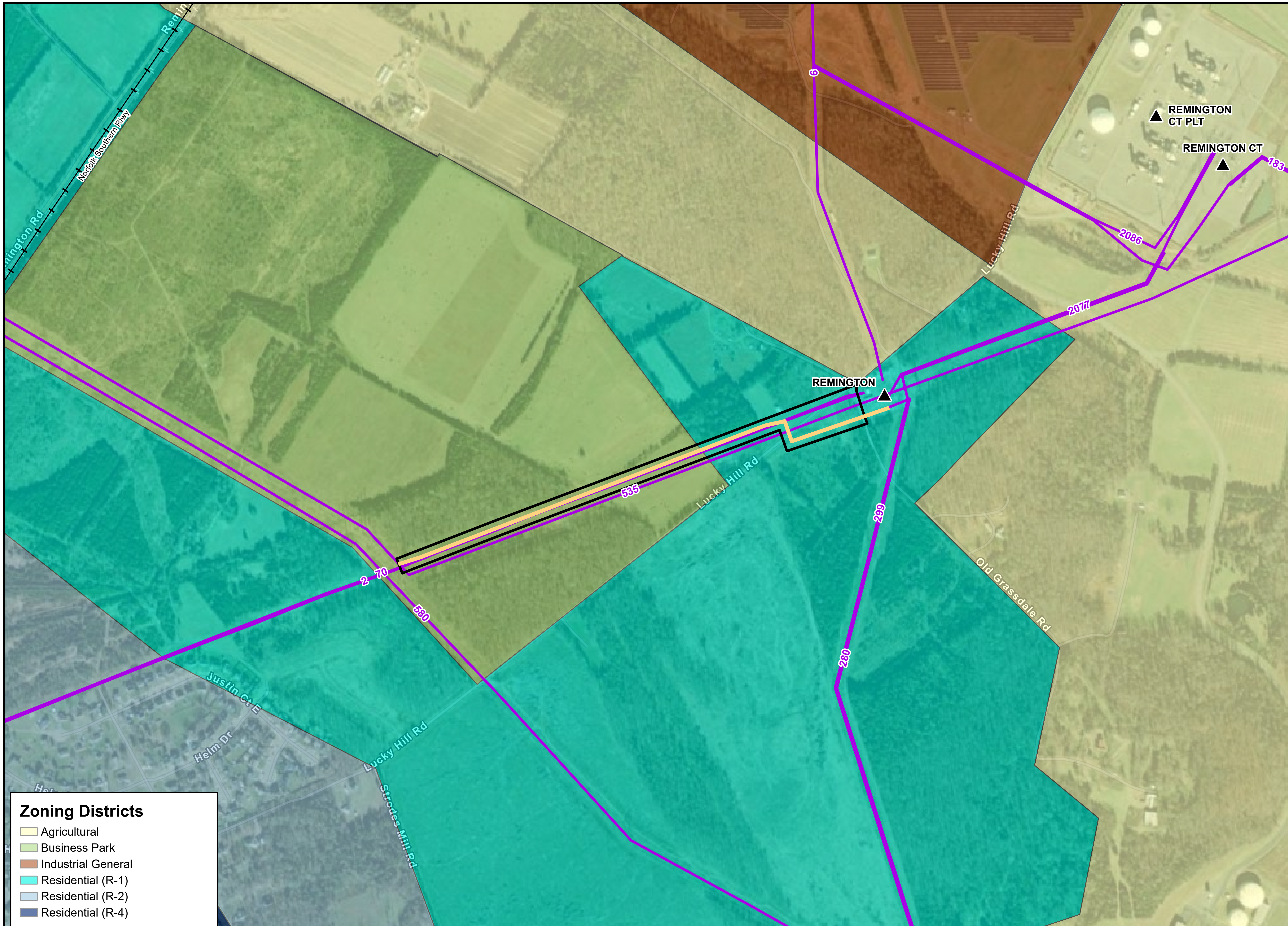


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Figure 5.1.3-1
Zoning Districts

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Fauquier County, Virginia

Page 3 of 3

▲ Existing Substation/Switching Station
Existing Dominion Transmission Line
Railroad
Right-of-Way (Existing)
Remington Lines
Remington Rebuild

0 430 860
Feet
1:7,200

ERM

N S E W

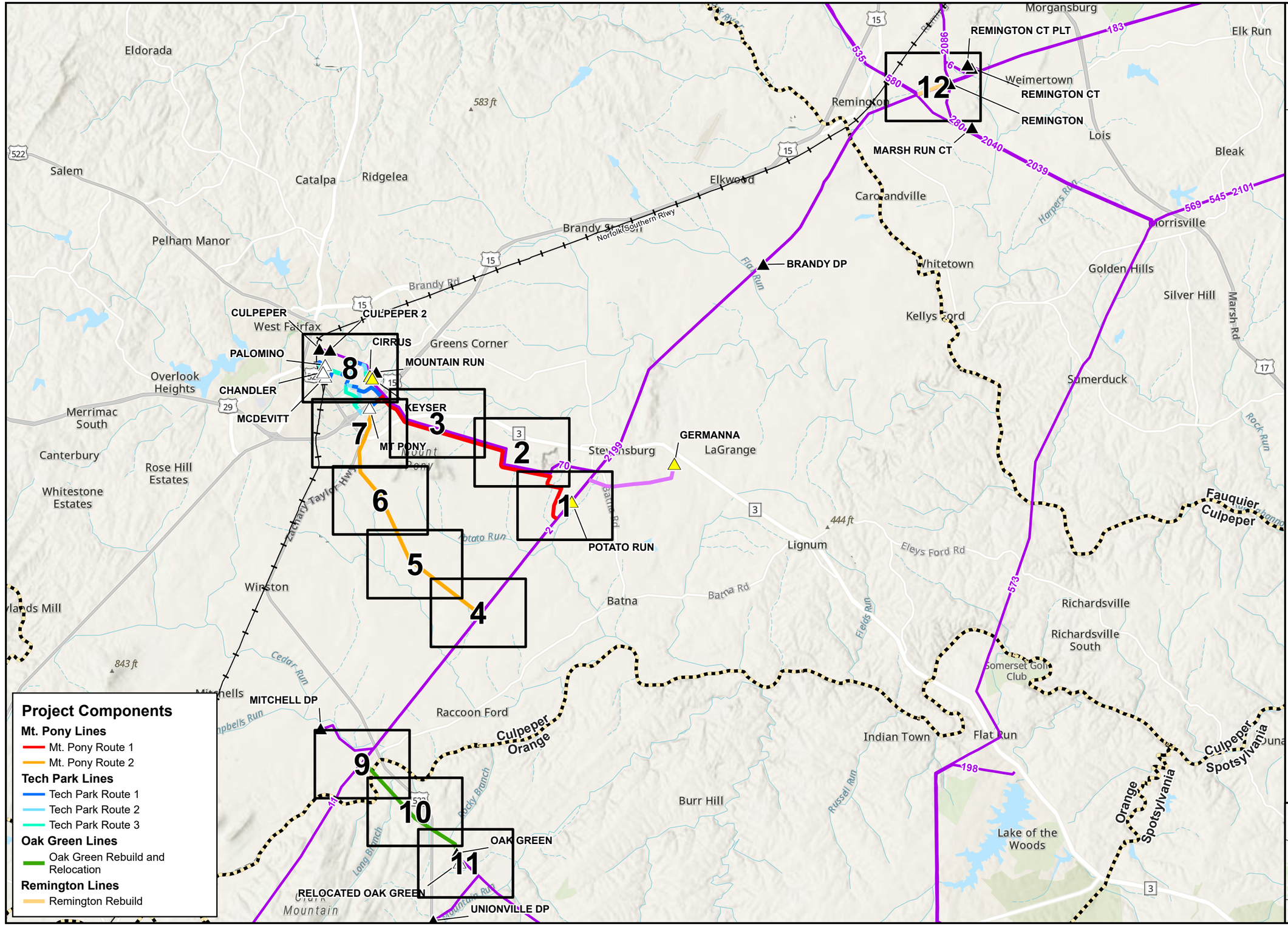
Zoning Districts
- Agricultural
- Business Park
- Industrial General
- Residential (R-1)
- Residential (R-2)
- Residential (R-4)

Dominion Energy®

Figure 5.1.4-1
Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper, Fauquier, and Orange County, Virginia

Index Map



- Page Index
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary

0 6,000 12,000
Feet

1:108,000

ERM

Dominion Energy

Figure 5.1.4-1
Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia

- Approved Future Substation/ Switching Station
- Milepost
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Right-of-Way
- 500-Foot Buffer
- 0.25-Mile Buffer

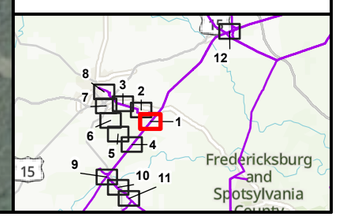
Buildings (ERM Identified)
- Existing Single-Family Residential

0 480 960
Feet

1:8,000

ERM

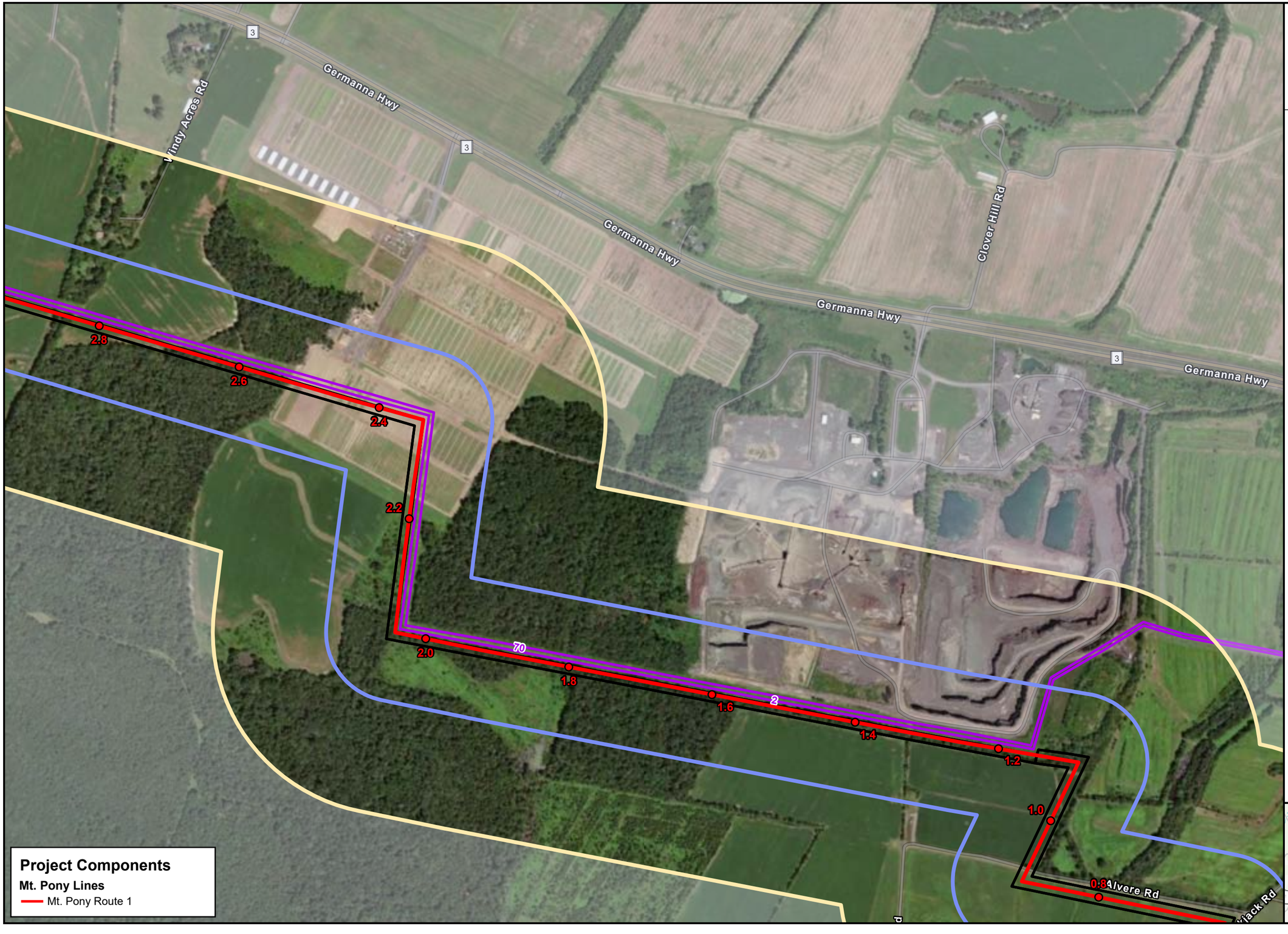
Project Components
Mt. Pony Lines
- Mt. Pony Route 1



