Dominion Energy®

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

Before the State Corporation Commission of Virginia

Butler Farm to Clover 230 kV Line, Butler to Finneywood 230 kV Line and Related Projects

Application No. 317

Case No. PUR-2022-00175

Filed: October 21, 2022

Volume 3 of 3

Environmental Routing Study

Butler Farm–Clover and Butler Farm–Finneywood 230 kV Transmission Line Project

October 2022

Project No.: 0615787

The business of sustainability

ERM

Document details	The details entered below are automatically shown on the cover and the main page footer. PLEASE NOTE: This table must NOT be removed from this document.
Document title	Environmental Routing Study
Document subtitle	Butler Farm–Clover and Butler Farm–Finneywood 230 kV Transmission Line Project
Project No.	0615787
Date	October 2022
Version	1.0
Author	ERM
Client Name	Dominion Energy Virginia

Document history

				ERM approval to issue		
Version	Revision	Author	Reviewed by	Name	Date	Comments
Draft	DRAFT 00	Name	Name	Name	00.00.0000	Text

Signature Page

October 2022

Environmental Routing Study

Butler Farm–Clover and Butler Farm–Finneywood 230 kV Transmission Line Project

Jon Berkin
Partner

Matt Teichert
Project Manager

Environmental Resources Management, Inc.
222 South 9th Street, Suite 2900
Minneapolis Minnesota 55402

CONTENTS

List of Tables

APPENDIX A FIGURES

Acronyms and Abbreviations

Name	Description
3D	three dimensional
ABPP	American Battlefield Protection Program
AMSL	above mean sea level
CBG	Census Block Group
CCB	Center for Conservation Biology
CFR	Code of Federal Regulations
CPCN	Certificate of Public Convenience and Necessity
CREP	Conservation Reserve Enhancement Program
CWA	Clean Water ACT
E2EM	estuarine
EJ	environmental justice
EJSCREEN	EPA's EJ mapping and screening tool
EMF	electromagnetic field
ERM	Environmental Resources Management, Inc.
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FCV	Forest Conservation Value
GIS	Geographic Information Systems
IPaC	Information for Planning and Consultation System
KOP	Key Observation Point
kV	kilovolt
LiDAR	light detection and ranging
MP	milepost
MVA	megavolt-amperes
MW	megawatt
NA	not applicable
NERC	North American Electric Reliability Corporation
NHD	National Hydrography Dataset
NHDE	Natural Heritage Data Explorer
NHL	National Historic Landmarks
NHP	Natural Heritage Program
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
PEM	palustrine emergent
PFO	palustrine forested
Project	Butler Farm–Clover and Butler Farm–Finneywood 230 kV Transmission Line Project
PSS	palustrine scrub-shrub
ROW	right-of-way
SCC	[Virginia] State Corporation Commission
SCU	Stream Conservation Unit
SSURGO	Soil Survey Geographic

Name	Description
TERPS	terminal instrument procedures
Transco	Transcontinental Gas Pipeline Company
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
Va., VA	Virginia
VAC	Virginia Administrative Code
VaFWIS	Virginia Fish and Wildlife Information Service
VCRIS	Virginia Cultural Resource Information System
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDHR	Virginia Department of Historic Resources
VDOT	Virginia Department of Transportation
VDWR	Virginia Department of Wildlife Resources
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 (herein referred to as Dominion Energy Virginia, Dominion, or the Company) for the proposed Butler Farm to Clover 230 kV Line and Butler Farm to Finneywood 230 kV Line Project (Project).

1.1 Project Description

To provide service requested by a retail electric service customer, maintain reliable service for overall load growth in the area, and comply with mandatory North American Electric Reliability Corporation (NERC) Reliability Standards, Dominion Energy Virginia proposes to construct and operate the following facilities in Halifax, Charlotte, and Mecklenburg Counties, Virginia:

- A new single circuit 230 kV transmission line that would extend from the existing Clover Switching Station in Halifax County east to the proposed Butler Farm Substation in Mecklenburg County (Butler Farm–Clover Line).
- A new single circuit 230 kV transmission line that would extend from the proposed Finneywood Switching Station south to the proposed Butler Farm Substation in Mecklenburg County (Butler Farm–Finneywood Line).
- The new Finneywood Switching Station, which would include installing two 840 megavolt-amperes (MVA) 500/230 kV transformers, a 230 kV breaker and half bus with 10 breakers, and a 500 kV ring bus with 4 breakers.
- The new Butler Farm Substation, which would include installing a 230 kV breaker and half scheme 230-kV bus with an ultimate configuration of 15 breakers.

In developing the Project, the Company considered the facilities required to construct and operate the Project, the length of new rights-of-way (ROWs) that would be required, the amount of existing development in the area, the potential for environmental impacts and impacts on communities, and the relative cost of the Project. As discussed in detail below, ERM identified three viable route options for the Butler Farm–Clover Line, and two viable route options for the Butler Farm–Finneywood Line.

1.2 Objectives of the Study

The Company requested ERM's services to define a study area for routing the new proposed facilities, collect information on routing constraints and opportunities within the study area, identify and compare transmission line alternative routes, and document these efforts. ERM's scope of work consisted of the following activities:

- Define and describe a study area based on the Company's transmission and service needs.
- Gather information regarding constraints and opportunities to be considered as part of the routing process.
- Identify and map routing constraints and opportunities within the study area.
- Identify buildable potential routes for transmission line segments that meet the siting criteria provided in the Code of Virginia (Va. Code) and included in the Virginia State Corporation Commission's (SCC) minimum filing guidelines for transmission projects.

- Compare the potential routes based on an analysis of environmental impacts and utilization of routing opportunities.
- Recommend a preferred route for each new transmission line.

2. METHODOLOGY

ERM defined the study area to encompass Dominion's existing Clover Switching Station to the west, Dominion's proposed Finneywood Switching Station to the north, Dominion's proposed Butler Farm Substation to the south, and the unincorporated area of Scotts Crossroad to the east. Figures 2-1 and 2-2 in Appendix A depict the study area boundary, existing Clover Switching Station, proposed Finneywood Switching Station and Butler Farm Substation, the Company's existing transmission lines, and roads in the vicinity of the Project. In total, the study area encompasses approximately 139 square miles within Halifax, Charlotte, Mecklenburg, and Lunenburg Counties.[1]

The study area includes the town of Chase City as well as the unincorporated communities of Public Fork, Wylliesburg, Finneywood, Barnes Junction, Black Branch, Fairview, Scotts Crossroad, Red Oak, Spanish Grove, and Philbeck Crossroads. The Staunton River flows from north to south across the western third of the study area, with much of the land along the river owned and managed by the U.S. Army Corps of Engineers (USACE) as part of the John H. Kerr Dam and Reservoir. Land use/land cover in the study area outside Chase City and the unincorporated communities is predominantly rural and either agricultural or forested.

Once the study area was defined, ERM identified and mapped existing land uses, planned developments, and environmental, visual, and cultural features within the study area. To complete the initial study, the routing team obtained, reviewed, and used the following data sources:

- Mecklenburg County geographic information system (GIS) datasets online portal (Mecklenburg County 2022)
- Virginia Department of Transportation (VDOT) projects and studies database (VDOT 2022);
- National Conservation Easement database (NCED 2022)
- Virginia Department of Conservation and Recreation (VDCR) Virginia conservation lands database (VDCR 2022)
- Virginia Department of Historic Resources (VDHR) Virginia Cultural Resource Information System (VCRIS; VDHR 2022)
- United States Environmental Protection Agency's Environmental Justice Screening and Mapping Tool (EJSCREEN; USEPA 2020)
- United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) mapping (USFWS 2022)
- Current aerial imagery taken in November 2020 (ESRI 2022)

From these and other sources, sensitive environmental resources or other features that could affect the constructability of the Project were defined as routing constraints.

ERM identified existing electric transmission lines, pipelines, roads, and other ROWs within the study area using a variety of digital map resources, current aerial imagery, and data provided by Dominion for its existing transmission facilities. These existing linear corridor features were defined as potential opportunities for routing the new transmission infrastructure. ERM layered the routing opportunities over the constraints in GIS to identify potential preliminary routes.

[1] None of the alternatives discussed in this report are located in Lunenburg County.

Subsequently, a more sophisticated route selection process was completed. ERM refined the preliminary routes taking into account potential impacts on environmental resources and utilization of routing opportunities. To the extent practicable, ERM identified routes that both avoid constraints and utilize routing opportunities, where appropriate. ERM conducted an analysis using GIS to quantify potential impacts associated with constraints and the use of opportunities for each route. Crossings of sensitive features were measured and tabulated to facilitate route comparisons. Other factors, such as visual and construction-related impacts, were assessed based on ERM's experience in electric transmission route selection.

Following a preliminary quantitative route assessment, Dominion Energy Virginia engaged the public, including elected officials, and regulatory, planning, and land managing agencies in discussions to gather feedback on the various routes. Some of this feedback resulted in adjustments to optimize the routes and, in certain cases, helped to inform the Company's decision to reject a specific route. Preferred routes were then identified based on a comparison of the advantages and disadvantages of each route. The process considered both the sensitivity and extent of the constraints relative to each route.

2.1 Study Area

As a first step in identifying potential transmission line routes, ERM (as directed by Dominion Energy Virginia) defined a geographic study area for the Project based on Dominion Energy Virginia's electric transmission and service needs as described above. Generally, the study area was defined to encompass the fixed beginning and ending points for the proposed facilities (i.e., the existing and proposed substations) as well as an area broad enough to allow for identifying reasonable alternative routes that meet the Project's objectives.

The Project study area is rectangular in shape and lies within the rural setting of southern Virginia in Halifax, Charlotte, Mecklenburg, and Lunenburg Counties. The study area also includes the town of Chase City to the east as well as several unincorporated communities as listed above. The Project study area's western boundary begins approximately 0.7 mile west of the existing Clover Switching Station, extending south for 8.0 miles. The southern boundary, which is approximately 0.7 mile south of the unincorporated area of Philbeck Crossroads, extends about 17.3 miles east from the western boundary to the eastern boundary. The Project study area's eastern boundary is located just east of the unincorporated area of Scotts Crossroad, extending north, from the southern boundary, about 8.0 miles to the northern boundary. Figures 2-1 and 2-2 in Appendix A show the study area.

2.2 Inventory of Constraints and Opportunities

A number of environmental features and routing constraints are present in the Project study area. These include:

- Virginia Outdoors Foundation (VOF) Easements: Multiple VOF easements are located throughout the study area and in particular in the western portion of the study area near the Staunton River.
- USACE Lands and Easements: The USACE owns land in fee title along the Staunton River beginning approximately 2.0 miles south of the Clover Switching Station and continuing south along the river through the study area. These lands comprise the John H. Kerr Dam and Reservoir. The USACE also has a flowage easement along the river north of their fee-owned land.
- Solar Development: Multiple solar developments are located in Charlotte and Mecklenburg Counties within the study area. The status of these solar developments range from conceptual to newly constructed and in service.

- Forested and Agricultural Lands: The Project is located in predominantly rural areas with forested and agricultural lands as the dominant land use/cover types. Many forested areas are used as timberlands and harvested when the trees mature. Agricultural activities are found in most non-forested places outside the limited urbanized and residential places within the study area.
- Chase City: The town of Chase City is a large urban area in the eastern portion of the study area. Residential and commercial developments are located within the town center as well as along major roadways into and out of the town.

The following list highlights the major routing opportunities present in the Project study area. These features (along with the constraints in the study area) are described in more detail in Chapter 3, Inventory of Existing Conditions:

- Dominion's existing transmission infrastructure
- Existing pipeline ROWs
- VDOT ROWs

2.3 Route Identification

Once the routing opportunities and constraints were identified and assessed, potential routes were identified within the study area that could meet the Project's objectives. Efforts were made to collocate routes with existing transmission lines and other linear corridor features, such as pipelines. Subsequent to the identification of preliminary routes, ERM conducted several site visits and began evaluating the routes. The Company also began stakeholder and agency outreach during this time to assist with route evaluation.

As referenced in Section 1.1, Project Description, two separate transmission lines are required to provide the service requested by the customer, maintain reliable service for overall growth in the area, and comply with mandatory NERC Reliability Standards. These two transmission lines are referred to as the Butler Farm–Clover Line and the Butler Farm–Finneywood Line.

The Butler Farm–Clover Line would require a single circuit 230 kV transmission line from the existing Clover Switching Station in Halifax County extending east to the proposed Butler Farm Substation southwest of Chase City in Mecklenburg County. Multiple potential routes were identified for the Butler Farm–Clover Line, of which three were deemed feasible for construction. The remaining routes were rejected from further consideration for the reasons discussed in Section 2.5, Routes Rejected from Further Consideration.

The Butler Farm–Finneywood Line would require a single circuit 230 kV transmission line from the proposed Finneywood Switching Station located north of Chase City in Mecklenburg County extending south to the proposed Butler Farm Substation southwest of Chase City. Multiple potential routes were identified for the Butler Farm–Finneywood Line with two routes deemed feasible for construction. The remaining routes were rejected from further consideration for the reasons discussed in Section 2.5.

2.4 Proposed Alternative Routes

2.4.1 Butler Farm–Clover Line

2.4.1.1 Butler Farm–Clover Route 1

Starting at the Clover Switching Station, Butler Farm–Clover Route 1 heads east for about 1.4 miles, paralleling the south side of Dominion's existing Line #556 ROW across mostly forested lands. The route then turns to the northeast, away from Line #556, for about 0.6 mile, crossing over the Staunton River at

approximate milepost (MP) 1.7. The route then turns to the southeast for 0.7 mile until it rejoins Line #556 and parallels the north side of the existing ROW to the east for 0.8 mile. The route then heads to the northeast, away from Line #556, for 0.7 mile before turning back to the southeast for 0.8 mile, rejoining Line #556 at about MP 5.0. At this point, the route continues east along the north side of the existing ROW for Line #556 for 0.3 mile. It then crosses to the south side of Line #556 and continues east along the existing ROW for 5.5 miles. In this segment, the route passes north of Wylliesburg near MP 7.2 and crosses Quarter Horse Road at MP 9.1.

At a point near the unincorporated town of Finneywood, the route turns southeast and then east along a greenfield alignment for about 1.2 miles before intersecting Dominion's existing ROW for Line #1012. The route then continues south paralleling the west side of the existing ROW for another 2.1 miles, crossing agricultural and forested tracts and intersecting Highway 47 at about MP 13.5. The route next heads south and east for about 0.6 mile, leaving the existing ROW to avoid homes in close proximity to Line #1012 along Highway 47.

At about MP 14.6, the route rejoins and follows the west side of the Line #1012 ROW for another 1.1 miles to the southeast, crossing a series of forested and agricultural parcels, and intersecting Spanish Grove Road at MP 15.2. This segment of the route passes about 0.9 mile to the west of Chase City. The route then deviates from Line #1012, heading mainly south for about 2.1 miles along a greenfield alignment across forested and agricultural lands, crossing Highway 92 at MP 16.8 and Highway 49 at MP 18.0. The route next turns and extends to the east/southeast for about 1.1 miles, continuing along a greenfield alignment across forested or open parcels. At its terminus, the route enters a proposed data center campus and the proposed Butler Farm Substation in the area approximately between High Street and the Norfolk Southern Railroad on the south side of Chase City.

Butler Farm–Clover Route 1 measures approximately 19.1 miles in length.

2.4.1.2 Butler Farm–Clover Route 2

Butler Farm–Clover Route 2 follows the same alignment as Butler Farm–Clover Route 1 for the first 9.4 miles from the Clover Switching Station to a point just east of Quarter Horse Road. At that point, the route turns south and continues across forested land or pasture along a greenfield alignment for about 3.6 miles to a crossing of Dominion's existing ROW for Line #235. This segment of the route crosses High House Road at about MP 11.6, approximately along the Charlotte/Mecklenburg County line. After the route crosses over Line #235, it parallels the west side of Dominion's existing ROW for Line #36 for approximately 0.5 mile to MP 13.0. To avoid homes close to Line #36, the route next follows a greenfield alignment for about 0.7 mile to the southwest, then 0.4 mile to the southeast, rejoining the existing ROW at the crossing of Trottinridge Road near MP 14.5. At this point, the route turns south and parallels the west side of Line #36 for about 1.5 miles to an intersection with an existing Transcontinental Gas Pipeline Company (Transco) natural gas pipeline corridor. The route then turns east to parallel the south side of the pipeline ROW for another 1.5 miles to about MP 17.4, mostly crossing forested or agricultural tracts. The route then deviates from the natural gas pipeline corridor continuing east then northeast for 3.6 miles across forested and agricultural parcels, crossing Highway 49 at MP 17.8, then entering a proposed data center campus. Once on the site, the route crosses through the center of the property into the proposed Butler Farm Substation.

Butler Farm–Clover Route 2 measures approximately 21.1 miles in length.

2.4.1.3 Butler Farm–Clover Route 3

Butler Farm–Clover Route 3 follows the same alignment as Butler Farm–Clover Route 1 for the first 3.5 miles from the Clover Switching Station to a point just east of Colemans Ferry Road. At that point, the route turns and continues southeast for about 4.1 miles along a greenfield alignment across mostly

forested and agricultural parcels, crossing Kings Highway at MP 5.5 and Highway 92 at MP 6.9. The route intersects Dominion's existing ROW for Line #235 at about MP 7.6, then follows the north side of this corridor for about 4.6 miles east to an intersection with Dominion's existing ROW for Line #36 at MP 12.1. From this point, the route follows the same alignment as Butler Farm–Clover Route 2 for the remaining 8.0 miles to the proposed Butler Farm Substation.

Butler Farm–Clover Route 3 measures approximately 20.2 miles in length.

2.4.1.4 Butler Farm–Clover Route Variation

Butler Farm-Clover Route Variation provides an alternative alignment to the Butler Farm-Clover Route 1 where the route crosses through the proposed Chase City Apartment Complex development. Beginning at MP 16.1 on Butler Farm-Clover Route 1, the route variation extends south for 0.3 mile before turning to the southeast for 0.2 mile and crossing over Bailey Drive. The route then heads southwest for 0.1 mile before turning south for 1.1 miles, crossing over Highway 92 at MP 0.7, and terminating at MP 17.9 along Butler Farm-Clover Route 1.

Butler Farm-Clover Route Variation measures approximately 1.7 miles.

2.4.2 Butler Farm–Finneywood Line

2.4.2.1 Butler Farm–Finneywood Route 1

Starting at the Finneywood Switching Station, this route initially extends west from the station for 0.2 mile until it intersects the Company's existing ROW for Line #235. The route then turns and continues southeast for about 2.5 miles following the Company's existing ROW for Line #235, with the route on the east side of the corridor from MPs 0.2 to 0.4 and the west side of the corridor from MPs 0.4 to 2.7. This segment of the route mostly crosses forested land and isolated parcels of open land or pasture with a crossing of the Norfolk Southern Railroad at MP 2.0 and Highway 47 at MP 2.6. The route leaves the Line #235 ROW at about MP 2.7, heading south along a greenfield alignment for 0.2 mile to an intersection with the Company's existing ROW for Line #1012. The route then follows the same alignment as Butler Farm–Clover Route 1 for 4.1 miles to its terminus at the proposed Butler Farm Substation. If both Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 are selected for the Project, the centerlines of the two routes would be offset by 40 feet where the routes are collocated, with Butler Farm–Finneywood Route 1 to the west of Butler Farm–Clover Route 1.

Butler Farm–Finneywood Route 1 measures approximately 7.0 miles in length.

2.4.2.2 Butler Farm–Finneywood Route 2

This route initially heads east out of the proposed Finneywood Substation for 0.1 mile, then turns to the north for 0.1 mile before intersecting the Company's existing ROW for Line #556. The route then turns to the east for 0.9 mile paralleling the south side of the existing ROW for Line #556. This segment crosses mostly forested land, intersecting Highway 49 at about MP 1.0. The route then turns and continues south along a greenfield alignment through forested or agricultural lands for about 4.9 miles, passing east of Chase City. This route segment crosses the Company's existing ROW for Line #98 at MP 2.1, Highway 47 at MP 4.0, and the Company's existing ROWs for Lines #40 and #38 at MPs 4.6 and 5.3, respectively. The route next turns west and continues for 1.4 miles along a greenfield alignment across forested or agricultural parcels, crossing Highway 92 and the Norfolk Southern Railroad at MPs 7.2 and 7.4, respectively. The route then follows the same alignment as Butler Farm–Finneywood Route 1 about 0.3 mile south to the proposed Butler Farm Substation.

Butler Farm–Finneywood Route 2 measures approximately 7.8 miles in length.

2.4.2.3 Butler Farm–Finneywood Route Variation

Butler Farm-Finneywood Route Variation provides an alternative alignment to the Butler Farm-Finneywood Route 1 where the route crosses through the proposed Chase City Apartment Complex development. The route follows the same alignment as Butler Farm-Clover Route Variation for the entirety of the route. If both Butler Farm–Clover Route Variation and Butler Farm–Finneywood Route Variation are selected for the Project, the centerlines of the two routes would be offset by 40 feet, with Butler Farm–Finneywood Route Variation to the west of Butler Farm–Clover Route Variation.

Butler Farm-Finneywood Route Variation measures approximately 1.7 miles.

2.5 Routes Rejected from Further Consideration

Dominion Energy Virginia reviewed additional potential alternative routes for the Project that it rejected from further consideration for the reasons discussed below.

2.5.1 Butler Farm–Clover Line

The Butler Farm–Clover component of the Project would require a crossing of the Staunton River, which is designated as scenic by the VDCR. Additionally, as shown on Figure 2.5-1, the USACE either owns lands along the river that are part of the John H. Kerr Dam and Reservoir or holds flowage easements on private lands adjacent to the river within the study area. The fee-owned lands and flowage easements together form a nearly unbroken chain of USACE-owned or managed lands along the river. Some parcels along the river additionally have been enrolled as VOF conservation easements.

The Company initially identified three potential crossings of the Staunton River: (1) along Dominion's existing ROW for Line #556 (crossing a USACE flowage easement and a VOF easement); (2) along Dominion's existing ROW for Line #235 (crossing USACE-owned land); and (3) along an existing Transco natural gas pipeline (also crossing USACE-owned land). These are labeled as Crossing 1, Crossing 2, and Crossing 3, respectively, on Figure 2.5-1. The Company subsequently met with the USACE to review the crossings and determine the permitting viability of crossing either the fee-owned land or flowage easement. The USACE advised Dominion that it would not permit a crossing of its fee-owned land if a viable alternative is available but would allow a crossing of the flowage easement.

Based on the feedback from the USACE, Crossings 2 and 3 were eliminated from further consideration. Crossing 1 along the Company's existing ROW for Line #556 was initially retained as a potential route across the river. As discussed in more detail below, however, because the Crossing 3 alignment would also intersect a VOF easement, it too was eliminated from further consideration as a viable alternative.

The Company considered the potential to route the transmission line along a southeasterly alignment between the existing Clover Switching Station and the intersection of Dominion's existing ROWs for Lines #235 and #36 near Spanish Grove, a straight-line distance of about 10.5 miles (Figure 2.5-2). The majority of this route would be greenfield. Because the SCC Guidelines favor the use of existing over new ROWs, and because there are multiple existing transmission and pipeline ROWs in the study area, the Company eliminated this potential option from further consideration.

As an alternative to Butler Farm–Clover Routes 2 and 3, the Company evaluated a potential route extending east from the intersection of the existing ROWs for Lines #235 and #36 toward Chase City (Figure 2.5-2). The route initially followed the south side of the existing Line #235 ROW for about 1.2 miles to the east in the area approximately between Tinker and Spanish Grove Roads. The route then turned south for about 0.2 mile, before continuing east toward Chase City, avoiding a home in close proximity to the existing line as well as the newly constructed Bluestone Solar Development. The Company subsequently learned of another solar development, the proposed Otter Creek Solar

Development, extending across what would be the ROW for the alternate route in the vicinity of the existing Spanish Grove Substation. After discussion with the Otter Creek developer, the Company determined that the potential alternate route would conflict with the planned solar development. The Company considered shifting the route further south to avoid the proposed solar facility, but this potential alignment was blocked by existing development along Highway 92 as well as tower height restrictions associated with the Chase City Municipal Airport, located about 0.6 mile to the south. For these reasons, the route was rejected from further consideration.

Dominion's existing Line #556 crosses two VOF easements in the western portion of the study area near the Staunton River. The Company investigated collocating the new transmission infrastructure with Line #556 through these easements, including holding multiple coordination calls with VOF staff. Through these calls, the Company learned that the VOF would require a 37:1 replacement ratio for easement lands affected by the Project in addition to a nominal fee as compensation for the crossing. Additionally, VOF would not begin processing a crossing application until after the SCC selects a route, and said it would take 6 to 18 months to approve an application after processing begins, which could place the Company's proposed in-service date in jeopardy. For these reasons, the Company rejected routes crossing the VOF easements (including Crossing 1 of the Staunton River as noted above).

Where Butler Farm-Clover Route 1 and Butler Farm-Finneywood Route 1 are collocated with one another south of Highway 92, the routes cross the proposed Chase City Apartment Complex development. The Company reviewed possible alternative routes to avoid crossing the development. One of these routes included routing west of the Bluestone Solar site and then south, crossing Highway 92 just west of the intersection with Airport Road. The route would then turn southeast for 1.3 miles before rejoining the alternative routes northwest of Highway 49. As this route is in close proximity to the Chase City Municipal Airport, the Company requested a preliminary review of the route's closest point to the airport. The review determined that the routes, at the location where they would cross over Line #235, would be limited to a maximum height of 79 feet. This height limitation would not allow safe spacing between the proposed and existing lines, which ultimately resulted in the removal of the route from further consideration.

Where the alternate routes are collocated with existing transmission or pipeline ROWs, the Company considered proximity to residences, impacts to developments and local land uses, and the number of crossings of the existing ROWs to determine the optimal side of the corridor for the new infrastructure. Based on these and other factors, the Company selected the optimal side for collocation and removed from further consideration collocation on the opposite side of the existing ROW.

2.5.2 Butler Farm–Finneywood Line

As an alternative to Butler Farm–Finneywood Route 1 as well as Butler Farm–Clover Route 1, the Company investigated a route on the west side of Chase City in the area west of Monroe Street, part of which would follow an existing low-voltage transmission/distribution line (Figure 2.5-2). The potential route extended south from the intersection of Dominion's existing ROWs for Lines #1012 and #235 for about 0.7 mile to 5th Street. From here, the route followed the general alignment of the existing low voltage transmission/distribution line south for about 1.4 miles, crossing West 2nd Avenue and West Sycamore Street and paralleling a short segment of High Street. Multiple residences and outbuildings are near this route, including one home within the ROW that would need to be removed or relocated. The route was rejected from further consideration due to the need to remove this home and to avoid residential areas in and near Chase City to the extent feasible.

2.6 Structure Types and Right-of-Way Widths

Dominion Energy Virginia would use multiple structure configurations for the Project (see proposed structure types in Appendix B).

For the Butler Farm–Clover Line, Dominion would use an H-Frame configuration for all alternative routes with the exception of Route 1 where the route would be collocated with Butler Farm-Finneywood Route 1 (should this route also be chosen). In this area, Dominion would use a single pole configuration. H-Frame structures would range in height from 60 to 135 feet, with an average height of 90 feet. Single pole structures would include all conductor arms on one side and would range in height from 95 to 125 feet, with an average height of 110 feet. The required ROW width for all routes would be 120 feet.

For the Butler Farm-Finneywoood Line, Dominion would use single pole configuration for all alternative routes. Single pole structures would include all conductor arms on one side and would range in height from 95 to 150 feet, with an average height of 113 feet. The required ROW width for all routes would be 120 feet.

2.7 Construction, Operation, and Maintenance Process

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

1. Detailed survey of the route alignment
2. ROW acquisition and clearing
3. Construction of access roads, where necessary
4. Installation of tower foundations
5. Assembly and erection of new structures
6. Stringing and tensioning of the conductors
7. Final clean-up and land restoration

All appropriate materials for the Project's 230 kV structures would be delivered and assembled at each structure location in the ROW. Detailed foundation design would not be completed until prior to construction; however, depending on soil conditions, the foundation design could include poured concrete requiring excavation for steel piles or caissons that might be vibrated, drilled, or driven into place. Structures would be erected with a crane and anchored to the foundation during final assembly. If there is excess soil from foundation construction, it would be evenly distributed at each structure and the soil replanted and stabilized. In wetland areas, excess soil would be removed and evenly distributed on an upland site within the Company's ROW. Typical construction equipment may 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. A 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.

Maintaining the ROW under the transmission lines is essential for the reliable operation of the line as well as public safety. Operation and maintenance of the line would consist of periodic inspections of the line and the ROW; 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 ROW. Danger trees are trees outside the cleared corridor that are sufficiently tall enough to fall into the ROW and potentially impact the transmission line. Periodic inspections would use both aerial and walking patrols. Normal operation and maintenance would require only infrequent visits by Dominion Energy Virginia or its contractors.

Most maintenance activities consist of selective, low-volume herbicide applications targeting only tree species on the ROW every 3 to 5 years, and the cutting of danger trees every 3 years. Dominion Energy Virginia only uses herbicides that are approved by the U.S. Environmental Protection Agency on power line ROWs.

3. INVENTORY OF EXISTING CONDITIONS

After defining the study area, ERM developed a list of routing criteria to help guide the routing process and provide a basis for comparing potential routes (see Table 3-1). The routing criteria includes routing constraints (e.g., sensitive environmental resources and existing and planned developments) and routing opportunities (e.g., existing corridors), as described in more detail in Chapter 4, Resources Affected. ERM inventoried existing conditions, routing constraints, and routing opportunities using information obtained from publicly available GIS data sets, agency websites, and other databases; published documents such as county or municipal land use plans; and communications with agency and county staff, stakeholders, and elected officials. 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 map and hand digitized the information needed to complete the study.

The existing conditions along the alternative routes are discussed in the subsections below. Table 3-1 identifies the various categories of constraint and opportunity features considered in this study. Descriptive information regarding features along and near the routes is provided in subsequent sections.

Table 3-1: Features Considered for Routing

Feature Type	Description
Existing Corridors	
Existing electric facilities	■ Transmission or distribution lines
Other utilities	■ Pipelines
Transportation infrastructure	■ Roads, railroads, and related corridors
Land Ownership	
	■ Federal, state, and local lands ■ Private lands
Land Uses	
Existing land use and land cover	■ Existing subdivisions ■ Land cover types (e.g., forested, agricultural, developed) ■ Residences, churches, schools, cemeteries
Recreational areas	■ Federal, state, county, or municipal parks ■ Federal-, state-, county-, or municipal-managed recreation areas ■ Golf courses ■ Recreation trails (biking, hiking, birding, wildlife)
Land use planning and zoning	■ Zoning districts
Planned developments	■ Planned, proposed, or conceptual residential, commercial, or industrial developments
Conservation lands and easements	■ VOF and VDCR conservation land and easements ■ Other conservation lands ■ Wetland mitigation banks
Transportation	■ Road crossings ■ Railroad crossings ■ Airport facilities

Feature Type	Description
Natural Resources	
Surface waters	■ Wetlands ■ Waterbodies
Protected or managed areas	■ Wildlife management areas
Protected species	■ Natural heritage resources ■ Threatened and endangered species ■ Bald eagles
Vegetation	■ Vegetation characteristics ■ Forested land ■ Agricultural land
Visual Resources	
Visually sensitive areas	■ View sheds to and from visually sensitive areas ■ Scenic rivers ■ Scenic byways
Cultural Resources	
Cultural resource sites	■ Archaeological sites ■ Historical or architectural sites and districts ■ NRHP-listed and eligible properties ■ Battlefields ■ VDHR protected easements
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

3.1 Land Use

3.1.1 Land Ownership

ERM obtained information on land ownership in the study area using publicly available GIS databases and digital parcel data from Halifax, Charlotte, Mecklenburg, and Lunenburg Counties (Real Estate Portal USA, LLC 2021a, 2021b, 2021c, and 2021d). While federal-, state-, and city-owned lands are present within the study area, the datasets indicate that all the lands crossed by the alternate routes discussed in this report are privately owned, with the exception of roadways. Figure 3.1-1 in Appendix A, Figures, depicts land ownership along each alternative route.

3.1.1.1 Federal Lands

The USACE owns parcels along the east and west sides of the Staunton River beginning at a point approximately 1.9 miles east of the existing Clover Switching Station and continuing south along the river across and outside the study area. The river segment between State Routes 360 and 761 (inclusive of the segment within the study area) is designated by the VDCR as the Staunton Scenic River, a component of the Virginia Scenic Rivers System. As discussed in Chapter 2, Methodology, the USACE advised Dominion that it would not permit a crossing of its fee title lands if a viable alternative is available. Based on this feedback, the Butler Farm–Clover routes avoid crossing the USACE-owned fee title lands along the river.