Dominion Energy

Figure 5.1.4-1
Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia



- Milepost
- Existing Dominion Transmission Line
- Right-of-Way
- 500-Foot Buffer
- 0.25-Mile Buffer

0 480 960
Feet

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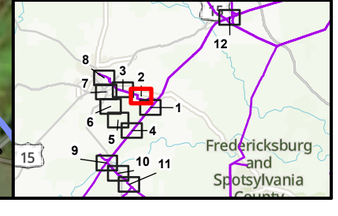
ERM



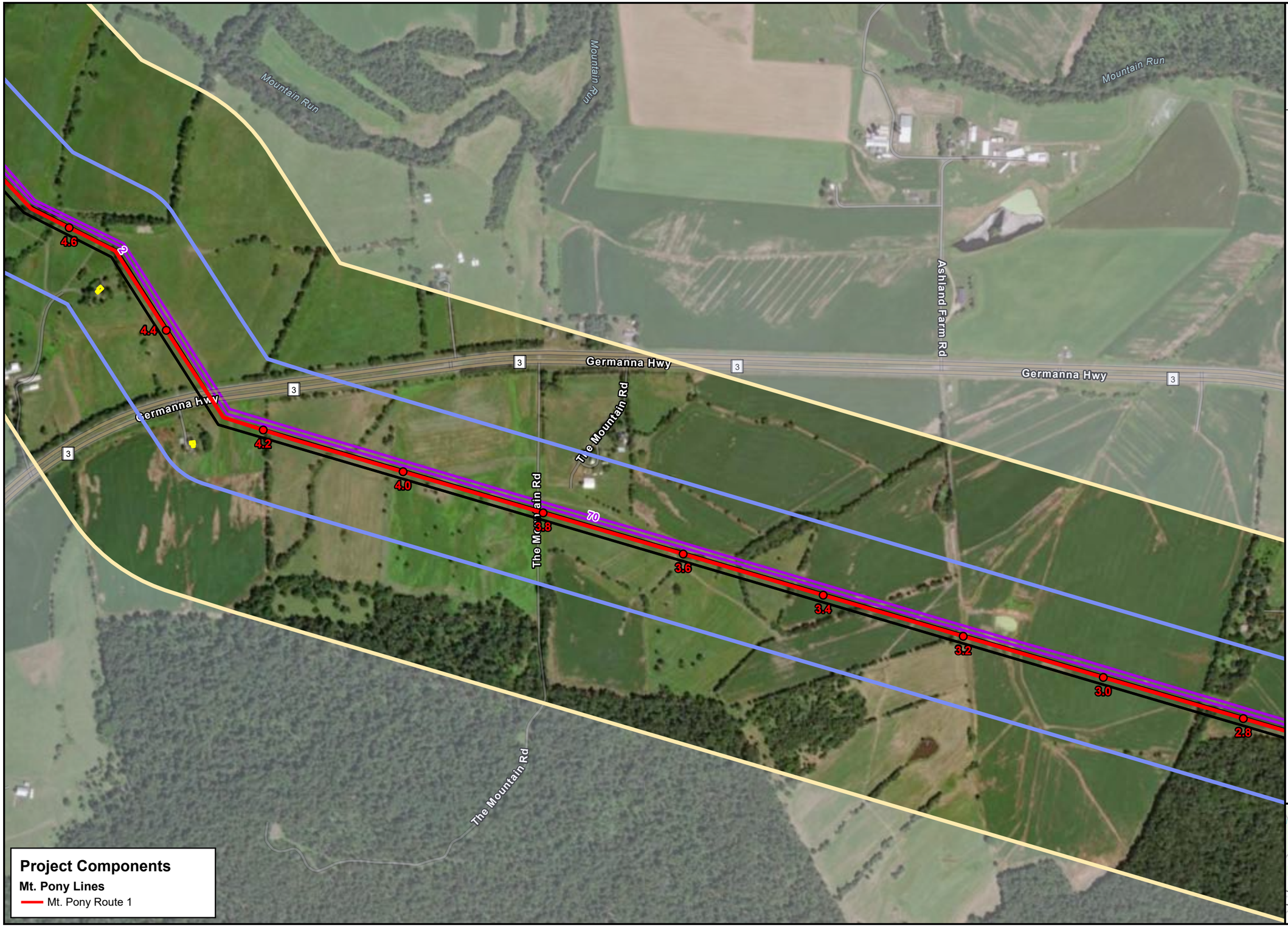


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Figure 5.1.4-1
Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia

- Milepost
- Existing Dominion Transmission Line
- Right-of-Way
- 500-Foot Buffer
- 0.25-Mile Buffer

Buildings (ERM Identified)

- Existing Single-Family Residential

0 480 960
Feet

1:8,000

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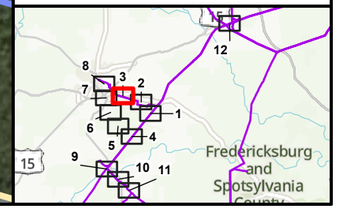

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Figure 5.1.4-1

Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

- Milepost
- Existing Dominion Transmission Line
- Right-of-Way
- 500-Foot Buffer
- 0.25-Mile Buffer

0 480 960
Feet

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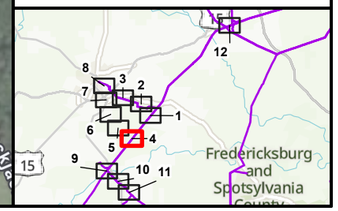

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Figure 5.1.4-1

Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

- Milepost
- Right-of-Way
- 500-Foot Buffer
- 0.25-Mile Buffer

0 480 960
Feet

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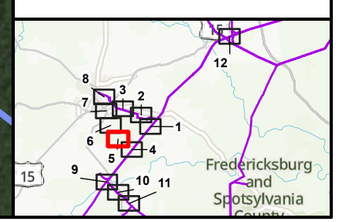

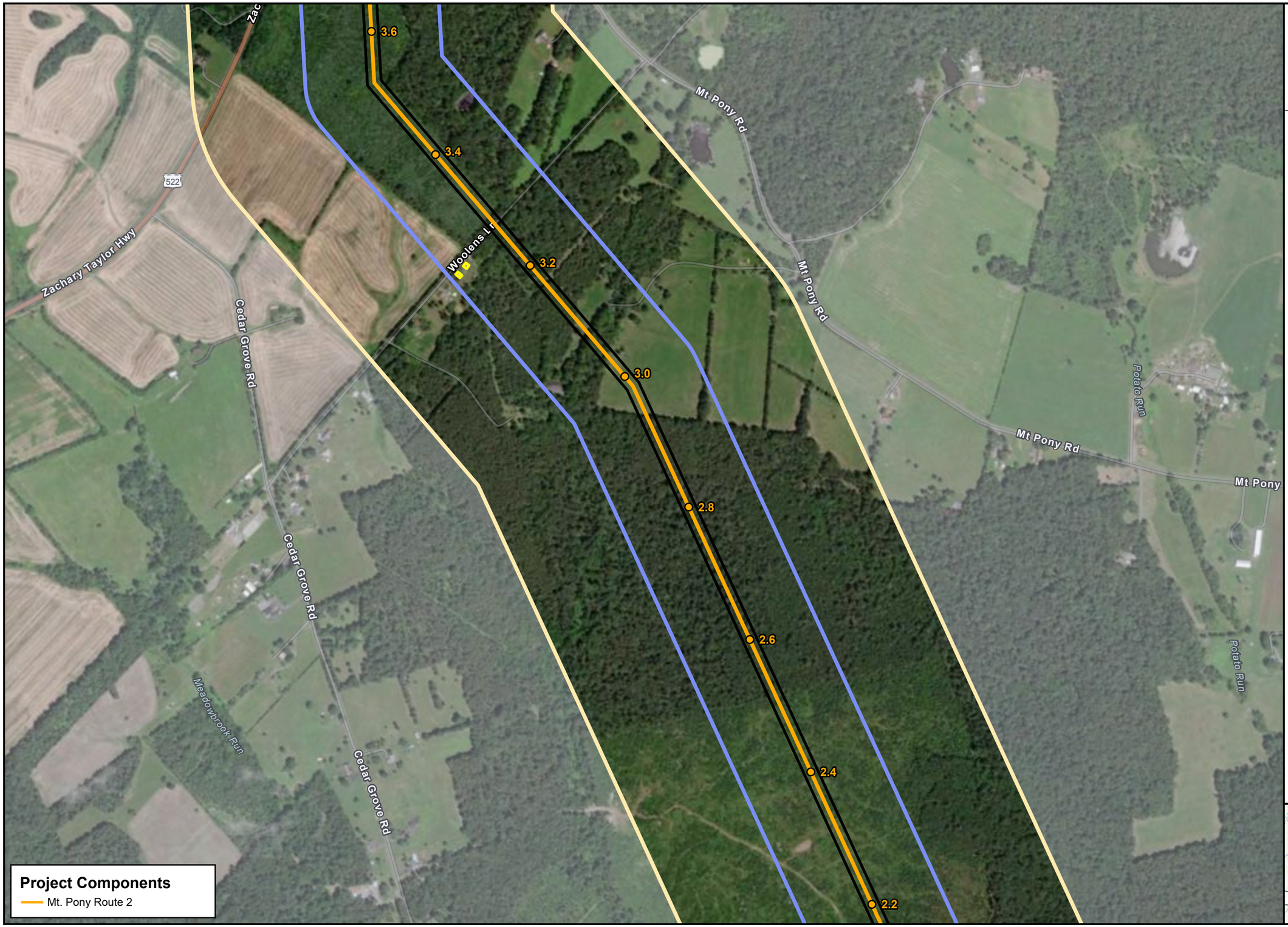

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Figure 5.1.4-1

Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

- Milepost
- Right-of-Way
- 500-Foot Buffer
- 0.25-Mile Buffer

Buildings (ERM Identified)

- Existing Single-Family Residential

0 480 960
Feet

1:8,000

ERM

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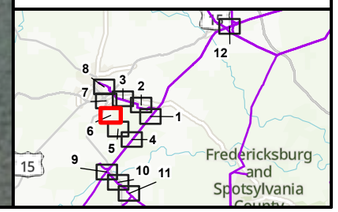

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Figure 5.1.4-1
Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia

Project Components

Mt. Pony Lines
- Mt. Pony Route 1
- Mt. Pony Route 2

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

- Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way
- 500-Foot Buffer
- 0.25-Mile Buffer
- Subdivision Boundaries

Buildings (ERM Identified)
- Existing Single-Family Residential

0 480 960
Feet

1:8,000

ERM

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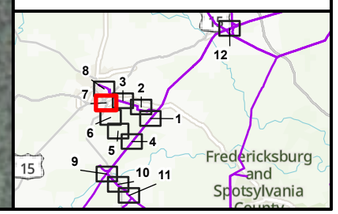

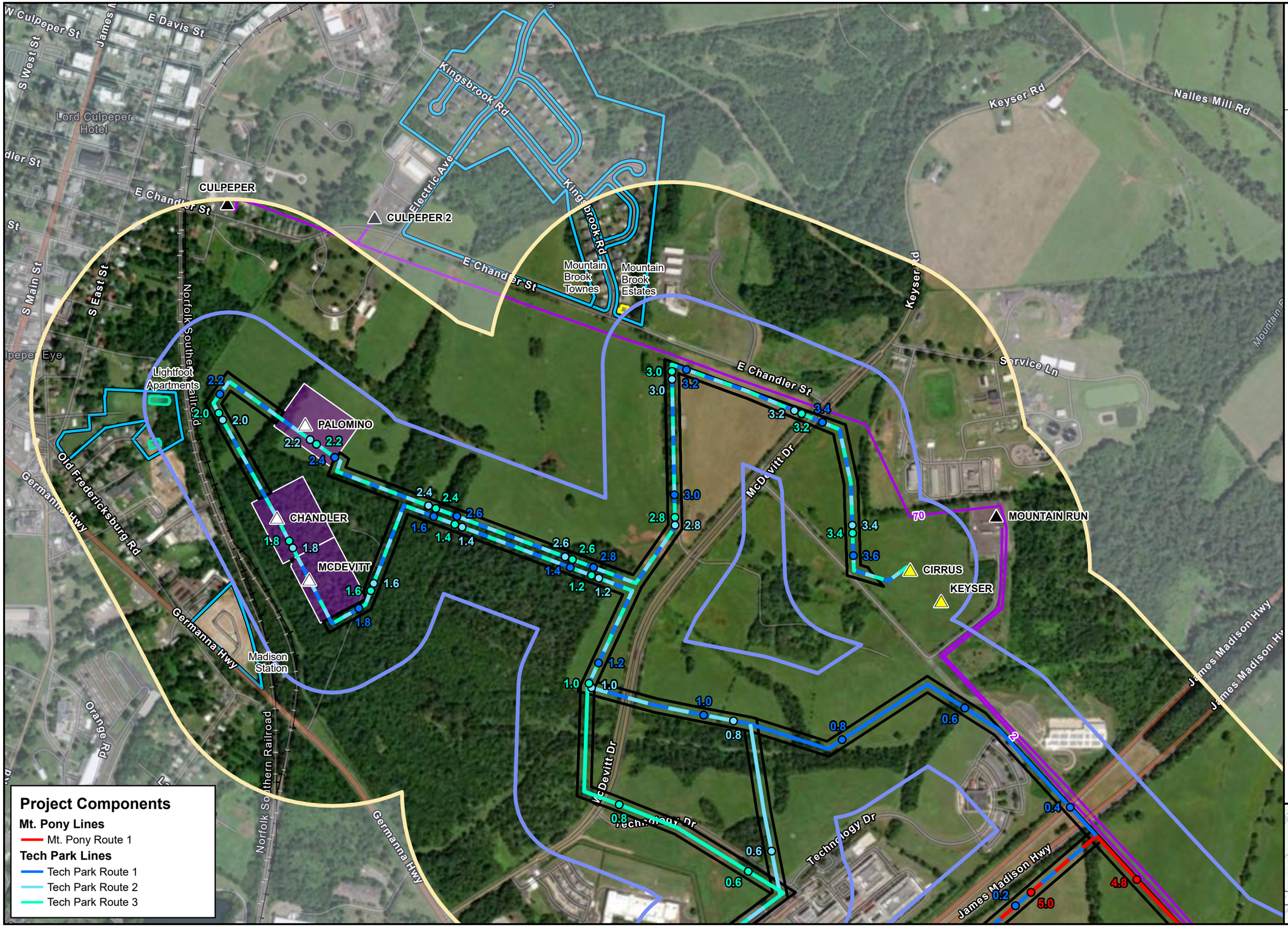

Dominion Energy

Figure 5.1.4-1

Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way
- 500-Foot Buffer
- 0.25-Mile Buffer
- Subdivision Boundaries

Buildings (ERM Identified)

- Existing Single-Family Residential
- Existing Multi-Family Residentia

0 480 960
Feet

1:8,000

ERM

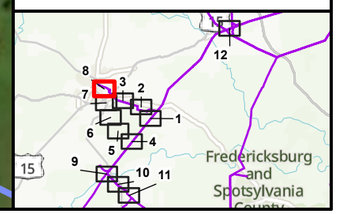

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Figure 5.1.4-1
Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper and Orange Counties
Virginia

Project Components
Oak Green Lines
- Oak Green Rebuild and Relocation

- Milepost
- Existing Dominion Transmission Line
- County Boundary
- Right-of-Way (Existing and Proposed)
- 500-Foot Buffer
- 0.25-Mile Buffer

0 480 960
Feet

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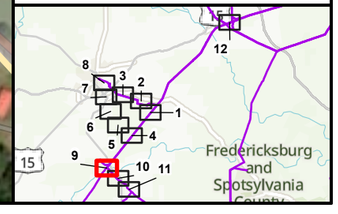

Dominion Energy

Figure 5.1.4-1
Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Orange County
Virginia

Project Components

Oak Green Lines
- Oak Green Rebuild and Relocation

- Milepost
- Existing Dominion Transmission Line
- County Boundary
- Right-of-Way (Existing and Proposed)
- 500-Foot Buffer
- 0.25-Mile Buffer

Buildings (ERM Identified)
- Existing Single-Family Residential

0 480 960
Feet

1:8,000

ERM

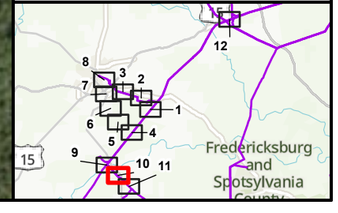

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Figure 5.1.4-1

Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Orange County
Virginia

- Existing Substation/Switching Station
- Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way (Existing and Proposed)
- 500-Foot Buffer
- 0.25-Mile Buffer

Buildings (ERM Identified)

- Existing Single-Family Residential

0 480 960
Feet

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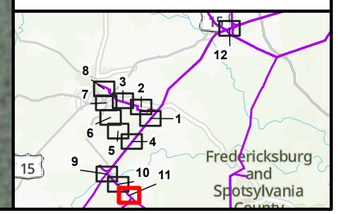

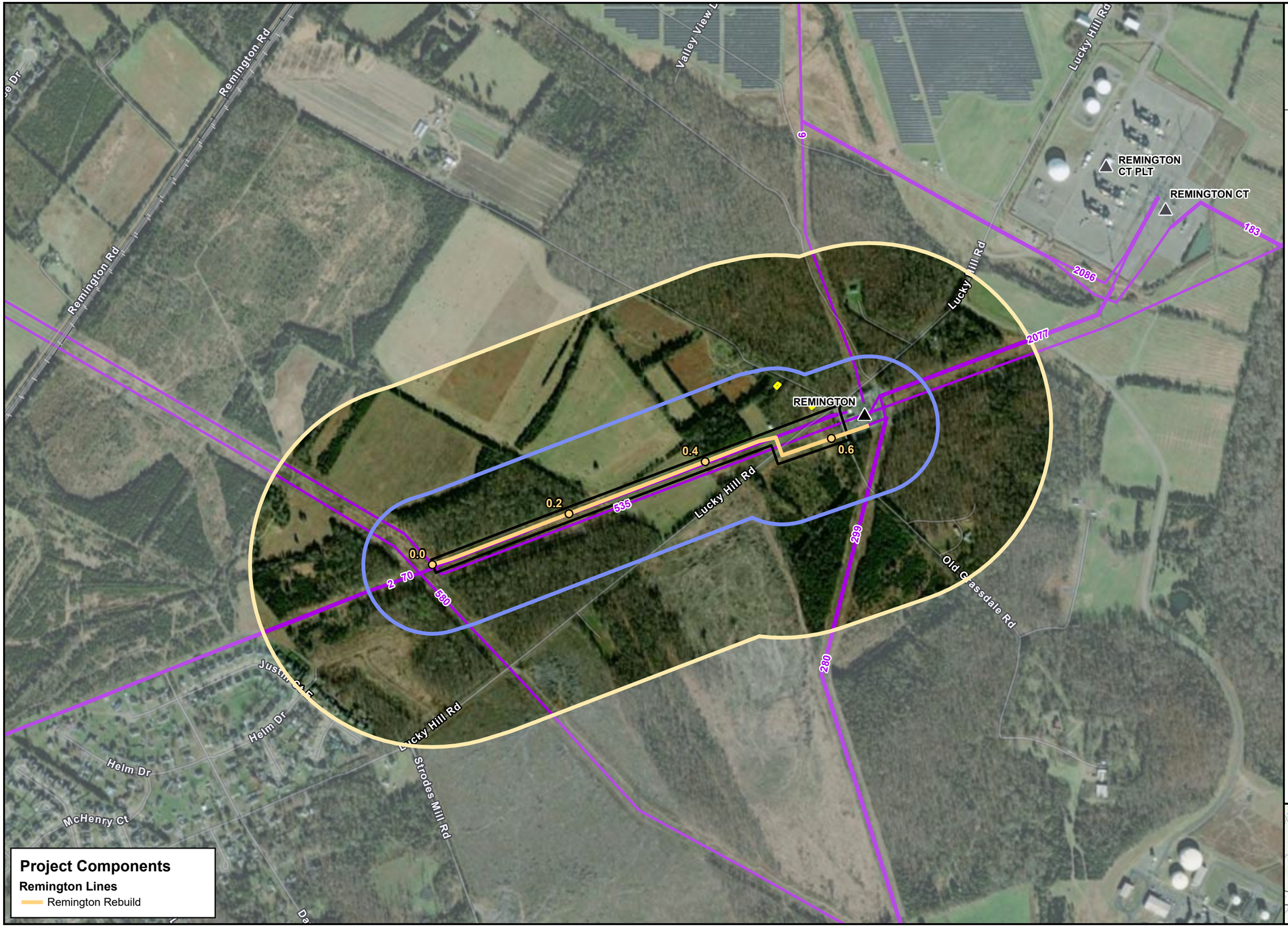

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Figure 5.1.4-1

Residential Areas within 0.25 mile and Residences within 500 feet of Routes

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Fauquier County
Virginia

- Existing Substation/Switching Station
- Milepost
- Existing Dominion Transmission Line
- Right-of-Way (Existing)
- 500-Foot Buffer
- 0.25-Mile Buffer

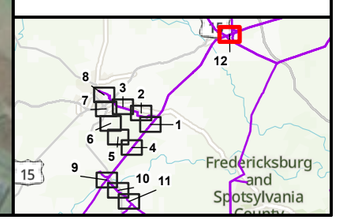
Buildings (ERM Identified)