3.1.1.2 State Lands

Approximately 25 acres of the state-owned, 820-acre Difficult Creek Natural Area Preserve are located within the southwestern corner of the study area along Athens Mill Road in Halifax County. The state also owns an approximately 5.5-acre Department of Transportation maintenance property off Huss Road and Bailey Drive in Chase City. Neither site is crossed by the alternative routes discussed in this study.

3.1.1.3 County Lands

Within the study area, Charlotte County owns an approximately 35-acre parcel off Horse Horn Road in the Bacon District approximately 1.9 miles west of Red Oak, and an approximately 3.3-acre parcel off Jeb Stuart Highway about 0.9 mile west of Barnes Junction. Mecklenburg County owns an approximately 10-acre parcel containing an office and distribution facility on Duckworth Drive and the approximately 18.7-acre Chase City Elementary School parcel on Highway 47. Both properties are located in the northern portion of Chase City. None of these county lands are crossed by the alternative routes discussed in this study.

3.1.1.4 Municipal Lands

The study area contains various parcels of municipal-owned land in Chase City, including the Chase City Municipal Airport located off Hangar Road (approximately 35.3 acres), the Chase City Water Plant off High Street (approximately 38 acres), and various parcels throughout the town. None of these lands are crossed by the alternative routes discussed in this study.

3.1.2 Existing Land Use and Land Cover

Land use and land cover within the study area were classified using a combination of local and state-wide datasets (Virginia Geographic Information Network 2016) as well as aerial photo interpretation to identify the most current uses for a given area. Land use and land cover can be broken down into the following five main categories:[2]

- Developed lands: These are areas characterized by medium- to high-density constructed buildings, such as certain residential subdivisions and commercial areas, as well as impervious surfaces. Additional information on residences and residential areas near the transmission line alternative routes is provided in Section 3.1.4, Residences, Residential Areas, and Commercial Structures.
- 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. Additional information on

[2] For purposes of land use/land cover, wetland areas have been classified as open space, forested land, or open water. Wetlands near the routes are discussed separately in Section 3.3.1, Wetlands.

recreation areas near the routes, including parks, golf courses, and trails, is provided in Section 3.1.3, Recreation Areas.

- Forested lands: These are areas where land cover consists of natural or maintained woody vegetation. Additional information on forested lands near the routes is provided in Section 3.3.5, Vegetation.
- Agricultural lands: These are areas used for commercial farming (e.g., commercial row crops or specialized agricultural activities) or grazing. Additional information on agricultural lands near the routes is provided in Section 3.1.5, Agricultural Areas.
- Open water: These are open water features, including rivers, streams, lakes, canals, waterways, reservoirs, and ponds. Additional information on open water features near the routes is provided in Section 3.3.2, Waterbodies.

Figure 3.1-2 in Appendix A, Figures, depicts land use/land cover along the alternative routes discussed in this study. Each of the land use/land cover categories described above would be crossed by the routes discussed in this report.

3.1.3 Recreation Areas

ERM reviewed U.S. Geological Survey (USGS) topographic quadrangles (USGS 2022), recent digital aerial photography (ESRI 2022), county parcel and other land data (Real Estate Portal USA, LLC 2021a, 2021b, 2021c, and 2021d; CBI 2016), and other data sets to identify recreation areas (e.g., parks, golf courses, trails, and other recreational facilities) within the study area. Figure 3.1-3 (Appendix A, Figures) depicts those recreation areas located within 0.25 mile of the alternative routes discussed in this report. Descriptions of the recreation areas are provided in the subsections below.

3.1.3.1 John H. Kerr Dam and Reservoir

The most prominent recreational resource in the study area is the John H. Kerr Dam and Reservoir, which encompasses approximately 50,000 acres of reservoir and 55,000 acres of adjacent (mostly USACE) lands along the Staunton River in Virginia and North Carolina (USACE 2022). The area provides opportunities for numerous outdoor recreational activities, including camping, hiking, hunting, fishing, swimming, and birding. In the study area, the managed lands associated with this resource are limited to an approximately 0.5-mile-wide corridor of USACE and private lands along the river, approximately between Woodlawn Plantation to the north and Monroe Trail to the south. While none of the routes discussed in this study cross or pass within 0.25 mile of the John H. Kerr Dam and Reservoir, they cross private lands along the Staunton River subject to a USACE flowage easement as discussed in Section 3.1.9, Conservation and Other Easements.

3.1.3.2 Butler Farm–Clover Line

Three recreation areas—the Staunton River Blueway and Scenic River, the Staunton Loop of the Virginia Birding and Wildlife Trail System, and the Highway 47 Scenic Byway—are within 0.25 mile of one or more Butler Farm–Clover routes. Descriptions of these areas are provided in Table 3.1-1. There are no parks or golf courses within 0.25 mile of the routes.

Table 3.1-1: Recreation Areas within 0.25 Mile of the Butler Farm–Clover Routes

Name	Description	Distance and Direction of the Recreation Area from each Applicable Butler Farm–Clover Route or Facility
Staunton River Blueway and Staunton River Scenic River	Within the study area, the Staunton River is designated both as a blueway (paddle trail) and a scenic river by the VDCR. The paddle trail measures approximately 107 miles long, extending from Smith Mountain Lake in Pittsylvania County to Staunton River State Park in Halifax County (VDCR 2022a; National Rivers Project 2022). The river segment designated as scenic extends from Altavista in Campbell County to Staunton River State Park in Halifax County. Rivers designated as scenic "possess outstanding scenic, recreational, historic, and natural characteristics of statewide significance" (VDCR 2022b). For additional information on the scenic river, see Section 3.4, Visual Conditions	Route 1: 0 feet (crossed) at MP 1.7 Route 2: 0 feet (crossed) at MP 1.7 Route 3: 0 feet (crossed) at MP 1.7
Virginia Birding and Wildlife Trail–Staunton Loop	This VDWR-designated trail extends west/northwest approximately between Chase City and Brookneal, Virginia, with ten historic, natural, or recreational sites at various locations along the loop (VDWR 2022). Within the study area, the trail follows Highway 92 from Chase City to Clover, then Black Walnut Road north towards Staunton River Battlefield State Park. Two of the sites along the loop—the MacCallum More Museum and Gardens in Chase City and the Corner Stone Farm bed-and-breakfast near Barnes Junction—are within the study area. Neither site, however, is within 0.25 mile of a route.	Route 1: 0 feet (crossed) at MP 16.8 Route 2: 0 feet (crossed) at MP 13.7 Route 3: 0 feet (crossed) at MPs 6.9, 10.2, and 12.9 Route Variation: 0 feet (crossed) at MP 0.7
Highway 47 Scenic Byway	This VDOT-designated scenic byway follows Highway 47 from its intersection with Route 1 in Mecklenburg County to its intersection with Route 460 in Appomattox County. Within the study area, the byway extends west from Scotts Crossroad to Chase City, then north/northwest to Fairview, Black Brach, and Finneywood. Roads designated under the scenic byway program have high aesthetic or cultural values and link historic, natural, and/or recreational sites (VDOT 2022a). For additional information on the scenic byway, see Section 3.4, Visual Conditions.	Route 1: 0 feet (crossed) at MPs 13.5 and 14.2

MP = milepost; VDCR = Virginia Department of Conservation and Recreation; VDOT = Virginia Department of Transportation; VDWR = Virginia Department of Wildlife Resources

3.1.3.3 Butler Farm Substation

No recreation areas are located within 0.25 mile of the proposed Butler Farm Substation.

3.1.3.4 Butler Farm–Finneywood Line

Four recreation areas—the Staunton Loop of the Virginia Birding and Wildlife Trail System, the Highway 47 Scenic Byway, Mecklenburg Country Club, and Tobacco Heritage Trail—are within 0.25 mile of the Butler Farm–Finneywood routes. Descriptions of these resources are provided in Table 3.1-2. There are no parks within 0.25 mile of the routes.

Table 3.1-2: Recreation Areas within 0.25 Mile of the Butler Farm–Finneywood Routes

Name	Description	Distance and Direction of the Recreation Area from each Applicable Butler Farm–Finneywood Route or Facility
Virginia Birding and Wildlife Trail–Staunton Loop	See the description in Table 3.1-1.	Route 1: 0 feet (crossed) at MP 4.7 Route Variation: 0 feet (crossed) at MP 0.7
Highway 47 Scenic Byway	See the description in Table 3.1-1.	Route 1: 0 feet (crossed) at MP 2.6 Route 2: 0 feet (crossed) at MP 4.0
Tobacco Heritage Trail	This is a shared use trail following abandoned railroad corridors and active roads between Lawrenceville in Brunswick County and Chase City. In the study area, the trail follows Highway 47 from Scotts Crossroads to Chase City, then North Main Street from Chase City to Fairview (identical to the route for the scenic byway along Highway 47 described in Table 3.1-1).	Route 2: 0 feet (crossed) at MP 4.0
Mecklenburg Country Club	This nine-hole, private golf course is located on the east side of Chase City, just south of Highway 47 and east of Country Club Drive. The property encompasses approximately 103 acres, with a combined 3,253 yards of fairways and greens. The property also contains a clubhouse, pool, and courts (GolfLink 2022).	Route 2: 0 feet (adjacent) between MPs 4.3 and 4.4

MP = milepost

3.1.3.5 Finneywood Switching Station

No recreation areas are located within 0.25 mile of the proposed Finneywood Switching Station.

3.1.4 Residences, Residential Areas, and Commercial Structures

ERM identified residences (multi-unit-dwellings, single-family-dwellings, and mobile homes), commercial structures, and other non-residential buildings within 100 feet, 250 feet, and 500 feet of each alternative route centerline through review of various digital datasets and maps, USGS topographic quadrangles (USGS 2022), and recent digital aerial photography (ESRI 2022). Table 3.1-3 and Table 3.1-4 list the number of dwellings by type within these tiers for each alternative route. The locations of dwellings along the routes are depicted on Figure 3.1-4 (Appendix A, Figures). Additional information on the residential areas along each route is provided in the subsections below.

The majority of buildings along the routes are single-family residences on privately owned parcels. The western portion of the study area is largely undeveloped, while the far eastern portion includes developed lands within and near Chase City (though none of the routes cross Chase City). There are no dwellings located within the ROWs of the alternative routes.

Table 3.1-3: Residences and Other Structures within 100 Feet, 250 Feet, and 500 Feet of the Centerline of the Butler Farm–Clover Routes

Route Name	Structure Type	Structures within 100 Feet	Structures within 250 Feet	Structures within 500 Feet
Butler Farm–Clover Route 1	Commercial Buildings	3	7	25
	Non-residential Buildings	2	6	26
	Single-Family Residence	0	5	17
Butler Farm–Clover Route 2	Commercial Buildings	2	2	12
	Non-residential Buildings	7	13	43
	Single-Family Residence	0	9	34
Butler Farm–Clover Route 3	Commercial Buildings	1	1	2
	Non-residential Buildings	11	18	58
	Single-Family Residence	0	8	41
Butler Farm–Clover Route Variation	Commercial Buildings	1	6	14
	Non-residential Buildings	0	2	9
	Single-Family Residence	0	6	27

Table 3.1-4: Residences and Other Structures within 100 Feet, 250 Feet, and 500 Feet of the Centerline of the Butler Farm–Finneywood Routes

Route Name	Structure Type	Structures within 100 Feet	Structures within 250 Feet	Structures within 500 Feet
Butler Farm–Finneywood Route 1	Commercial Buildings	0	4	10
	Non-residential Buildings	0	3	17
	Single-Family Residence	0	4	15
Butler Farm–Finneywood Route 2	Commercial Buildings	0	0	3
	Non-residential Buildings	1	3	22
	Single-Family Residence	0	0	7
Butler Farm–Finneywood Route Variation	Commercial Buildings	1	8	14
	Non-residential Buildings	0	2	6
	Single-Family Residence	0	3	24

3.1.4.1 Butler Farm–Clover Line

Seventeen single-family residences are within 500 feet of the Butler Farm–Clover Route 1 centerline, with a majority of the dwellings (n=18; 72 percent) between 250 and 500 feet of the centerline. Most of the residences occur in the areas between MPs 11.0 and 14.5 (approximately between Greenhouse Road and High House Road); MPs 16.7 and 16.9 (along Baily Drive and Highway 92); and MPs 17.7 and 18.1 (along Highway 47). The Butler Farm–Clover Route 1 centerline additionally passes within 500 feet of 26 non-residential and 25 commercial structures, with the majority located between MPs 3.2 and 5.0

(approximately between Colemans Ferry Road and Lin Way Lane), MPs 13.9 and 14.4 (along Highway 47), MPs 16.3 and 16.6 (along Bailey Drive and Highway 92), and MPs 18.0 to 18.1 (along Highway 47).

Thirty-four single-family residences are within 500 feet of the Butler Farm–Clover Route 2 centerline, with a majority of the dwellings (n=25; 71 percent) between 250 and 500 feet of the centerline. Most of the residences are located in the areas between MPs 13.1 and 14.7 (approximately between Tinker Road and Country Way) and MPs 16.3 and 18.8 (approximately between Country Way and Butler Farm Road). The Butler Farm–Clover Route 2 centerline also passes within 500 feet of 43 non-residential and 13 commercial structures, with the majority of these located between MPs 3.3 and 5.0 (approximately between Colemans Ferry Road and Lin Way Lane), MPs 12.8 and 14.8 (approximately between Tinker Road and Country Way), and MPs 15.8 and 19.0 (approximately between Country Way and Butler Farm Road).

Forty-one single-family residences are within 500 feet of the Butler Farm–Clover Route 3 centerline, with a majority of the dwellings (n=33; 79 percent) between 250 and 500 feet of the centerline. Most of the residences occur in the areas between MPs 4.1 and 4.2 (along Hare Road), MPs 6.8 and 7.0 (along Highway 92/Jeb Stuart Highway), MPs 87 and 8.8 (along Barnesville Highway), MPs 10.8 and 10.9 (along Godseys Lane), MPs 11.9 and 13.9 (approximately between Tinker Road and Country Way), and MPs 15.0 and 18.2 (approximately between Country Way and Butler Farm Road). The Butler Farm–Clover Route 3 centerline additionally passes within 500 feet of 58 non-residential and 2 commercial structures, with most of these located between MPs 3.2 and 3.4 (along Colemans Ferry Road), MPs 4.6 and 4.8 (south of Rocky Branch Road), MPs 6.8 and 13.9 (approximately between Highway 92 and Trottinridge Road), and between MPs 14.9 and 18.2 (approximately between Country Way and Butler Farm Road).

Twenty-seven single-family residences are within 500 feet of the Butler Farm–Clover Route Variation centerline, with a majority of the dwellings (n=21; 77.8 percent) between 250 and 500 feet of the centerline. Most of the residences occur in the areas between MPs 0.4 and 0.5 (adjacent to Raven Road and north of Bailey Drive). The Butler Farm–Clover Route Variation centerline additionally passes within 500 feet of 9 non-residential and 14 commercial structures, with most of these located between MPs 0.4 and 0.8 (near Bailey Drive and along Highway 92), and between MPs 1.3 and 1.7 (west of Highway 49).

3.1.4.2 Butler Farm Substation

Two single-family residences are within 500 feet of the Butler Farm Substation site, one within 250 feet and none within 100 feet of the proposed substation. All residences are located east of the station, across the Norfolk Southern Railroad, off of Skipwith Road. Additionally, two non-residential structures are within 500 feet of the substation. All are located in the same area as the residences.

3.1.4.3 Butler Farm–Finneywood Line

Fifteen single-family residences are within 500 feet of the Butler Farm–Finneywood Route 1 centerline, with a majority of the dwellings (n=10; 71 percent) between 250 and 500 feet of the centerline. The residences mostly occur between MPs 0.5 and 0.7 (along Fort Mitchell Road), MPs 2.5 to 2.7 (along Highway 47), MPs 4.6 to 4.7 (along Bailey Drive and Highway 92), and MPs 5.7 to 5.9 (along Highway 49). The Butler Farm–Finneywood Route 1 centerline additionally passes within 500 feet of 17 non-residential and 10 commercial structures, with most located in these same areas.

Seven single-family residences are within 500 feet of the Butler Farm–Finneywood Route 2 centerline, all of which are between 250 and 500 feet of the centerline. Most of the residences occur between MPs 3.8 and 4.0 (along Highway 47) and MPs 4.8 and 5.1 (along Country Club Road). The Butler Farm–Finneywood Route 2 centerline also passes within 500 feet of 22 non-residential and 3 commercial structures, located in the same areas as well as between MPs 7.0 and 7.2 (along Highway 92).

Twenty-four single-family residences are within 500 feet of the Butler Farm–Finneywood Route Variation centerline, with a majority of the dwellings (n=21; 87.5 percent) between 250 and 500 feet of the centerline. Most of the residences occur in the areas between MPs 0.4 and 0.5 (adjacent to Raven Road and north of Bailey Drive). The Butler Farm–Finneywood Route Variation centerline additionally passes within 500 feet of 6 non-residential and 14 commercial structures, with most of these located between MPs 0.4 and 0.8 (near Bailey Drive and along Highway 92), and between MPs 1.3 and 1.7 (west of Highway 49).

3.1.4.4 Finneywood Switching Station

There are no residences, commercial structures, and other non-residential buildings within 100 feet, 250 feet, and 500 feet of the proposed Finneywood Switching Station

3.1.5 Agricultural Areas

Land use/land cover types in the Project vicinity consist of a mix of forested and agricultural lands with urban areas limited to Chase City and residential areas and individual homes found along the highways and roads of the area. Agricultural and open space lands are valued by the counties in the study area. Based on outreach to county staff, the counties prefer routes that avoid agricultural and open space lands where possible. Agricultural areas, mainly consisting of pasture and cropland, are found in the study area along the Barnesville Highway, predominately between Wylliesburg and Red Oak; along Highway 47 predominately between Chase City and Finneywood; and the area between Highway 92 and Highway 49 between Chase City and Philbeck Crossroads. Lists of the agricultural areas crossed by each route are provided in Table 3.1-5 and Table 3.1-6 and depicted on Figure 3.1-2 in Appendix A, Figures. An assessment of potential impacts on agricultural lands for the routes is provided in Section 4.1.4, Agricultural Areas.

Table 3.1-5: Agricultural Lands Crossed by the Butler Farm–Clover Routes

Route	Agricultural Lands Crossed
Butler Farm–Clover Route 1	■ MPs 1.8 to 2.2 in the area east of the Staunton River ■ MPs 2.6 to 2.9, MPs 3.0 to 3.1, and MPs 3.2 to 3.3 in the area east of Colemans Ferry Road ■ MPs 3.4 to 3.5 and MPs 3.8 to 3.9 in the area approximately between Colemans Ferry Road and Roanoke Station Road ■ MPs 4.7 to 5.0 in the area south of Tatum Ogeary Lane ■ MPs 5.2 to 5.6 in the area along Lin Way Lane ■ MPs 5.9 to 6.2 in the area west of Lin Way Lane ■ MPs 6.7 to 7.6 at the King's Highway crossing ■ MPs 11.1 to 12.0 in the area approximately between Greenhouse Road and Dominion's exiting ROW for Line #1012 ■ MPs 12.4 to 13.7 at the Highway 47 crossing near Black Branch ■ MPs 14.0 to 14.3 at the crossing of Highway 47 and High House Road ■ MPs 14.6 to 14.8 in the area south of Highway 47 ■ MPs 15.1 to 15.2 at the crossing of Spanish Grove Road ■ MPs 16.2 to 16.4 in the area north of Bailey Drive ■ MPs 16.8 to 17.1 in the area south of Highway 92 ■ MPs 17.5 to 18.0 in the area west of Highway 49
Butler Farm–Clover Route 2	■ MPs 1.8 to 2.2 in the area east of the Staunton River

Route	Agricultural Lands Crossed
	■ MPs 2.6 to 2.9, MPs 3.0 to 3.1, and MPs 3.2 to 3.3 in the area east of Colemans Ferry Road ■ MPs 3.4 to 3.5 and MPs 3.8 to 3.9 in the area approximately between Colemans Ferry Road and Roanoke Station Road ■ MPs 4.7 to 5.0 in the area south of Tatum Ogeary Lane ■ MPs 5.2 to 5.6 in the area along Lin Way Lane ■ MPs 5.9 to 6.2 in the area west of Lin Way Lane ■ MPs 6.7 to 7.6 at the King's Highway crossing ■ MPs 9.6 to 10.1 at the Lindward Road crossing ■ MPs 10.9 to 11.4 in the area south of West Spring Hill Road ■ MPs 13.0 to 13.5 at the crossing of Tinker Road ■ MPs 14.1 to 14.2 and MPs 14.4 to 14.5 in the area approximately between Lawson Road and Trottinridge Road ■ MPs 14.5 to 14.7 in the area approximately between Trottinridge Road and Country Way ■ MPs 15.5 to 15.7 and 16.1 to 16.3 in the area west of Country Way ■ MPs 16.8 to 16.9 and MPs 17.0 to 17.2 in the area approximately between Country Way and Cutesy Hill Road ■ MPs 18.5 to 18.6 at the crossing of Revelle Road
Butler Farm–Clover Route 3	■ MPs 1.8 to 2.2 in the area east of the Staunton River ■ MPs 2.6 to 2.9, MPs 3.0 to 3.1, and MPs 3.2 to 3.3 in the area east of Colemans Ferry Road ■ MPs 3.4 to 3.5, MPs 3.8 to 3.9, and MPs 4.1 to 4.2 in the area approximately between Colemans Ferry Road and Hare Road ■ MPs 4.5 to 5.6, MPs 4.7 to 4.8, MPs 4.9 to 5.1, and MPs 5.2 to 5.4 in the area approximately between Rocky Branch Road and Kings Highway ■ MPs 6.4 to 6.5 in the area north of Highway 92 ■ MPs 7.0 to 7.3, MPs 7.4 to 7.6, and MPs 7.4 to 7.5 in the area approximately between Highway 92 and Dominion's existing ROW for Line #235 ■ MPs 8.8 to 9.0, MPs 9.2 to 9.4, and MPs 9.7 to 10.0 in the area approximately between Barnesville Highway and Highway 92 ■ MPs 11.4 to 12.0 and MPs 12.2 to 12.6 in the area approximately between Allgood Road and Tinker Road ■ MPs 13.2 to 13.3 and MPs 13.6 to 13.8 in the area approximately between Highway 92 and Country Way ■ MPs 14.7 to 14.9 and MPs 15.3 to 15.4 in the area west of Country Way ■ MPs 15.7 to 15.8 and MPs 16.2 to 16.3 in the area approximately between Country Way and Cutesy Hill Road ■ MPs 17.7 to 17.8 at the crossing of Revelle Road
Butler Farm–Clover Route Variation	■ MPs 0.3 to 0.4 in the area west of Blankenship Road and north of Bailey Drive ■ MPs 0.5 to 0.7 in the area approximately between Bailey Drive and Highway 92 ■ MPs 1.3 to 1.7 in the area west of Highway 49

MP = milepost

Table 3.1-6: Agricultural Lands Crossed by the Butler Farm–Finneywood Routes

Route	Agricultural Lands Crossed
Butler Farm–Finneywood Route 1	■ MPs 0.5 to 0.8 and MPs 1.1 to 1.5 in the area approximately between Fort Mitchell Road and the Norfolk Southern Railroad ■ MPs 3.0 to 3.1 at the crossing of Spanish Grove Road ■ MPs 4.1 to 4.3 and MPs 4.4 to 4.6 in the area north of Bailey Drive ■ MPs 4.7 to 5.0 in the area south of Highway 92 ■ MPs 5.4 to 5.9 in the area west of Highway 49
Butler Farm–Finneywood Route 2	■ MPs 4.6 to 5.0 and MPs 5.3 to 5.7 in the area approximately between Dominion's existing ROW for Line #40 and Cemetery Road ■ MPs 6.7 to 7.2 in the area west of Highway 92
Butler Farm–Finneywood Route Variation	■ MPs 0.3 to 0.4 in the area west of Blankenship Road and north of Bailey Drive ■ MPs 0.5 to 0.7 in the area approximately between Bailey Drive and Highway 92 ■ MPs 1.3 to 1.7 in the area west of Highway 49

MP = milepost

3.1.6 Cemeteries, Schools, and Places of Worship

ERM reviewed USGS topographic quadrangles (USGS 2022), recent digital aerial photography (ESRI 2022), county parcel data (Real Estate Portal USA, LLC 2021a, 2021b, 2021c, and 2021d), and information from the Virginia Cultural Resource Information System (VDHR 2022) to identify cemeteries, schools, and/or places of worship within 0.25 mile of the alternative routes and other Project facilities discussed in this study. Additional information on cemeteries was obtained from findagrave.com (2022). Figure 3.1-5 (Appendix A, Figures) depicts the cemeteries, schools, and places of worship along and near each route.

3.1.6.1 Butler Farm–Clover Line

Cemeteries

ERM identified 11 cemeteries along and near the Butler Farm–Clover routes and associated facilities. Descriptions of these cemeteries are provided in Table 3.1-7, which also identifies the distance and direction of each cemetery from the applicable route(s). Of the cemeteries listed in Table 3.1-7, two burial grounds (Cemetery No. 3 and Friendship United Methodist Church Cemetery) are within 500 feet of one or more alternative routes. Potential impacts on these cemeteries from construction and operation of the Project are discussed in Section 4.1.5, Cemeteries, Schools, and Places of Worship. The remainder, which are greater than 500 feet from one or more routes, are not discussed further in this report.

Table 3.1-7: Cemeteries within 0.25 Mile of the Butler Farm–Clover Routes

Name	Description	Distance and Direction of the Cemetery from each Applicable Butler Farm–Clover Route or Facility [a]
Halifax County		
Unknown (referred to here as	A cemetery is labeled on a USGS topographic quadrangle (dating from 1981) at the current site of the existing Clover Power Station, which was built in the 1990s. The cemetery was documented as part of	Route 1: approximately 1,085 feet north of MP 0.0

Name	Description	Distance and Direction of the Cemetery from each Applicable Butler Farm–Clover Route or Facility [a]
Cemetery No 1.)	an archaeological survey completed prior to construction of the power plant (though it was not recorded as a site). At that time, the cemetery reportedly measured 20 by 20 feet in area, containing two polished granite headstones with burials dating from the early 20th century (Stewart et al. 1989).	Route 2: approximately 1,085 feet north of MP 0.0 Route 3: approximately 1,085 feet north of MP 0.0
Charlotte County		
Unknown (referred to here as Cemetery No. 2)	This cemetery is situated in an agricultural field off Lin Way Lane in Charlotte County. The cemetery encompasses approximately 0.1 acre based on county parcel data. The number and date of interments at the site is unknown. The burial ground is within an agricultural field with no indication of headstones visible on recent aerial photography of the area. There is a small copse of trees within the field about 30 feet south of the cemetery boundary as defined in county parcel data. This copse of trees could represent the location of the burial ground.	Route 1: approximately 625 feet north of MP 5.7 Route 2: approximately 625 feet north of MP 5.7
Unknown (referred to here as Cemetery No. 3)	This cemetery is located in a copse of trees within an agricultural field on the east side of Lindward Road in Charlotte County. Based on county parcel data, the burial ground encompasses just under 0.3 acre. The number and dates of interments at the cemetery is unknown.	Route 2: approximately 180 feet east of MP 9.8
Unknown (referred to here as Cemetery No. 4)	A cemetery is situated in a grove of trees on the north side of High House Road approximately at the Charlotte/ Mecklenburg County line. Based on county parcel data, the burial ground encompasses just under 0.3 acre. The site may be the Ivy Hill Family Cemetery, which contains at least 58 interments dating from the mid-20th to the 21st centuries. No headstones are visible on recent aerial photography of the area.	Route 2: approximately 520 feet east of MP 11.6
Unknown (referred to here as Cemetery No. 5)	This cemetery, which encompasses approximately 0.2 acre based on county parcel data, is located on the south side of Hare Road in Charlotte County. The reported location of the cemetery is within a hay field or pasture adjacent to a small copse of trees along the road. This may be the Cassada Family Cemetery, which contains at least nine interments dating from the mid-20th to the 21st centuries. A 2008 photo of the cemetery on findagrave.com (2022) depicts a fence around the burial ground; however, no indication of a fence is visible at the site on recent aerial photography.	Route 3: approximately 1,125 feet southwest of MP 4.1
Mecklenburg County		
Black Branch Baptist Church Cemetery	This cemetery associated with the Black Branch Baptist Church is situated just south of the intersection of Highway 47 and Twin Drive in Mecklenburg County. The parcel containing the church and cemetery encompasses about 5.2 acres; however, the burial ground appears to be limited to	Route 1: approximately 935 feet west of MP 13.7

Name	Description	Distance and Direction of the Cemetery from each Applicable Butler Farm–Clover Route or Facility [a]
	an approximately 1.0-acre area on the south side of the church based on recent aerial photography. The cemetery contains at least 339 interments ranging in date from the early 20th to the 21st centuries.	
Unknown (referred to here as Cemetery No. 6)	This cemetery is situated at the intersection of Huss Road and Highway 92 in Mecklenburg County, about 0.5 mile west of Chase City. The burial ground encompasses approximately 0.1 acre based on county parcel data. The number and date of interments at the site is unknown. The mapped location of the cemetery places it within a parcel containing a propane distribution facility, with the burial ground in an area of the site used for materials storage based on recent aerial photography. There is no indication of headstones in this area on recent aerial photography.	Route 1: approximately 745 feet east of MP 16.8 Route Variation: approximately 570 feet west of MP 0.6
Friendship United Methodist Church Cemetery	Located along Highway 49 in Mecklenburg County, this cemetery is associated with the Friendship United Methodist Church. It contains at least 185 burials ranging in date from the mid-20th to the 21st centuries. Based on county parcel data, the burial ground encompasses about 1.0 acre in area. The cemetery is mostly open with forest to the east, south, and west	Route 1: approximately 390 feet southwest of MP 18.0 Route Variation: approximately 690 feet southeast of MP 1.7
Unknown (referred to here as Cemetery No. 7)	A cemetery is situated in a partially cleared/partially forested area on the north side of High House Road in Mecklenburg County. The burial ground encompasses about 0.3 acre based on county parcel data. The site may be the Ivy Hill Family Cemetery, which as noted above contains at least 58 interments dating from the mid-20th to the 21st centuries. Approx. a dozen headstones are visible on recent aerial photography within the cleared portion of the site.	Route 2: approximately 930 feet east of MP 11.7
Unknown (referred to here as Cemetery No. 8)	This cemetery is located within an agricultural field east of Country Way and north of Brankley Road in Mecklenburg County. Based on county parcel data, the cemetery encompasses approximately 2.9 acres. The number and date of interments at the site is unknown. No headstones are visible on recent aerial photography of the area.	Route 2: approximately 950 feet south of MP 16.5 Route 3: approximately 950 feet south of MP 15.6
Unknown (referred to here as Cemetery No. 9)	This cemetery is situated on the east side of Highway 49 in Mecklenburg County. The tract containing the cemetery encompasses approximately 1.1 acres based on county parcel data. Most of the area is maintained, with forest along the north, east, and south sides of the burial ground. Approximately a dozen headstones are visible on recent aerial and/or Street Map photography of the cemetery; however, the total number and dates of burials at the site are unknown.	Route 2: approximately 655 feet north of MP 17.9 Route 3: approximately 655 feet north of MP 17.1

MP = milepost; USGS = U.S. Geological Survey

[a] Measured from the cemetery boundary to the centerline for each route.

Schools

No schools were identified within 0.25 mile of the Butler Farm–Clover routes.

Places of Worship

ERM identified two churches along and near the Butler Farm–Clover routes and associated facilities. Descriptions of both churches are provided in Table 3.1-8, which also identifies the distance and direction of each church from the applicable route(s). Of the two churches, one (Friendship United Methodist Church) is within 500 feet of a route. Potential impacts on this church from construction and operation of the Project are discussed in Section 4.1.5, Cemeteries, Schools, and Places of Worship. Because the other church is greater than 500 feet from a route, it is not discussed further in this report.