- Existing Single-Family Residential

0 480 960
Feet

1:8,000

ERM



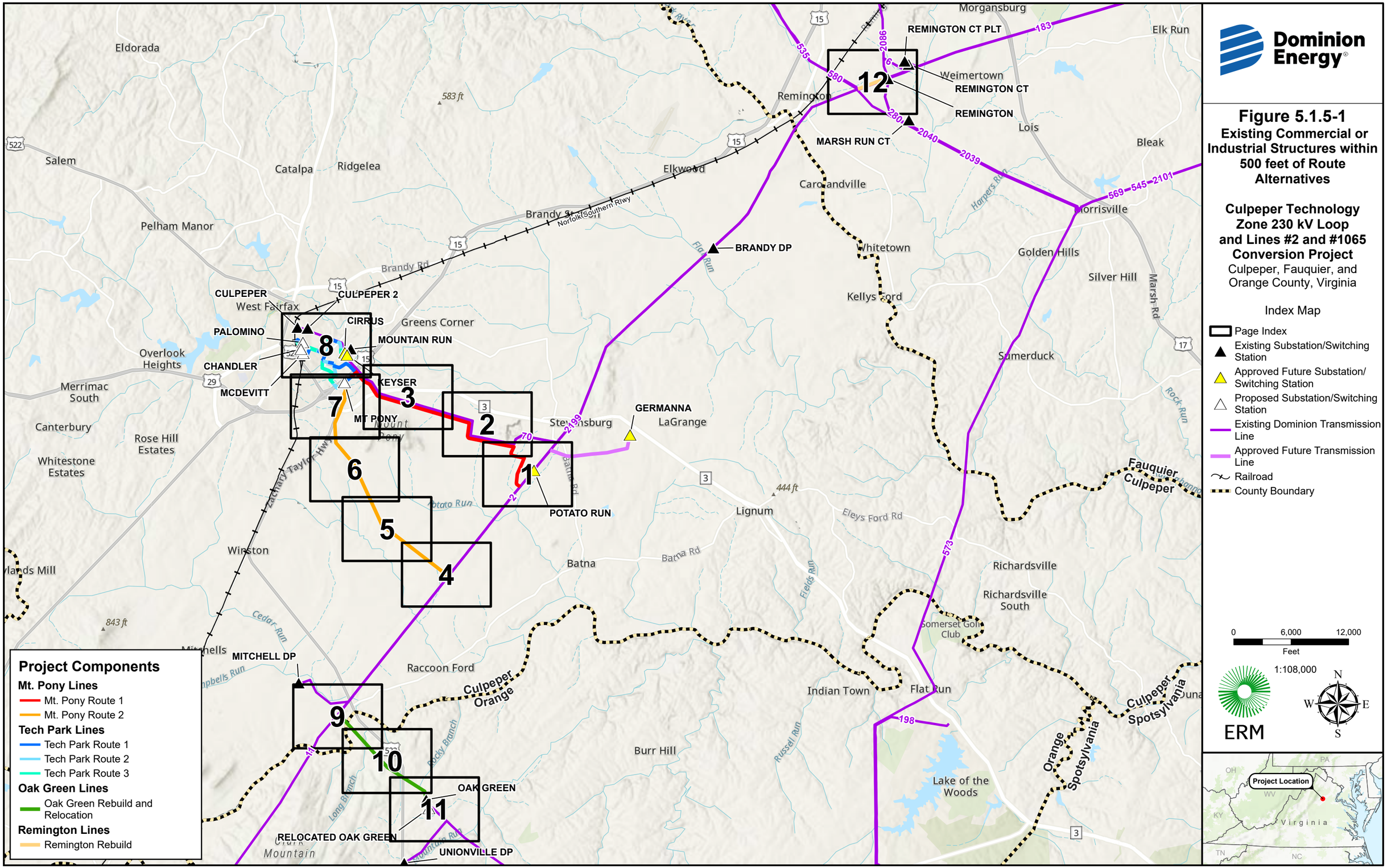


Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper, Fauquier, and Orange County, Virginia

Index Map

- Page Index
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary

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Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

- Approved Future Substation/ Switching Station
- Milepost
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Right-of-Way
- 500-Foot Buffer

0 480 960
Feet

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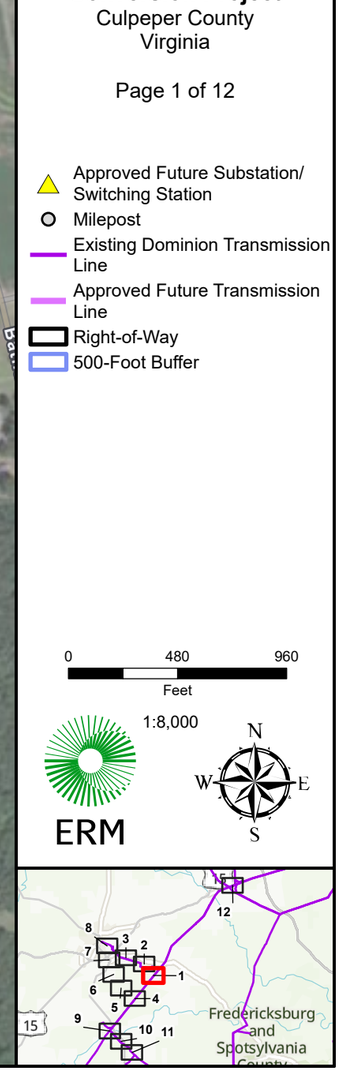

Project Components

Mt. Pony Lines

- Mt. Pony Route 1

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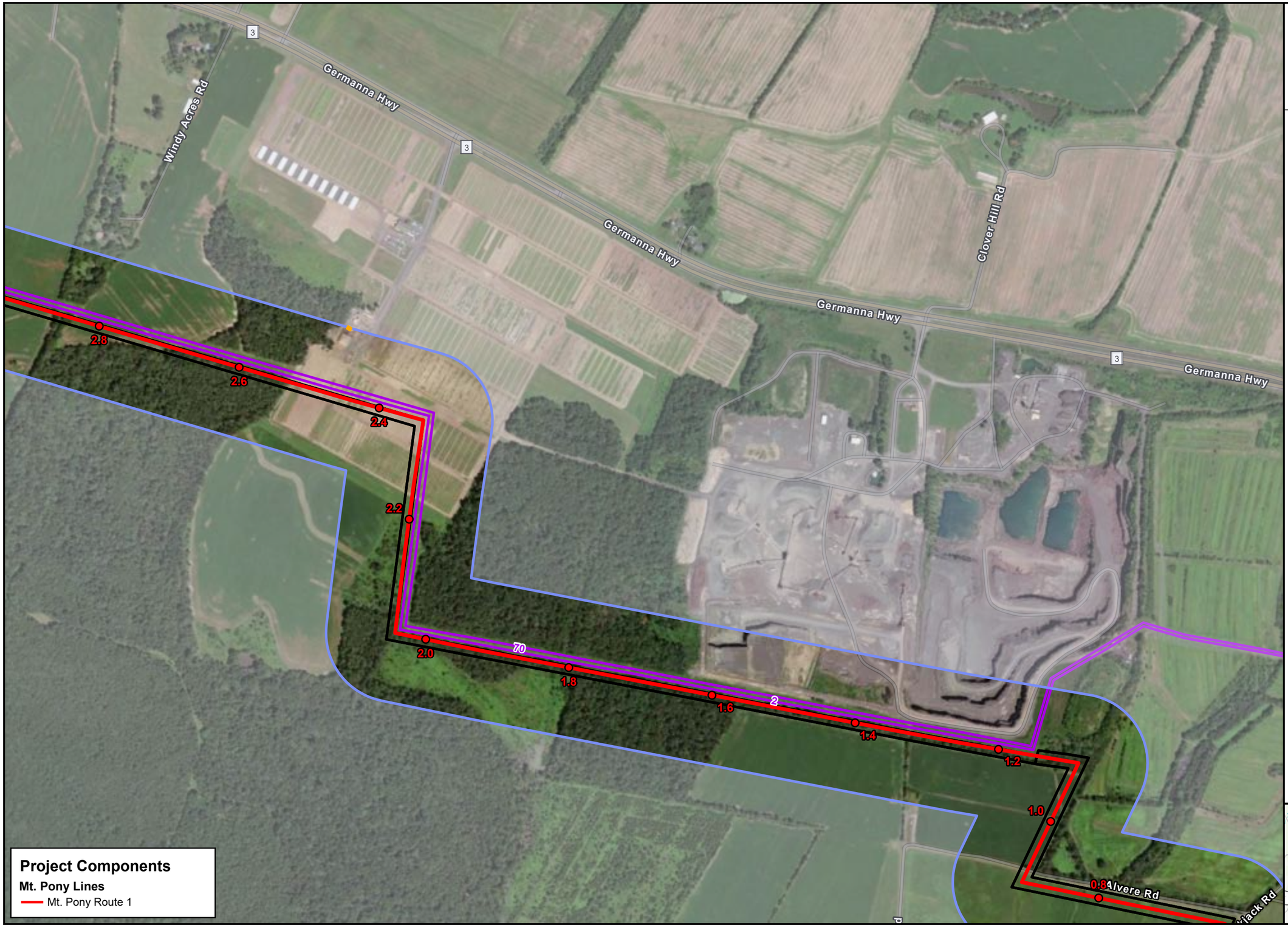
Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia



- Milepost
- Existing Dominion Transmission Line
- Right-of-Way
- 500-Foot Buffer

Buildings (ERM Identified)

- Existing Commercial Building

0 480 960
Feet

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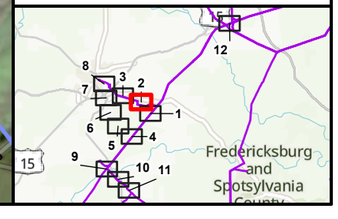

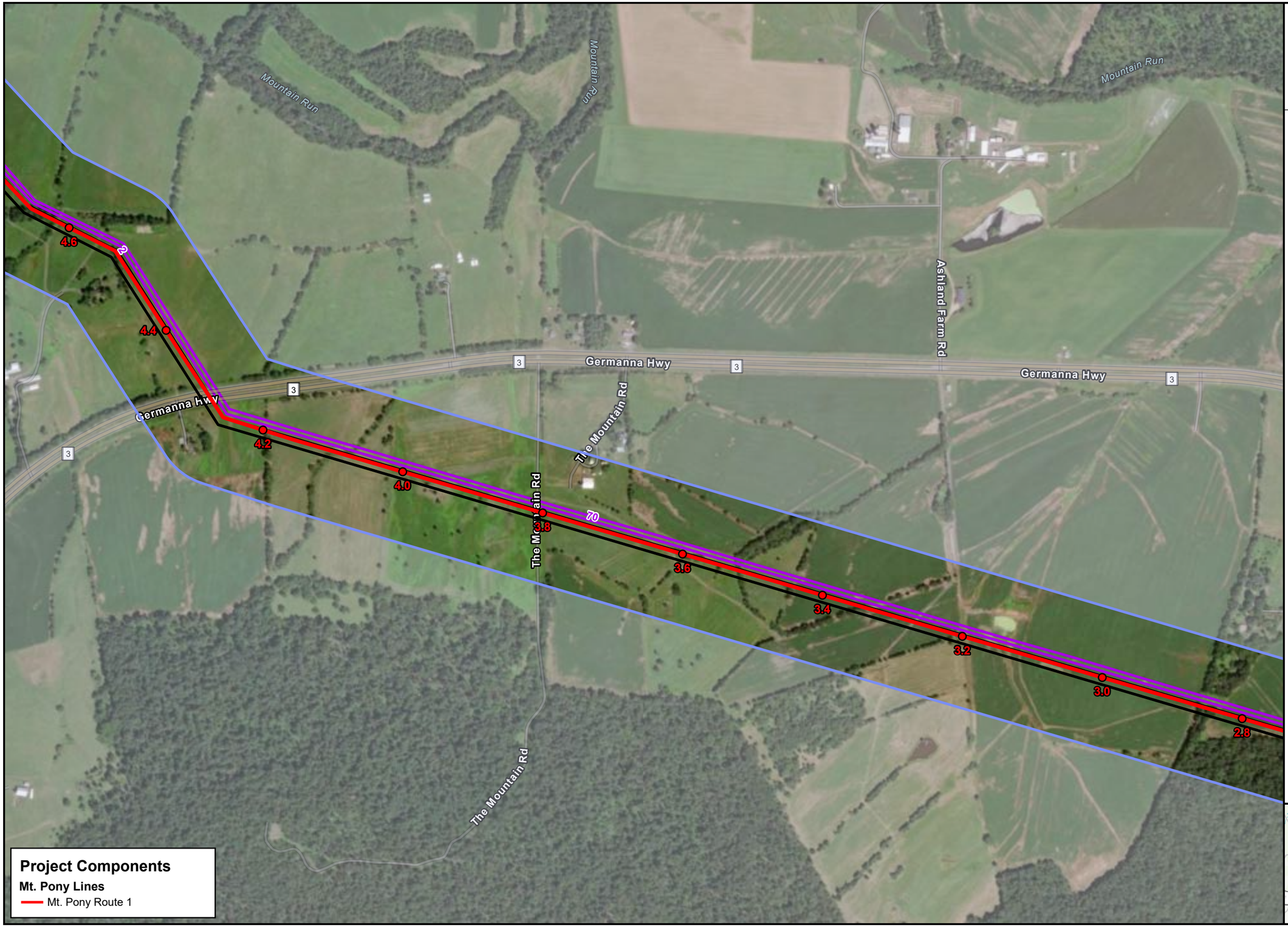

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Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

- Milepost
- Existing Dominion Transmission Line
- Right-of-Way
- 500-Foot Buffer

0 480 960
Feet

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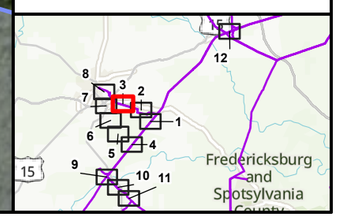