Table 3.1-8: Places of Worship within 0.25 Mile of the Butler Farm–Clover Routes

Name	Description	Distance and Direction of the Place of Worship from each Applicable Butler Farm–Clover Route or Facility [a]
Mecklenburg County		
Black Branch Baptist Church	This church is situated at the intersection of Highway 47 and Twin Drive in Mecklenburg County, about 2.4 miles northwest of Chase City. The grounds are mostly open, with forested lands to the south and a line of trees along the western boundary of the property. The parcel contains the church building, a parking lot, and an associated cemetery (described in Table 3.1-7). The church grounds encompass approximately 5.2 acres, with the church trustees also owning an adjacent parcel on the opposite site of the highway.	Route 1: approximately 935 feet west of MP 13.7
Friendship United Methodist Church	This church is located along Highway 49 about 0.7 mile to the southeast of Chase City in Mecklenburg County. The grounds are partially open and partially forested, with the main church building within a horseshoe driveway off the highway, flanked to the north and south by outbuildings. The parcel, which encompasses about 1.7 acres, is largely surrounded by forested lands, with an adjacent, associated cemetery (described in Table 3.1-7) to the south on the opposite side of the highway.	Route 1: approximately 15 feet between MPs 17.9 and 18.0 [b] Route Variation: approximately 330 feet southeast of MP 1.7

MP = milepost

[a] Measured from the boundary of the parcel containing the church to the centerline for each route.

[b] The centerline for Route 1 is 15 feet from the church property; the ROW for the route crosses the property.

3.1.6.2 Butler Farm Substation

There are no cemeteries, schools, or places of worship within 0.25 mile of the proposed Butler Farm Substation.

3.1.6.3 Butler Farm–Finneywood Line

Cemeteries

ERM identified three cemeteries along and near the Butler Farm–Finneywood routes and associated facilities. Descriptions of these cemeteries are provided in Table 3.1-9, which also identifies the distance and direction of each cemetery from the applicable route(s). One of the three cemeteries (Friendship United Methodist Church Cemetery) is within 500 feet of a route. Potential impacts on this cemetery from

construction and operation of the Project are discussed in Section 4.1.5, Cemeteries, Schools, and Places of Worship. Because the other cemeteries are greater than 500 feet from a route, they are not discussed further in this report.

Table 3.1-9: Cemeteries within 0.25 Mile of the Butler Farm–Finneywood Routes

Name	Description	Distance and Direction of the Cemetery from each Applicable Butler Farm–Finneywood Route or Facility [a]
Mecklenburg County		
Unknown (referred to here as Cemetery No. 6)	See the description in Table 3.1-7.	Route 1: approximately 785 feet east of MP 4.7 Route Variation: approximately 525 feet northwest of MP 0.6
Friendship United Methodist Church Cemetery	See the description in Table 3.1-7.	Route 1: approximately 350 feet southwest of MP 5.9 Route Variation: approximately 690 feet southeast of MP 1.7
Berean Baptist Church Cemetery	This cemetery is associated with the Berean Baptist Church and occupies portions of two tracts along either side of Highway 49 in Mecklenburg County. The tracts combined encompass about 2.4 acres; however, the burial grounds appear to be limited to an approximately 0.6-acre area—0.3 acre on either side of the highway—based on aerial photography. The cemetery contains at least 96 interments ranging in date from the mid-20th to the 21st centuries.	Route 2: approximately 1,190 feet south of MP 0.8

MP = milepost

[a] *Measured from the cemetery boundary to the centerline for each route.*

Schools

No schools were identified within 0.25 mile of the Butler Farm–Finneywood routes.

Places of Worship

ERM identified two churches along and near the Butler Farm–Finneywood routes and associated facilities. Descriptions of these churches are provided in Table 3.1-10, which also identifies the distance and direction of each church to the applicable route(s). One of the churches (Friendship United Methodist Church) is within 500 feet of a route. Potential impacts on this church from construction and operation of the Project are discussed in Section 4.1.6, Existing and Planned Development. The other, which is greater than 500 feet from a route, is not discussed further in this report.

Table 3.1-10: Places of Worship within 0.25 Mile of the Butler Farm–Finneywood Routes

Name	Description	Distance and Direction of the Place of Worship from each Applicable Butler Farm–Finneywood Route or Facility [a]
Mecklenburg County		

Name	Description	Distance and Direction of the Place of Worship from each Applicable Butler Farm–Finneywood Route or Facility [a]
Friendship United Methodist Church	See the description in Table 3.1-8.	Route 1: 0 feet (crossed) between MP 5.8 to 5.9 Route Variation: approximately 355 feet southeast of MP 1.7
Berean Baptist Church	This church is located along Highway 49 in Mecklenburg County about 3.0 miles north/northeast of Chase City. The parcel containing the church is split by the highway, with church-owned lands on both the east and west sides of the roadway. The church itself is on the eastern parcel, which also contains two driveways and a cemetery (described in Table 3.1-7). The parcel on the west side of the highway contains burials and is partially cleared and partially forested. The parcels collectively encompass about 2.4 acres. The lands surrounding the parcels are mostly forested.	Route 2: approximately 1,110 feet south of MP 0.8

MP = milepost

[a] *Measured from the boundary of the parcel containing the church to the centerline for each route.*

3.1.6.4 Finneywood Switching Station

There are no cemeteries, schools, or places of worship within 0.25 mile of the proposed Finneywood Switching Station.

3.1.7 Existing and Planned Developments

ERM identified existing and planned future developments within 0.5 mile of the routes through publicly available data on county websites and consultations with county and town planning officials and other stakeholders. Figure 3.1-6 in Appendix A, Figures, depicts the existing and planned developments along and near each route.

3.1.7.1 Butler Farm–Clover Line

Existing and planned future developments crossed by or within 0.5 mile of the Butler Farm–Clover routes are listed in Table 3.1-11, which additionally includes information on the status of the developments and their locations relative to the alternative routes. Descriptions of the existing and planned developments are provided below. There are no planned developments within 0.5 mile of the proposed Butler Farm Substation.

Table 3.1-11: Existing and Planned Developments Within 0.5 Mile of the Butler Farm–Clover Routes

Development Name	Status	Routes Crossed
Randolph Solar Site	Unconstructed, project in planning stages	Route 1: Crossed from MPs 2.2 to 2.6, MPs 3.6 to 4.3, and MPs 4.8 to 7.1 Route 2: Crossed from MPs 2.2 to 2.6, MPs 3.6 to 4.3, and MPs 4.8 to 7.1 Route 3: Crossed from MPs 2.2 to 2.6
Quarter Horse Solar Site	Unconstructed, project in planning stages	Route 1: Crossed from MPs 7.3 to 11.9 Route 2: Crossed from MPs 7.3 to 10.5

Development Name	Status	Routes Crossed
Moody Creek Solar Site	Unconstructed, project in planning stages	Route 1: Crossed from MPs 9.6 to 10.2 and MPs 10.7 to 10.9
Engie Bluestone Solar Development	Existing	Route 1: 360 feet southeast of MP 15.2
Chase City Apartment Complex	Unconstructed, project in planning stages	Route 1: Crossed from MPs 16.8 to 17.1 Route Variation: within 50 feet near MP 0.9

MP = milepost

Randolph Solar Site

The Randolph Solar Site is an 800-megawatt (MW) solar project proposed within Charlotte County. The total project footprint includes 300 parcels optioned by 146 landowners, totaling 21,071 acres spanning from the Staunton River southeast to Kings Highway (Highway 360). Randolph Solar is proposing to interconnect to the grid by tying into Dominion's Line #556 east of the Staunton River. A new interconnection substation is proposed at the site adjacent to the north side of the ROW of Line #556. Randolph Solar is currently in the process of coordinating with landowners to lease or purchase land. They have also completed the first study for interconnecting to the electrical grid and conducted preliminary desktop site due diligence.

Quarter Horse Solar Site

The Quarter Horse Solar Site is a proposed solar development in Charlotte and Mecklenburg counties currently in the planning stages. The preliminary site location extends from Kings Highway approximately to the Charlotte/Mecklenburg County line, encompassing 6,000 acres. The project is early in the planning process and does not yet have a site plan developed for the area.

Moody Creek Solar Site

The Moody Creek Solar Site is a 150 MW solar facility expected to generate enough energy to power up to 30,000 homes. The facility is being developed on approximately 829 acres in southeastern Charlotte County by Apex Clean Energy of Charlottesville, Virginia, and SolUnesco of Reston, Virginia. The solar development is generally located southeast of Kings Highway with the eastern boundary being Dominion's existing Line #1012 and the southern boundary being Dominion's existing Line #556. In September 2019, the project received zoning approval from the Board of Supervisors with a Conditional Use Permit from Charlotte County. The Virginia Department of Environmental Quality (VDEQ) issued a permit by rule for the facility in June 2021.

Engie Bluestone Solar Development

The Engie Bluestone Solar site is an existing 50 MW solar facility located on 330 acres within Mecklenburg County. Construction of the site began in 2019 with operations beginning in 2021. The solar development is located west of Chase City and is bounded by Spanish Grove Road to the north, Dominion's existing Line #1012 to the east, and Dominion's existing Line #235 to the south. The project is owned by Engie North America.

Chase City Apartment Complex

The Chase City apartment complex is a proposed development located on approximately 60 acres of land on the south side of Highway 92, approximately 200 feet east of its intersection with Highway 600 (Bailey Drive) in Mecklenburg County. Plans include construction of ten apartment buildings, a community center,

and various ancillary structures. The property was voted to be rezoned from Business B-1 to Residential R-2 by the Mecklenburg Board of Supervisors in March of 2022.

3.1.7.2 Butler Farm–Finneywood Line

Existing and planned future developments crossed by or within 0.5 mile of the Butler Farm–Finneywood alternate routes are listed in Table 3.1-12, which additionally includes information on the status of the developments and their locations relative to the routes. Descriptions of the existing and planned developments are provided below, with the exception of the Engie Bluestone Solar Development, which is described above in Section 3.1.7.1, Butler Farm–Clover Line.

Table 3.1-12: Existing and Planned Developments Within 0.5 Mile of the Butler Farm–Finneywood Routes

Development Name	Status	Routes Crossed
Engie Bluestone Solar Development	Existing	Route 1: 360 feet southwest of MP 3.5
Finneywood Solar	Unconstructed, project in planning stages	Route 1: 1,000 feet north of MP 0.0 Route 2: 350 feet north of MP 0.4 Finneywood Switching Station: 220 feet north
Seven Bridges Solar Development	Unconstructed, project in planning stages	Route 2: 2,000 feet east of MP 1.9
Chase City Apartment Complex	Unconstructed, project in planning stages	Route 1: crossed from MP 4.7 to 5.0 Route Variation: within 10 feet near MP 0.9

MP = milepost

Finneywood Solar Development

The Finneywood Solar site is a proposed 97 MW solar facility located on approximately 1,000 acres in northwestern Mecklenburg County. Solar panels would be built on approximately 500 of the 1,000 acres. The development will be owned and operated by Dominion Energy. The site is located approximately 3.0 miles north of Chase City, directly north of Dominion's existing Line #556 and the proposed Finneywood Switching Station. The proposed development is bounded to the east by Highway 49 and to the west by Fort Mitchell Road. The site is also bisected by Dominion's existing Line #235. If approved by the Mecklenburg County Board of Supervisors, construction could begin as soon as spring of 2024.

Seven Bridges Solar Development

The Seven Bridges Solar site is a proposed 105 MW project in Mecklenburg County, Virginia. The project footprint encompasses approximately 799 acres located about 2.0 miles northeast of Chase City between Scotts Crossroads and Route 49, and about 1.6 miles east of the proposed Finneywood Switching Station. The developer is Longroad Energy. In January 2022, the Mecklenburg County Board of Supervisors rejected approval of the solar development.

Chase City Apartment Complex

The Chase City Apartment Complex is discussed in Section 3.1.7.1, Butler Farm–Clover Line.

3.1.7.3 Finneywood Switching Station

The Finneywood Solar Development, discussed in Section 3.1.7.2, Butler Farm–Finneywood Line, is located 500 feet north of the proposed Finneywood Switching Station.

3.1.7.4 Otter Creek Solar Development

This project is not located within 0.5 mile of any proposed route, but is close to existing transmission lines, which were reviewed as possible routing options for the Project. The Otter Creek Solar Park is a proposed 76.8 MW ground-mounted solar power project under development in Mecklenburg County. The footprint encompasses approximately 690 acres situated west of Chase City directly adjacent to and west of the Bluestone Solar Development. The project is being developed by Brookfield Renewable Partners, SolUnesco, and Virginia Electric and Power, who is also the owner. The Otter Creek Solar Park is expected to provide energy to power 9,600 homes. In February 2018, the Mecklenburg County Board of Supervisors issued the project a Special Exception Permit. The VDEQ issued a permit by rule for the project in October 2019. Post completion of construction, the project is expected to be commissioned in December 2022.

3.1.8 Land Use Planning

3.1.8.1 Land Use Planning

Section 15.2-2223 of the Va. Code requires local planning commissions to adopt a comprehensive plan to guide the physical development of the territory within its jurisdiction. The plan looks at existing and future land uses, anticipates development trends, and makes recommendations for guiding long-term development decisions. To implement objectives of the comprehensive plan, local governments use zoning. A zoning ordinance creates land use categories that separate incompatible uses and establishes development standards to guide orderly and efficient land use. Virginia 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. Zoning ordinances may be modified by the local land manager and governing bodies or through requests from residents or businesses to change zoning designations or approve new uses.

The alternate routes discussed in this study cross Halifax, Charlotte, and Mecklenburg counties, each of which have adopted comprehensive plans and zoning ordinances within their jurisdictions. The Mecklenburg Long Range Plan was adopted in 2012 and amended 2017; the Charlotte County Comprehensive Plan and Halifax County Comprehensive Plan were both adopted in 2017.

Halifax County

The Halifax County Comprehensive Plan is designed to enhance desirable development practices for future growth. Goals are long–range community aspirations for establishing the future direction of the county (Halifax County 2017). Objectives are guidelines for action that direct the pursuit of goals while enabling the County to respond to a wide range of problems as they arise. The Project, if approved, would further the effort to achieve some of the goals and objectives stated in the Comprehensive Plan by providing quality, cost effective facilities and services meeting community needs and accommodating managed, future growth. One of the key recommendations in the plan is to “encourage properly sited electric generation and transmission facilities” (Halifax County 2017).

Halifax County is in the process of reviewing and potentially amending its subdivision and zoning ordinances to address modern land uses and development standards. Specifically, the County notes that zoning or other ordinance amendments are needed to accommodate the provision of utilities and services generated by proposed development and community growth. Future land use changes are focused on

larger communities within the County. Future land uses for the area around the Town of Clover, for example, are planned to transition from mainly agricultural, forest, and open land to residential land.

Charlotte County

The overall goal of the Charlotte County Comprehensive Plan, adopted in 2017, is to allow suitable economic and physical development while retaining the County's natural assets and quality of life (Charlotte County 2017). Charlotte County land use goals prioritize preservation of land, vegetation, and air quality, including enhancement of county scenic vistas, and encouraging industrial development in areas where needed infrastructure is most readily available. A list of elements that make up the Charlotte County "practical vision" include Infrastructure for Economic Growth, Economic Growth and Stability, and Technology Related Job Opportunities. The County acknowledges that infrastructure facilities and services are limited and aging, and the need to upgrade infrastructure to meet changing requirements and modern needs is a significant challenge.

The Charlotte County Comprehensive Plan discusses revising the county zoning ordinance to encourage construction of new homes on internal subdivision streets and revising the General Residential District boundaries to account for existing housing, future construction, and the location of current and planned water and sewer lines. The recommended infill development will further the necessity to upgrade transmission infrastructure.

Mecklenburg County

The Mecklenburg Long Range Plan, adopted in 2012 and amended in 2017, describes a county vision focusing on natural resource conservation, targeted economic growth, and town revitalization and expansion (Mecklenburg County 2012). The plan considers existing conditions, trends of growth, and the desired community vision for the future. It supports infrastructure investment to promote the long-term public health, safety, and welfare of its residents. Specifically, vision statements of the plan include the goal of providing adequate infrastructure to serve future development patterns and investment in this infrastructure to support and attract high profile technology companies to the county.

The vision of the Comprehensive Plan will shape any revisions to the County Zoning and Subdivision Ordinances. These ordinances are very basic in terms of regulating land use and development. It is the goal of the Mecklenburg County planning and zoning department to be proactive in terms of future land uses and development. Future land use plans identified in the Mecklenburg County Long Range Plan indicate that land uses in the areas crossed by the Project alternate routes are likely to remain mainly agricultural with some transition to industry, particularly south of Chase City.

Town of Chase City

While none of the Project routes pass within the boundaries of Chase City, the Town's Comprehensive Plan (Chase City 2012) identifies a future annexation zone that would include the area identified for the transmission line, south and west of the current municipal boundary. The plan indicates that the Town of Chase City will petition the County for a boundary adjustment to allow for future town growth. Chase City Zoning has not identified zoning districts for this expansion area and no land use controls are in place beyond the county zoning.

3.1.8.2 Zoning

As outlined above, Halifax, Charlotte, and Mecklenburg Counties have developed and implemented Comprehensive Plans for managing growth. The plans are implemented through zoning ordinances that dictate the type of development permissible in different areas of the county. To implement a new land use in a zoning district, an application for a Conditional Use Permit is typically submitted to the zoning

department for review and approval. Under Virginia law, public utilities planning to construct a transmission line of 138 kV or higher are required to obtain a Certificate of Public Convenience and Necessity (CPCN) from the SCC or obtain any and all applicable local zoning ordinance approvals. Va. Code § 56-265.2 preempts the local zoning ordinances. Therefore, the SCC's issuance of a CPCN would satisfy the requirements of all local zoning ordinances (Va. Code § 56-265.2). Because Dominion is applying to the SCC for a CPCN for the Project, no additional discussion of local zoning or local zoning requirements is included in this study.

3.1.9 Conservation and Other Easements

ERM used the VDCR's Virginia Conservation Lands Database (VDCR 2022c) to identify all easement types and individual easements throughout the study area. Easements within the study area and their proximity to the Project alternate routes are described below. Impacts on easements are addressed in Section 4.1.8, Easements.

Dominion understands that properties are placed under easements throughout the year, and additional easements may be identified as the Project moves forward. Dominion will continue to consult with the various land managing entities in the study area regarding potential new easements along the alternate routes.

3.1.9.1 USACE Flowage Easement

The USACE holds a flowage easement on both sides of the Staunton River from approximately 0.4 mile south of the existing Line #556 river crossing location, north to the northern study area boundary for the Project. Flowage easements are non-federal lands on which the United States has acquired perpetual rights, including the right to overflow, flood, and submerge the land; prohibit certain structures; and approve all other structures proposed for construction within the easement. The land within a flowage easement may still be maintained by a landowner (e.g., mowed, planted, or otherwise used as desired if not in conflict with the rights of the government) and sold or leased to others subject to all restrictions within the easement. A structure that does not reduce flood storage capacity or is not designed or intended to be used for human habitation may be constructed within the flowage easement if approved by the USACE. Butler Farm–Clover Routes 1, 2, and 3 would cross this type of easement.

3.1.9.2 Virginia Outdoors Foundation

The VOF leads Virginia in land conservation, protecting over 850,000 acres across the state. The VOF was established in 1966 under the Virginia Open-Space Land Act, which provides for the creation of open-space easements by public bodies as a means of preserving open space or significant natural, cultural, and recreational resources on public or private lands (VOF 2022). Most easements created under the Act are held by the VOF, but any state agency is authorized to create and hold an open-space easement. The easements are designed to 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 and development on the property (VOF 2022). There are two VOF easements within the Project study area. None of the alternative routes would cross these easements.

3.1.9.3 Conservation Reserve Enhancement Program

The Conservation Reserve Enhancement Program (CREP) is a water quality partnership effort led by the VDCR that aims to improve water quality and wildlife habitat through financial incentives, cost-sharing, and rental payments to farmers who voluntarily restore riparian forest buffers, grass and shrub buffers, and wetlands. CREP efforts are expected to reduce annual nitrogen, phosphorous, and sediment loads to

meet water quality improvement goals for the state. Within Virginia, CREP focuses on riparian buffer installation to reduce nutrient and sediment pollution in the waters of the Commonwealth. In the Project study area, one CREP easement is located adjacent to the west side of the Staunton River near the crossing of the existing Line #556. None of the alternative routes would cross any of these easements.

3.1.9.4 Agricultural and Forestal Districts

The Virginia Agricultural and Forestal Districts Act provides for the creation of conservation districts (Commonwealth of Virginia 1997). These districts are designed to conserve, protect, and encourage the development and improvement of a locality's agricultural and forested lands for the production of food and other products while also conserving and protecting land as valued natural and ecological resources. These districts are voluntary agreements between landowners and the locality and offer benefits to landowners when they agree to keep their land in its current use for between 4 and 10 years. A district must contain at least 200 acres. No Virginia Agricultural and Forestal Districts are located within the study area.

3.1.10 Transportation–Roads and Railroads

Major public roads within the study area include Highway 360 (Kings Highway) in Halifax and Charlotte Counties; Highway 15 (Barnesville Highway) in Charlotte County; Highway 92 in Halifax, Charlotte, and Mecklenburg Counties; Highway 49 in Mecklenburg County; and Highway 49 in Mecklenburg and Lunenburg Counties. All of these major roads are maintained by VDOT. Each of the roads is crossed by one or more of the Project alternate routes.

ERM reviewed the VDOT projects and studies website to identify future road projects in the study area (VDOT 2022b). The review identified one proposed project in the area, a roundabout at the intersection of Highway 15 and Kings Highway in Charlotte County. One Butler Farm–Clover alternative route would be within 0.25 mile of the potential VDOT project but would likely not be impacted by the roundabout development should it move forward. No future road projects were identified within or near the Butler Farm–Finneywood routes.

Two railroads cross the study area: the Southern Railroad, which intersects the northwest corner of the study area near the existing Clover Power Station, and the Norfolk Southern Railroad, which crosses through the eastern third of the study area, passing through Chase City. None of the routes cross the former; the Butler Farm–Finneywood routes each cross the latter.

3.1.11 Airport Facilities

Transmission line towers have the potential to affect airspace in and around airports. In routing and building new overhead electric transmission lines, airports are an important consideration. The following sections describe the airports in the vicinity of the study area and the airspace regulations that could have an impact on the Project. Potential impacts on airports and airspace are addressed in Section 4.1.10, Airports.

3.1.11.1 Airports Near the Project Area

ERM reviewed the Federal Aviation Administration's (FAA) website to identify public use airports, airports operated by a federal agency or the U.S. Department of Defense, airports or heliports with at least one FAA-approved instrument approach procedure, and public use or military airports under construction (FAA 2022). Based on this review, there are six airports located within 10.0 nautical miles of the Project alternate routes and facilities (see Figure 3.1-7 in Appendix A, Figures). Details for each of these are listed in Table 3.1-13.

Table 3.1-13: Airports, Heliports, and Private Airstrips Located in the Vicinity of the Project

Airport/Heliport Name	Airport Identification Number	Approximate Distance and Direction from Nearest Project Facility	Use	Maximum Runway Length (feet)
Chase City Municipal Airport	CXE	■ 1.0 mile west of Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 ■ 0.9 mile north of Butler Farm–Clover Route 2 and Butler Farm–Clover Route 3	Public	3,400
Hazelswart Airport	1VA8	■ 1.4 miles northeast of Butler Farm–Finneywood Route 2 ■ 2.3 miles northeast of Butler Farm–Finneywood Route 1	Private	3,000
Murdocks Flying V Airport	3VG4	■ 3.3 miles southeast of Butler Farm–Finneywood Route 2 ■ 4.1 miles southeast of Butler Farm–Clover Route 1, Butler Farm–Clover Route 2, Butler Farm–Clover Route 3, and Butler Farm–Finneywood Route 1	Private	2,600
Murdock's Holly Bu Airport	23VG	■ 4.6 miles south of Butler Farm–Finneywood Route 2 ■ 4.7 miles south of Butler Farm–Clover Route 2 and Butler Farm–Clover Route 3 ■ 5.0 miles south of Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1	Private	1,500
Twin Towers Airport	VA25	■ 5.6 miles east of Butler Farm–Finneywood Route 2 ■ 6.6 miles east of Butler Farm–Clover Route 1, Butler Farm–Clover Route 2, Butler Farm–Clover Route 3, and Butler Farm–Finneywood Route 1	Private	1,500
Alpha Hotel Airport	07VA	■ 5.4 miles southwest of Butler Farm–Clover Route 1, Butler Farm–Clover Route 2, and Butler Farm–Clover Route 3	Private	1,600

Source: FAA 2022

3.1.11.2 Federal Aviation Administration Regulations

The FAA is responsible for overseeing air transportation in the United States. The FAA focuses on air transportation safety, including the enforcement of safety standards for aircraft manufacturing, operation, and maintenance. The FAA also manages air traffic in the United States and evaluates physical objects that may affect the safety of aeronautical operations through an obstruction evaluation. The prime

objective of the FAA in conducting an 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 provided in Appendix C.

Civil Airport Imaginary Surfaces

Civil airport imaginary surfaces have been established with relation to each airport and each runway. The imaginary surfaces were developed to prevent existing or proposed objects from extending from the ground into navigable airspace. Following is a description of the civil imaginary surfaces.

- **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.
- **Conical surface**: This is a surface extending 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 is a surface longitudinally centered on a runway. The primary surface 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.
- **Approach Surface**: This is a surface longitudinally centered on the extended runway centerline and extending 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 (e.g., precision instrument approach, visual approach).

Transitional Surfaces

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 a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

Terminal Instrument Procedures

In addition to the civil airport imaginary surfaces, there are imaginary surfaces associated with terminal instrument procedures (TERPS). TERPS are procedures for instrument approach and departure of aircraft to and from civil and military airports. They are used for airport obstruction analyses to protect airspace by establishing restrictions on the height of buildings, antennas, trees, and other objects as necessary to protect the airspace needed for aircraft during preparation for, and completion of, the landing or departure phases of flight. None of the alternative routes discussed in this study would exceed the TERPS surfaces of the airports identified in Table 3.1-13.

Federal Aviation Administration Notice Requirements and Timing

Based on the runway categories and dimensional standards described above, a notice must be filed with the FAA if:

- Any construction or alteration is more than 200 feet above ground level at its site;

- Any construction or alteration exceeds an imaginary surface extending outward and upward at the following slope:

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; and

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.

- 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 within which the construction or alteration will be located 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 above ground level for each pole/structure and the height of construction equipment, such as cranes.

Based on the current design plans, the transmission line structures for the Project would range in height from 70 to 80 feet tall for the h-frame structures and 110 to 120 feet tall for the monopole structures. It is anticipated that cranes would be used to install the structures. Based on current plans, Butler Farm–Clover Routes 2 and 3 would each require FAA Part 7460 notifications because of their proximity to Chase City Airport. All other routes would likely not require notifications. Figure 3.1-8 in Appendix A depicts the imaginary surfaces associated with the Chase City Municipal Airport. Figure 3.1-9 in Appendix A, Figures, depicts the maximum tower heights that would be allowed near the Chase City Municipal Airport based on airport surfaces.

State and Local Regulations

Commonwealth of Virginia Aviation Regulations

Section 5.1-25.1 of the Va. Code establishes that it is unlawful for a person to erect 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 described in regulations of the Virginia Department of Aviation or the FAA without first securing a permit for its erection from the Board of Aviation. However, it also states that this requirement does not apply to any structure erected in a county, city, or town that has an ordinance regulating the height of such structures to prevent the penetration of zones and surfaces provided for in 14 CFR Part 77 and Rule 19 of the Virginia Department of Aviation.

Local Airport Regulations

Va. Code Sections 15.2-2280, 15.2-2282, 15.2-2293, and 15.2-2294 give local jurisdictions the power to establish and regulate zoning districts, make airspace subject to their zoning ordinance, and establish airport safety zoning. Following is a summary of the zoning regulations applicable to the airports listed in Table 3.1-13.

Mecklenburg County has codified FAA part 77 airspace restrictions as part of Appendix B Article 9 of the Mecklenburg County Code of Ordinances, but the restrictions are associated with the Mecklenburg Brunswick County Regional Airport located about 20.0 miles to the east of the study area. As noted in Table 3.1-13, Butler Farm–Clover Routes 1, 2, and 3 each pass within about a mile of the Chase City

Municipal Airport; however, no Overlay Airport Zoning Ordinance associated with this airport has been adopted. Therefore, the transmission lines will need to comply with the FAA part 7460 notice requirements mentioned above.

Private airports are not afforded overlay zoning protection. Skyvector aeronautical charts show the Chase City Municipal Airport as the only airport in the study area with airspace considerations.

3.2 Environmental Justice

ERM completed a desktop environmental justice (EJ) review to identify potential EJ populations that could be affected by the Project. The EJ review followed federal guidance and recommended methodologies outlined by the Council on Environmental Quality and the Federal Interagency Working Group on Environmental Justice and National Environmental Policy Act Committee. The analysis additionally used definitions provided in the Virginia Environmental Justice Act for different categories of EJ populations (Va. Code §§ 2.2-234, 2.2-235). The purpose of conducting the EJ review was to determine if construction or operation of the transmission line along any of the alternative routes would result in disproportionately high and adverse environmental impacts on populations of color and low-income populations, linguistically isolated communities, or age-based vulnerable communities (i.e., EJ populations). This approach is consistent with requirements outlined in the Virginia Clean Economy Act of 2020 pertaining to the development of new, or expansion of existing, energy resources or facilities (Va. Code §§ 56-585.1).

In identifying potential areas of concern, federal guidelines state that the size of the area surrounding a project selected for the EJ assessment should be an appropriate unit of geographic analysis that does not artificially dilute or inflate the affected minority population. The Census Block Group (CBG) was used as the primary unit for analysis in the EJ review for each alternative route because it is the smallest geographic unit for which U.S. Census Bureau demographic and economic data is available. All CBGs crossed by and within a 1.0-mile radius of the alternate routes were included in the screening area. Figures 3.2-1 through 3.2-5 in Appendix A depict where EJ populations were identified along the routes.

The Commonwealth of Virginia was used as the reference population for the desktop review. Demographic data for the Commonwealth were compared with individual CBGs to help identify the presence of potential EJ populations. For example, if the reported percentage of population of color within an individual CBG was greater than the percentage of population of color in Virginia as a whole, a potential EJ population was identified. Data for the counties were also considered in the review to assess regional demographic variations. The EPA's EJ mapping and screening tool, EJScreen 2.0 (USEPA 2022), and census data from the U.S. Census Bureau *2015–2019 American Community Survey* (U.S. Census Bureau 2019) were used to collect demographic data for the state and counties.

The Commonwealth of Virginia defines "population of color" as a group of individuals belonging to one or more of the following racial and ethnic categories: "Black, African American, Asian, Pacific Islander, Native American, other, nonwhite race, mixed race, Hispanic, Latino or linguistically isolated." EJScreen's definition of a population of color is analogous to Virginia's definition of population of color but does not include linguistically isolated individuals. However, EJScreen includes a separate demographic indicator for linguistic isolation.

The Commonwealth of Virginia identifies a minority population, or what it terms a "community of color" if an analysis area has a greater "population of color" percentage than that of the state as a whole. If a "community of color" is composed primarily of a specific "population of color," however, then the percentage population of that single group in the state is used instead of the percentage for the total "population of color." The Commonwealth of Virginia's criteria for an identified "community of color" or "population of color" and what constitutes an EJ population have a lower threshold and are more inclusive

than federal guidance. Therefore, the state's criteria were used to identify CBGs that contain populations of color.

Federal guidelines recommend using an appropriate poverty threshold and comparing the analysis area with a reference population to identify low-income populations. The Commonwealth of Virginia identifies low-income populations in analysis areas as any CBG in which 30 percent of the population is composed of low-income residents. It defines low income as "having an annual household income equal to or less than the greater of (i) an amount equal to 80 percent of the median income of the area in which the household is located, as reported by the Department of Housing and Urban Development, and (ii) 200 percent of the Federal Poverty Level" (Va. Code § 2.2-234).

A low-income population is considered present when the low-income population percentage in the CBG exceeds 30 percent. The EJScreen tool provides percentages of low-income populations by CBG that are defined as households where the income is less than or equal to twice the federal poverty level as reported by the U.S. Census Bureau.

The EJ review assessed the potential for other factors that could limit low-income or minority communities from reviewing and commenting on the various alternative routes, including age-based vulnerabilities, linguistic isolation, and populations with less than a high school education. These communities were identified using the federal guidance of a meaningfully greater threshold. A CBG containing households with language barriers, populations with educational attainment less than high school, or populations below age 5 or above age 64 that equal or exceed 200 percent of the state averages was identified as containing a potential EJ population.

In addition to reviewing demographic indicators, this assessment was also informed by online research to identify historic African American communities or other potential overburdened populations in the area. Two notable African American places of importance located near, but not crossed by, the Project alternate routes—Salem School and the Thyne Institute—are along the Civil Rights in Education Heritage Trail. This trail is a self-guided driving tour that features local landmarks conveying the Civil Rights story for African Americans in southern Virginia. Salem School and the Thyne Institute are briefly described below. They are depicted on Figures 3.2-1 through 3.2-5 found in Appendix A, Figures.

In the Red Oak area of Charlotte County, the Salem School consisted of three classrooms and operated between 1921 and 1959. The Salem School was placed on the Virginia Landmarks Register in 1998. The Thyne Institute was established as an educational institution. The school initially opened in a tobacco warehouse but was later built on a 5-acre property donated by John Thyne. In 1914, the Thyne Institute was accredited as a high school by the Virginia Department of Education. About 5,000 students were enrolled during the school's history, with a peak student body of 650 students during the 1951 school year. Mecklenburg County School Board eventually operated the school, which was replaced by an elementary school in the 1970s.

The desktop study characterizing the demographic characteristics of the analysis area are provided below. An analysis of potential impacts on identified EJ populations is provided in Section 4.2, Environmental Justice.

3.2.1 Environmental Justice Desktop Results

The desktop review identified nine CBGs within the screening area. Of these, seven block groups are crossed by one or more of the routes, each of which contain potential EJ communities (see Figures 3.2-1 through 3.2-5 in Appendix A). The remaining two CBGs are within 1.0 mile of the routes but not directly crossed by a route. Table 3.2-1 through Table 3.2-9 identify populations of color, low-income populations, age based vulnerable populations, and populations with educational attainment less than high school for the CBGs in the analysis area of each route and switching station. The tables also identify the appropriate

reference populations for identifying potential EJ communities. Specific desktop results for each alternative route are discussed below.

3.2.1.1 Butler Farm–Clover Route 1

Low-Income Populations

Among the CBGs in the analysis area, the low-income population percentages range between 26 and 54 percent, compared to an average of 25 percent for the state as a whole. Five of the CBGs have low-income populations that are greater than the 30 percent threshold for low-income populations identified by the state (Table 3.2-1). Butler Farm–Clover Route 1 crosses four of the low-income CBGs.

Populations of Color

Four CBGs are identified as encompassing populations of color (i.e., greater than the 38 percent statewide average), of which the minority population in two CBGs is primarily Black or African American (Table 3.2-1). Butler Farm–Clover Route 1 crosses all of these CBGs.

Other Sensitive Populations

Six of the CBGs contain populations with less than a high school education exceeding 200 percent of the state average, which is 7 percent (Table 3.2-1). Five of the six CBGs are crossed by Butler Farm–Clover Route 1. There are no under age 5 or over age 64 populations in the analysis area for this route.

Table 3.2-1: Butler Farm–Clover Route 1 Demographic Indicators

State/County Census Block Group (Census Tract, Block Group) [a]	Population	Total Populations of Color (%) [b]	White, non-Hispanic (%)	Black or African American (%)	American Indian and Alaska Native (%)	Asian (%)	Pacific Islander (%)	Some Other Race Alone (%)	Two or More Races (%)	Hispanic or Latino (%)	Low-Income Population (%)	Linguistically Isolated Households (%)	Population with Less than High School Education (%)	Population Under Age 5 (%)	Population Over Age 64 (%)
VIRGINIA	8,454,463	38	62	19	<0.1	6	<0.1	<0.1	3	9	25	3	7	6	15
Charlotte County	12,040	32	68	28	<0.1	<0.1	<0.1	<0.1	1	2	46	<0.1	12	5	22
510379303002 (CT 9303, BG 2)	1,070	31	69	30	<0.1	<0.1	<0.1	<0.1	1	<0.1	52	<0.1	20	<0.1	23
510379303003 (CT 9303, BG 3)	1,508	44	56	44	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	45	<0.1	24	3	24
Halifax County	34,522	40	60\	35	<0.1	<0.1	<0.1	<0.1	3	2	36	1	13	5	23
510839301003 (CT 9301, BG 3)	1,477	64	36	36	<0.1	1	<0.1	<0.1	26	1	26	<0.1	21	10	19
Mecklenburg County	30,728	40	60	35	1	<0.1	<0.1	<0.1	1	3	41	1	13	5	25
511179304001 (CT 9304, BG 1)	1,327	27	73	19	3	<0.1	<0.1	<0.1	1	4	40	0	21	4	29
511179304002 (CT 9304, BG 2)	1,859	66	34	61	<0.1	<0.1	<0.1	1	1	3	54	0	25	1	23
511179304003 (CT9304, BG 3)	1,652	44	56	39	<0.1	<0.1	<0.1	<0.1	5	<0.1	46	0	15	5	29

Sources: USEPA 2022, EJSCREEN (Version 2.0, issued 2/18/2022); U.S. Census Bureau 2019, 5-year American Community Survey (2015–2019) Files #B03002

[a] *Bold indicates the CBG is crossed by the Butler Farm–Clover Route 1.*

[b] *The demographic data in this table have been rounded for presentation purposes. As a result, the total populations of color percentages may not reflect the sum of the addends.*

Gray shaded cells indicate reference populations.

Blue shaded cells indicate populations of color.

Pink shaded cells indicate that the community of color is composed primarily of one of the groups listed in the definition of "population of color."
Green shaded cells indicate low-income populations.
Orange shaded cells indicate populations with less than a high school education.

3.2.1.2 Butler Farm–Clover Route 2

Low-Income Populations

Among the CBGs in the analysis area, the low-income population percentages range between 26 and 54 percent (compared to 25 percent for Virginia as a whole). Seven of the CBGs in the analysis area have low-income populations that are greater than the 30 percent threshold for low-income populations identified by the state (Table 3.2-2). Butler Farm–Clover Route 2 crosses five of the low-income CBGs.

Populations of Color

Five CBGs are identified as encompassing populations of color (i.e., greater than the 38 percent average for the state as whole), in which the minority population in four CBGs is primarily Black or African American (Table 3.2-2). Butler Farm–Clover Route 2 crosses four of the five CBGs.

Other Sensitive Populations

Eight of the CBGs contain populations with less than a high school education that exceeds 200 percent of the state average (7 percent). Six of the eight CBGs are crossed by Butler Farm–Clover Route 2 (Table 3.2-2). Additionally, one CBG crossed by the route contains a population over age 64 that is more than twice the state average of 15 percent (Table 3.2-2).

Table 3.2-2: Butler Farm–Clover Route 2 Demographic Indicators

State/County Census Block Group (Census Tract, Block Group) [a]	Population	Total Populations of Color (%) [b]	White, non-Hispanic (%)	Black or African American (%)	American Indian and Alaska Native (%)	Asian (%)	Pacific Islander (%)	Some Other Race Alone (%)	Two or More Races (%)	Hispanic or Latino (%)	Low-Income Population (%)	Linguistically Isolated Households (%)	Population with Less than High School Education (%)	Population Under Age 5 (%)	Population Over Age 64 (%)
VIRGINIA	8,454,463	38	62	19	<0.1	6	<0.1	<0.1	3	9	25	3	7	6	15
Charlotte County	12,040	32	68	28	<0.1	<0.1	<0.1	<0.1	1	2	45	<0.1	12	5	22
510379303002 (CT 9303, BG 2)	1,070	31	69	30	<0.1	<0.1	<0.1	<0.1	1	<0.1	52	<0.1	20	<0.1	23
510379303003 (CT 9303, BG 3)	1,508	44	56	44	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	45	<0.1	24	3	24
Halifax County	34,522	40	60	35	<0.1	<0.1	<0.1	<0.1	3	2	36	1	13	5	23
510839301003 (CT 9301, BG 3)	1,477	64	36	36	<0.1	1	<0.1	<0.1	26	1	26	<0.1	21	10	19
Mecklenburg County	30,728	40	60	35	1	<0.1	<0.1	<0.1	1	3	41	1	13	5	25
511179304001 (CT 9304, BG 1)	1,327	27	73	19	3	<0.1	<0.1	<0.1	1	4	40	0	21	4	29
511179304002 (CT 9304, BG 2)	1,859	66	34	61	<0.1	<0.1	<0.1	1	1	3	54	0	25	1	23
511179304003 (CT 9304, BG 3)	1,652	44	56	39	<0.1	<0.1	<0.1	<0.1	5	<0.1	46	0	15	5	29
511179305001 (CT 9305, BG 1)	931	42	58	42	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	42	<0.1	14	8	26
511179305002 (CT 9305, BG 2)	768	18	82	16	1	1	1	<0.1	<0.1	<0.1	38	2	30	1	46

Sources: USEPA 2022, EJSCREEN (Version 2.0, issued 2/18/2022); U.S. Census Bureau 2019, 5-year American Community Survey (2015–2019) Files #B03002

[a] *Bold indicates the CBG is crossed by the Butler Farm–Clover Route 2.*

[b] The demographic data in this table have been rounded for presentation purposes. As a result, the total populations of color percentages may not reflect the sum of the addends.

Gray shaded cells indicate reference populations.

Blue shaded cells indicate populations of color.

Pink shaded cells indicate that the community of color is composed primarily of one of the groups listed in the definition of "population of color."

Green shaded cells indicate low-income populations.

Orange shaded cells indicate populations with less than a high school education.

Yellow shaded cells indicate age populations.

3.2.1.3 Butler Farm–Clover Route 3

Low-Income Populations

Among the CBGs in the analysis area, the low-income population percentages range between 26 and 54 percent (compared to 25 percent for the Commonwealth as a whole). Seven of the CBGs in the analysis area have low-income populations that are greater than the 30 percent threshold for low-income populations identified by the state (Table 3.2-3). Butler Farm–Clover Route 3 crosses five of the low-income CBGs.

Populations of Color

Five CBGs are identified as encompassing populations of color (i.e., greater than the 38 percent average for the state), in which the minority population in four CBGs is primarily Black or African American (Table 3.2-3). Butler Farm–Clover Route 3 crosses all five of these CBGs.

Other Sensitive Populations

Eight of the CBGs contain populations with less than a high school education that exceeds 200 percent of the state average (7 percent). Six of the eight CBGs are crossed by Butler Farm–Clover Route 3 (Table 3.2-3). Additionally, one CBG contains a population over age 64 that is more than twice the state average (15 percent); this CBG is crossed by Butler Farm–Clover Route 3 (Table 3.2-3).

Table 3.2-3: Butler Farm–Clover Route 3 Demographic Indicators

State/County Census Block Group (Census Tract, Block Group) [a]	Population	Total Populations of Color (%) [b]	White, non-Hispanic (%)	Black or African American (%)	American Indian and Alaska Native (%)	Asian (%)	Pacific Islander (%)	Some Other Race Alone (%)	Two pr More Races (%)	Hispanic or Latino (%)	Low-Income Population (%)	Linguistically Isolated Households (%)	Population with Less than High School Education (%)	Population Under Age 5 (%)	Population Over Age 64 (%)
VIRGINIA	8,454,463	38	62	19	<0.1	6	<0.1	<0.1	3	9	25	3	7	6	15
Charlotte County	12,040	32	68	28	<0.1	<0.1	<0.1	<0.1	1	2	45	<0.1	12	5	22
510379303002 (CT 9303, BG 2)	1,070	31	69	30	<0.1	<0.1	<0.1	<0.1	1	<0.1	52	<0.1	20	<0.1	23
510379303003 (CT 9303, BG 3)	1,508	44	56	44	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	45	<0.1	24	3	24
Halifax County	34,522	40	60\	35	<0.1	<0.1	<0.1	<0.1	3	2	36	1	13	5	23
510839301003 (CT 9301, BG 3)	1,477	64	36	36	<0.1	1	<0.1	<0.1	26	1	26	<0.1	21	10	19
Mecklenburg County	30,728	40	60	35	1	<0.1	<0.1	<0.1	1	3	41	1	13	5	25
511179304001 (CT 9304, BG 1)	1,327	27	73	19	3	<0.1	<0.1	<0.1	1	4	40	0	21	4	29
511179304002 (CT 9304, BG 2)	1,859	66	34	61	<0.1	<0.1	<0.1	1	1	3	54	0	25	1	23
511179304003 (CT 9304, BG 3)	1,652	44	56	39	<0.1	<0.1	<0.1	<0.1	5	<0.1	46	0	15	5	29
511179305001 (CT 9305, BG 1)	931	42	58	42	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	42	<0.1	14	8	26
511179305002 (CT 9305, BG 2)	768	18	82	16	1	1	1	<0.1	<0.1	<0.1	38	2	30	1	46

Sources: USEPA 2022, EJSCREEN (Version 2.0, issued 2/18/2022); U.S. Census Bureau 2019, 5-year American Community Survey (2015–2019) Files #B03002

[a] *Bold indicates the CBG is crossed by the Butler Farm–Clover Route 3.*

[b] *The demographic data in this table have been rounded for presentation purposes. As a result, the total populations of color percentages may not reflect the sum of the addends.*

Gray shaded cells indicate reference populations.

Blue shaded cells indicate populations of color.

Pink shaded cells indicate that the community of color is composed primarily of one of the groups listed in the definition of "population of color."

Green shaded cells indicate low-income populations.

Orange shaded cells indicate populations with less than a high school education.

Yellow shaded cells indicate age populations.

3.2.1.4 Butler Farm–Clover Route Variation

Low-Income Populations

Among the CBGs in the analysis area, the low-income population percentages range between 40 and 54 percent, compared to an average of 25 percent for the state as a whole. Three of the CBGs have low-income populations that are greater than the 30 percent threshold for low-income populations identified by the state (Table 3.2-4). Butler Farm–Clover Route Variation crosses two of the low-income CBGs.

Populations of Color

Two CBGs are identified as encompassing populations of color (i.e., greater than the 38 percent statewide average), of which the minority population in two CBGs is primarily Black or African American (Table 3.2-4). Butler Farm–Clover Route Variation crosses both of these CBGs.

Other Sensitive Populations

All of the CBGs contain populations with less than a high school education exceeding 200 percent of the state average, which is 7 percent (Table 3.2-4). Two of the three CBGs are crossed by Butler Farm–Clover Route Variation. There are no under age 5 or over age 64 populations in the analysis area for this route.

Table 3.2-4: Butler Farm–Clover Route Variation Demographic Indicators

State/County Census Block Group (Census Tract, Block Group) [a]	Population	Total Populations of Color (%) [b]	White, non-Hispanic (%)	Black or African American (%)	American Indian and Alaska Native (%)	Asian (%)	Pacific Islander (%)	Some Other Race Alone (%)	Two or More Races (%)	Hispanic or Latino (%)	Low-Income Population (%)	Linguistically Isolated Households (%)	Population with Less than High School Education (%)	Population Under Age 5 (%)	Population Over Age 64 (%)
VIRGINIA	8,454,463	38	62	19	<0.1	6	<0.1	<0.1	3	9	25	3	7	6	15
Mecklenburg County	30,728	40	60	35	1	<0.1	<0.1	<0.1	1	3	41	1	13	5	25
511179304001 (CT 9304, BG 1)	1,327	27	73	19	3	<0.1	<0.1	<0.1	1	4	40	0	21	4	29
511179304002 (CT 9304, BG 2)	1,859	66	34	61	<0.1	<0.1	<0.1	1	1	3	54	0	25	1	23
511179304003 (CT9304, BG 3)	1,652	44	56	39	<0.1	<0.1	<0.1	<0.1	5	<0.1	46	0	15	5	29

Sources: USEPA 2022, EJSCREEN (Version 2.0, issued 2/18/2022); U.S. Census Bureau 2019, 5-year American Community Survey (2015–2019) Files #B03002

[a] *Bold indicates the CBG is crossed by the Butler Farm–Clover Route 1.*

[b] *The demographic data in this table have been rounded for presentation purposes. As a result, the total populations of color percentages may not reflect the sum of the addends.*

Gray shaded cells indicate reference populations.

Blue shaded cells indicate populations of color.

Pink shaded cells indicate that the community of color is composed primarily of one of the groups listed in the definition of "population of color."

Green shaded cells indicate low-income populations.

Orange shaded cells indicate populations with less than a high school education.

3.2.1.5 Butler Farm–Finneywood Route 1

Low-Income Populations

Among the CBGs in the analysis area, the low-income population percentages range between 40 and 54 percent (compared with the state average of 25 percent). Three of the CBGs have low-income populations that are greater than the 30 percent threshold for low-income populations identified by the state (Table 3.2-5), of which Butler Farm–Finneywood Route 1 crosses two.

Populations of Color

Two CBGs are identified as encompassing populations of color (greater than the state average of 38 percent), in both of which the minority population is primarily Black or African American (Table 3.2-5). Butler Farm–Finneywood Route 1 crosses one of these CBGs.

Other Sensitive Populations

Three of the CBGs contain populations with less than a high school education that exceeds 200 percent of the state average of 7 percent. Two of these CBGs are crossed by Butler Farm–Finneywood Route 1 (Table 3.2-5). There are no under age 5 or over age 64 populations in the analysis area for this route.

Table 3.2-5: Butler Farm–Finneywood Route 1 Demographic Indicators

State/County Census Block Group (Census Tract, Block Group) [a]	Population	Total Populations of Color (%) [b]	White, non-Hispanic (%)	Black or African American (%)	American Indian and Alaska Native (%)	Asian (%)	Pacific Islander (%)	Some Other Race Alone (%)	Two or More Races (%)	Hispanic or Latino (%)	Low-Income Population (%)	Linguistically Isolated Households (%)	Population with Less than High School Education (%)	Population Under Age 5 (%)	Population Over Age 64 (%)
VIRGINIA	8,454,463	38	62	19	<0.1	6	<0.1	<0.1	3	9	25	3	7	6	15
Mecklenburg County	30,728	40	60	35	1	<0.1	<0.1	<0.1	1	3	41	1	13	5	25
511179304001 (CT 9304, BG 1)	1,327	27	73	19	3	<0.1	<0.1	<0.1	1	4	40	0	21	4	29
511179304002 (CT 9304, BG 2)	1,859	66	34	61	<0.1	<0.1	<0.1	1	1	3	54	0	25	1	23
511179304003 (CT 9304, BG 3)	1,652	44	56	39	<0.1	<0.1	<0.1	<0.1	5	<0.1	46	0	15	5	29

Sources: USEPA 2022, EJSCREEN (Version 2.0, issued 2/18/2022); U.S. Census Bureau 2019, 5-year American Community Survey (2015–2019) Files #B03002

[a] *Bold indicates the CBG is crossed by the Butler Farm–Finneywood Route 1.*

[b] *The demographic data in this table have been rounded for presentation purposes. As a result, the total populations of color percentages may not reflect the sum of the addends.*

Gray shaded cells indicate reference populations.

Blue shaded cells indicate populations of color.

Pink shaded cells indicate that the community of color is composed primarily of one of the groups listed in the definition of "population of color."

Green shaded cells indicate low-income populations.

Orange shaded cells indicate populations with less than a high school education.

3.2.1.6 Butler Farm–Finneywood Route 2

Low-Income Populations

Among the CBGs in the analysis area, the low-income population percentages range between 32 and 54 percent, compared to 25 percent for Virginia as a whole. Four of the CBGs have low-income populations that are greater than the 30 percent threshold for low-income populations identified by the state (Table 3.2-6). Butler Farm–Finneywood Route 2 crosses three of the four low-income CBGs.

Populations of Color

Three CBGs are identified as encompassing populations of color (greater than the state average of 38 percent), each of which includes a majority Black or African American population (Table 3.2-6). Butler Farm–Finneywood Route 2 crosses two of these CBGs.

Other Sensitive Populations

Four of the CBGs contain populations with less than a high school education that exceeds 200 percent of the state average, which is 7 percent. Three of these CBGs are crossed by Butler Farm–Finneywood Route 2 (Table 3.2-6). Additionally, one CBG contains a population over age 64 that is more than twice the state average (15 percent); this CBG is crossed by Butler Farm–Finneywood Route 2 (Table 3.2-6).

Table 3.2-6: Butler Farm–Finneywood Route 2 Demographic Indicators

State/County Census Block Group (Census Tract, Block Group) [a]	Population	Total Populations of Color (%) [b]	White, non-Hispanic (%)	Black or African American (%)	American Indian and Alaska Native (%)	Asian (%)	Pacific Islander (%)	Some Other Race Alone (%)	Two pr More Races (%)	Hispanic or Latino (%)	Low-Income Population (%)	Linguistically Isolated Households (%)	Population with Less than High School Education (%)	Population Under Age 5 (%)	Population Over Age 64 (%)
VIRGINIA	8,454,463	38	62	19	<0.1	6	<0.1	<0.1	3	9	25	3	7	6	15
Lunenburg County	12,282	41	59	31	<0.1	3	<0.1	<0.1	2	5	25	<0.1	16	5	21
511119302004 (CT 9302, BG 4)	847	46	54	46	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	32	<0.1	17	1	37
Mecklenburg County	30,728	40	60	35	1	<0.1	<0.1	<0.1	1	3	41	1	13	5	25
511179304001 (CT 9304, BG 1)	1,327	27	73	19	3	<0.1	<0.1	<0.1	1	4	40	0	21	4	29
511179304002 (CT 9304, BG 2)	1,859	66	34	61	<0.1	<0.1	<0.1	1	1	3	54	0	25	1	23
511179304003 (CT 9304, BG 3)	1,652	44	56	39	<0.1	<0.1	<0.1	<0.1	5	<0.1	46	0	15	5	29

Sources: USEPA 2022, EJSCREEN (Version 2.0, issued 2/18/2022); U.S. Census Bureau 2019, 5-year American Community Survey (2015–2019) Files #B03002

[a] *Bold indicates the CBG is crossed by the Clover-Butler-Finneywood 230 kV Transmission Line Project.*

[b] *The demographic data in this table have been rounded for presentation purposes. As a result, the total populations of color percentages may not reflect the sum of the addends.*

Gray shaded cells indicate reference populations.

Blue shaded cells indicate populations of color.

Pink shaded cells indicate that the community of color is composed primarily of one of the groups listed in the definition of "population of color."

Green shaded cells indicate low-income populations.

Orange shaded cells indicate populations with less than a high school education.

Yellow shaded cells indicate age populations.

3.2.1.7 Butler Farm–Finneywood Route Variation

Low-Income Populations

Among the CBGs in the analysis area, the low-income population percentages range between 40 and 54 percent, compared to an average of 25 percent for the state as a whole. Three of the CBGs have low-income populations that are greater than the 30 percent threshold for low-income populations identified by the state (Table 3.2-7). Butler Farm–Finneywood Route Variation crosses two of the low-income CBGs.

Populations of Color

Two CBGs are identified as encompassing populations of color (i.e., greater than the 38 percent statewide average), of which the minority population in two CBGs is primarily Black or African American (Table 3.2-7). Butler Farm–Finneywood Route Variation crosses both of these CBGs.

Other Sensitive Populations

All of the CBGs contain populations with less than a high school education exceeding 200 percent of the state average, which is 7 percent (Table 3.2-7). Two of the three CBGs are crossed by Butler Farm–Finneywood Route Variation. There are no under age 5 or over age 64 populations in the analysis area for this route.

Table 3.2-7: Butler Farm–Finneywood Route Variation Demographic Indicators

State/County Census Block Group (Census Tract, Block Group) [a]	Population	Total Populations of Color (%) [b]	White, non-Hispanic (%)	Black or African American (%)	American Indian and Alaska Native (%)	Asian (%)	Pacific Islander (%)	Some Other Race Alone (%)	Two or More Races (%)	Hispanic or Latino (%)	Low-Income Population (%)	Linguistically Isolated Households (%)	Population with Less than High School Education (%)	Population Under Age 5 (%)	Population Over Age 64 (%)
VIRGINIA	8,454,463	38	62	19	<0.1	6	<0.1	<0.1	3	9	25	3	7	6	15
Mecklenburg County	30,728	40	60	35	1	<0.1	<0.1	<0.1	1	3	41	1	13	5	25
511179304001 (CT 9304, BG 1)	1,327	27	73	19	3	<0.1	<0.1	<0.1	1	4	40	0	21	4	29
511179304002 (CT 9304, BG 2)	1,859	66	34	61	<0.1	<0.1	<0.1	1	1	3	54	0	25	1	23
511179304003 (CT9304, BG 3)	1,652	44	56	39	<0.1	<0.1	<0.1	<0.1	5	<0.1	46	0	15	5	29

Sources: USEPA 2022, EJSCREEN (Version 2.0, issued 2/18/2022); U.S. Census Bureau 2019, 5-year American Community Survey (2015–2019) Files #B03002

[a] *Bold indicates the CBG is crossed by the Butler Farm–Clover Route 1.*

[b] *The demographic data in this table have been rounded for presentation purposes. As a result, the total populations of color percentages may not reflect the sum of the addends.*

Gray shaded cells indicate reference populations.

Blue shaded cells indicate populations of color.

Pink shaded cells indicate that the community of color is composed primarily of one of the groups listed in the definition of "population of color."

Green shaded cells indicate low-income populations.

Orange shaded cells indicate populations with less than a high school education.

3.2.1.8 Finneywood Switching Station

The proposed Finneywood Switching Station is located in a CBG that exceeds the thresholds for low-income, populations of color, and educational attainment (Table 3.2-8).

Table 3.2-8: Finneywood Switching Station Demographic Indicators

State/County Census Block Group (Census Tract, Block Group) [a]	Population	Total Populations of Color (%) [b]	White, non-Hispanic (%)	Black or African American (%)	American Indian and Alaska Native (%)	Asian (%)	Pacific Islander (%)	Some Other Race Alone (%)	Two pr More Races (%)	Hispanic or Latino (%)	Low-Income Population (%)	Linguistically Isolated Households (%)	Population with Less than High School Education (%)	Population Under Age 5 (%)	Population Over Age 64 (%)
VIRGINIA	8,454,463	38	62	19	<0.1	6	<0.1	<0.1	3	9	25	3	7	6	15
Mecklenburg County	30,728	40	60	35	1	<0.1	<0.1	<0.1	1	3	41	1	13	5	25
511179304002 (CT 9304, BG 2)	1,859	66	34	61	<0.1	<0.1	<0.1	1	1	3	54	0	25	1	23

Sources: USEPA 2022, EJSCREEN (Version 2.0, issued 2/18/2022); U.S. Census Bureau 2019, 5-year American Community Survey (2015–2019) Files #B03002

[a] *Bold indicates the CBG is crossed by the Clover-Butler-Finneywood 230 kV Transmission Line Project.*

[b] *The demographic data in this table have been rounded for presentation purposes. As a result, the total populations of color percentages may not reflect the sum of the addends.*

Gray shaded cells indicate reference populations.

Blue shaded cells indicate populations of color.

Pink shaded cells indicate that the community of color is composed primarily of one of the groups listed in the definition of "population of color."

Green shaded cells indicate low-income populations.

Orange shaded cells indicate populations with less than a high school education.

3.2.1.9 Butler Farm Substation

The proposed Butler Farm Substation is located in a CBG that exceeds the thresholds for low-income, populations of color, and educational attainment (Table 3.2-9).

Table 3.2-9: Butler Farm Substation Demographic Indicators

State/County Census Block Group (Census Tract, Block Group) [a]	Population	Total Populations of Color (%) [b]	White, non-Hispanic (%)	Black or African American (%)	American Indian and Alaska Native (%)	Asian (%)	Pacific Islander (%)	Some Other Race Alone (%)	Two pr More Races (%)	Hispanic or Latino (%)	Low-Income Population (%)	Linguistically Isolated Households (%)	Population with Less than High School Education (%)	Population Under Age 5 (%)	Population Over Age 64 (%)
VIRGINIA	8,454,463	38	62	19	<0.1	6	<0.1	<0.1	3	9	25	3	7	6	15
Mecklenburg County	30,728	40	60	35	1	<0.1	<0.1	<0.1	1	3	41	1	13	5	25
511179304003 (CT 9304, BG 3)	1,652	44	56	39	<0.1	<0.1	<0.1	<0.1	5	<0.1	46	0	15	5	29

Sources: USEPA 2022, EJSCREEN (Version 2.0, issued 2/18/2022); U.S. Census Bureau 2019, 5-year American Community Survey (2015–2019) Files #B03002

[a] *Bold indicates the CBG is crossed by the Clover-Butler-Finneywood 230 kV Transmission Line Project.*

[b] *The demographic data in this table have been rounded for presentation purposes. As a result, the total populations of color percentages may not reflect the sum of the addends.*

Gray shaded cells indicate reference populations.

Blue shaded cells indicate populations of color.

Pink shaded cells indicate that the community of color is composed primarily of one of the groups listed in the definition of "population of color."

Green shaded cells indicate low-income populations.

Orange shaded cells indicate populations with less than a high school education.

3.3 Natural Resources

3.3.1 Wetlands

ERM identified and mapped wetlands in the study area using publicly available sources, including:

- USGS 7.5-minute series topographic quadrangles (USGS 2022)
- NWI maps from the U.S. Fish and Wildlife Service online data mapping portal (USFWS 2022)
- Soils data from the U.S. Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) Soil Survey Geographic (SSURGO) Database (USDA-NRCS 2022)
- The National Hydrography Dataset (NHD) (USGS 2022b)
- Recent (2022) digital aerial photography (ESRI 2022)

For reference, an overview map illustrating the location of NWI wetlands in the study area is provided as Figure 3.3-1 (Appendix A, Figures). A complete desktop Wetland and Waterbody Report, including wetland mapping based on the sources listed above, is attached as Appendix D, Wetland and Waterbody Desktop Summary. That report quantifies the wetland types that would be crossed by each alternative route. ERM did not conduct an on-site delineation of wetlands or waterbodies along the routes.

The majority of wetlands in the study area are adjacent to, or contiguous with, rivers, streams, and associated tributaries regulated by the USACE and VDEQ under Sections 404 and 401 of the Clean Water Act (CWA), respectively. Based on the wetland classification system defined by Cowardin et al. (1979), wetlands along the alternative routes primarily are classified as palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine forested (PFO). PEM wetlands are characterized by erect, rooted, herbaceous hydrophytes (i.e., aquatic plants), excluding mosses and lichens; PSS wetlands are characterized by woody vegetation less than 20 feet tall; and PFO wetlands are characterized by woody vegetation that is at least 20 feet tall.

The subsections below identify areas where longer crossings of wetlands or wetland complexes occur along each route. In addition to these areas, the routes cross isolated occurrences of wetlands and waterbodies. Additional detail on the desktop wetland study and an assessment of wetland impacts by route is provided in Section 4.3.1, Wetlands.

3.3.1.1 Butler Farm–Clover Line

Butler Farm–Clover Route 1

Crossings of larger expanses or groups of wetlands occur in the following locations along Butler Farm–Clover Route 1:

- Riverine wetlands and forested wetlands surrounding intermittent tributaries between approximate MPs 4.0 and 4.7 and MPs 5.0 and 5.2
- Forested and riverine wetland complexes at approximate MPs 7.3, 7.9, and 8.4
- Forested wetlands around Bluestone Creek at approximate MP 8.6
- Forested wetlands around Devil's Branch Creek at approximate MP 10.8
- Forested wetland around Black Branch at approximate MP 13.8
- Forested wetland around Otter Creek at approximate MP 15.0
- Forested wetlands around Little Bluestone Creek between approximate MPs 15.6,16.0, and 18.4

- Forested and shrub-scrub wetlands between MPs 16.7 and 17.1
- Forested, shrub-scrub, and emergent wetlands associated with a tributary at MP 17.7

Butler Farm–Clover Route 2

Butler Farm–Clover Route 2 crosses the same wetlands as Butler Farm–Clover Route 1 from MPs 0.0 to 9.3. Other wetland crossings along Route 2 occur in the following locations:

- Riverine and forested wetlands between approximate MPs 9.3 and 9.4
- Multiple riverine and forested wetlands associated with Bluestone Creek at approximate MPs 10.1, 10.4, 10.7, 11.0, and 11.4
- Forested and riverine wetlands associated with Otter Creek at approximate MP 12.3
- Forested and riverine wetlands associated with Yerbys Creek between approximate MPs 13.7 and 14.1 and between approximate MPs 14.2 and 14.3
- Forested and riverine wetlands between approximate MPs 14.7 and 14.9 and between approximate MPs 15.2 and 15.5
- Forested and riverine wetlands associated with waterbodies at approximate MPs 16.0 and between approximate MPs 16.7 and 16.9
- Forested wetlands associated with Woodpecker Creek between MPs 17.4 and 17.7
- Forested and riverine wetlands associated with Little Bluestem Creek between approximate MPs 18.8 and 19.4

Butler Farm–Clover Route 3

Butler Farm–Clover Route 3 crosses the same wetlands as Butler Farm–Clover Route 1 from approximate MPs 0.0 to 3.4, and the same wetlands as Butler Farm–Clover Route 2 from approximate MP 12.1 to the proposed Butler Farm Substation at MP 20.2.[3] Wetland crossings between approximate MPs 3.4 and 12.1 of Butler Farm–Clover Route 3 occur in the following locations:

- Riverine wetlands associated with an unnamed tributary to Sandy Creek between MPs 3.5 and 3.6, 3.7 and 3.8, and 3.9
- Forested and riverine wetlands between approximate MPs 5.5 and 6.2
- Forested, riverine, and emergent wetlands associated with Bruce Spring Branch and its tributaries between approximate MPs 7.8 and 8.7
- Forested and riverine wetlands associated with Tanyard Branch between approximate MPs 9.3 and 9.5
- Emergent, forested, and riverine wetlands associated with Bluestem Creek between approximate MPs 9.8 and 10.1.