Dominion Energy

Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

- Milepost
- Existing Dominion Transmission Line
- Right-of-Way
- 500-Foot Buffer

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Feet

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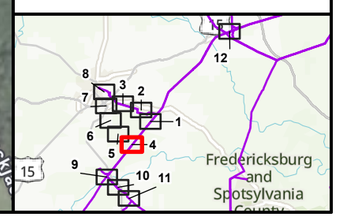

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Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

Milepost
Right-of-Way
500-Foot Buffer

0 480 960
Feet

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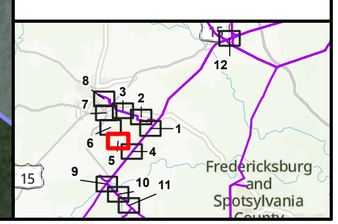

Dominion Energy

Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

Milepost
Right-of-Way
500-Foot Buffer

0 480 960
Feet

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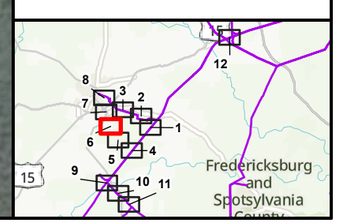

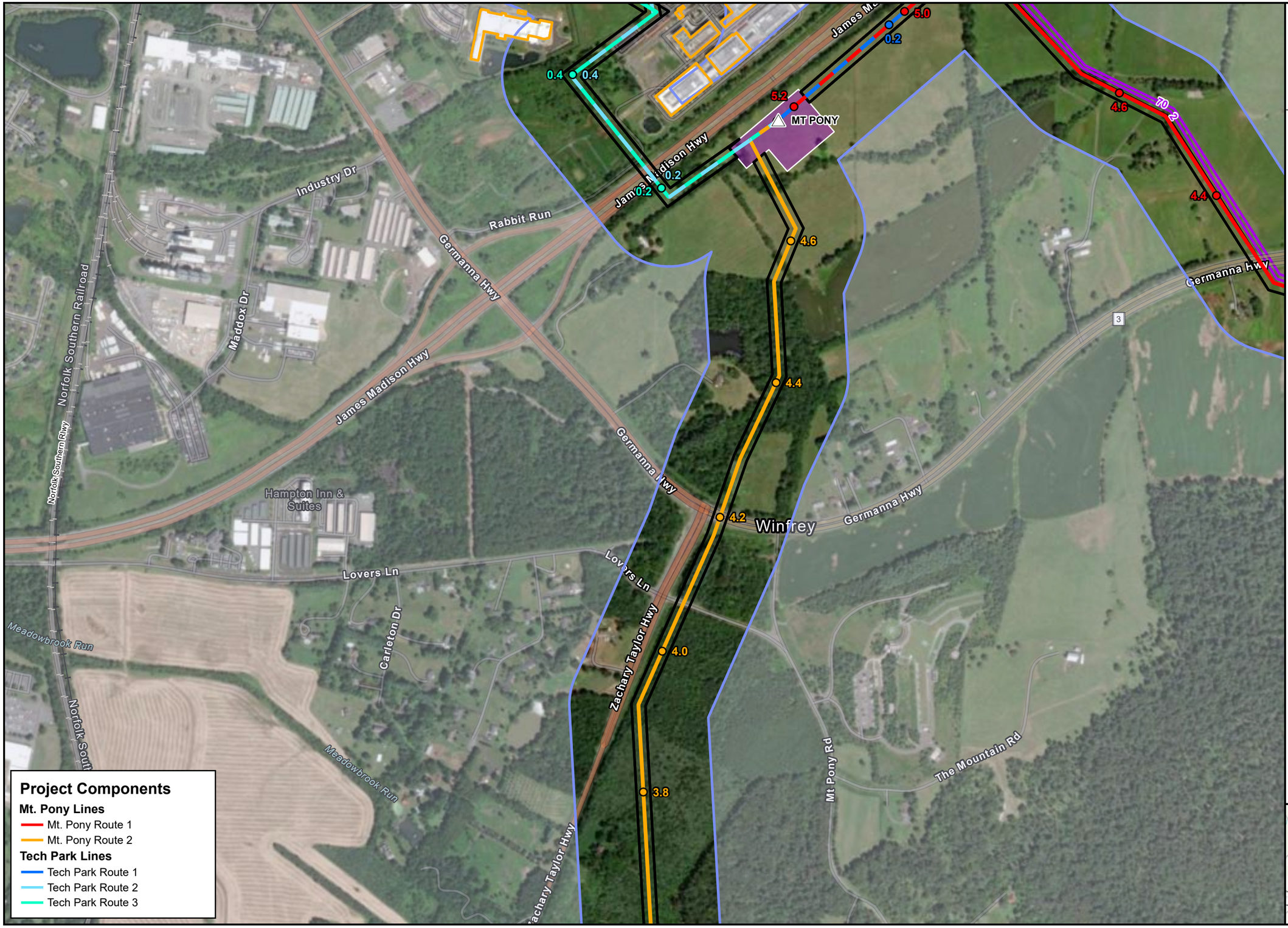

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Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

- Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way
- 500-Foot Buffer

Buildings (ERM Identified)

- Existing Commercial Building

0 480 960
Feet

1:8,000

ERM

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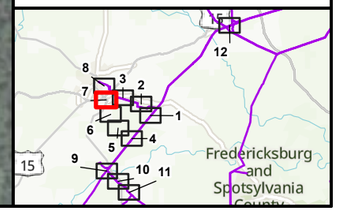

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Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way
- 500-Foot Buffer

Buildings (ERM Identified)

- Existing Commercial Building

0 480 960
Feet

1:8,000

ERM

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Project Components

Mt. Pony Lines
- Mt. Pony Route 1

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

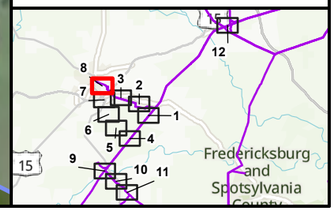

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Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper and Orange Counties
Virginia

- Milepost
- Existing Dominion Transmission Line
- County Boundary
- Right-of-Way (Existing and Proposed)
- 500-Foot Buffer

0 480 960
Feet

1:8,000

ERM

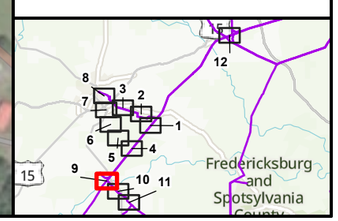

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Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Orange County
Virginia

- Milepost
- Existing Dominion Transmission Line
- County Boundary
- Right-of-Way (Existing and Proposed)
- 500-Foot Buffer

0 480 960
Feet

1:8,000

ERM

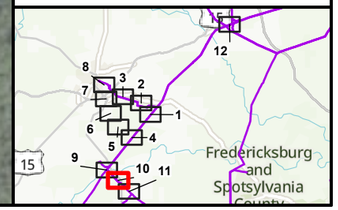

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Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

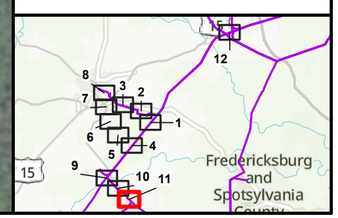
Orange County
Virginia

- Existing Substation/Switching Station
- Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way (Existing and Proposed)
- 500-Foot Buffer

0 480 960
Feet

1:8,000

ERM



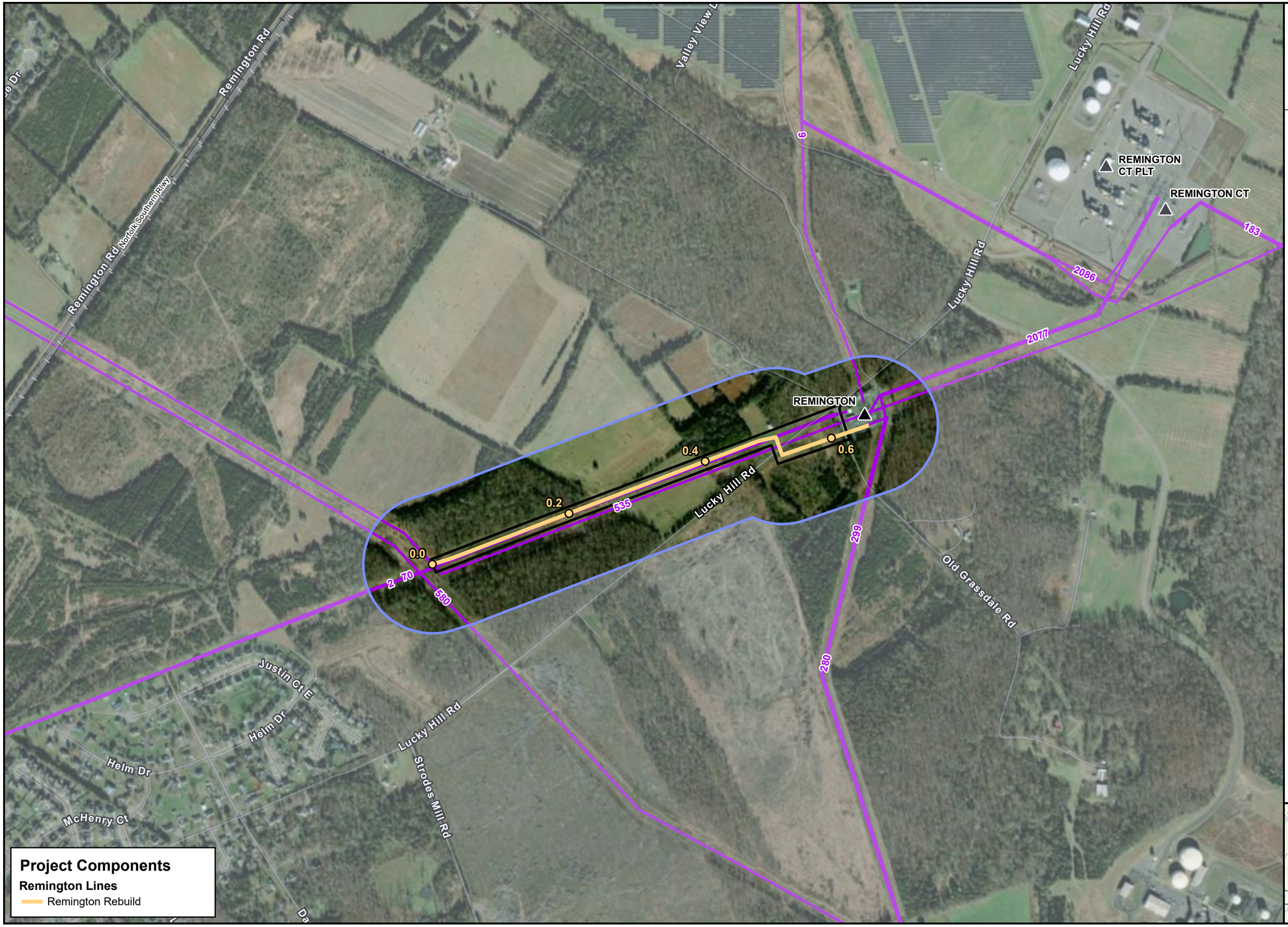


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Figure 5.1.5-1

Existing Commercial or Industrial Structures within 500 feet of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

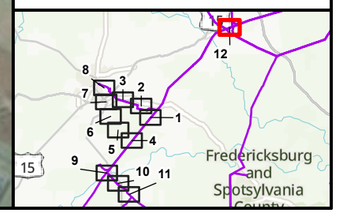
Fauquier County
Virginia

- Existing Substation/Switching Station
- Milepost
- Existing Dominion Transmission Line
- Right-of-Way (Existing)
- 500-Foot Buffer