[3] The approximate MP crossings for wetlands along Butler Farm–Clover Route 3 where it shares a common alignment with Butler Farm–Clover Route 2 are as follows: forested and riverine wetlands associated with Yerbys Creek between approximate MPs 12.9 and 13.2 and between MPs 13.4 and 13.5; forested and riverine wetlands between approximate MPs 13.9 and 14.1 and between approximate MPs 14.4 and 14.8; forested and riverine wetlands associated with waterbodies at approximate MPs 16.0 XX and between approximate MPs 15.8 and 16.1; forested wetlands associated with Woodpecker Creek between MPs 16.6 and 16.9; and forested wetlands associated with Little Bluestem Creek between approximate MPs 18.0 to 18.6.

Butler Farm–Clover Route Variation

Crossings of larger expanses or groups of wetlands occur in the following locations along Butler Farm–Clover Route Variation:

- Forested wetlands associated with an unnamed tributary to Little Bluestem Creek between MPs 1.0 and 1.3
- Scrub-shrub and emergent wetlands associated an unnamed tributary to Little Bluestem Creek between MPs 1.4 and 1.5

3.3.1.2 Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Crossings of the largest expanses of wetlands along Butler Farm–Finneywood Route 1 occur at the following locations:

- Forested wetland associated with an open waterbody between approximate MPs 0.8 and 1.0
- Forested and/or shrub-scrub wetlands around streams or channels between MPs 1.0 and 1.3 and at approximate MPs 1.3, 1.8 to 1.9, 2.6 to 2.7, 2.9 to 3.0, 3.5 to 3.6, 3.9 to 4.0
- Forested and scrub-shrub wetland from MP 4.6 to 5.1
- Forested, emergent, and shrub-scrub wetlands associated with a tributary at MP 5.5
- Forested wetland associated with Little Bluestem Creek at MP 6.3

Butler Farm–Finneywood Route 2

Crossings of larger expanses of wetlands occur in the following locations along Butler Farm–Finneywood Route 2:

- Forested wetland around Horsepen Creek between approximate MPs 1.5 and 1.7
- Forested and emergent wetlands surrounding two intermittent tributaries between approximate MPs 4.4 and 4.6
- Forested wetland around Butcher Creek and an associated intermittent tributary between MPs 6.3 and 6.8

Butler Farm–Finneywood Route Variation

Crossings of larger expanses or groups of wetlands occur in the following locations along Butler Farm–Finneywood Route Variation:

- Forested wetlands associated with an unnamed tributary to Little Bluestem Creek between MPs 1.0 and 1.3
- Scrub-shrub and emergent wetlands associated an unnamed tributary to Little Bluestem Creek between MPs 1.4 and 1.5

3.3.2 Waterbodies

ERM identified and mapped waterbodies and open water features (e.g., reservoirs, lakes, and ponds) in the study area using publicly available GIS databases, the USGS NHD, USGS topographic maps (1:24,000) (USGS 2022), and recent (2022) digital aerial photography (ESRI 2022). All of the alternative routes cross perennial and intermittent waterbodies (rivers, streams, and tributaries). The former includes

the Staunton River, which is considered a navigable water by the USACE, regulated under Section 10 of the Rivers and Harbors Act. Activities within and over state-owned subaqueous lands of Virginia are regulated by the Virginia Marine Resources Commission pursuant to Va. Code § 28.2-1205.

For reference, a general location map illustrating the waterbodies crossed by each route is provided as Attachment 1 in Appendix D, Wetland and Waterbody Desktop Summary. The Wetland and Waterbody Desktop Report quantifies the waterbody types crossed by each route. Crossings of perennial and/or named intermittent waterbodies and open waterbody features along each route are provided in the subsections below.

3.3.2.1 Butler Farm–Clover Line

Butler Farm–Clover Route 1

Butler Farm–Clover Route 1 crosses perennial waterbodies, named intermittent waterbodies, and open waterbody features in the following locations:

- An unnamed, perennial tributary to the Staunton River between approximate MPs 0.2 and 0.3
- The perennial Staunton River between MPs 1.7 and 1.8
- Two perennial canal ditch tributaries to the Staunton River between approximate MPs 2.1 and 2.2
- An open waterbody feature between approximate MPs 3.1 and 3.2
- An unnamed, perennial tributary to Sandy Creek between approximate MPs 4.5 and 4.6
- An open waterbody feature between MPs 4.8 and 4.9
- An unnamed, perennial tributary to Sandy Creek between approximate MPs 5.0 and 5.1.
- An open waterbody feature at approximate MP 5.5
- An open waterbody feature associated with an intermittent segment of Sandy Creek between MPs 6.6 and 6.8
- An intermittent segment of Moody Creek at approximate MP 8.4
- The perennial Bluestone Creek at approximate MP 9.6
- The perennial Devil's Branch between MPs 10.8 and 10.9
- An open waterbody feature at approximate MP 12.8
- The perennial Black Branch between approximate MPs 13.8 and 13.9
- An intermittent segment of Otter Creek between approximate MPs 15.0 and 15.1
- An intermittent segment of Little Bluestone Creek between approximate MPs 16.0 and 16.1
- An unnamed, perennial tributary to Little Bluestone Creek between approximate MPs 16.7 and 17.2
- An unnamed, perennial tributary to Little Bluestone Creek at approximate MP 17.7
- An open waterbody feature between approximate MPs 18.0 and 18.1
- The perennial Little Bluestone Creek at approximate MP 18.4
- An open waterbody feature between MPs 18.6 and 18.7

Butler Farm–Clover Route 2

Butler Farm–Clover Route 2 crosses the same waterbodies as Butler Farm–Clover Route 1 from approximate MPs 0.0 to 9.3. Other waterbody crossings along the route occur in the following locations:

- The perennial Bluestone Creek at approximate MP 10.4
- An unnamed, perennial tributary to Bluestone Creek at approximate MP 10.7
- The perennial Otter Creek at approximate MP 12.3
- A small open waterbody feature between approximate MPs 12.8 and 12.9
- An intermittent segment of Yerbys Creek between approximate MPs 13.7 and 14.0
- An open waterbody feature at approximate MP 16.5
- An unnamed, perennial tributary to Peckerwood Branch at approximate MP 16.8 and a small open waterbody feature with an intermittent tributary flowing into the unnamed, perennial tributary to Peckerwood Branch at approximate MP 16.9
- The perennial Woodpecker Creek between approximate MPs 17.5 and 17.6
- An open waterbody feature between MPs 17.9 and 18.0
- The perennial Little Bluestone Creek at approximate MP 18.9
- A small open waterbody feature at approximate MP 19.5
- An open waterbody feature at approximate MP 20.7

Butler Farm–Clover Route 3

Butler Farm–Clover Route 3 crosses the same waterbodies as Butler Farm–Clover Route 1 from approximate MPs 0.0 to 3.4, and the same waterbodies as Butler Farm–Clover Route 2 from approximate MPs 12.1 to the proposed Butler Farm Substation at approximate MP 20.2.[4] Waterbody crossings between approximate MPs 3.4 and 12.1 of Butler Farm–Clover Route 3 occur in the following locations:

- An open waterbody feature at approximate MP 4.2
- An open waterbody feature at approximate MP 4.7
- The perennial Sandy Creek between MPs 5.3 and 5.4
- The perennial Berles Creek at approximate MP 5.5
- An unnamed, perennial tributary to Berles Creek between approximate MPs 5.9 and 6.1
- The perennial Bruce Spring Branch between approximate MPs 7.8 and 8.0
- An open waterbody feature at approximate MP 9.1
- The perennial Tanyard Branch between MPs 9.4 and 9.5
- An unnamed, perennial tributary to Bluestone Creek between MPs 9.9 and 10.0

[4] The approximate MP crossings for waterbodies along Butler Farm–Clover Route 3 where it shares a common alignment with Butler Farm–Clover Route 2 are as follows: an intermittent segment of Yerbys Creek between approximate MPs 12.9 and 13.2; an open waterbody feature between MP 15.6 and 15.7; an unnamed, perennial tributary to Peckerwood Branch at approximate MP 15.9 and a small open waterbody at approximate MP 16.1; the perennial Woodpecker Creek between approximate MPs 16.6 and 16.7; an open waterbody feature at approximate MP 17.1; the perennial Little Bluestone Creek between approximate MPs 18.0 and 18.1; an open waterbody feature at approximate MP 18.7; and an open waterbody feature between approximate MPs 19.7 and 19.9.

- The perennial Bluestone Creek between MPs 10.0 and 10.1
- An open waterbody feature between approximate MPs 11.5 and 11.6

Butler Farm–Clover Route Variation

Butler Farm–Clover Route Variation crosses perennial and intermittent waterbodies in the following locations:

- An unnamed, perennial tributary to Little Bluestone Creek between MPs 1.0 and 1.3 and between MPs 1.4 and 1.5

3.3.2.2 Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Butler Farm–Finneywood Route 1 crosses perennial waterbodies, named intermittent waterbodies, and open waterbody features in the following locations:

- An intermittent segment of Otter Creek between approximate MPs 2.9 and 3.0
- An intermittent segment of Little Bluestone Creek between approximate MPs 3.9 and 4.0
- An unnamed, perennial tributary to Little Bluestone Creek between approximate MPs 4.6 and 5.1
- An unnamed, perennial tributary to Little Bluestone Creek at approximate MP 5.6
- The perennial Little Bluestone Creek at approximate MPs 6.3
- And an open waterbody feature between approximate MP 6.5 and 6.6

Butler Farm–Finneywood Route 2

Butler Farm–Finneywood Route 2 crosses perennial waterbodies in the following locations:

- An unnamed, perennial tributary to Finneywood Creek at approximate MPs 0.3
- The perennial Horsepen Creek between approximate MP 1.5 and 1.6
- The perennial Butcher Creek between approximate MP 6.3 and 6.4

Butler Farm–Finneywood Route Variation

Butler Farm–Finneywood Route Variation crosses perennial and intermittent waterbodies in the following locations:

- An unnamed, perennial tributary to Little Bluestone Creek between MPs 1.0 and 1.3 and between MPs 1.4 and 1.5

3.3.3 Areas of Ecological Significance

ERM reviewed available ecological datasets for the area within a 1.0-mile buffer around the ROWs for each alternative route. ERM also consulted the VDCR's Natural Heritage Program (NHP) (VDCR 2022a) and requested a formal review of the routes from the VDCR to identify areas of ecological significance along and near the alternative routes, including natural area preserves, conservation sites, Stream Conservation Units (SCUs), ecological cores, and general location areas for natural heritage resources. These areas collectively delineate habitats containing rare, threatened, or endangered plants and animals, unique or exemplary natural communities, and/or significant geologic formations.

The VDCR responded to Dominion's request for formal review of the routes in a letter dated May 2, 2022. Based on that response and research conducted by ERM, no natural area preserves, conservation sites, or general location areas for natural heritage resources are present along the alternative routes, and no further discussion of these resource types is provided in this study. Areas of ecological significance that are present along the alternative routes include SCUs and ecological cores. General descriptions of these areas are provided below.

- SCUs were identified (when present) up to 2.0 miles upstream and 1.0 mile downstream of the Project area. SCUs identify stream reaches that contain aquatic natural heritage resources, including upstream and downstream buffers and tributaries associated with the reach. SCUs are given a biodiversity significance ranking based on the rarity, quality, and number of natural heritage resources they contain. The units can be used to identify land management needs, protection priorities, and potential conflicts with development activities.
- Ecological cores are areas of at least 100 acres of continuous interior, natural cover that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that use marsh, dune, and beach habitats. Interior ecological core areas begin 100 meters inside the nearest core edges and continue to the deepest parts of the ecological core. Ecological cores also provide natural and economic benefits of open space, recreation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including carbon sequestration and oxygen production). Ecological cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of the natural heritage resources the cores contain.

Specifically, VDCR determined that the Sandy Creek SCU and the Bluestone Creek–Devils Creek SCU are located within the study area (Figure 3.3-2; Appendix A, Figures).[5] In addition, VDCR determined that each route intersects multiple ecological cores ranging in rank from C3 (high ecological integrity) to C5 (general ecological integrity) (Figure 3.3-3; Appendix A, Figures).

3.3.3.1 Sandy Creek Stream Conservation Unit

The Sandy Creek SCU has been given a biodiversity ranking of B5, which represents a site of general biodiversity significance. The natural heritage resource associated with this site is Speckled killifish (*Fundulus rathbuni*). The Speckled killifish inhabits the lower Dan River system of the Staunton River in Virginia. It occurs in pools, backwaters, and slow runs of shallow creeks with sandy and silty substrate (VDCR 2022a).

Of the alternative routes for the Project, only Butler Farm–Clover Route 3 crosses the Sandy Creek SCU. The route intersects the main stem of Sandy Creek and six tributaries within the unit in the area approximately between Hare Road to the north and Highway 92 to the south. The MPs for these crossings are as follows:

- An unnamed tributary to Sandy Creek at approximate MP 4.4
- An unnamed tributary to Sandy Creek at approximate MP 4.9
- Sandy Creek at approximate MP 5.3
- Berles Creek at approximate MP 5.5
- An unnamed tributary to Sandy Creek at approximate MP 5.8

[5] There is a conservation site within the study associated with the Sandy Creek SCU. This site, referred to as the Sandy Creek Drainage Conservation Site, is located about 0.4 mile west of Butler Farm–Clover Route 3 at approximate MP 4.9. The site will not be affected by the Project and is not discussed further in this report.

- An unnamed tributary to Sandy Creek at approximate MP 6.0
- An unnamed tributary to Sandy Creek at approximate MP 6.1

None of the other alternative routes cross this SCU.

3.3.3.2 Bluestone Creek–Devils Creek Stream Conservation Unit

The Bluestone Creek–Devils Creek SCU has been given a biodiversity ranking of B4, which represents a site of moderate biodiversity significance. The natural heritage resources associated with this site are Roanoke slabshell (*Elliptio roanokensis*) and Whitemouth shiner (*Notropis alborus*). The Roanoke slabshell is a relatively large freshwater mussel species that is typically found in riffle habitats of large rivers. The Whitemouth shiner inhabits warm, clear or somewhat turbid, small- to medium-sized creeks in the middle and lower Piedmont. This species is currently classified as threatened by the Virginia Department of Wildlife Resources (VDWR), as described in Section 3.3.4, Protected Species.

Of the alternative routes for the proposed Project, Butler Farm–Clover Route 1 and Butler Farm–Clover Route 2 each cross Bluestone Creek within the unit. For Butler Farm–Clover Route 1, the crossing occurs at approximate MP 9.5; for Butler Farm–Clover Route 2, the crossing occurs at approximate MP 10.4. None of the other alternative routes cross the Bluestone Creek–Devils Creek SCU.

3.3.3.3 Ecological Cores

Each alternative route crosses multiple ecological core units identified by the VDCR. In general, VDCR ranks ecological cores from C1 to C5 based on the estimated ecological integrity of natural resources within the unit. The VDCR ranking system for ecological integrity includes:

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

According to VDCR, larger and more biologically diverse core areas have higher rankings. Ecological integrity is enhanced if the core is part of a larger complex of natural lands or if the core contributes to water quality enhancement. Ecological cores in the two highest categories (i.e., C1 and C2) are connected by landscape corridors that create a statewide network of natural lands.

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Thirteen crossings of ecological cores occur along Butler Farm–Clover Route 1. Table 3.3-1 lists the ecological core unit identification, rank, and starting and ending mileposts for each crossing.

Table 3.3-1: Ecological Cores Crossed by Butler Farm–Clover Route 1

Ecological Core ID	Ecological Core Rank	Milepost (Start)	Milepost (End)
71411	5—General	0.0	0.4
71496	5—General	0.7	1.1
71061	4—Moderate	1.4	2.6
71211	4—Moderate	4.0	4.6

Ecological Core ID	Ecological Core Rank	Milepost (Start)	Milepost (End)
71423	4—Moderate	5.8	6.1
71426	5—General	6.2	6.8
71446	3—High	7.6	8.9
71479	4—Moderate	9.2	10.2
71480	4—Moderate	10.6	11.1
71631	5—General	12.2	12.4
72316	5—General	15.2	15.7
72718	4—Moderate	17.1	17.5
72952	5—General	17.9	18.0

Butler Farm–Clover Route 2

Eighteen crossings of ecological cores occur along Butler Farm–Clover Route 2. Table 3.3-2 lists the ecological core unit identification, rank, and starting and ending mileposts for each crossing.

Table 3.3-2: Ecological Cores Crossed by Butler Farm–Clover Route 2

Ecological Core ID	Ecological Core Rank	Milepost (Start)	Milepost (End)
71411	5—General	0.1	0.5
71496	5—General	0.0	1.1
71061	4—Moderate	1.4	2.6
71211	4—Moderate	4.0	4.6
71423	4—Moderate	5.8	6.1
71426	5—General	6.2	6.8
71446	3—High	7.6	8.9
71479	4—Moderate	9.2	9.6
71675	5—General	10.1	10.6
71910	4—Moderate	11.4	11.6
72116	4—Moderate	11.7	12.9
72607	5—General	13.5	13.7
72587	3—High	13.9	14.4
72961	5—General	14.9	15.2
73175	5—General	15.7	15.9
73290	5—General	16.5	16.6
73238	5—General	17.3	17.6
73180	5—General	19.6	19.9

Butler Farm–Clover Route 3

Fifteen crossings of ecological cores occur along Butler Farm–Clover Route 3. Table 3.3-3 lists the ecological core unit identification, rank, and starting and ending mileposts for each crossing.

Table 3.3-3: Ecological Cores Crossed by Butler Farm–Clover Route 3

Ecological Core ID	Ecological Core Rank	Milepost (Start)	Milepost (End)
71411	5—General	0.1	0.5
71496	5—General	0.7	1.1
71061	4—Moderate	1.4	2.6
71478	5—General	3.5	4.0
71930	5—General	5.9	6.1
72071	5—General	6.5	6.9
72281	4—Moderate	10.5	11.0
72116	4—Moderate	12.1	12.1
72607	5—General	12.7	12.9
72587	3—High	13.0	13.6
72961	5—General	14.0	14.4
73175	5—General	14.9	15.0
73290	5—General	15.7	15.7
73238	5—General	16.5	16.8
73180	5—General	18.8	19.1

Butler Farm–Clover Route Variation

Two crossings of ecological cores occur along Butler Farm–Clover Route Variation. Table 3.3-4 lists the ecological core unit identification, rank, and starting and ending mileposts for each crossing.

Table 3.3-4: Ecological Cores Crossed by Butler Farm–Clover Route Variation

Ecological Core ID	Ecological Core Rank	Milepost (Start)	Milepost (End)
72718	4—Moderate	0.9	1.3
72952	5—General	1.6	1.7

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Five crossings of ecological cores occur along Butler Farm–Finneywood Route 1. Table 3.3-5 lists the ecological core unit identification, rank, and starting and ending mileposts for each crossing.

Table 3.3-5: Ecological Cores Crossed by Butler Farm–Finneywood Route 1

Ecological Core ID	Ecological Core Rank	Milepost (Start)	Milepost (End)
71632	4—Moderate	0.0	0.4
72316	5—General	3.1	3.6
72718	4—Moderate	5.0	5.4
72952	5—General	5.7	5.9

Butler Farm–Finneywood Route 2

Six crossings of ecological cores occur on Butler Farm–Finneywood Route 2. Table 3.3-6 lists the ecological core unit identification, rank, and starting and ending mileposts for each crossing.

Table 3.3-6: Ecological Cores Crossed by Butler Farm–Finneywood Route 2

Ecological Core ID	Ecological Core Rank	Milepost (Start)	Milepost (End)
71632	4—Moderate	0.0	0.7
71600	3—High	1.2	2.1
71424	3—High	2.1	3.4
72409	5—General	4.0	4.4
72710	5—General	5.6	5.7
72849	3—High	5.8	6.7

Butler Farm–Finneywood Route Variation

Two crossings of ecological cores occur along Butler Farm–Finneywood Route Variation. Table 3.3-7 lists the ecological core unit identification, rank, and starting and ending mileposts for each crossing.

Table 3.3-7: Ecological Cores Crossed by Butler Farm–Finneywood Route Variation

Ecological Core ID	Ecological Core Rank	Milepost (Start)	Milepost (End)
72718	4—Moderate	0.9	1.3
72952	5—General	1.6	1.7

3.3.4 Protected Species

To protect and recover imperiled species and the ecosystems they depend on, Congress passed the Endangered Species Act (ESA) in 1973, which states that threatened and endangered plant and animal species are of aesthetic, ecological, educational, historic, and scientific value to the United States, and protection of these species and their habitats is required. The ESA is administered by both the National Oceanic and Atmospheric Administration and the 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.

Take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." 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. A federally threatened species is any species that is likely to become endangered in the foreseeable future throughout all or a significant portion of its range.

Virginia has adopted separate acts for protecting animals and plants in the state. The Virginia ESA (Va. Code §§ 29.1-563–29.1-570) 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 identify and protect state-listed wildlife. The Virginia ESA prohibits by regulation the taking, transportation, processing, sale, or offer for sale of those species.

Under the Endangered Plant and Insect Species Act (2 Virginia Administrative Code [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 assessing potential effects on state-listed plant and insect species.

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

- USFWS Information for Planning and Consultation System (IPaC) online system (USFWS 2022)
- VDCR NHP (VDCR 2022a)
- VDWR Fish and Wildlife Information Service (VaFWIS) (VDWR 2022a)
- VDWR Wildlife Environmental Review Map Service (WERMS) (VDWR 2018)
- Center for Conservation Biology (CCB) Eagle Nest Locator (CCB 2022)
- VDWR Northern Long-Eared Bat Winter Habitat & Roost Tree Application (VDWR 2022b)
- VDWR Little Brown Bat and Tri-colored Bat Winter Habitat & Roost Tree Application (VDWR 2022c)

ERM obtained query results from the VDCR NHP, the VDWR VaFWIS, the VDWR WERMS, and the USFWS IPaC to identify federally and state-listed species that may occur within the study area. Digital data were obtained from the VDCR to identify locations within the ROWs of the alternative routes and 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 2022a). Query results from USFWS IPaC includes species that may occur within the ROWs of the alternative routes and associated 100-foot buffer (USFWS 2022). Query results from VaFWIS include species known to occur or likely to occur within a 10.0-mile radius from the geographic center of the alternative routes (VDWR 2022a). Data for species known to occur within the Project alternative routes were retrieved using queries of the VDWR WERMS.

The VDCR's element occurrence data are mapped representations of plants, animals, and exemplary natural communities, which are tracked by the VDCR NHP due to their rarity. Each occurrence is represented by a polygon indicating its known location. The polygons are intended to indicate the full known aerial extent of the occurrence, modified to account for the locational uncertainty of the source data. VDWR's Species Observation dataset includes all verified species documentations maintained by the VDWR.

3.3.4.1 Federally and State-Listed Endangered and Threatened Species

Database queries identified one federally listed species that may potentially occur within the study area, the Northern long-eared bat (*Myotis septentrionalis*). Seven state-listed species were identified in queries including Little brown bat (*Myotis lucifugus*), Tri-colored bat (*Perimyotis subflavus*), Eastern big-eared bat (*Corynorhinus rafinesquii macrotis*), Henslow's Sparrow (*Ammodramus henslowii*), Loggerhead Shrike (*Lanius ludovicianus*), Carolina darter (*Etheostoma collis*), and Whitemouth shiner. Each species was reviewed for potential of occurrence within and adjacent to the Butler Farm–Clover and Butler Farm–Finneywood routes. Information on the federally and state-listed species is provided in Table 3.3-8. As part of their review, the VDCR concluded that the Project as planned would not affect any documented state-listed plants or insects.

Butler Farm–Clover Line

Summer foraging habitat for Northern long-eared bat, Little brown bat, and Tri-colored bat includes forest along each Butler Farm–Clover route. However, a review of the VDWR winter habitat and roost trees

online mapping system did not show winter habitat (i.e., hibernacula) or roost trees for these bat species within any of the Butler Farm–Clover routes (VDWR 2018).

Predicted suitable habitat for Carolina darter is identified by the VDCR along multiple waterbodies crossed by the Butler Farm–Clover routes, including the Staunton River, Sandy Creek, Berles Creek, Tanyard Branch, Bluestone Creek, and Devils Branch. Therefore, all Butler Farm–Clover routes cross predicted suitable habitat for Carolina darter in one or more locations.

Predicted suitable habitat for Whitemouth shiner within the study area is identified by the VDCR along multiple waterbodies, including Bluestone Creek, Devils Branch, Otter Creek, Finneywood Creek, Horsepen Creek, and Butcher Creek. Therefore, all Butler Farm–Clover routes cross predicted suitable habitat for Whitemouth shiner in one or more locations.

VDWR WERMS data indicate several occurrences of Loggerhead Shrike near the Butler Farm–Clover routes. Both Loggerhead Shrike and Henslow's Sparrow prefer to forage in open habitats that lack dense forested cover. Habitat types required for these species are present in multiple locations along each of the Butler Farm–Clover routes.

Butler Farm–Finneywood Line

Summer foraging habitat for northern long-eared bat, little brown bat, and tri-colored bat includes forested habitats along both Butler Farm–Finneywood routes. However, a review of the VDWR winter habitat and roost trees online mapping system did not show winter habitat (i.e., hibernacula) or roost trees for these bat species within any of the Butler Farm–Finneywood routes (VDWR 2018).

Predicted suitable habitat for eastern big-eared bat within the study area is identified by the VDCR in riparian habitats along Finneywood Creek and Horsepen Creek. The only Project alternative route that crosses predicted suitable habitat for eastern big-eared bat is Butler Farm–Finneywood Route 2.

Predicted suitable habitat for Carolina darter within the study area is identified by the VDCR along multiple waterbodies, including Bluestone Creek, Devils Branch, and Butcher Creek. Butler Farm–Finneywood Route 1 is the only alternative route that does not cross predicted suitable habitat for Carolina darter.

Predicted suitable habitat for Whitemouth shiner within the study area is identified by the VDCR along multiple waterbodies, including Bluestone Creek, Devils Branch, Otter Creek, Finneywood Creek, Horsepen Creek, and Butcher Creek. Butler Farm–Finneywood Route 1 is the only alternative route that does not cross predicted suitable habitat for Whitemouth shiner.

VDWR WERMS data indicates several occurrences of Loggerhead Shrike near the Butler Farm–Finneywood routes. Both Loggerhead Shrike and Henslow's Sparrow prefer to forage in open habitats that lack dense forested cover. The habitat types required for these species are present in multiple locations across each of the Butler Farm–Finneywood routes.

Table 3.3-8: Potential Federally and State-Listed Species in the Study Area

Common Name	Scientific Name	Federal Status	State Status	Global Rank	Habitat Summary	Potential Route Occurrence	Data Source
FEDERALLY LISTED SPECIES							
Mammals							
Northern long-eared bat	*Myotis septentrionalis*	LT	LT	G4	Old-growth or late successional interior forests; partially dead or decaying trees; caves, mines, and tunnels	All	IPaC, VaFWIS, VDWR Maps
STATE-LISTED SPECIES							
Mammals							
Eastern big-eared bat	*Corynorhinus rafinesquii macrotis*	None	LE	G3, G4, T3	Hollow trees or abandoned buildings; mature forests near waterbodies	Butler Farm–Finneywood Route 2	VDCR
Little brown bat	*Myotis lucifugus*	None	LE	G3	Caves, buildings, rocks, trees, under bridges, and in mines and tunnels	All	VaFWIS, VDWR Maps
Tri-colored bat	*Perimyotis subflavus*	None	LE	G3	Forest edges, caves, and mines	All	VaFWIS, VDWR Maps
Fish							
Carolina darter	*Etheostoma collis*	None	LT	G3	Small to moderate-sized streams in areas of low current velocity	All but Butler Farm–Finneywood Route 1	VaFWIS, VDCR
Whitemouth shiner	*Notropis alborus*	None	LT	G4	Warm, clear or somewhat turbid, small- to medium-sized creeks	All but Butler Farm–Finneywood Route 1	VaFWIS, VDCR
Birds							
Henslow's Sparrow	*Ammodramus henslowii*	None	LT	G4	Open grasslands with few or no woody plants and tall dense grasses and litter layer	All	VaFWIS

Common Name	Scientific Name	Federal Status	State Status	Global Rank	Habitat Summary	Potential Route Occurrence	Data Source
Loggerhead Shrike	*Lanius ludovicianus*	None	LT	G4	Open country with scattered shrubs and trees or other tall structures for perching	All	VaFWIS

Sources: USFWS 2022; VDCR 2022a; VDWR 2022a, 2018

IPaC = Information for Planning and Consultation; VaFWIS = Virginia Fish and Wildlife Information Service; VDWR = Virginia Department of Wildlife Resources
Federal/State Status:
LE Listed as endangered
LT Listed as threatened
Global Rank:
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
T3 Subspecies 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

3.3.4.2 Bald Eagle Management

The Bald Eagle (*Haliaeetus leucocephalus*) is no longer federally listed under the ESA, but it is a state-listed threatened species in Virginia under the Virginia ESA and is protected under Va. Code § 29.1-521 and VDWR regulations (4 VAC 15-30-10). The Bald Eagle is also protected under the federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. *The Management of Bald Eagle Nests, Concentration Areas, and Communal Roosts in Virginia: A Guide for Landowners* (VDGIF and CCB 2012), issued by the then Virginia Department of Game and Inland Fisheries (now the VDWR) provides 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 agency on a case-by-case basis (Virginia Department of Game and Inland Fisheries and the Center for Conservation Biology at the College of William and Mary and Virginia Commonwealth University 2012).

To obtain the most current eagle nest data, ERM reviewed the CCB website (CCB 2022), which provides information about the Virginia Bald Eagle population, including the results of the CCB's annual eagle nest survey. According to the CCB database, the closest Bald Eagle nest (Nest ID HF0601) to the study area is located approximately 2.3 miles northwest of the Clover Switching Station. None of the alternative routes are within the 660-foot management buffer for this nest.

3.3.4.3 Species of Concern and Other Documented Occurrences

Species of Concern typically are not afforded the same level of protection as federally and state-listed endangered and threatened species. NatureServe, an international network of NHPs, assigns a global rank based on rarity and conservation status. Species ranked "G1" (global rank 1 / critically imperiled) or "G2" (global rank 2 / imperiled) are most at risk. Based on the VDCR's May 2, 2022, review letter (VDCR 2022d), two rare species have the potential to occur in the study area if suitable habitat is present (VDCR 2022a). A summary of the results of the VDCR review are included in Table 3.3-9.

Table 3.3-9: Rare Species with the Potential to Occur in the Project Area

Common Name	Scientific Name	Federal Status	State Status	Global Rank	State Rank	Habitat Summary	Data Source
Fish							
Speckled killifish	*Fundulus rathbuni*	None	None	G4	S2	Pools, backwaters, and slow runs of shallow creeks with sandy and silty substrate	VDCR
Invertebrates							
Roanoke slabshell	*Elliptio roanokensis*	None	None	G3	S1	Riffle habitats of large rivers	VDCR

Source: VDCR 2022a

VDCR = Virginia Department of Conservation and Recreation
Global Rank:
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

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.*

The Speckled killifish is found in the lower Dan River system of the Staunton River in Virginia and occurs in the pools, backwaters, and slow runs of shallow creeks with sandy and silty substrate (VDCR 2022a). VDCR indicates that Speckled killifish is associated with Sandy Creek within the Sandy Creek SCU crossed by Butler Farm–Clover Route 3.

The Roanoke slabshell is a relatively large freshwater mussel species found in riffle habitats of large rivers. Tributary creeks and rivers can provide habitat for the species, usually in near-shore habitats in sand/gravel substrates and sometimes in more coarse substrates (VDCR 2022a). VDCR indicates that Roanoke slabshell is associated with Bluestone Creek within the Bluestone Creek–Devils Creek SCU crossed by all Butler Farm–Clover alternative routes.

Butler Farm–Clover Line

No crossings of habitat identified by VDCR for Speckled killifish occur along Butler Farm–Clover Route 1; however, crossings of habitat for Roanoke slabshell occur in the following location along the route: Bluestone Creek–Devils Creek SCU at approximate MP 9.6.

No crossings of habitat identified by VDCR for speckled killifish occur in Butler Farm–Clover Route 2; however, crossings of habitat for Roanoke slabshell occur in the following location along the route: Bluestone Creek–Devils Creek SCU at MP 10.4.

Crossings of habitat identified by VDCR for Speckled killifish and Roanoke slabshell occur in the following locations along Butler Farm–Clover Route 3: Sandy Creek SCU (seven crossings total) between approximate MPs 4.4 and 6.1; and Bluestone Creek–Devils Creek SCU at approximate MP 10.0.[6]

No crossings of habitat identified by VDCR for Speckled killifish or Roanoke slabshell occur along Butler Farm–Clover Route Variation.

Butler Farm–Finneywood Line

No crossings of habitat identified by VDCR for speckled killifish or Roanoke slabshell occur along Butler Farm–Finneywood Routes 1 or 2, or Route Variation.

3.3.5 Vegetation

3.3.5.1 Local Vegetation Characteristics

The study area is situated within the Piedmont Province. Vegetation in this province has been altered by clearing as part of ongoing agricultural and silvicultural practices occurring since European settlement. Prior to the effects of European settlement, vegetation was influenced by the practices of Native Americans. Writings from early explorers indicate that parts of the Piedmont were once open, savanna-like woodlands and grasslands. Native American practices included burning forests to drive game and keep the understory of forests clear for hunting.

More recently, forests in the study area have undergone a cycle of clearing, farming, and regenerating. If left unattended, fallow farmland undergoes a successional regeneration process that typically results in a prevalence of early successional trees such as Virginia pine (*Pinus virginiana*), Eastern red cedar

[6] Butler Farm–Clover Route 3 passes just south of the Bluestone Creek–Devils Creek SCU at approximate MP 10.0.

(*Juniperus virginiana*), and Tulip-poplar (*Liriodendron tulipifera*). Regenerating forests ultimately mature into oak-hickory forests dominated by later successional tree species (VDCR 2022b). The effects of human influence on the landscape for centuries have resulted in a patchwork of early successional forests, secondary forests, pastures, and agricultural fields.

Descriptions of the vegetation communities crossed by the alternative routes are provided in the sections below.

3.3.5.2 Forested Vegetation

Forested vegetation within the study area is generally associated with relatively small-sized contiguous tracts of trees found in upland and/or alluvial forests located between larger expanses of agricultural land. Upland forests are composed of tree species typically found in the Piedmont physiographic province, with vegetation assemblages such as pine forest and mixed hardwood forest dominated by Loblolly pine (*Pinus taeda*) species, Red maples (*Acer rubrum*), Shortleaf pine (*Pinus echinata*), Sweet gum (*Liquidambar styraciflua*) Tulip tree, American beech (*Fagus grandifolia*), hickories (*Carya* spp.), and various upland oaks (*Quercus* spp.). Upland forest communities are usually reduced in size due to historic encroachment from agricultural land use and residential development, and usually exist in small contiguous tracts of woodlands or fragmented forests located between croplands, pastures, and developed areas.

Alluvial forests in the study area are found at lower topographic elevations in floodplains and drainageways associated with and waterbodies like the Staunton River and its tributaries. Alluvial forest composition typically includes species like Silver maple (*Acer saccharinum*), Sycamore (*Platanus occidentalis*), American elm (*Ulmus americana*), Box elder (*Acer negundo*), Hackberry (*Celtis occidentalis*), and River birch (*Betula nigra*). Floodplain sloughs and backswamps are common landforms in the Piedmont and can support a variety of water-tolerant oak species in the forest canopy, like Pin oak (*Quercus palustris*), Swamp white oak (*Quercus bicolor*), Willow oak (*Quercus phellos*), and Swamp chestnut oak (*Quercus michauxii*). Beneath the forest canopy, understory plants include a variety of shrubs and herbaceous species such as Sweet pepper bush (*Clethra alnifolia*), Spice bush (*Lindera benzoin*), Arrowwood (*Viburnum dentatum*), sedges (*Carex* spp.), and rushes (*Juncus* spp.).

As referenced in Section 3.1.2, Existing Land Use and Land Cover, land cover along the alternative routes was classified using a combination of local and state-wide datasets as well as aerial photo interpretation to identify the most current uses for a given area. Figure 3.1.2-1 in Appendix A, Figures, depicts land use/land cover, including forested areas, along the alternative routes.

3.3.5.3 Forest Conservation Values

The Forest Conservation Value (FCV) model is a tool designed by the Virginia Department of Forestry (VDOF) to strategically identify the highest priority forestland for conservation in Virginia (VDCR 2022c). 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, and 1- Average. For the purposes of this analysis, only those forests with Outstanding and Very High conservation values, which typically are associated with streams and rivers, are discussed below.

Butler Farm-Clover Line

Butler Farm–Clover Route 1

Butler Farm–Clover Route 1 crosses forest with Outstanding or Very High conservation values on the west side of the Staunton River from MPs 1.4 to 1.7. The route additionally crosses forest with Very High

conservation values adjacent to an unnamed stream between MPs 4.0 and 4.4 as well as at Sandy Creek (MP 6.6), Moody Creek (MP 8.4), Bluestone Creek (MP 9.6), Devils Branch (MP 10.8), and an unnamed tributary to Little Bluestone Creek (between MPs 16.7 and 16.9).

Butler Farm–Clover Route 2

Butler Farm–Clover Route 2 crosses forest with Outstanding or Very High conservation values on the west side of the Staunton River from MPs 1.4 to 1.7. Butler Farm–Clover Route 1 additionally crosses forest with Very High conservation values adjacent to an unnamed stream between MP 4.0 to 4.4. Butler Farm–Clover Route 1 also crosses forest with Very High conservation values adjacent to Sandy Creek (MP 6.6), Moody Creek (MP 8.4), and Yerbys Creek (MP 13.9). Additionally, forests with Outstanding and Very High conservation values associated with tree stands are crossed from MPs 11.4 to 11.6, 12.6 to 12.7, and 14.2 to 14.4.

Butler Farm–Clover Route 3

Butler Farm–Clover Route 1 crosses forest with Outstanding or Very High conservation values on the west side of the Staunton River from approximate MPs 1.4 to 1.7. Butler Farm–Clover Route 3 also crosses forest with Outstanding and Very High conservation values adjacent to Bluestone Creek (MP 10.1) and Yerbys Creek (MP 13.9), and forests with Outstanding and Very High conservation values associated with tree stands from approximate MPs 13.4 to 13.6.

Butler Farm–Clover Route Variation

Butler Farm–Clover Route Variation crosses forest with Outstanding or Very High conservation values around an unnamed perennial tributary to Little Bluestone Creek between MPs 0.9 and 1.5.

Butler Farm-Finneywood Line

Butler Farm–Finneywood Route 1

Butler Farm–Finneywood Route 1 crosses minimal forest with Very High conservation values, including forested areas near approximate from MPs 1.8 to 1.9, MP 3, MP 3.1, from MPs 3.4 to 3.6, and from MPs 4.6 to 4.7. No forest with Outstanding conservation values is crossed by the route.

Butler Farm–Finneywood Route 2

Butler Farm–Finneywood Route 2 crosses limited forest with Outstanding or Very High conservation values, including forested areas near MP 0.3, MP 1.2, adjacent to Horsepen Creek (MP 1.4 to 1.8 and MP 2.0), an unnamed stream (MPs 2.2 to 2.5), and Butcher Creek (MPs 6.3 to 6.4). Additionally, forest with Outstanding or Very High conservation values associated with tree stands are crossed between approximate MP 4.1, and MPs 6.2 and 6.7, which includes Butcher Creek.

Butler Farm–Finneywood Route Variation

Butler Farm–Finneywood Route Variation crosses forest with Outstanding or Very High conservation values around an unnamed perennial tributary to Little Bluestone Creek between MPs 0.9 and 1.5.

3.3.5.4 Agricultural Vegetation

In addition to forest, vegetation cover types in the study area include a mix of agricultural lands (hay/pasture and cropland) outside of the small urban and residential areas associated with Chase City. Typical crops grown in the area include grains (e.g., soybeans, wheat), tobacco, and some vegetables. Livestock grazing, mainly cattle, is found in many open non-cultivated agricultural areas.

In the vicinity of the Project alternative routes, agricultural vegetation occurs along the Barnesville Highway, predominately between Wylliesburg and Red Oak; along Highway 47 predominately between Chase City and Finneywood; and the area between Highways 92 and Highway 49 located between Chase City and Philbeck Crossroads. Each of the alternative routes discussed in this report crosses agricultural vegetation in one or more of these areas (see Figure 3.1.2-1 in Appendix A, Figures).

3.4 Visual Conditions

ERM conducted the following analyses to understand the existing visual conditions and potential impacts from the installation of the proposed Project components along the Butler Farm–Clover and Butler Farm–Finneywood alternative routes:

- Identification of visually sensitive resources (VSRs) through review of recent (2021) digital aerial photography and Google Maps
- Site reconnaissance and local outreach
- Definition of potential user groups
- Review of visual simulations from key observation points (KOPs) along the routes
- Evaluation of the alternative routes with respect to visual impacts

VSRs were defined as areas where the Project components and any associated vegetation clearing would be additions to the surrounding landscape and/or areas containing resources with unique scenic qualities or sensitive viewsheds. Examples of VSRs include designated scenic resources (e.g., scenic byways, overlooks, and landscapes), residential groupings, recreational areas, historic landscapes or districts, conserved open space, documented natural features, cultural destinations, road corridors, and areas of high public concentration. VSRs along and near the routes include Kings Highway; Highways 47, 49, and 92; residential areas in and around Wylliesburg, Fairview, and Chase City; and various rural residences. The study area overall has a rural land use character with a collection of industrial, residential, commercial, and agricultural uses. Table 3.4-1 lists and describes the VSRs along and near the various alternative routes for the Project. Table 3.4-2 identifies 17 KOPs along the routes and explains why the KOPs were included in the analysis.

User groups present in the study area include local residents/workers, commuters/through travelers, and recreationalists/tourists. Although recreational users often experience the greatest visual impact based on their sensitivity to change in the landscape, active recreational activities such as those associated with sports lower the user's sensitivity to visual change (because the user is focused on the activity as opposed to the viewshed). Local residents/workers may experience a similar sensitivity to change as recreationalists/tourists; however, this is often centered around static views from their residences or workplaces. Commuters/through travelers have the lowest sensitivity to visual change in the landscape based on their activity and average speed associated with travel on roadways.

Table 3.4-1: Visually Sensitive Resources and User Groups along the Alternative Routes

VSR Name	VSR Description	Impacted User Group(s)	Route(s) (and MP crossing where applicable)	General Information / Visual Sensitivity
Scenic Resource				
Highway 47 Scenic Byway	■ Three lane road surface with one way each direction and a suicide lane	■ Local residents/workers and commuters/through travelers	■ Butler Farm–Clover Route 1 (MPs 13.5 and 14.2) ■ Butler Farm–Finneywood Route 1 (MP 2.6) ■ Butler Farm–Finneywood Route 2 (MP 4.0)	■ Based on existing landscape character, the section of byway crossed by each route has a medium level of visual sensitivity.
Staunton River Blueway	■ Paddle trail consisting of three rivers and two lakes spanning Halifax and Mecklenburg counties ■ Provides opportunities for paddling, camping, and other river activities	■ Recreationalists/tourists	■ Butler Farm–Clover Route 1 (MP 1.7) ■ Butler Farm–Clover Route 2 (MP 1.7) ■ Butler Farm–Clover Route 3 (MP 1.7)	■ The crossing of the river along Butler Farm–Clover Routes 1, 2, and 3 occurs along a greenfield alignment. ■ There are no adjacent designated resources (e.g., boat launches or camping areas) at or near the crossing. ■ Based on existing landscape character, this section of the resource has a low level of visual sensitivity.
Recreational Resource				
Staunton River Scenic River	■ A component of the Virginia Scenic Rivers System that overlaps with the Staunton River Blueway	■ Recreationalists/tourists	■ Butler Farm–Clover Route 1 (MP 1.7) ■ Butler Farm–Clover Route 2 (MP 1.7) ■ Butler Farm–Clover Route 3 (MP 1.7)	■ The river segment approximately between the Schuffletown Road launch site (approximately 5.5 miles upstream of the crossing) and the Kings Highway launch site (approximately 3.3 miles downstream of the crossing) includes a distribution line (across Staunton State Park), a transmission line (Line #556), a railroad bridge (now a trail), and two road crossings (Highway 92 and Kings Highway). ■ Based on existing landscape character, this section of the scenic river has a medium level of visual sensitivity.

VSR Name	VSR Description	Impacted User Group(s)	Route(s) (and MP crossing where applicable)	General Information / Visual Sensitivity
Mecklenburg Country Club	■ 9-hole private golf course	■ Local residents/workers and recreationalists/ tourists	■ Butler Farm–Finneywood Route 2 (adjacent to the course between MPs 4.3 to 4.5)	■ Dominion's existing ROW for Line #40 bisects the center of the course. ■ Clearing for the Project along this route would leave a band of mature vegetation measuring approximately 250 to 300 feet in width between the new ROW and the course at its closest point (the tee box on hole 3/12). ■ Based on viewer activity, the level of visual sensitivity in this area is low.
Historic Resource				
Staunton River Battlefield State Park	■ This park is a 300-acre Civil War historic site with Confederate earthworks and historic trails ■ This resource is outside the study area for the Project	■ Recreationalists/tourists	■ Butler Farm–Clover Route 1 (NA) ■ Butler Farm–Clover Route 2 (NA) ■ Butler Farm–Clover Route 3 (NA)	■ The grounds for this resource contain two visitor centers and a trail network, including Battlefield Trail and Edgewood Nature Trail. ■ The resource is located approximately 2 miles from the alternative routes. ■ Based on cultural importance and viewer use, visual sensitivity is high.
Tobacco Heritage Trail	■ Surrounded by woods, tobacco farms, and little towns, this trail is best experienced on foot, bicycle, or horseback; however, the segment of trail within the study area consists of a highway (Highway 47)	■ Recreationalists/tourists	■ Butler Farm–Finneywood Route 2 (MP 4.0)	■ This is an on-road portion of the trail network along the Highway 47 Scenic Byway, ending in Chase City. ■ Because this is the on-road portion of the trail, visual sensitivity is low.
Cultural Resource				
Friendship United Methodist Church	■ Faith gathering site with associated cemetery along Highway 49 to the southwest of Chase City	■ Local residents/workers	■ Butler Farm–Clover Route 1 (MPs 17.9 to 18.0) ■ Butler Farm–Finneywood Route 1 (MPs 5.8 to 5.9)	■ Both routes cross the church property. ■ Based on viewer use and associated activities along Highway 49, visual sensitivity is low.

VSR Name	VSR Description	Impacted User Group(s)	Route(s) (and MP crossing where applicable)	General Information / Visual Sensitivity
Road Corridors				
U.S. Route 15	■ After separating from Kings Highway, the road is a two-way paved and striped roadway	■ Local residents/workers and commuters/through travelers	■ Butler Farm–Clover Route 1 (MP 7.3) ■ Butler Farm–Clover Route 2 (MP 7.3) ■ Butler Farm–Clover Route 3 (MP 8.8)	■ The road has an AADT [a] of 1,900 cars. ■ Visual sensitivity is low.
Kings Highway (U.S. Route 360)	■ Four lane, divided, limited access roadway	■ Local residents/workers and commuters/through travelers	■ Butler Farm–Clover Route 1 (MP 7.1) ■ Butler Farm–Clover Route 2 (MP 7.1) ■ Butler Farm–Clover Route 3 (MP 5.5)	■ The road has an AADT [a] of 3,300 cars. ■ Visual sensitivity is low.
Highway 47	■ Two-way paved and striped roadway	■ Local residents/workers, commuter/through travelers, and recreationalists/tourists	■ Butler Farm–Clover Route 1 (MPs 13.5 and 14.2) ■ Butler Farm–Finneywood Route 1 (MP 2.6) ■ Butler Farm–Finneywood Route 2 (MP 4.0)	■ The road has an AADT [a] of 1,700 cars north of Chase City, 6,600 cars in the city, and 3,500 cars south of the city. ■ Visual sensitivity varies but has an overall level of medium.
Highway 49	■ Two-way paved and striped roadway	■ Local residents/workers and commuters/through travelers	■ Butler Farm–Clover Route 1 (MP 18.0) ■ Butler Farm–Clover Route 2 (MP 17.8) ■ Butler Farm–Clover Route 3 (MP 16.9) ■ Butler Farm–Finneywood Route 1 (MP 5.9) ■ Butler Farm–Finneywood Route 2 (MP 1.0)	■ The road has an AADT [a] of 1,000 cars north of Chase City, 6,600 cars in the city, and 1,500 cars south of the city. ■ Visual sensitivity varies but has an overall level of medium.

VSR Name	VSR Description	Impacted User Group(s)	Route(s) (and MP crossing where applicable)	General Information / Visual Sensitivity
Highway 92	■ Two-way paved and striped roadway	■ Local residents/workers and commuters/through travelers	■ Butler Farm–Clover Route 1 (MP 16.8) ■ Butler Farm–Clover Route Variation (MP 0.7) ■ Butler Farm–Clover Route 2 (MP 13.8) ■ Butler Farm–Clover Route 3 (MPs 6.9, 10.2, and 12.9) ■ Butler Farm–Finneywood Route 1 (MP 4.7) ■ Butler Farm–Finneywood Route Variation (MP 0.7) ■ Butler Farm–Finneywood Route 2 (MP 7.2)	■ The road has an AADT [a] of 2,000 cars. ■ Visual sensitivity is low.
Areas of High Public Concentration				
Chase City	■ Population of 2,047 [b]	■ Residents/workers and commuters/through travelers	■ Butler Farm–Clover Route 1 (MP 16.5 to 17.9) ■ Butler Farm–Finneywood Route 1 (MPs 3.6 to 5.4)	The routes pass to the west of Chase City.
Fairview	■ Population of 145 [c]	■ Local residents/workers	■ Butler Farm–Clover Route 1 (MPs 15.0 to 15.8) ■ Butler Farm–Finneywood Route 1 (MPs 2.8 to 3.6)	The routes pass to the west of Fairview.
Wylliesburg	■ Population of 65 [d]	■ Local residents/workers	■ Butler Farm–Clover Route 1 (MPs 6.8 to 7.4) ■ Butler Farm–Clover Route 1 (MP 6.8 to 7.4)	The routes pass to the south of Wylliesburg.

AADT = Average Annual Daily Traffic; MP = milepost; ROW = right-of-way; VSR = visually sensitive resource

[a] *AADT data source: VDOT 2022*

[b] *Population source: U.S. Census Bureau 2021*

[c] *Population source: U.S. Census Bureau 2020*

[d] *Population source: https://www.point2homes.com/US/Neighborhood/VA/Wylliesburg-Demographics.html*

Table 3.4-2: Key Observation Points

KOP #	Location	Reason for Inclusion	Routes Represented
1	Colemans Ferry Road Latitude/Longitude: 36.86284°/-78.65399°	■ Example of existing ROW expansion (with clearing) through rural wooded landscape ■ Affected user groups: local residents/workers ■ Representative of rural road crossings	Butler Farm–Clover Routes 1, 2 and 3
2	View looking north from Rocky Branch Road Latitude/Longitude: 36.85097°/-78.64169°	■ Example of new ROW through both agricultural land and mature mixed hard/soft tree stands ■ Affected user groups: local residents/workers ■ Representative of rural road crossings	Butler Farm–Clover Route 3
3	View looking west from Kings Highway Latitude/Longitude: 36.86319°/-78.58954°	■ Example of existing ROW expansion with existing infrastructure and limited clearing ■ Affected user groups: local residents/workers, commuters/through travellers, and recreationalists/tourists ■ Representative of VSR Kings Highway	Butler Farm–Clover Routes 1 and 2
4	View looking south from U.S. Route 15 Latitude/Longitude: 36.81171°/-78.59980°	■ Example of existing ROW expansion (with clearing) through suburban landscape ■ Affected user groups: local residents/workers, commuters/travellers ■ Representative of VSR U.S. Route 15	Butler Farm–Clover Route 3
5	View looking northeast from Hawker Lane Latitude/Longitude: 36.80866°, -78.59168°	■ Example of existing ROW expansion (with minimal clearing) through rural residential landscape ■ Affected user groups: local residents/workers ■ Representative of rural residential interaction	Butler Farm–Clover Route 3
6	View looking southwest from Hill Road Latitude/Longitude: 36.83730°/-78.54583°	■ Example of new ROW through open agricultural land ■ Affected user groups: local residents/workers ■ Representative of open road crossing	Butler Farm–Clover Route 2
7	View looking west from Tinker Road Latitude/Longitude: 36.80786°/-78.54219°	■ Example of existing ROW expansion with existing infrastructure and limited clearing ■ Affected user groups: local residents/workers ■ Representative of existing infrastructure	Butler Farm–Clover Route 3
8	View looking south from Trottinridge Road Latitude/Longitude: 36.78936°/-78.54019°	■ Example of existing ROW expansion with existing infrastructure and clearing and open fields ■ Affected user groups: local residents/workers ■ Representative of existing infrastructure	Butler Farm–Clover Routes 2 and 3
9	View looking southeast from Cutesy Hill Road Latitude/Longitude: 36.77041°/-78.51883°	■ Example of existing natural gas pipeline ROW expansion (with clearing) through rural wooded landscape ■ Affected user groups: local residents/workers ■ Representative of VSR Highway 49	Butler Farm–Clover Routes 2 and 3

KOP #	Location	Reason for Inclusion	Routes Represented
10	View looking south from Highway 49 Latitude/Longitude: 36.78235°/-78.48008°	■ Example of new ROW through developed land; ■ Affected user groups: local residents/workers, and commuters/travellers; ■ Representative of VSR Highway 49	Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1
11	View looking west from Highway 92 Latitude/Longitude: 36.79704°/-78.47917°	■ Example of new ROW through developed land ■ Affected user groups: local residents/workers, and commuters/travellers ■ Representative of VSR Highway 92	Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1
12	View looking north from High House Road Latitude/Longitude: 36.82258°/-78.49429°	■ Example of existing ROW expansion with existing infrastructure and limited clearing ■ Affected user groups: local residents/workers ■ Representative of VSR Scenic Highway 47	Butler Farm–Clover Route 1
13	View looking north from Black Branch Baptist Church Latitude/Longitude: 36.82909°/-78.49973°	■ Example of existing ROW expansion running parallel to VSR Black Branch Baptist Church ■ Affected user groups: local residents/workers, tourist/recreationalist ■ Representative of VSR Black Branch Baptist Church	Butler Farm–Clover Route 1
14	View looking southwest from Fort Mitchell Road Latitude/Longitude: 36.84306°/-78.45898°	■ Example of existing ROW expansion through open and wooded rural residential area ■ Affected user groups: local residents/workers ■ Representative of area of residential concentration	Butler Farm–Finneywood Route 1
15	View looking northeast from Highway 49 Latitude/Longitude: 36.84981°/-78.43583°	■ Example of existing ROW expansion through forested land ■ Affected user groups: local residents/workers ■ Representative of VSR Highway 49 crossing	Butler Farm–Finneywood Route 2
16	View looking east from Highway 47 Latitude/Longitude: 36.80992°/-78.42890°	■ Example of existing ROW expansion through forested land ■ Affected user groups: local residents/workers ■ Representative of VSR Highway 47 crossing	Butler Farm–Finneywood Route 2
17	View looking east from Country Club Drive Latitude/Longitude: 36.79740°/-78.43223°	■ Example of new ROW through open agricultural land ■ Affected user groups: local residents/workers ■ Representative of VSR Mecklenburg Country Club	Butler Farm–Finneywood Route 2

KOP = Key Observation Point; ROW = right-of-way; VSR = visually sensitive resource

3.5 Cultural Resources

ERM conducted a pre-application analysis of potential impacts on cultural resources for the alternative routes under consideration in accordance with the VDHR's *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (Guidelines) (VDHR 2008). For each alternative route, the analysis identified and considered previously recorded resources within the following study tiers as specified in the Guidelines:

- National Historic Landmarks (NHLs) within a 1.5-mile radius of each route centerline;

- National Register of Historic Places (NRHP)-listed properties, NHLs, battlefields, and historic landscapes within a 1.0-mile radius of each route centerline;
- NRHP-eligible and NRHP-listed properties, NHLs, battlefields, and historic landscapes within a 0.5-mile radius of each route centerline; and
- All of the above qualifying resources, as well as archaeological sites within the ROW for each alternative route.

These study tiers additionally encompassed the proposed Finneywood Switching Station and Butler Farm Substation. Data on previously recorded cultural resources within each of the study tiers was obtained from the VCRIS.

In addition to the VCRIS, ERM collected information from the Halifax County Historical Society, Museum of Charlotte County, Charlotte County Historical and Genealogical Society, Mecklenburg Genealogical Society, and Lunenburg County Historical Society to find locally significant resources within a 1.0-mile radius of each centerline. No additional resources were identified through these sources. ERM additionally collected information on battlefields surveyed and assessed by the National Park Service's American Battlefield Protection Program (ABPP). No additional ABPP study areas, core areas, or potential NRHP boundaries for battlefields were identified within the relevant study tiers for the various route options through this source.

Many of the previously recorded cultural resource sites in the vicinity of the alternate routes have not been assessed for NRHP eligibility, therefore, are not included in the pre-application 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 proposed facilities. Any such resources would be addressed during an intensive cultural resources survey to be conducted in a subsequent phase of cultural resource studies for these facilities.

Along with the records review, ERM conducted field assessments of the considered architectural resources and historic districts for each alternative route in accordance with the Guidelines. Digital photographs were taken of each architectural resource with views toward the applicable transmission line route (or routes) or other facility. Photo simulations were prepared to assess potential visual effects on the considered resources within the tiered study area. For the previously recorded archaeological sites under consideration, aerial photographs were examined to assess the current land condition and spatial relationship between the sites and any existing or planned transmission lines. The results of these assessments are presented in Sections 4.5.1.1 and 4.5.2.1, Archaeology Findings, and Sections 4.5.1.2 and 4.5.2.2, Aboveground Historic Properties, as appropriate.

As enumerated in more detail bellow, ERM identified two previously recorded archaeological sites within the ROW for each alternative. Because portions of the alternative routes share common alignments, both sites are crossed by more than one route. Of the two sites, one is potentially eligible for listing in the NRHP and the other is unevaluated for listing in the NRHP.

With regard to historic architectural resources, ERM identified eight previously recorded sites and/or historic districts within the study tiers as described above. Some of these resources would be within the VDHR-defined study tiers for more than one route where the routes use common alignments. Of the eight districts and sites, four are listed in the NRHP, three are eligible for listing in the NRHP, and one (a battlefield) is potentially eligible for listing in the NRHP.

3.5.1 Archaeological Sites

Crossings of archaeological sites were considered a constraint in this study due to the potential for an electric transmission line to impact archaeological deposits in these areas (e.g., due to transmission structure placement, tree clearing, or heavy equipment usage within a site). The known archaeological sites in the ROW for each alternative route are listed and described in Table 3.5-1. A desktop assessment of potential impacts on the archaeological sites is provided in Sections 4.5.1.1 and 4.5.2.1, Archaeology Findings. A confident and complete assessment of the integrity of each site would require archaeological field investigations, which would be completed in a subsequent phase of studies for the Project.

Table 3.5-1: Archaeological Resources in the Rights-of-Way for each Alternative Transmission Line Route

Alternative Route	Greenfield or Existing/ Expanded ROW?	Site Number	Description (Cultural Affiliation)	NRHP Status
Butler Farm–Clover Route 1	Existing/ Expanded ROW	44HA0228	Camp (Unknown)	Unevaluated
Butler Farm–Clover Route 2	Existing/ Expanded ROW	44HA0228	Camp (Unknown)	Unevaluated
	Existing/ Expanded ROW	44MC0902	Lithic quarry, Lithic scatter (Early Woodland)	Potentially Eligible
Butler Farm–Clover Route 3	Existing/ Expanded ROW	44HA0228	Camp (Unknown)	Unevaluated
	Existing/ Expanded ROW	44MC0902	Lithic quarry, Lithic scatter (Early Woodland)	Potentially Eligible
Butler Farm–Clover Route Variation [a]	Not applicable	Not applicable	None identified	Not applicable
Butler Farm–Finneywood Route 1 [b]	Not applicable	Not applicable	None identified	Not applicable
Butler Farm–Finneywood Route 2 [b]	Not applicable	Not applicable	None identified	Not applicable
Butler Farm–Finneywood Route Variation [a]	Not applicable	Not applicable	None identified	Not applicable
Finneywood Switching Station [c]	Not applicable	Not applicable	None identified	Not applicable
Butler Farm Substation [c]	Not applicable	Not applicable	None identified	Not applicable

ROW = right-of-way

[a] No previously recorded archaeological sites are located within the ROWs for the Butler Farm–Clover or Butler Farm–Finneywood Route Variations.

[b] No previously recorded archaeological sites are located within the ROWs for the Butler Farm–Finneywood routes.

[c] No previously recorded archaeological sites are located in the footprint of the Finneywood Switching Station or Butler Farm Substation sites.

3.5.2 Historic Architecture and Other Sites

Each alternative route reviewed in this study has the potential to affect a number of historic architectural resources and districts. This section of the report presents information on known architectural resources in the vicinity of each alternative route using the VDHR's tiered study area model. The locations of

resources relevant to each alternative route are shown on Figure 3.5-1 (Appendix A, Figures). Individual descriptions of the resources are provided in the Pre-application Analysis Report, which is attached as Appendix F. No previously recorded architectural resources were identified within the study tiers for Butler Farm–Finneywood Route 2, the Finneywood Switching Station, or the Butler Farm Substation.

Butler Farm–Clover Route 1

The seven considered resources that lie within the VDHR study tiers for Butler Farm–Clover Route 1 are presented in Table 3.5-2. ERM conducted a field reconnaissance of these resources. A preliminary assessment of impacts along Butler Farm–Clover Route 1 is provided in Section 4.5.1.2, Aboveground Historic Properties.

Table 3.5-2: Historic Resources in VDHR Tiers for Butler Farm–Clover Route 1

Buffer (mile)	Resource Category	Resource Number	Description
1.0 to 1.5	National Historic Landmarks	Not applicable	None identified
0.5 to 1.0	National Register Properties (listed)	041-0006	Black Walnut
		186-0002	Chase City High School/Maple Manor Apartments
		186-5005	Chase City Warehouse and Commercial Historic District
0.0 to 0.5	National Register—eligible	019-0073	Farmstead
		019-0075	Vernacular I-House
		058-0274	Pleasant Hill Farm/Roberts Plantation/Wooten Farm
	National Register—potentially eligible	019-5190	Staunton River Bridge Battlefield
0.0 (within the ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	Not applicable	None identified

ROW = right-of-way

Butler Farm–Clover Route 2

The four considered resources that lie within the VDHR study tiers for Butler Farm–Clover Route 2 are presented in Table 3.5-3. ERM conducted a field reconnaissance of these resources. A preliminary assessment of impacts along Butler Farm–Clover Route 2 is provided in Section 4.5.1.2, Aboveground Historic Properties.

Table 3.5-3: Historic Resources in VDHR Tiers for Butler Farm–Clover Route 2

Buffer (mile)	Resource Category	Resource Number	Description
1.0 to 1.5	National Historic Landmarks	Not applicable	None identified
0.5 to 1.0	National Register Properties (listed)	041-0006	Black Walnut
0.0 to 0.5	National Register—eligible	019-0073	Farmstead
		019-0075	Vernacular I-House

Buffer (mile)	Resource Category	Resource Number	Description
	National Register—potentially eligible	019-5190	Staunton River Bridge Battlefield
0.0 (within ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	Not applicable	None identified

ROW = right-of-way

Butler Farm–Clover Route 3

The two considered resources that lie within the VDHR study tiers for Butler Farm–Clover Route 3 are presented in Table 3.5-4. ERM conducted a field reconnaissance of these resources. A preliminary assessment of impacts along Butler Farm–Clover Route 3 is provided in Section 4.5.1.2, Aboveground Historic Properties.