0 480 960
Feet

1:8,000

ERM



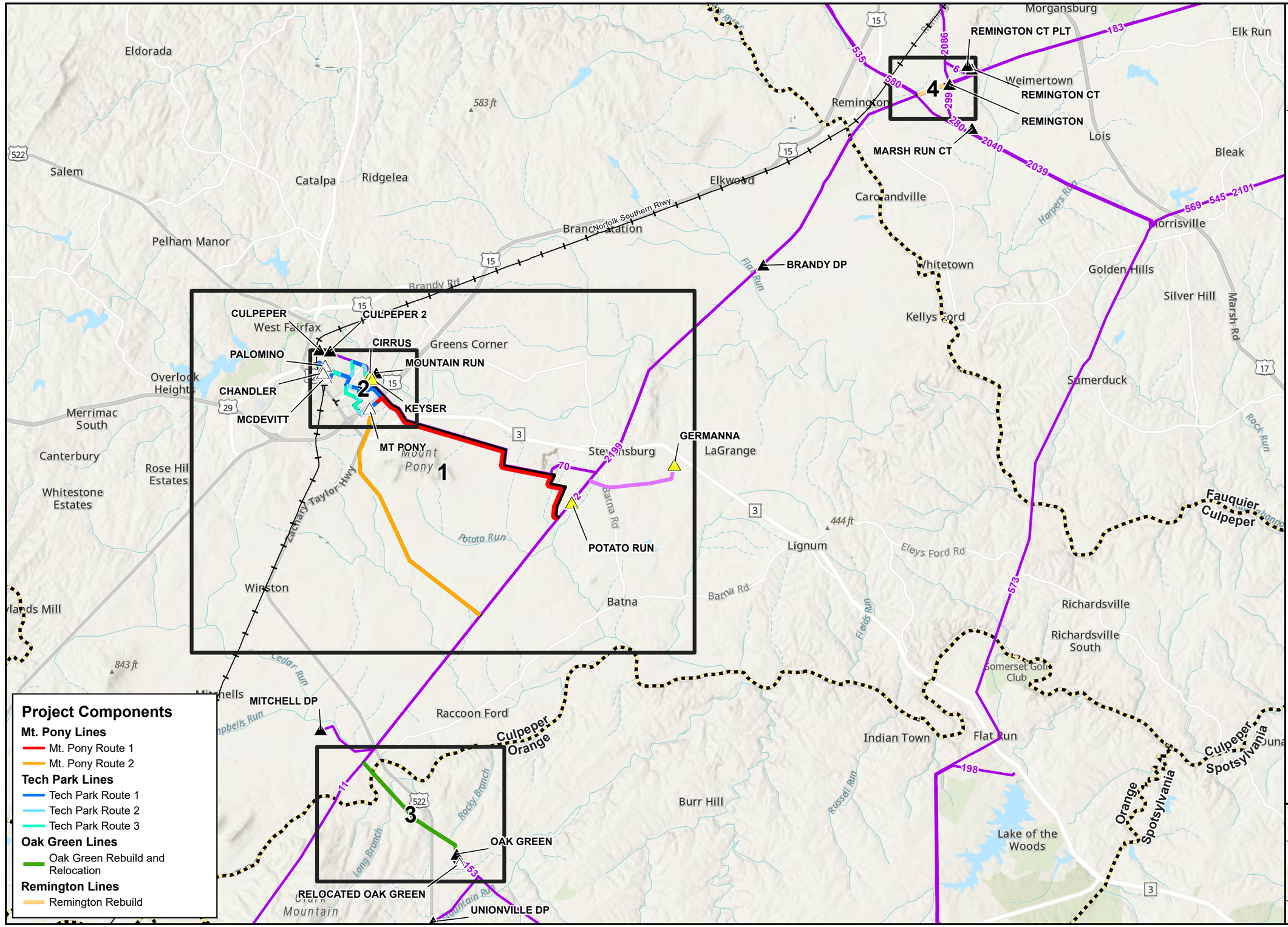


Figure 5.1.6-1
Planned Developments within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper, Fauquier, and Orange County, Virginia

Index Map

- Index Page
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary

0 6,000 12,000 Feet

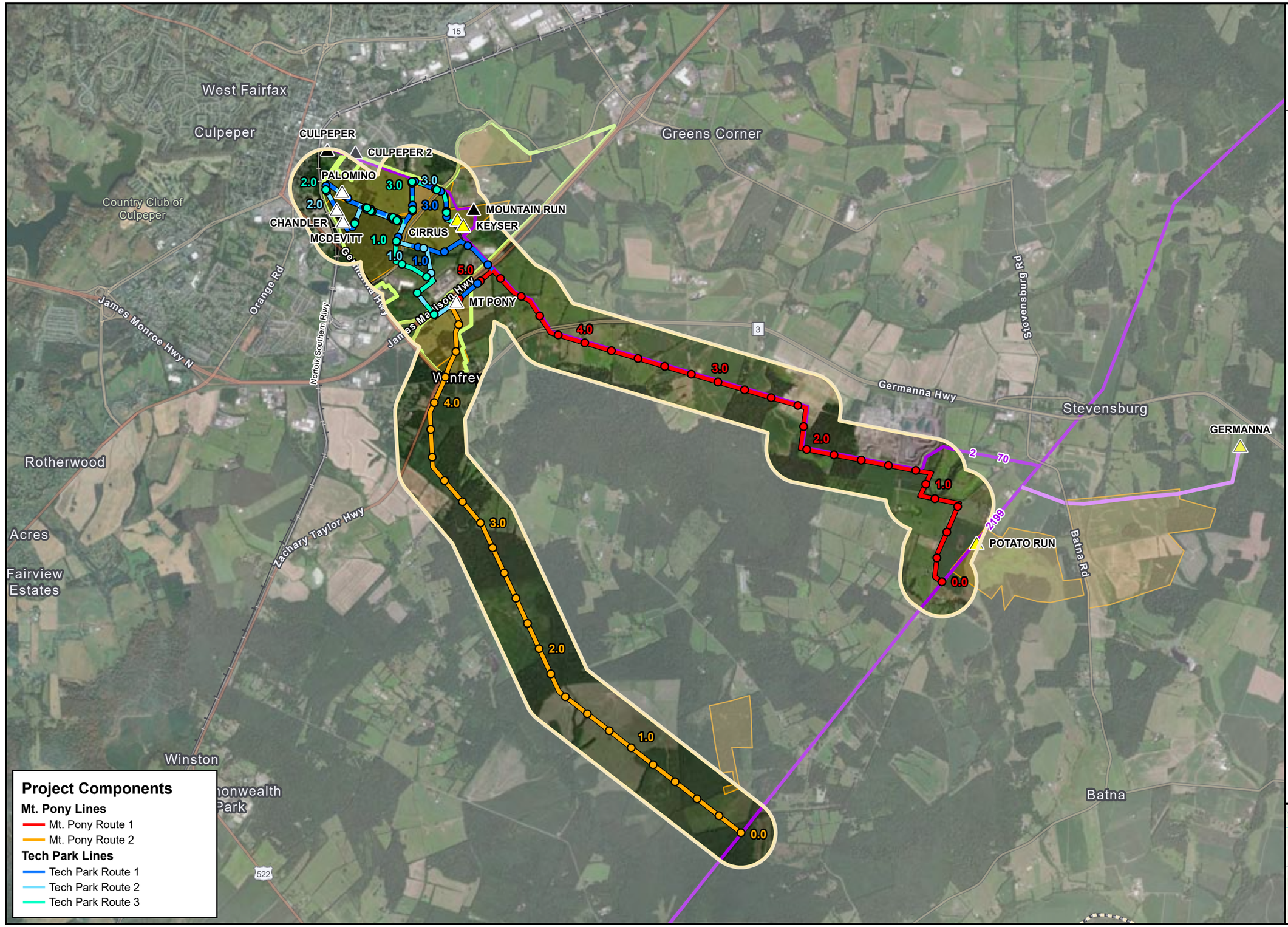
1:108,000

ERM

Dominion Energy

Figure 5.1.6-1
Planned Developments within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County, Virginia



Project Components

Mt. Pony Lines
- Mt. Pony Route 1
- Mt. Pony Route 2

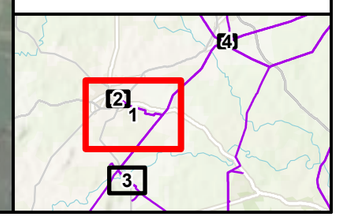
Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Milepost
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary
- Planned Development
- VDOT Road Alignment
- 0.25-Mile Buffer
- Culpeper Tech Zone

0 2,000 4,000
Feet

1:42,000

ERM



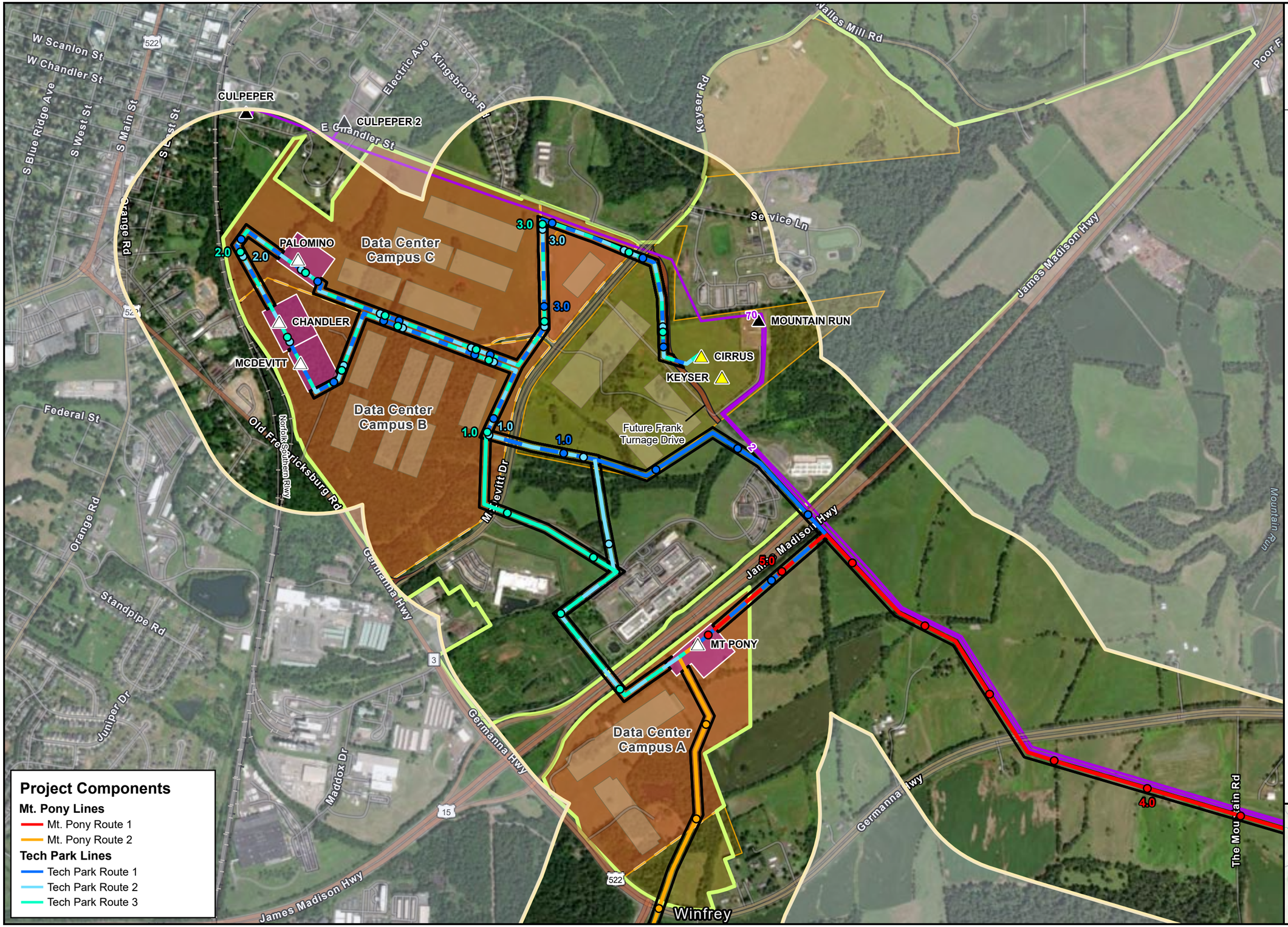


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Figure 5.1.6-1
Planned Developments within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County, Virginia