Table 3.5-4: Historic Resources in VDHR Tiers for Butler Farm–Clover Route 3

Buffer (mile)	Resource Category	Resource Number	Description
1.0 to 1.5	National Historic Landmarks	Not applicable	None identified
0.5 to 1.0	National Register Properties (listed)	041-0006	Black Walnut
0.0 to 0.5	National Register—eligible	Not applicable	None identified
	National Register—potentially eligible	019-5190	Staunton River Bridge Battlefield
0.0 (within ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	Not applicable	None identified

ROW = right-of-way

Butler Farm–Clover Route Variation

The three considered resources that lie within the VDHR study tiers for Butler Farm–Clover Route Variation are presented in Table 3.5-5. ERM conducted a field reconnaissance of these resources. A preliminary assessment of impacts along Butler Farm–Clover Route Variation is provided in Section 4.5.1.2, Aboveground Historic Properties.

Table 3.5-5: Historic Resources in VDHR Tiers for Butler Farm–Clover Route Variation

Buffer (mile)	Resource Category	Resource Number	Description
1.0 to 1.5	National Historic Landmarks	Not applicable	None identified
0.5 to 1.0	National Register Properties (listed)	186-0002	Chase City High School/Maple Manor Apartments
		186-5004	Shadow Lawn
		186-5005	Chase City Warehouse and Commercial Historic District
0.0 to 0.5	National Register—eligible	Not applicable	None identified

Buffer (mile)	Resource Category	Resource Number	Description
0.0 (within ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	Not applicable	None identified

ROW = right-of-way

Butler Farm–Finneywood Route 1

The two considered resources that lie within the VDHR study tiers for Butler Farm–Finneywood Route 1 are presented in Table 3.5-6. ERM conducted a field reconnaissance of these resources. A preliminary assessment of impacts along Butler Farm–Finneywood Route 1 is provided in Section 4.5.2.2, Aboveground Historic Properties.

Table 3.5-6: Historic Resources in VDHR Tiers for Butler Farm–Finneywood Route 1

Buffer (mile)	Resource Category	Resource Number	Description
1.0 to 1.5	National Historic Landmarks	Not applicable	None identified
0.5 to 1.0	National Register Properties (listed)	186-0002	Chase City High School/Maple Manor Apartments
		186-5005	Chase City Warehouse and Commercial Historic District
0.0 to 0.5	National Register—eligible	Not applicable	None identified
0.0 (within ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	Not applicable	None identified

ROW = right-of-way

Butler Farm–Finneywood Route Variation

The two considered resources that lie within the VDHR study tiers for Butler Farm–Finneywood Route Variation are presented in Table 3.5-7. ERM conducted a field reconnaissance of these resources. A preliminary assessment of impacts along Butler Farm–Finneywood Route Variation is provided in Section 4.5.2.2, Aboveground Historic Properties.

Table 3.5-7: Historic Resources in VDHR Tiers for Butler Farm–Finneywood Route Variation

Buffer (mile)	Resource Category	Resource Number	Description
1.0 to 1.5	National Historic Landmarks	Not applicable	None identified
0.5 to 1.0	National Register Properties (listed)	186-0002	Chase City High School/Maple Manor Apartments
		186-5005	Chase City Warehouse and Commercial Historic District
0.0 to 0.5	National Register—eligible	Not applicable	None identified
0.0 (within ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	Not applicable	None identified

ROW = right-of-way

3.5.3 Summary of Existing Survey Data Performed Under Section 106 or Section 110 of the National Historic Preservation Act

Some portions of the alternative routes and associated facilities were previously surveyed for cultural resources. Research indicates that 15 prior Phase I cultural resource surveys have been conducted within 1.0 mile of the alternative routes, including 9 that overlap portions of various individual routes. Because the alternative routes share some common segments, many of the previous surveys have covered portions of multiple routes. The previous surveys relevant to the alternative routes are identified in Table 3.5-8 and shown on Figure 3.5-2 (Appendix A, Figures).

Table 3.5-8: Cultural Resource Surveys Covering Portions of the Alternative Routes

VDHR Survey #	Title	Author	Date
BR-011	A Phase I Archaeology Survey and Phase II Evaluation of Site 44BR116 for the Clover to Carson 5000 kV Transmission Line, Halifax, Charlotte, Lunenburg, Mecklenburg, Brunswick, and Dinwiddie Counties, Virginia	Higgins, Downing, Pullins, McDaid, and Beckett	1995
BR-039	Phase I Cultural Resources Investigation Virginia Southside Expansion Project, Brunswick, Charlotte, Halifax, Mecklenburg, and Pittsylvania Counties, Virginia	Glenn, Duncan, Munford, Frye, Kenneally, and Baiocchi	2012
CH-033	Phase I Cultural Resource Survey of and Three Cemetery Delineations within the 660.12-Hectare (1,631.2-Acre) Moody Creek Solar Project Area, Charlotte County, Virginia	Gryctko and Taylor	2021
HA-012	Cultural Resource Investigations of the Clover Site Old Dominion Electric Cooperative, Halifax County, Virginia	Stewart, Bowers, and Wuebber	1989
HA-022	Phase IB Archeological Investigations of a Proposed 230 KV Transmission Line and Construction Access Road, Clover Power Generating Plant, Halifax County, Virginia	Neumann, Thomas and Martha Williams	1991
HA-039	Cultural Resource Investigations of the Clover Property Old Dominion Electric Cooperative, Halifax County, Virginia	Louis Berger & Associates, Inc.	1994
MC-007	Archaeological Survey of the John H. Kerr Reservoir, Virginia-North Carolina	White, Garrow, Watson, Nicklas, Savage, and Muse	1980
MC-038	Appraisal of the Archeological Resources, Buggs Island Reservoir in Mecklenburg, Halifax, Charlotte Counties, Virginia; Warren, Vance and Granville Counties, North Carolina	Miller	1947
MC-103	A Phase I Cultural Resources Survey of Approximately 2,510.6 Acres for the Proposed Seven Bridges Solar Site in Mecklenburg County, Virginia	DeChard, and Stewart	2019

3.6 Geological Constraints

The study area is located within the Piedmont geologic province, which is characterized by strongly weathered bedrock due to the humid climate, thick soils overlying saprolite (weathered bedrock), and rolling topography that becomes more rugged to the west near the Blue Ridge mountains. In general, the Piedmont province consists of several complex geologic terranes where faults separate rock units with differing igneous and metamorphic histories (William and Mary Department of Geology 2022).

3.6.1 Butler Farm–Clover Line

Based on review of the Geologic Map of Virginia, the Butler Farm–Clover routes are located within a block of rocks referred to as the Carolina terrane. Within this accreted terrane, the bedrock underlying the area comprises Proterozoic-age volcanic, metamorphosed volcanic, and intrusive gabbroic rocks that were intruded by granitic plutons. The northwestern end of the Butler Farm–Clover routes at the Clover Switching Station additionally extends into a section of mylonite bedrock (highly metamorphosed rock) that serves as the boundary between the Carolina terrane and the Chopawamsic-Milton terrane to the west (William and Mary Department of Geology 2022; USGS 2005).

3.6.2 Butler Farm–Finneywood Line

Based on review of the Geologic Map of Virginia, the Butler Farm–Finneywood routes are located within the Carolina terrane, but primarily cross bedrock comprising Proterozoic-age gabbro and interlayered mafic and felsic (i.e., dark and light-colored) metavolcanic rocks (William and Mary Department of Geology 2022; USGS 2005).

3.6.3 Mineral Resources

ERM reviewed publicly available Virginia Energy datasets (2022), USGS topographic quadrangles, and recent (2022) digital aerial photographs to identify mineral resources in the study area. The results of this review are discussed below.

3.6.3.1 Butler Farm–Clover Line

No active mineral resources were identified within 0.25 mile of the Butler Farm–Clover routes. The closest active permitted mining site, the Watkins Bridge site, is located on Scuffletown Road near the Staunton River, approximately 4.0 miles northwest of MP 0.0 of the common alignment of Butler Farm–Clover Routes 1, 2, and 3. The closest mineral occurrence or prospect is a gold occurrence located approximately 0.8 mile west of MP 14.0 of Butler Farm–Clover Route 2 (Virginia Energy 2022).

3.6.3.2 Butler Farm–Finneywood Line

No active mineral resources were identified within 0.25 mile of the Butler Farm–Finneywood routes. The closest active permitted mining site, the Watkins Bridge site, is located on Scuffletown Road near the Staunton River, approximately 16.0 miles northwest of MP 2.5 of Butler Farm–Finneywood Route 1. The closest mineral occurrence is a clay and sand prospect located approximately 1.9 miles southeast of MP 5.9 of Butler Farm–Finneywood Route 2 (Virginia Energy 2022).

3.7 Existing and Planned Corridors within the Project Study Area

ERM identified existing and planned corridors within the study area through review of recent digital aerial photography, county planning documents (e.g., Halifax County 2017, Charlotte County 2017, Mecklenburg County 2012), data from Dominion on its existing transmission system, and various publicly available data layers. Existing corridors within the study area include existing electric transmission lines, pipeline facilities, electric distribution lines, and major road corridors (see Figure 2-1 and 2-2 in Appendix A, Figures). Each of the existing corridors was assessed as a potential opportunity for routing the transmission lines required for the Project and considered in developing the alternative routes. Descriptions of the routing opportunities in the study area are provided in the following subsections.

3.7.1 Electric Transmission Corridors

Dominion maintains a broad network of existing transmission lines and associated infrastructure that cross the study area. An assessment of the ROWs for these transmission lines as routing opportunities for the Project facilities is provided in Table 3.7-1. As shown in the table, portions of all routes would be adjacent to and overlap with existing Dominion transmission ROWs.

3.7.2 Pipeline Corridors

The Williams Company LLC owns and operates the Transco Pipeline that carries natural gas from Texas to New York, with multiple spur lines leading off the main line. One of the spur lines crosses the southern portion of the study area in an east/west direction. The pipeline corridor crosses generally rural agricultural and forested areas. Some homes and outbuildings have been constructed adjacent to the corridor. Butler Farm–Clover Routes 2 and 3 parallel the pipeline corridor from Line #36 east to Highway 49. Butler Farm–Clover Route 2 parallels the corridor from MPs 16.0 to 17.6; Butler Farm–Clover Route 3 parallels the corridor form MPs 15.1 to 16.7.

3.7.3 Major Road Corridors

There are multiple major road corridors in the study area, including Kings Highway (Highway 360), Highway 92, Highway 15, Highway 47, and Highway 49. All of these highways were studied as possible routing corridors. However, due to the presence of homes constructed along these major arteries, the highways were deemed not viable as routing opportunities.

Table 3.7-1: Existing Dominion Transmission Rights-of-Way within the Study Area

Transmission Rights-of-Way	Description	Suitability as a Routing Opportunity	Use as a Routing Opportunity
Line #556	This 500 kV transmission line extends east from the existing Clover Switching Station across the northern portion of the study area.	The transmission line crosses through mainly rural forested and agricultural areas. Few homes and other buildings are located near the line.	■ Butler Farm–Clover Route 1: MPs 0.0 to 1.4, 2.7 to 3.5, and 5.0 to 10.8 ■ Butler Farm–Clover Route 2: MPs 0.0 to 1.4, 2.7 to 3.5, and 5.0 to 9.3 ■ Butler Farm–Clover Route 3: MPs 0.0 to 1.4 and 2.7 to 3.5 ■ Butler Farm–Finneywood Route 2: MPs 0.2 to 1.2
Line #235	This 230 kV transmission line extends south from the existing Clover Switching Station for 3.6 miles, then heads east across the center of the study area to Chase City. The line then turns north, exiting the northeast corner of the study area.	The transmission line crosses through mainly rural forested and agricultural areas. Few homes and other buildings are located near the line.	■ Butler Farm–Clover Route 3: MPs 7.6 to 12.1 ■ Butler Farm–Finneywood Route 1: MPs 0.2 to 2.7
Line #1012	This 230 kV transmission line extends south from the Twin Creeks	The transmission line crosses through mainly rural forested and agricultural areas. Few	■ Butler Farm–Clover Route 1: MPs 12.0 to 14.1 and 14.6 to 15.2

Transmission Rights-of-Way	Description	Suitability as a Routing Opportunity	Use as a Routing Opportunity
	Substation, located north of the study area, until it merges onto the same structures as Line #235, northwest of Chase City.	homes and other buildings are located near the line.	■ Butler Farm–Finneywood Route 1: MP 2.9 to 3.0
Lines #235 and #1012	This 230 kV double circuit transmission line extends for a short segment northwest from the Chase City area.	The transmission line crosses through forested areas with no homes or other buildings located near the line.	■ Butler Farm–Clover Route 1: MPs 15.2 to 15.8 ■ Butler Farm–Finneywood Route 1: MPs 3.1 to 3.7
Line #36	This 115 kV transmission line extends south from where it intersects Line #235 in the middle of the study area.	The transmission line crosses through mainly rural forested and agricultural areas. Some homes and other buildings are located near the line.	■ Butler Farm–Clover Route 2: MPs 13.0 to 13.4 and 14.5 to 16.0 ■ Butler Farm–Clover Route 3: MPs 12.1 to 12.6 and 13.7 to 15.1
Line #40	This 115 kV transmission line extends from Chase City east out of the study area.	The transmission line crosses farming areas at the far eastern edge of the study area, then crosses the Mecklenburg Country Club, and passes near residential areas as it approaches Chase City.	None of the routes utilize Line #40 as a routing opportunity
Lines #38 and #137	These two 115 kV transmission lines extend from Chase City southeast out of the study area.	The transmission lines cross agricultural and farming areas at the far eastern edge of the study area. As the lines near Chase City, they are in close proximity to residential areas.	None of the routes utilize Lines #38 and #137 as a routing opportunity.
Line #98	This 230 kV transmission line extends from Chase City northeast out of the study area.	The transmission line crosses through forest and the Grasshopper Solar Project east of Chase City.	None of the routes utilize Line #98 as a routing opportunity.

kV = kilovolt; MP = milepost

4. RESOURCES AFFECTED

Environmental conditions along the Butler Farm–Clover and Butler Farm–Finneywood alternative routes were identified, mapped, and reviewed as discussed in Chapter 3, Inventory of Existing Conditions. Refer to Table 3-1 for a list of environmental features considered during the evaluation process. To further evaluate and consider the environmental advantages and disadvantages of each alternative route, the environmental features potentially affected by the routes were quantified for comparison purposes. Tables 4-1 and 4-2 below quantify data on crossings of environmental and other features along the Butler Farm–Clover and Butler Farm–Finneywood alternative routes. Impacts associated with construction and operation of the proposed Finneywood Switching Station are included in the existing environmental conditions and resources affected for the two Butler Farm–Finneywood routes. A discussion and comparison of each route's environmental advantages and disadvantages is presented in the subsections below.

Table 4-1: Feature Crossings Table for the Butler Farm–Clover Line [a, b]

Environmental Feature	Unit	Route 1	Route 2	Route 3	Route Variation	Comparison Segment of Route Variation
ROUTE LENGTH AND CONSTRUCTION FOOTPRINT						
Route Length	miles	19.1	21.1	20.2	1.7	1.8
Construction Footprint	acres	278.4	306.3	294.2	24.5	26.3
Existing ROW [c]	acres	21.6	16.8	17.6	0.0	0.0
New/Expanded ROW [d]	acres	256.8	289.5	276.5	24.5	26.3
LAND USE						
Land Ownership						
Parcels Affected (total)	number	74	90	101	13	9
Private	number	74	90	101	13	9
Public	number	0	0	0	0	0
Land Use/Land Cover						
Forested	acres	136.5	165.3	162.0	15.3	14.4
Agricultural	acres	79.9	61.6	61.6	7.0	11.2
Developed	acres	3.8	3.8	5.4	1.0	0.2
Open space	acres	51.5	64.8	55.9	1.1	0.6
Open water	acres	6.6	10.7	9.6	0.0	0.0
Recreation Areas						
Staunton River Blueway and Staunton River Scenic River	number	1	1	1	0	0
Virginia Birding and Wildlife Trail – Staunton Loop	number	1	1	3	1	1
Highway 47 Scenic Byway	number	2	0	0	0	0
Residences and Other Structures						

Environmental Feature	Unit	Route 1	Route 2	Route 3	Route Variation	Comparison Segment of Route Variation
Dwellings within ROW	number	0	0	0	0	0
Dwellings within 60 feet of ROW	number	0	0	0	0	0
Dwellings within 100 feet of centerline	number	0	1	1	0	0
Dwellings within 250 feet of centerline	number	5	9	8	6	2
Dwellings within 500 feet of centerline	number	17	34	41	27	4
Non-residential Buildings within ROW	number	1	1	2	0	0
Non-residential Buildings within 500 feet of centerline	number	51	55	60	23	13
Cemeteries, Schools, and Places of Worship						
Cemeteries within 500 feet of centerline	number	1	1	0	0	0
Schools within 500 feet of centerline	number	0	0	0	0	0
Places of Worship within 500 feet of centerline	number	1	0	0	1	1
Planned Developments						
Planned Developments—total	number acres	4 130.2	2 95.3	1 5.5	0 0.0	1 4.3
Randolph Solar Site	acres	49.4	49.4	5.5	0.0	0.0
Quarter Horse Solar Site	acres	66.5	45.8	0.0	0.0	0.0
Moody Creek Solar Site	acres	9.9	0.0	0.0	0.0	0.0
Chace City Apartment Complex	acres	4.4	0.0	0.0	0.0	4.3
Easements						
VOF Easement	acres	0.0	0.0	0.0	0.0	0.0
USACE Flowage Easement	acres	7.9	7.9	7.9	0.0	0.0
DCR CREP Easement	acres	0.0	0.0	0.0	0.0	0.0
Transportation						
Roads	number	20	20	21	2	2

Environmental Feature	Unit	Route 1	Route 2	Route 3	Route Variation	Comparison Segment of Route Variation
Railroads	number	0	0	0	0	0
NATURAL RESOURCES						
Wetlands						
Wetlands Affected—total [e]	miles acres	2.5 34.9	3.0 43.1	2.8 39.1	0.2 3.5	0.3 4.8
Palustrine Forested	acres	21.1	30.5	25.1	2.5	2.1
Palustrine Emergent	acres	5.0	1.9	3.6	0.2	0.3
Palustrine Scrub Shrub	acres	2.3	0.0	0.0	0.4	2.3
Palustrine Unconsolidated Bottom	acres	3.1	4.5	3.9	0.0	0.0
Riverine	acres	3.3	6.3	6.4	0.4	0.2
Waterbodies						
Waterbodies—total	number	51	61	64	4	4
Perennial	number	12	10	13	4	1
Intermittent	number	31	42	41	0	3
Canal/Ditch	number	2	2	2	0	0
Lake/Pond	number	6	7	8	0	0
Forest Conservation Value						
Average	acres	34.1	29.6	38.3	1.9	1.8
Moderate	acres	58.7	75.4	76.3	4.3	3.4
High	acres	49.9	68.2	51.0	3.4	7.3
Very High	acres	14.8	20.7	12.3	4.7	2.4
Outstanding	acres	1.5	8.1	5.8	0.2	0.0
Areas of Ecological Significance						
Sandy Creek Stream Conservation Unit	number	0	0	7	0	0

Environmental Feature	Unit	Route 1	Route 2	Route 3	Route Variation	Comparison Segment of Route Variation
Bluestone Creek–Devils Creek Stream Conservation Unit	number	1	1	0	0	0
Ecological Cores						
Outstanding	acres	0.0	0.0	0.0	0	0
Very High	acres	0.0	0.0	0.0	0	0
High	acres	15.7	22.3	6.6	0	0
Moderate	acres	50.8	52.0	18.4	6.0	5.3
General	acres	22.9	39.9	41.3	0.8	0.6
Protected Species						
Bald eagle nests within 330 feet	number	0	0	0	0	0
Bald Eagle Nests within 660 Feet	number	0	0	0	0	0
CULTURAL RESOURCES						
Archaeological sites within ROW	number	1	2	2	0	0
NRHP-eligible and NRHP-listed Properties, NHLs, Battlefields, and Historic Landscapes within ROW	number	0	0	0	0	0
NRHP-eligible and NRHP-listed Properties, NHLs, Battlefields, and Historic Landscapes within 0.5 mile	number	3	2	0	0	0
NRHP-listed Properties, NHLs, Battlefields, Historic Landscapes, and NHLs between 0.5 and 1.0 mile	number	3	1	1	3	2
NHLs between 1.0 and 1.5 miles	number	0	0	0	0	0
Historic Districts Crossed	miles	0	0	0	0	0
NRHP-listed Battlefields Crossed	number	0	0	0	0	0
NRHP-eligible Battlefields Crossed	number	0	0	0	0	0
VDHR Easements Crossed	number	0	0	0	0	0
Battlefields (National Park Service ABPP) Crossed	number	0	0	0	0	0
Routing Opportunities						

Environmental Feature	Unit	Route 1	Route 2	Route 3	Route Variation	Comparison Segment of Route Variation
Collocation—total	miles	11.3	10.5	10.6	0.0	0.0
Existing Transmission Lines	miles	11.3	8.5	8.6	0.0	0.0
Existing Pipelines	miles	0.0	1.8	1.8	0.0	0.0
Existing Roads	miles	0.0	0.2	0.2	0.0	0.0

ABPP = American Battlefield Protection Program; NHL = National Historic Landmark; NRHP = National Register of Historic Places; ROW = right-of-way; VDHR = Virginia Department of Historic Resources

[a] *The sum of the addends may not equal the totals due to rounding.*

[b] *The crossing lengths presented in this table for all feature categories were calculated using the centerline of each route.*

[c] *This value represents the portion of the construction footprint located within existing Dominion ROWs.*

[d] *This value represents the portion of the construction corridor located within new or expanded ROW.*

[e] *This is based on results of the desktop waterbody and wetlands study (see Appendix D).*

Table 4-2: Feature Crossings Table for the Butler Farm-Finneywood Line [a, b]

Environmental Feature	Unit	Route 1	Route 2	Route Variation	Comparison Segment of Route Variation
ROUTE LENGTH AND CONSTRUCTION FOOTPRINT					
Route Length	miles	7.0	7.8	1.7	1.8
Construction Footprint [f]	acres	116.8	128.0	24.6	26.5
Existing ROW [c]	acres	9.7	6.5	0.0	0.0
New/Expanded ROW [d]	acres	107.1	121.5	24.6	26.5
LAND USE					
Land Ownership					
Parcels Affected (total)	number	41	23	14	9
Private	number	41	23	14	9
Public	number	0	0	0	0
Land Use/Land Cover [f]					

Environmental Feature	Unit	Route 1	Route 2	Route Variation	Comparison Segment of Route Variation
Forest	acres	72.2	94.4	14.8	13.9
Agricultural	acres	18.8	16.0	7.8	12.0
Developed	acres	0.8	0.6	0.9	0.2
Open space	acres	24.2	16.4	1.1	0.5
Open water	acres	0.8	0.5	0.0	0.0
Recreation Areas					
Virginia Birding and Wildlife Trail – Staunton Loop	number	1	0	1	1
Highway 47 Scenic Byway	number	1	1	0	0
Tobacco Heritage Trail	number	0	1	0	0
Mecklenburg Country Club	number	0	1	0	0
Residences and Other Structures					
Dwellings within ROW	number	0	0	0	0
Dwellings within 60 feet of ROW	number	0	0	0	0
Dwellings within 100 feet of centerline	number	0	0	0	0
Dwellings within 250 feet of centerline	number	4	0	3	1
Dwellings within 500 feet of centerline	number	15	8	24	4
Non-residential Buildings within ROW	number	0	0	0	0
Non-residential Buildings within 500 feet of centerline	number	27	25	20	12
Cemeteries, Schools, and Places of Worship					
Cemeteries within 500 feet of centerline	number	1	0	0	0
Schools within 500 feet of centerline	number	0	0	0	0
Places of Worship within 500 feet of centerline	number	1	0	1	1
Planned Developments					
Planned Developments—total	number	1	0	0	1

Environmental Feature	Unit	Route 1	Route 2	Route Variation	Comparison Segment of Route Variation
Chase City Apartment Complex	acres	4.4	0.0	0.0	4.4
Easements					
VOF Easement	acres	0.0	0.0	0.0	0.0
USACE Flowage Easement	acres	0.0	0.0	0.0	0.0
DCR CREP Easement	acres	0.0	0.0	0.0	0.0
Transportation					
Roads	number	7	5	2	2
Railroads	number	1	1	0	0
NATURAL RESOURCES					
Wetlands					
Wetlands Affected—total [d]	miles acres	0.9 13.3	0.7 10.0	0.2 2.5	0.4 5.4
Palustrine Forested	acres	8.1	7.4	1.5	2.0
Palustrine Emergent	acres	1.2	2.1	0.3	0.4
Palustrine Scrub Shrub	acres	2.9	0.0	0.4	2.9
Palustrine Unconsolidated Bottom	acres	0.6	0.0	0.0	0.0
Riverine	acres	0.5	0.6	0.3	0.2
Waterbodies					
Waterbodies—total	number	12	11	3	4
Perennial	number	5	3	3	1
Intermittent	number	6	7	0	3
Lake/Pond	number	1	1	0	0
Forest Conservation Value [f]					
Average	acres	14.0	10.6	1.7	1.7
Moderate	acres	54.4	41.5	4.2	3.6

Environmental Feature	Unit	Route 1	Route 2	Route Variation	Comparison Segment of Route Variation
High	acres	20.3	28.8	3.4	8.3
Very High	acres	4.5	16.0	4.4	2.4
Outstanding	acres	0.0	3.6	0.0	0.0
Areas of Ecological Significance					
Areas of Ecological Significance	number	0	0	0	0
Ecological Cores					
Outstanding	acres	0.0	0.0	0	0
Very High	acres	0.0	0.0	0	0
High	acres	0.0	43.9	0	0
Moderate	acres	25.3	23.9	5.9	5.4
General	acres	8.5	5.7	1.0	0.7
Protected Species					
Bald Eagle nests within 330 feet	number	0	0	0	0
Bald Eagle Nests Within 660 feet	number	0	0	0	0
CULTURAL RESOURCES					
Archaeological Sites within ROW	number	0	0	0	0
NRHP-eligible and NRHP-listed Properties, NHLs, Battlefields, and Historic Landscapes within ROW	number	0	0	0	0
NRHP-eligible and NRHP-listed Properties, NHLs, Battlefields, and Historic Landscapes within 0.5 mile	number	0	0	0	0
NRHP-listed Properties, NHLs, Battlefields, and Historic Landscapes between 0.5 and 1.0 mile	number	2	0	2	2
NHLs between 1.0 and 1.5 miles	number	0	0	0	0
Historic Districts Crossed	miles	0	0	0	0
NRHP-listed Battlefields Crossed	number	0	0	0	0
NRHP-eligible Battlefields Crossed	number	0	0	0	0

Environmental Feature	Unit	Route 1	Route 2	Route Variation	Comparison Segment of Route Variation
VDHR Easements Crossed	number	0	0	0	0
Battlefields (National Park Service ABPP) Crossed	number	0	0	0	0
Routing Opportunities					
Collocation—total	miles	3.3	0.9	0.0	0.0
Existing Transmission Lines	miles	3.3	0.9	0.0	0.0
Existing Pipelines	miles	0.0	0.0	0.0	0.0
Existing Roads	miles	0.0	0.0	0.0	0.0

ABPP = American Battlefield Protection Program; NHL = National Historic Landmark; NRHP = National Register of Historic Places; ROW = right-of-way; VDHR = Virginia Department of Historic Resources

[a] *The sum of the addends may not equal the totals due to rounding.*

[b] *The crossing lengths presented in this table for all feature categories were calculated using the centerline of each route.*

[c] *This value represents the portion of the construction footprint located within existing Dominion ROWs.*

[d] *This value represents the portion of the construction corridor located within new or expanded ROW.*

[e] *This is based on results of the desktop waterbody and wetlands study (see Appendix D).*

[f] *Acreage includes the Finneywood Switching Station.*

4.1 Land Use

4.1.1 Land Ownership and Land Use

ERM categorized and quantified land use/land cover types along and within the alternative transmission line routes and associated facilities based on review of local and statewide datasets and air photo interpretation to identify the most current uses using the following categories: developed lands, open space, forested lands, agricultural lands, and open water.[7] Definitions of these categories are provided in Section 3.1.2, Existing Land Use and Land Cover. See Tables 4-1 and 4-2 for a quantification of the specific land use / land cover types along each route. More detailed descriptions of potential impacts on agricultural and forested lands are provided in Section 4.1.4, Agricultural Areas, and Section 4.3.5, Vegetation, respectively. Potential impacts on recreational resources and residential areas are addressed in Section 4.1.2, Recreation Areas, and Section 4.1.3, Residences, Residential Areas, and Commercial Structures, respectively.

4.1.1.1 Butler Farm-Clover Line

Butler Farm–Clover Route 1

Butler Farm–Clover Route 1 crosses 19.1 miles of land encompassing a total of 278.4 acres of ROW (21.6 acres of existing ROW and 256.8 acres of new or expanded ROW). All 74 individual parcels crossed by the route are privately owned. The route crosses the fewest privately owned parcels of the Butler Farm–Clover alternative routes. Of the 74 private parcels along the route, 4 are within Halifax County, 32 are within Charlotte County, and 38 are within Mecklenburg County.

Land use and cover types along and within the Butler Farm–Clover Route 1 ROW mostly consist of forested areas interspersed with agricultural lands and open space. By area, approximately 136.5 acres (4.3 acres of existing ROW and 132.2 acres of new or expanded ROW) consists of forest. An additional 79.9 acres (4.1 acres of existing ROW and 75.8 acres of new or expanded ROW) consists of agricultural land followed by 51.5 acres of open space (12.1 acres of existing ROW and 39.5 acres of new or expanded ROW). Open water accounts for 6.6 acres within the ROW (0.6 acre of existing ROW and 6.1 acres of new or expanded ROW), followed by developed land at 3.8 acres (0.6 acre of existing ROW and 3.2 acres of new or expanded ROW).

Butler Farm–Clover Route 2

Butler Farm–Clover Route 2 crosses 21.1 miles of land encompassing a total of 306.3 acres of ROW (16.8 acres of existing ROW and 289.5 acres of new or expanded ROW). All 90 individual parcels crossed by the route are privately owned. Of these parcels, 4 are within Halifax County, 35 are within Charlotte County, and 51 are within Mecklenburg County.

Land use and cover types along and within the Butler Farm–Clover Route 2 ROW mostly consist of forest areas interspersed with agricultural lands and open space. By area, approximately 165.2 acres (2.5 acres of existing ROW and 162.7 acres of new or expanded ROW) consists of forest. An additional 64.8 acres (8.2 acres of existing ROW and 56.6 acres of new or expanded ROW) consists of open space followed by 61.6 acres of agricultural land (4.8 acres of existing ROW and 56.9 acres of new or expanded ROW). Open water accounts for 10.7 acres within the ROW (0.5 acre of existing ROW and 10.2 acres of new or

[7] For purposes of land use/land cover, wetland areas have been classified as open space, forested land, or open water. Wetland impacts for each route are addressed in Section 4.3.1, Wetlands. The desktop wetland report is provided as Appendix D, Wetland and Waterbody Desktop Summary.

expanded ROW), followed by 3.8 acres of developed land (0.8 acre of existing ROW and 3.0 acres of new or expanded ROW).

Butler Farm–Clover Route 3

Butler Farm–Clover Route 3 crosses 20.2 miles of land encompassing a total of 294.2 acres of ROW (17.6 acres of existing ROW and 276.5 acres of new or expanded ROW). All 101 individual parcels crossed by the route are privately owned. This route crosses the most private parcels of the Butler Farm–Clover routes. Of the 101 parcels crossed by the route, 4 are within Halifax County, 48 are within Charlotte County, and 49 are within Mecklenburg County.

Land use and cover types along and within the Butler Farm–Clover Route 3 ROW mostly consist of forested areas interspersed with agricultural lands and open space. By area, approximately 162.0 acres (0.6 acre of existing ROW and 161.4 acres of new or expanded ROW) consist of forest. An additional 61.6 acres of agricultural land (4.2 acres of existing ROW and 57.2 acres of new or expanded ROW) followed by 55.9 acres (11.1 acres of existing ROW and 44.8 acres of new or expanded ROW) consists of open space. Open water accounts for 9.6 acres (0.3 acre of existing ROW and 9.3 acres of new or expanded ROW) followed by 5.4 acres of developed land (1.5 acres of existing ROW and 3.9 acres of new or expanded ROW).

Butler Farm–Clover Route Variation

Butler Farm–Clover Route Variation crosses 1.7 miles of land encompassing a total of 24.5 acres of ROW, all of which would be within new ROW. All 13 individual parcels crossed by the route are privately owned and are all located within Mecklenburg County.

Land use and cover types along and within the Butler Farm–Clover Route Variation ROW mostly consist of forested areas interspersed with agricultural lands. By area, the ROW consists of approximately 15.3 acres of forest, 7.0 acres of agricultural land, 1.1 acres of open space, and 1.0 acre of developed land, all within new ROW.