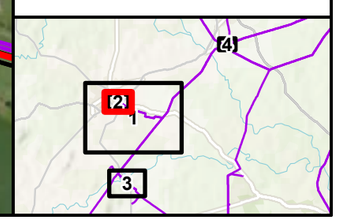
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Railroad
- Right-of-Way
- Planned Development
- Customer Data Center
- Proposed Data Center Building
- VDOT Road Alignment
- 0.25-Mile Buffer
- Culpeper Tech Zone

0 700 1,400
Feet

1:12,000

ERM

N W E S



Dominion Energy

Figure 5.1.6-1
Planned Developments within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper and Orange County, Virginia

- ▲ Existing Substation/Switching Station
- △ Proposed Substation/Switching Station
- O Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Right-of-Way (Existing and Proposed)
- County Boundary
- Planned Development
- 0.25-Mile Buffer

0 925 1,850
Feet

1:16,000

N W E S

ERM

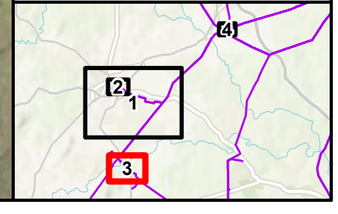


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Figure 5.1.6-1
Planned Developments within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Fauquier County, Virginia

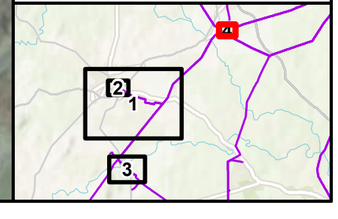
- ▲ Existing Substation/Switching Station
- ○ Milepost
- Existing Dominion Transmission Line
- Railroad
- Right-of-Way (Existing)
- 0.25-Mile Buffer

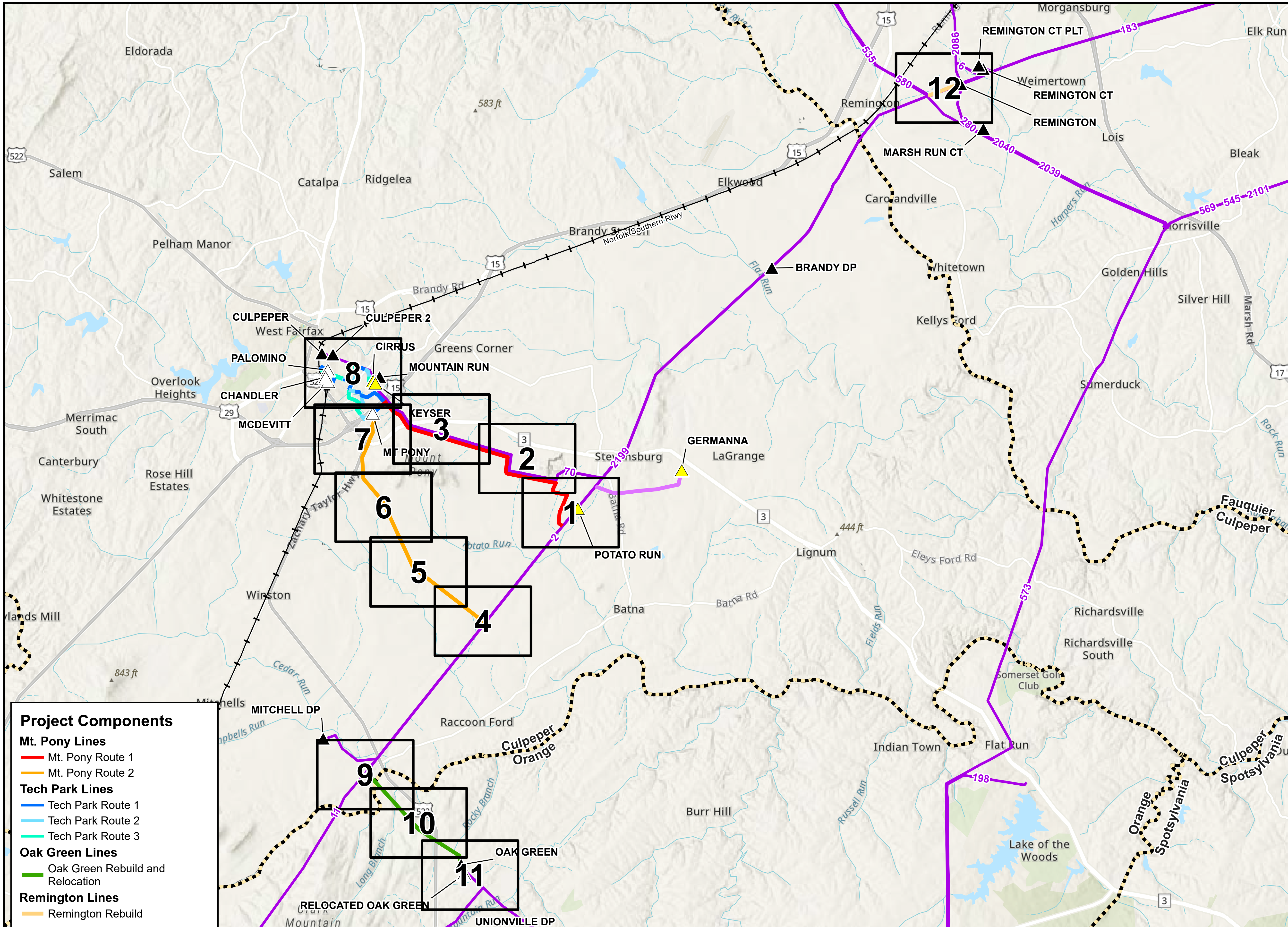
** No planned developments are located within the map extent.

0 430 860
Feet

1:7,200

ERM





REMINGTON CT PLT
REMINGTON CT
REMINGTON
MARSH RUN CT
BRANDY DP
CULPEPER
CULPEPER 2
PALOMINO
CIRRUS
MOUNTAIN RUN
CHANDLER
MCDEVITT
KEYSER
MT PONY
GERMANNA
POTATO RUN
MITCHELL DP
OAK GREEN
RELOCATED OAK GREEN
UNIONVILLE DP
1
2
3
4
5
6
7
8
9
10
11
12
Morgansburg
Elk Run
Eldorada
Weimertown
Remington
Lois
Bleak
Salem
Catalpa
Ridgelea
Elkwood
Brandy Station
Norfolk Southern Rlwy
Carolandville
Morrisville
Pelham Manor
Whitetown
Golden Hills
Silver Hill
Kellys Ford
West Fairfax
Greens Corner
Overlook Heights
Sumerduck
Merrimac South
Canterbury
Rose Hill Estates
Whitestone Estates
Stevensburg
LaGrange
Lignum
Winston
Batna
Richardsville
Richardsville South
Somerset Golf Club
Raccoon Ford
Indian Town
Flat Run
Burr Hill
Lake of the Woods
Fauquier
Culpeper
Orange
Spotsylvania

Project Components

Mt. Pony Lines
- Mt. Pony Route 1
- Mt. Pony Route 2

Tech Park Lines
- Tech Park Route 1
- Tech Park Route 2
- Tech Park Route 3

Oak Green Lines
- Oak Green Rebuild and Relocation

Remington Lines
- Remington Rebuild

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Figure 5.1.7-1

Conservation Easements within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper, Fauquier, and Orange County, Virginia

Index Map

- Page Index
- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Railroad
- County Boundary

0 6,000 12,000
Feet

1:108,000

ERM

Project Location
Virginia

Dominion Energy

Figure 5.1.7-1

Conservation Easements within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

- Approved Future Substation/ Switching Station
- Milepost
- Existing Dominion Transmission Line
- Approved Future Transmission Line
- Right-of-Way
- 0.25-Mile Buffer

Easements

- VA Outdoors Foundation
- Old Dominion Land Conservancy
- Culpeper County Agricultural Forestal Districts

0 480 960
Feet

1:8,000

ERM

Dominion Energy

Figure 5.1.7-1
Conservation Easements within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project
Culpeper County
Virginia

Germanna Hwy
Windy Acres Rd
Clover Hill Rd
Stevensburg AFD
Alvere Rd
Fredericksburg and Spotsylvania County

2.8
2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
70
2

Project Components
Mt. Pony Lines
Mt. Pony Route 1

- Milepost
- Existing Dominion Transmission Line
- Right-of-Way
- 0.25-Mile Buffer

Easements
- VA Outdoors Foundation
- Culpeper County Agricultural Forestal Districts

0 480 960
Feet
1:8,000

ERM

N
W E
S

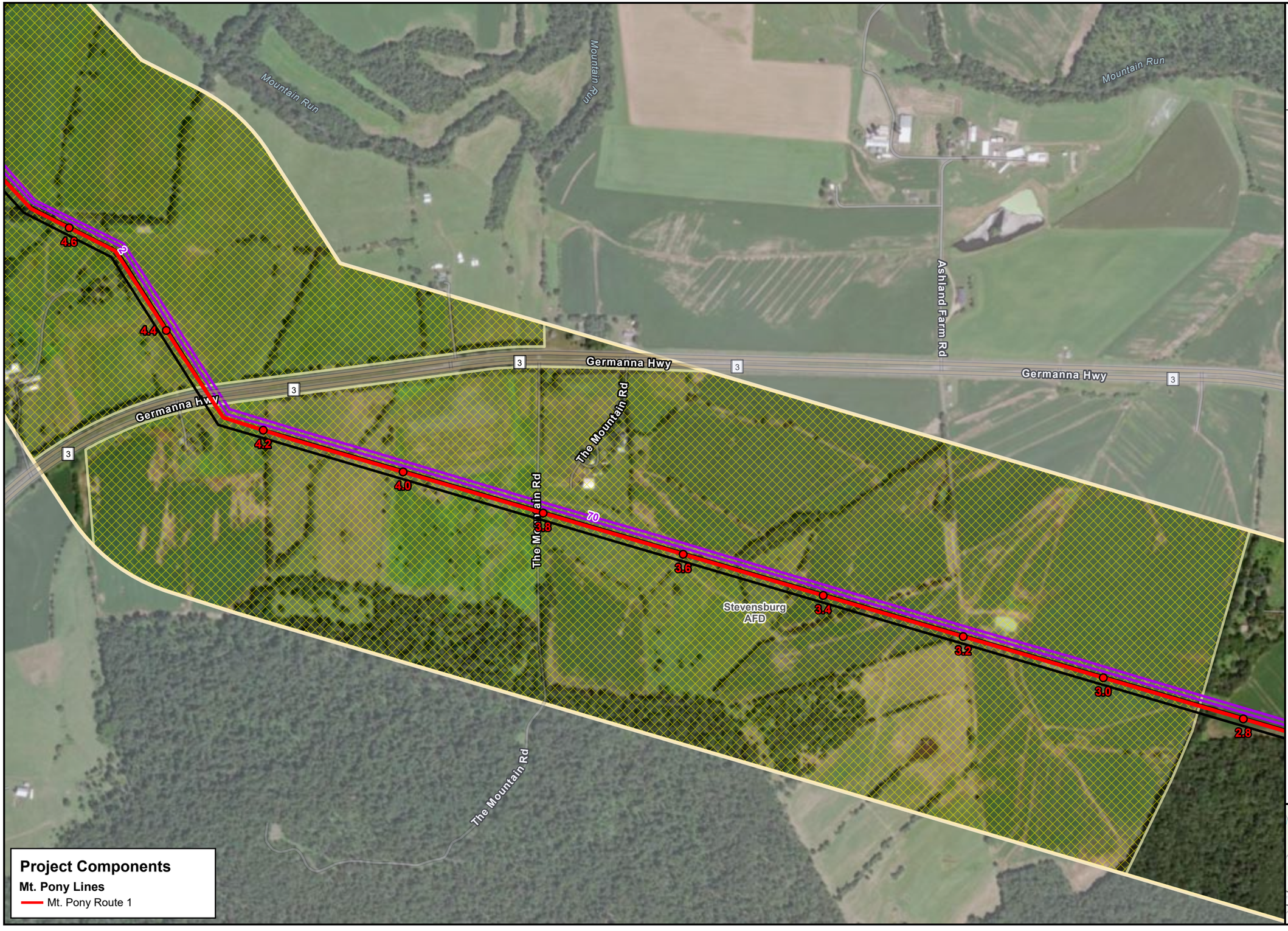
Dominion Energy®

Figure 5.1.7-1

Conservation Easements within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia



- Milepost
- Existing Dominion Transmission Line
- Right-of-Way
- 0.25-Mile Buffer
- Culpeper County Agricultural Forestal Districts

0 480 960
Feet

1:8,000

ERM

N
W E
S

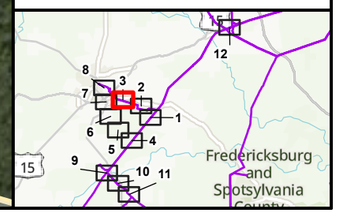


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Figure 5.1.7-1

Conservation Easements within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

1.0
0.8
0.6
0.4
0.2
0.0
2
2199
Mt Pony Rd
Ruth Ln
Holmes Ln
Mt Pony Rd
Blackjack Rd
Raccoon Ford AFD
Blackjack Rd
Blackjack
15
merduck Run

Project Components
Mt. Pony Route 2

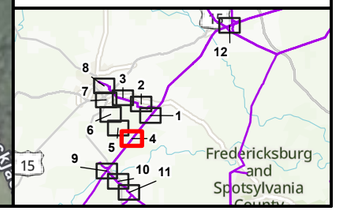
- Milepost
- Existing Dominion Transmission Line
- Right-of-Way
- 0.25-Mile Buffer
- Culpeper County Agricultural Forestal Districts

0 480 960
Feet

1:8,000

N
W E
S

ERM



Dominion Energy

Figure 5.1.7-1

Conservation Easements within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

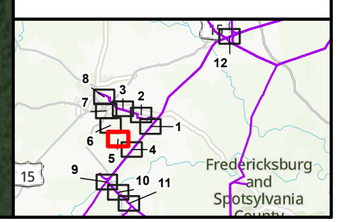
Culpeper County
Virginia

Milepost
Right-of-Way
0.25-Mile Buffer

0 480 960
Feet

1:8,000

ERM



Dominion Energy®

Figure 5.1.7-1

Conservation Easements within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia

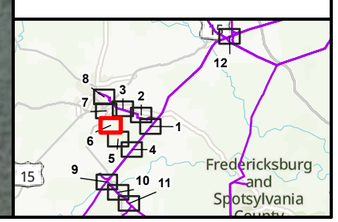
- Milepost
- Right-of-Way
- 0.25-Mile Buffer

0 480 960
Feet

1:8,000

ERM

N
W E
S



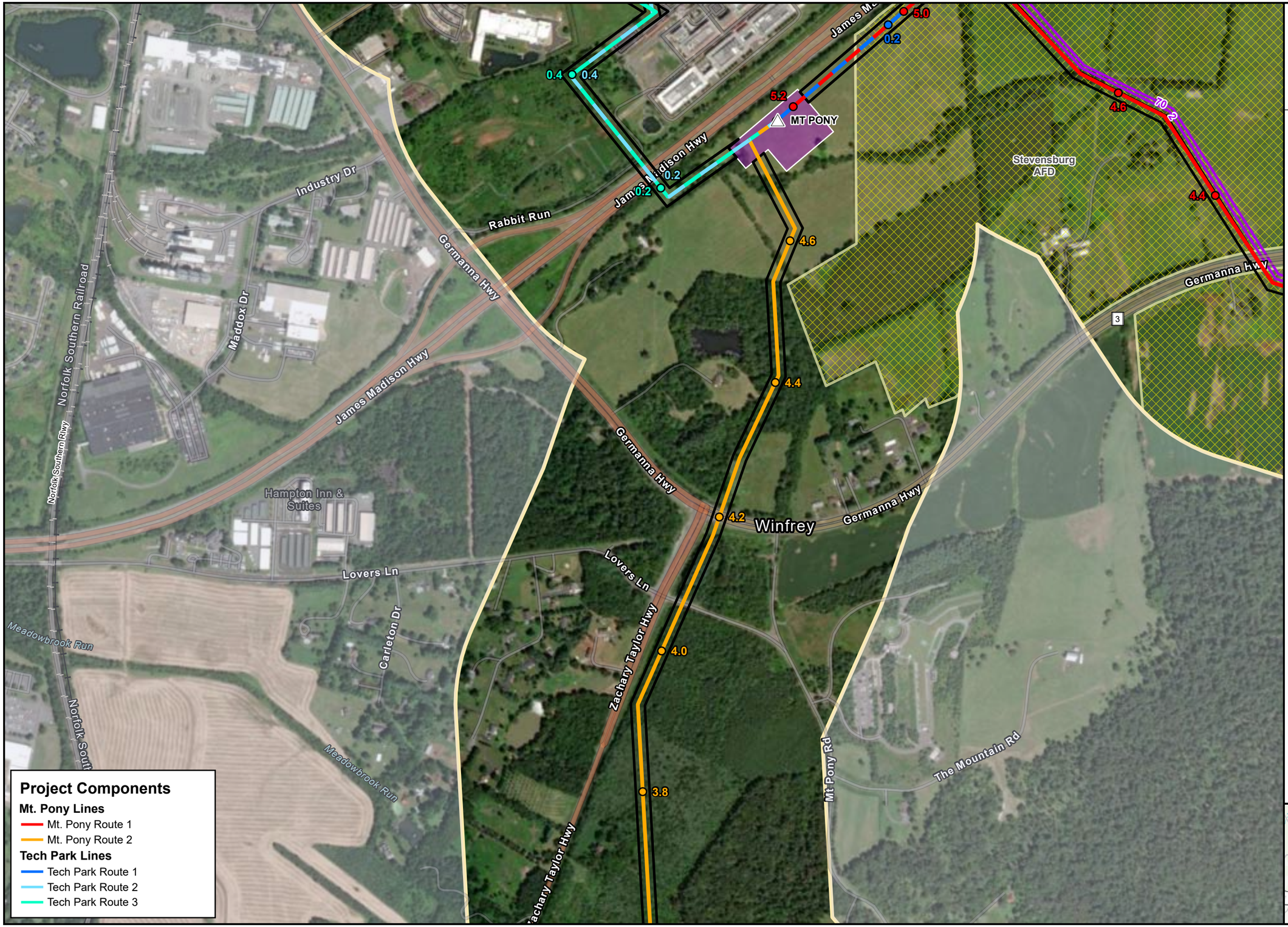
Dominion Energy

Figure 5.1.7-1

Conservation Easements within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia



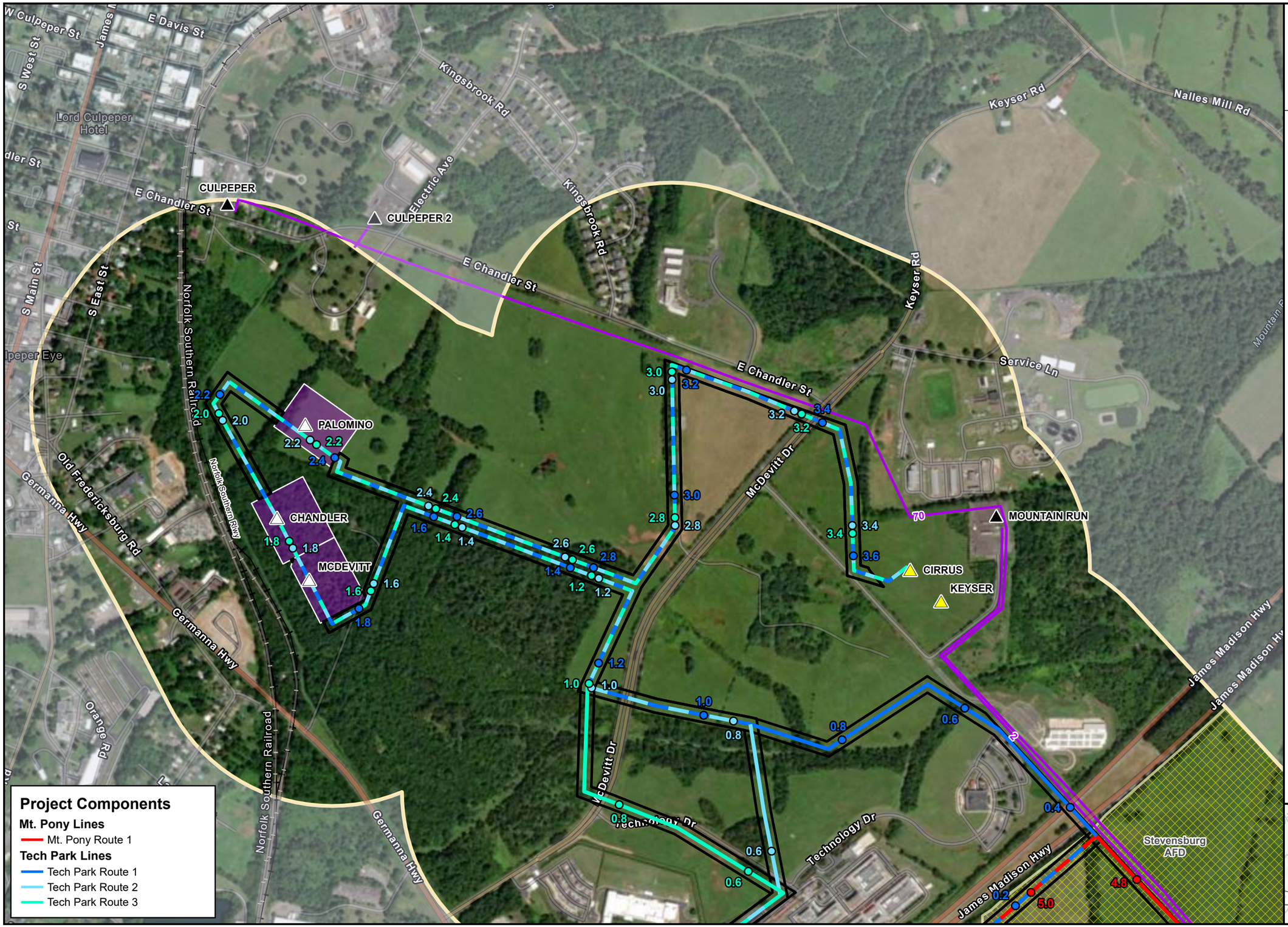
Dominion Energy

Figure 5.1.7-1

Conservation Easements within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper County
Virginia



- Existing Substation/Switching Station
- Approved Future Substation/ Switching Station
- Proposed Substation/Switching Station
- Milepost
- Proposed Substation/Switching Station Footprint
- Existing Dominion Transmission Line
- Railroad
- Right-of-Way
- 0.25-Mile Buffer
- Culpeper County Agricultural Forestal Districts

0 480 960
Feet

1:8,000

ERM

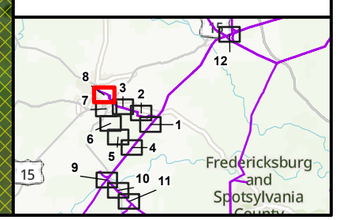


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Figure 5.1.7-1

Conservation Easements within 0.25 Mile of Route Alternatives

Culpeper Technology Zone 230 kV Loop and Lines #2 and #1065 Conversion Project

Culpeper and Orange Counties
Virginia

Somerville Rd
Cedar Run
522
Zachary Taylor Hwy
2499
Algonquin Trl
Bellmeadow Dr
Twin Mountains Rd
0.0
1
2
Brandywine AFD
0.2
0.4
0.6
0.8
Culpeper County
Orange County
Long Branch
Rapidan River
River Rd

Project Components

Oak Green Lines

Oak Green Rebuild and Relocation

- Milepost
- Existing Dominion Transmission Line
- County Boundary
- Right-of-Way (Existing and Proposed)
- 0.25-Mile Buffer

Easements

- VA Outdoors Foundation
- Culpeper County Agricultural Forestal Districts

0 480 960
Feet

1:8,000

N
W E
S

ERM

Fredericksburg and Spotsylvania County