4.1.1.2 Butler Farm-Finneywood Line

Butler Farm–Finneywood Route 1

Butler Farm–Finneywood Route 1 crosses 7.0 miles of land encompassing a total of 116.7 acres of ROW including 15.4 acres for the proposed Finneywood Switching Station (9.7 acres of existing ROW and 106.2 acres of new or expanded ROW). All 41 individual parcels crossed by the route are privately owned and located in Mecklenburg County.

Land use and cover types along and within the Butler Farm–Finneywood Route 1 ROW mostly consist of forested areas interspersed with open space and agricultural lands. By area, approximately 72.2 acres (15.2 acres within the Finneywood Switching Station footprint, 1.1 acres of existing ROW and 55.9 acres of new or expanded ROW) consists of forest. An additional 24.2 acres (0.2 acre within the Finneywood Switching Station footprint, 6.5 acres of existing ROW and 17.5 acres of new or expanded ROW) consists of open space followed by 18.8 acres of agricultural land (1.3 acres of existing ROW and 17.6 acres of new or expanded ROW). Developed land accounts for 0.8 acre within the ROW (0.1 acre of existing ROW and 0.8 acre of new or expanded ROW) followed by 0.8 acre of open water (all new or expanded ROW).

Butler Farm–Finneywood Route 2

Butler Farm–Finneywood Route 2 crosses 7.8 miles of land encompassing a total of 128.0 acres of ROW including 15.4 acres for the proposed Finneywood Switching Station (6.5 acres of existing ROW and

121.5 acres of new or expanded ROW). All 23 individual parcels crossed by the route are privately owned and located in Mecklenburg County.

Land use and cover types along the Butler Farm–Finneywood Route 2 ROW mostly consist of forested areas interspersed with agricultural lands and open space. By area, approximately 94.4 acres (15.2 acres for the proposed Finneywood Switching Station, 2.6 acres of existing ROW, and 76.7 acres within new or expanded ROW) consists of forest. An additional 16.4 acres (0.2 acre for the proposed Finneywood Switching Station, 3.1 acres of existing ROW, and 13.1 acres of new or expanded ROW) consists of open space followed by 16.0 acres of agricultural land (all new or expanded ROW). Developed land accounts for 0.6 acre within the ROW (>0.0 acre of existing ROW, and 0.6 acre of new or expanded ROW) followed by 0.5 acre of open water (all new or expanded ROW).

Butler Farm–Finneywood Route Variation

Butler Farm–Finneywood Route Variation crosses 1.7 miles of land encompassing a total of 24.6 acres of ROW, all of which would be within new ROW. All 14 individual parcels crossed by the route are privately owned and all are located within Mecklenburg County.

Land use and cover types along and within the Butler Farm–Finneywood Route Variation ROW mostly consist of forested areas interspersed with agricultural lands. By area, the ROW consists of approximately 14.8 acres of forest, 7.8 acres of agricultural land, 1.1 acres of open space, and 0.9 acre of developed land, all within new ROW.

4.1.2 Recreation Areas

As discussed in Section 3.1.3, Recreation Areas, ERM identified recreational resources along and near the alternative routes through review of digital maps, aerial photography, county parcel data, and other sources. Descriptions of the recreational areas discussed in the subsections below are provided in Table 3.1-1 and Table 3.1-2.

4.1.2.1 Butler Farm–Clover Line

Three recreation areas—the Staunton River Blueway and Scenic River, the Staunton Loop of the Virginia Birding and Wildlife Trail System, and the Highway 47 Scenic Byway—are crossed by or within 500 feet of the Butler Farm–Clover routes. Potential impacts on these recreation areas from construction and operation of the Project are discussed below. See section 4.4, Visual Assessment, for an analysis of visual impacts at crossings of select recreation areas, including the Staunton River Scenic River and Highway 47 Scenic Byway.

- **Staunton River Blueway and Staunton River Scenic River:** Butler Farm–Clover Routes 1, 2, and 3 each cross the Staunton River at approximate MP 1.7 in an area where the routes share a common greenfield alignment. The parcels adjacent to the river on either side of the crossing are privately owned but subject to conservation easements as discussed in Section 4.1.8, Easements. Land cover is forested on the west side of the river, with open fields or pasture to the east. The ROW for each route would create a new approximately 120-foot-wide cleared corridor across the river. The new transmission infrastructure required for the Project would not affect uses of the river, such as canoeing or fishing, but would result in a new visual impact on the blueway and scenic river.
- **Staunton Loop of the Virginia Birding and Wildlife Trail System:** Butler Farm–Clover Route 1 crosses the Staunton Loop (Highway 92) at approximate MP 16.8 along a greenfield segment in Mecklenburg County, about 0.5 mile west of Chase City. No sites associated with the loop are located near the crossing. Land cover at the crossing consists of forest on the north side of the highway and open or agricultural land to the south. If Butler Farm–Clover Route 1 is selected for the

Project, the ROW would create a new approximately 120-foot-wide cleared corridor at the crossing. The new transmission infrastructure would not affect use of the loop but would change existing viewshed conditions at the crossing to include views of transmission structures and conductors, particularly to the south where the route crosses open land or agricultural fields.[8]

At approximate MP 13.8, Butler Farm–Clover Route 2 crosses the Staunton Loop along a greenfield alignment just west of Spanish Grove in Mecklenburg County. No sites associated with the loop are located near the crossing. Land cover at the crossing consists of forest on both sides of the highway. If Butler Farm–Clover Route 2 is selected for the Project, the ROW would create a new approximately 120-foot-wide cleared corridor through the forested land on either side of the highway. While this would not affect traffic along the loop, it would alter existing visual conditions at the crossing.

Butler Farm–Clover Route 3 crosses the Staunton Loop at three locations: at approximate MP 6.9, west of Kings Crossroads in Charlotte County; at approximate MP 10.2, southeast of Barnes Junction in Mecklenburg County; and at approximate MP 12.9, west of Spanish Grove, also in Mecklenburg County. The crossing at MP 12.9 uses the same alignment and ROW configuration and would result in the same impacts as the crossing along Butler Farm–Clover Route 2 discussed above. The other two crossings are reviewed below.

The Butler Farm–Clover Route 3 crossing of the Staunton Loop at approximate MP 6.9 occurs along a greenfield segment of the route, where land cover on either side of Highway 92 is forested. No sites associated with the loop are located near the crossing. If this route is selected for the Project, the ROW would create a new approximately 120-foot-wide cleared corridor at this location. The new transmission infrastructure would not affect use of the loop but would change existing viewshed conditions at the crossing.

The Butler Farm–Clover Route 3 crossing at approximate MP 10.2 occurs in an area where the route is within and adjacent to Dominion's existing ROW for Line #235. No sites associated with the loop are located near the crossing. Land cover consists of forest on the west side of the highway with open land or pasture to the east. If Route 3 is selected for the Project, the existing approximately 160-foot-wide ROW would be expanded by about 100 feet to the north to accommodate the new transmission infrastructure required for the Project. While this would modify existing visual conditions at the crossing, the impact would be consistent with existing conditions along the Line #235 ROW. The expanded corridor would not affect traffic along the loop.

Butler Farm–Clover Route Variation crosses the Staunton Loop at approximate MP 0.7 where the route alignment intersects Highway 92. No sites associated with the loop are located near the crossing. Land cover on the north side of the highway consists of a mix of open space and commercial structures; to the south, land cover is largely developed with the route crossing a parking area between a motel (Wesco Motel) and a commercial facility (T&J Farm Equipment Sales). If the route variation is selected for the Project, its ROW would create a new, approximately 120-foot-wide utility corridor where it crosses the Staunton Loop but would not conflict with existing land conditions along Highway 92 in this area. Additionally, the new ROW would not affect travel along or uses of the loop.[9]

[8] Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 each use parallel and adjacent alignments where they cross the Staunton Loop. If both routes are selected for the Project, their ROWs would create an approximate 160-foot-wide cleared corridor across the loop.

[9] Butler Farm–Clover Route Variation and Butler Farm–Finneywood Route Variation each use parallel and adjacent alignments where they cross the Staunton Loop. If both routes are selected for the Project, their ROWs would create an approximate 160-foot-wide corridor across the loop.

- **Highway 47 Scenic Byway:** Butler Farm–Clover Route 1 crosses the Highway 47 Scenic Byway at two locations in Mecklenburg County. At approximate MP 13.5, the route crosses the byway just north of the intersection of Highway 47 and Twin Drive in an area where the route is within and adjacent to Dominion's existing ROW for Line #1012. Land cover on either side of the crossing is predominantly open and/or agricultural. If Butler Farm–Clover Route 1 is selected for the Project, the existing approximately 100-foot-wide ROW would be expanded by about 100 feet to the west to accommodate the new transmission infrastructure required for the Project. The expanded corridor and new infrastructure would not affect traffic on the byway but would modify existing viewsheds at the crossing.

  The second crossing of the byway occurs at approximate MP 14.2 near the intersection of Highway 47 and High House Road along a short, greenfield segment of the route. This segment deviates from Dominion's existing ROW for Line #1012 at approximate MP 14.1, passing west of houses along the highway, rejoining the existing ROW at approximate MP 14.7. Land cover along either side of the crossing consists of open or agricultural land with the route paralleling a line of trees along High House Road for about 800 feet on the south side of the highway. If Butler Farm–Clover Route 1 is selected for the Project, the ROW would create a new approximately 120-foot-wide corridor at the crossing, introducing new structures and conductors in an area otherwise unaffected by existing transmission lines.

4.1.2.2 Butler Farm–Finneywood Line

Four recreation areas—the Staunton Loop of the Virginia Birding and Wildlife Trail System, the Highway 47 Scenic Byway, Mecklenburg Country Club, and the Tobacco Heritage Trail—are crossed by or within 500 feet of the Butler Farm–Finneywood routes. Potential impacts on these recreation areas from construction and operation of the Project are discussed below. See section 4.4, Visual Assessment, for an analysis of visual impacts where the routes cross the Highway 47 Scenic Byway.

- **Staunton Loop of the Virginia Birding and Wildlife Trail System:** At approximate MP 4.7, Butler Farm–Finneywood Route 1 crosses the Staunton Loop (Highway 92) in Mecklenburg County on the west side of Chase City along a greenfield segment of the route. Land cover at the crossing consists of forest on the north side of the highway and open or agricultural land to the south. If Butler Farm–Finneywood Route 1 is selected for the Project, the ROW would create a new approximately 120-foot-wide corridor at the crossing. The new transmission infrastructure would not affect traffic along the loop but would change existing viewshed conditions at the crossing, resulting in views of transmission structures and conductors, particularly where the route crosses the open and agricultural lands on the south side of the highway.[10]

  Butler Farm–Finneywood Route Variation crosses the Staunton Loop at approximate MP 0.7 where the route alignment intersects Highway 92. No sites associated with the loop are located near the crossing. Land cover on the north side of the highway consists of a mix of open space and commercial structures; to the south, land cover is largely developed with the route crossing a parking area between a motel (Wesco Motel) and a commercial facility (T&J Farm Equipment Sales). If the route variation is selected for the Project, its ROW would create a new, approximately 120-foot-wide utility corridor where it crosses the Staunton Loop but would not conflict with existing land conditions

[10] Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 each use parallel and adjacent alignments where they cross the Staunton Loop. If both routes are selected for the Project, their ROWs would create an approximately 160-foot-wide cleared corridor across the loop.

along Highway 92 in this area. Additionally, the new ROW would not affect travel along or uses of the loop.[11]

- **Highway 47 Scenic Byway and Tobacco Heritage Trail:** Butler Farm–Finneywood Route 1 crosses the Highway 47 Scenic Byway at approximate MP 2.6 in Mecklenburg County. The crossing occurs about 1.4 miles northwest of Chase City in an area where the route is within and adjacent to Dominion's existing ROW for Line #235. Land cover on either side of the crossing outside the existing ROW is forested. If Route 1 is selected for the Project, the existing, approximately 125-foot-wide ROW would be expanded by about 100 feet to the west. The expanded corridor and new infrastructure would not affect use of the byway but would modify existing viewsheds at the crossing. The impact would be consistent with existing conditions along and within the Line #235 ROW.

  At approximate MP 4.0, Butler Farm–Finneywood Route 2 crosses the Highway 47 Scenic Byway and Tobacco Heritage Trail in Mecklenburg County about 1.4 miles east/northeast of Chase City along a greenfield segment of the route. Land cover on either side of Highway 47 at the crossing is forested. If Route 2 is selected for the Project, the ROW would create a new approximately 120-foot-wide cleared corridor across the byway/trail at the crossing. The new transmission infrastructure would not affect use of the byway/trail but would alter existing viewsheds at the crossing, introducing new structures and conductors in an area otherwise unaffected by existing transmission lines.

- **Mecklenburg County Club:** Between approximate MPs 4.3 and 4.4 in Mecklenburg County, Butler Farm–Finneywood Route 2 is adjacent to, but outside of, the western boundary of this golf course along a greenfield segment of the route. The country club is situated south of Highway 47 and east of Country Club Drive on the eastern side of Chase City. Land cover along this segment of the route is predominantly forested. If Butler Farm–Finneywood Route 2 is selected for the Project, the ROW would create a new approximately 120-foot-wide cleared corridor through the forested lands near the country club. While new transmission structures and conductors could potentially be visible above the tree line by golfers, a band of forested land measuring between about 250 and 300 feet in width would remain between the new ROW and the nearest fairway where the route is adjacent to the country club. This forested area would provide screening from the course to the ROW. Otherwise, the new transmission infrastructure along Butler Farm–Finneywood Route 2 would not directly affect use of the course by golfers or require modifications of fairways, tee boxes, or greens at the course. Dominion additionally notes that the golf course is crossed by another transmission line (Dominion's existing Line #40), which bisects the course passing between two fairways.

4.1.3 Residences, Residential Areas, and Commercial Structures

As discussed in Section 3.1.4, Residences, Residential Areas, and Commercial Structures, ERM tallied the number of dwellings and non-residential structures within 100 feet, 250 feet, and 500 feet of each route centerline and the permanent footprint of the proposed Finneywood Switching Station and Butler Farm Substation. The results of this analysis are provided in Table 3.1-3 and Table 3.1-4. Note that there are no buildings located within 500 feet of the proposed Finneywood Switching Station.

To provide additional context and to focus the analysis on areas where new impacts would occur, ERM sorted the building counts presented in Section 3.1.4 to differentiate between transmission route segments representing new ROWs from route segments collocated with existing Dominion transmission infrastructure. Table 4.1-1 and Table 4.1-2 provide the number of structures in each of these categories within 100 feet, 250 feet, and 500 feet of the centerline of each alternative route.

[11] Butler Farm–Finneywood Route Variation and Butler Farm–Clover Route Variation each use parallel and adjacent alignments where they cross the Staunton Loop. If both routes are selected for the Project, their ROWs would create an approximate 160-foot-wide corridor across the loop.

Table 4.1-1: Residences and Other Structures within 100 Feet, 250 Feet, and 500 Feet of the Centerline of Butler Farm–Clover Routes

Route Name	Structure Type	Structures within 100 Feet		Structures within 250 Feet		Structures within 500 Feet	
		New ROW	Existing/ Expanded ROW	New ROW	Existing/ Expanded ROW	New ROW	Existing/ Expanded ROW
Butler Farm–Clover Route 1	Commercial	0	3	3	4	17	8
	Non-residential	1	1	3	3	14	12
	Single-Family Residence	0	0	5	0	15	2
Butler Farm–Clover Route 2	Commercial	0	2	0	2	7	5
	Non-residential	4	3	7	6	22	21
	Single-Family Residence	0	0	5	4	23	11
Butler Farm–Clover Route 3	Commercial	0	1	0	1	1	1
	Non-residential	5	6	9	9	24	34
	Single-Family Residence	0	0	2	6	23	18
Butler Farm–Clover Route Variation	Commercial	1	0	6	0	14	0
	Non-residential	0	0	2	0	9	0
	Single-Family Residence	0	0	6	0	27	0
Butler Farm Substation	Commercial	0	0	0	0	0	0
	Non-residential	0	0	0	0	2	0
	Single-Family Residence	0	0	1	0	2	0

ROW = right-of-way

Table 4.1-2: Residences and Other Structures within 100 Feet, 250 Feet, and 500 Feet of the Centerline of Butler Farm–Finneywood Routes

Route Name	Structure Type	Structures within 100 Feet		Structures within 250 Feet		Structures within 500 Feet	
		New ROW	Existing/ Expanded ROW	New ROW	Existing/ Expanded ROW	New ROW	Existing/ Expanded ROW
Butler Farm-Finneywood Route 1	Commercial	0	0	3	1	8	2
	Non-residential	0	0	2	1	8	9
	Single-Family Residence	0	0	2	2	7	8
	Commercial	0	0	0	0	3	0
	Non-residential	1	0	3	0	21	1

Route Name	Structure Type	Structures within 100 Feet		Structures within 250 Feet		Structures within 500 Feet	
		New ROW	Existing/ Expanded ROW	New ROW	Existing/ Expanded ROW	New ROW	Existing/ Expanded ROW
Butler Farm-Finneywood Route 2	Single-Family Residence	0	0	0	0	7	0
Butler Farm–Finneywood Route Variation	Commercial	1	0	8	0	14	0
	Non-residential	0	0	2	0	6	0
	Single-Family Residence	0	0	3	0	24	0

ROW = right-of-way

4.1.3.1 Butler Farm–Clover Line

Butler Farm–Clover Route 1

There are no single-family residences within 100 feet, 5 single-family residences within 250 feet, and 17 single-family residences within 500 feet of the Butler Farm–Clover Route 1 centerline. The majority of the single-family dwellings within 500 feet of the centerline are located along the eastern portion of the route where it crosses several highways and roads. These crossings include locations where the route is near Highways 47, 92, and 49. The route is collocated with existing transmission lines near Highway 47, but not near Highways 92 and 49. Commercial and non-residential structures are generally located in the same areas as the single-family dwellings along the route.

In total, 15 of the 17 single-family dwellings (88 percent) located within 500 feet of the centerline are in areas where new ROW would be required. The remainder (2 residences) are in areas where the route is adjacent to existing transmission infrastructure. In most places, trees are present between the route and the single-family dwellings. Dominion would leave a tree buffer along the ROW to help shield the views of the route from homes where feasible.

Butler Farm–Clover Route 2

There are no single-family residences within 100 feet, 9 single-family residences within 250 feet, and 34 single-family residences within 500 feet of the Butler Farm–Clover Route 2 centerline. The majority of the single-family dwellings within 500 feet of the centerline are found where the route is adjacent to Line #36 (between approximate MPs 13.0 and 16.0) or adjacent to the existing Transco natural gas pipeline (between approximate MPs 16.0 and 17.8). In the area along Line #36, many homes have been constructed along Tinker Road, Trottinridge Road, and Highway 92 in the Spanish Grove area. Similarly, in the area along the pipeline corridor, many homes have been built along Country Way, Cutesy Hill Road, and Highway 49. Commercial and non-residential structures are generally located in the same areas as the single-family dwellings along the route.

In total, 23 of the 34 single-family dwellings (57 percent) within 500 feet of the centerline are in areas where a new transmission ROW would be required.[12] The remainder (11 residences) are in areas where the route is adjacent to existing transmission infrastructure. In most places, trees are present between the

[12] This includes the dwellings along the existing natural gas pipeline where there currently are no existing transmission structures.

route and the single-family dwellings. Dominion would leave a tree buffer along the ROW to help shield the views of the route from homes where feasible.

Butler Farm–Clover Route 3

There are no single-family residences within 100 feet, 8 single-family residences within 250 feet, and 41 single-family residences within 500 feet of the Butler Farm–Clover Route 3 centerline. The majority of the single-family dwellings within 500 feet of the centerline are found where the route is adjacent to Line #36 (between approximate MPs 13.0 and 16.0) or adjacent to the existing Transco natural gas pipeline (between approximate MPs 15.1 and 16.9). In the area along Line #36, many homes have been constructed along Tinker Road, Trottinridge Road, and Highway 92 in the Spanish Grove area. Similarly, in the area along the pipeline corridor, many homes have been built along Country Way, Cutesy Hill Road, and Highway 49. Commercial and non-residential structures are generally located in the same areas as the single-family dwellings along the route.

In total, 23 of the 41 single-family dwellings (58 percent) within 500 feet of the centerline are in areas where a new transmission ROW would be required.[13] In most areas, trees are present between the route and the single-family structures. Dominion would leave a tree buffer along the ROW to help shield the views of the route from homes where feasible.

Butler Farm–Clover Route Variation

There are no single-family residences within 100 feet, 6 single-family residences within 250 feet, and 27 single-family residences within 500 feet of the Butler Farm–Clover Route Variation centerline. The single-family dwellings within 500 feet of the centerline are located north of Bailey Road (between MPs 0.3 and 0.5). Commercial and non-residential structures are generally located adjacent to Highway 92 (between MPs 0.6 and 0.8) and to the east of the route along Highway 49 (between MPs 1.3 and 1.7).

All of the single-family dwellings within 500 feet of the centerline are in areas where a new transmission ROW would be required. Some trees are present between the route and the majority of the single-family structures. Dominion would leave a tree buffer along the ROW to help shield the views of the route from homes where feasible.

Butler Farm Substation

There are no single-family residences within 100 feet, 1 single-family residence within 250 feet, and 2 single-family residences within 500 feet of the Butler Farm Substation site. Both residences are located east of the site, across the Norfolk Southern Railroad, and located off of Skipwith Road.

4.1.3.2 Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

There are no single-family residences within 100 feet, 4 single-family residences within 250 feet, and 15 single-family residences within 500 feet of the Butler Farm–Finneywood Route 1 centerline. Most of the single-family residences are adjacent to the major roads crossed by the route, including Fort Mitchell Road, and Highways 47, 92, and 49. Where the route is near and crosses Fort Mitchell Road and Highway 47, it is adjacent to the Company's existing ROW for Line #235. Commercial and non-residential structures generally are located in the same areas as the single-family dwellings; however, more of these types of structures are located throughout the route.

[13] This includes dwellings along the existing natural gas pipeline corridor where there currently are no existing transmission structures.

Eight of the 15 single-family dwellings (57 percent) within 500 feet of the centerline are in areas where existing Dominion transmission ROW would be expanded. In most areas, trees are present between the route and the single-family dwellings. Dominion would leave a tree buffer along the ROW to help shield the views of the route from homes where feasible.

Butler Farm–Finneywood Route 2

There are no single-family residences within 100 feet, no single-family residences within 250 feet, and 7 single-family residences within 500 feet of the Butler Farm–Finneywood Route 2 centerline. Most of the single-family structures are located adjacent to roads crossed by the route, including Highway 47, Highway 49, and Country Club Road. The route uses a greenfield alignment where it crosses these roads. Commercial and non-residential structures generally are located in the same areas as the single-family dwellings.

All 7 of the single-family residences within 500 feet of the centerline are in areas where a new ROW would be required. Trees are present between the route and the single-family dwellings in most areas. Dominion would leave a tree buffer along the ROW to help shield the views of the route from homes where feasible.

Butler Farm–Finneywood Route Variation

There are no single-family residences within 100 feet, 3 single-family residences within 250 feet, and 24 single-family residences within 500 feet of the Butler Farm–Finneywood Route Variation centerline. The single-family dwellings within 500 feet of the centerline are located north of Bailey Road (between MPs 0.3 and 0.5). Commercial and non-residential structures are generally located adjacent to Highway 92 (between MPs 0.6 and 0.8) and to the east of the route along Highway 49 (between MPs 1.3 and 1.7).

All of the single-family dwellings within 500 feet of the centerline are in areas where a new transmission ROW would be required. Some trees are present between the route and the majority of the single-family structures. Dominion would leave a tree buffer along the ROW to help shield the views of the route from homes where feasible.

4.1.4 Agricultural Areas

As discussed above in Section 4.1.1, Land Ownership and Land Use, ERM categorized and quantified land use/land cover types along and within the alternative routes, including agricultural lands, based on review of local and statewide datasets and air photo interpretation. Quantifications of the agricultural lands that would be affected by each route are provided in Table 4-1 and Table 4-2. Lists of the agricultural areas crossed by each route are provided in Table 3.1-5 and Table 3.1-6. With the exception of areas directly affected by new transmission structures, agricultural activities would continue within the ROW during Project operations. Therefore, none of the routes would adversely impact ongoing or future farming practices. Additionally, the Finneywood Switching Station would not impact agricultural lands.

4.1.5 Cemeteries, Schools, and Places of Worship

As described in Section 3.1.6, ERM identified cemeteries, schools, and places of worship along and near the alternative routes and other Project facilities through review of digital maps, aerial photography, county parcel data, and other sources. No schools are crossed by or within 500 feet of the ROWs for the various alternative routes. Descriptions of the individual cemeteries and places of worship discussed in the subsections below are provided in Table 3.1-7 through Table 3.1-10.

4.1.5.1 Butler Farm–Clover Line

Cemeteries

Two burial grounds (Cemetery No. 3 and Friendship United Methodist Church Cemetery) are located within 500 feet of a Butler Farm–Clover route. Potential impacts on these cemeteries from construction and operation of the Project are discussed below:

- **Cemetery No. 3:** At approximate MP 9.8 in Charlotte County, Butler Farm–Clover Route 2 passes about 180 feet to the west of this cemetery along a greenfield alignment approximately where the route crosses Lindward Road. The cemetery occupies a copse of trees in the middle of an agricultural field bordered to the north, east, and south by forest. If Route 2 is selected for the Project, the ROW would create a new approximately 120-foot-wide corridor crossing the agricultural field containing the burial ground. While the trees within the cemetery would provide some visual screening, transmission structures and conductors within the field would be visible from the cemetery. Otherwise, there would be no direct impacts on the cemetery from construction and operation of the transmission line along Route 2.
- **Friendship United Methodist Church Cemetery:** At approximate MP 18.0 in Mecklenburg County, Butler Farm–Clover Route 1 passes approximately 390 feet to the northeast of this cemetery along a greenfield alignment, approximately where the route crosses Highway 49. The cemetery is maintained, with headstones visible from the highway, which forms the western boundary of the burial ground. Forested lands surround the cemetery to the north, east, and south. If selected for the Project, the ROW for Butler Farm–Clover Route 1 would create a new approximately 120-foot-wide cleared corridor in the forested area to the north of the cemetery. While transmission structures and conductors could be visible from parts of the cemetery above the tree line, the forested land remaining between the burial ground and ROW (with a width of approximately 375 feet) would provide visual screening. Otherwise, there would be no direct impacts on the cemetery from construction and operation of the Project.[14]

Places of Worship

One church (Friendship United Methodist Church) is located within 500 feet of a Butler Farm–Clover route. Potential impacts on this church from construction and operation of the Project are discussed below:

- **Friendship United Methodist Church:** Between approximate MPs 17.9 and 18.0, the ROW for Butler Farm–Clover Route 1 crosses the parcel containing this church along a greenfield alignment where the route intersects Highway 49 in Mecklenburg County. The grounds are partially open and partially forested, with the main church building within a horseshoe driveway on the west side of the highway and forest to the north, west, and south. The church itself is situated approximately 295 feet to south/southwest of Butler Farm–Clover Route 1, which crosses the forested area along the northern boundary of the parcel. If Butler Farm–Clover Route 1 is selected for the Project, the ROW would create an approximately 120-foot-wide cleared corridor through these lands, encompassing just under 0.2 acre of church-owned property. While transmission structures and conductors could be visible from the church above the tree line, an approximately 100-foot-wide forested buffer would

[14] Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 each use parallel and adjacent alignments where they pass near the Friendship United Methodist Church Cemetery. If both routes are selected for the Project, their ROWs would create an approximately 160-foot-wide cleared corridor in the forested lands to the north of the burial ground, reducing the width of the forested buffer between the cemetery and ROW to about 340 feet.

remain between the church building and ROW, providing visual screening. Otherwise, no direct impacts on the church would result from construction and operation of the Project.[15]

Butler Farm–Clover Route Variation terminates (i.e., intersects and joins Butler Farm–Clover Route 1) approximately 330 feet to the northwest of the parcel containing Friendship United Methodist Church. No direct physical impacts on the church would result from construction and operation of the Project along the route variation, though some transmission structures associated with this alternative could be visible from the church grounds above the tree line.

4.1.5.2 Butler Farm Substation

No cemeteries, schools, or places of worship are located within 500 feet of the proposed Butler Farm Substation.

4.1.5.3 Butler Farm–Finneywood Line

Cemeteries

One cemetery (Friendship United Methodist Church Cemetery) is located within 500 feet of a Butler Farm–Finneywood route. Potential impacts on this cemetery from construction and operation of the Project are discussed below.

- **Friendship United Methodist Church Cemetery:** At approximate MP 6.0 in Mecklenburg County, Butler Farm–Finneywood Route 1 passes about 350 feet to the northeast of this cemetery where the route crosses Highway 49. A description of the cemetery grounds is provided above. If Butler Farm–Finneywood Route 1 is selected for the Project, the ROW would create a new approximately 120-foot-wide cleared corridor in the forested area to the north of the cemetery. While transmission structures and conductors could be visible from parts of the cemetery above the tree line, the forested land remaining between the burial ground and ROW (with a width of about 340 feet) would provide visual screening. Otherwise, there would be no direct impacts on the cemetery from construction and operation of the Project.[16]

Places of Worship

One church (Friendship United Methodist Church) is located within 500 feet of a Butler Farm–Finneywood route. Potential impacts on this church from construction and operation of the Project are discussed below.

- **Friendship United Methodist Church:** Between approximate MPs 5.8 and 5.9, Butler Farm–Finneywood Route 1 crosses the parcel containing this church along a greenfield alignment where the route intersects Highway 49 in Mecklenburg County. A description of the church grounds is provided above. The main church building is situated approximately 255 feet to the south/southwest of Butler Farm–Finneywood Route 1, which crosses the forested area along the northern boundary of the parcel. If Butler Farm–Finneywood Route 1 is selected for the Project, the ROW would create an

[15] Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 each use parallel and adjacent alignments where they cross the Friendship United Methodist Church property. If both routes are selected for the Project, their ROWs would create an approximately 160-foot-wide cleared corridor in the forested lands to the north of the church, reducing the width of the forested buffer between the church and ROW to about 65 feet.

[16] Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 each use parallel and adjacent alignments where they pass near the Friendship United Methodist Church Cemetery. If both routes are selected for the Project, their ROWs would create an approximately 160-foot-wide cleared corridor in the forested lands to the north of the burial ground, leaving a forested buffer of about 340 feet between the cemetery and ROW.

approximately 120-foot-wide clear-cut corridor through these forested lands, encompassing about 0.3 acre of church-owned property. While transmission structures and conductors could be visible from the church above the tree line, an approximately 65-foot-wide forested buffer would remain between the church building and ROW, which would provide some visual screening. Otherwise, no direct impacts on the church would result from construction and operation of the Project along this route.[17]

Butler Farm–Finneywood Route Variation terminates (i.e., intersects and joins Butler Farm–Finneywood Route 1) approximately 330 feet to the northwest of the parcel containing Friendship United Methodist Church. No direct physical impacts on the church would result from construction and operation of the Project along the route variation, though some transmission structures associated with this alternative could be visible from the church grounds above the tree line.

4.1.5.4 Finneywood Switching Station

No cemeteries, schools, or places of worship are located within 500 feet of the proposed Finneywood Switching Station.

4.1.6 Existing and Planned Development

ERM identified planned developments along the alternative routes and other facilities through review of data on county websites and consultations with city planning officials and other stakeholders. Descriptions of the individual planned developments that are discussed in the subsections below are provided in Section 3.1.7, Existing and Planned Developments.

4.1.6.1 Butler Farm–Clover Line

As shown in Table 4.1-3, Butler Farm–Clover Routes 1, 2, and 3 each cross portions of the proposed Randolph, Quarter Horse, and Moody Creek solar sites and the Chase City Apartment Complex development. The table also provides the approximate MPs for each crossing and the total area of impact within each development.

Table 4.1-3: Planned Developments Crossed by the Butler Farm–Clover Line

Solar Site	Route	Approximate MP Location	Acres of Impacts
Randolph Solar Site	Butler Farm–Clover Route 1	■ Crossed at MPs 2.1 to 2.6 ■ Crossed at MPs 3.6 to 4.3 ■ Crossed at MPs 4.7 to 7.1	49.4
	Butler Farm–Clover Route 2	■ Crossed at MPs 2.1 to 2.6 ■ Crossed at MPs 3.6 to 4.3 ■ Crossed at MPs 4.7 to 7.1	49.4
	Butler Farm–Clover Route 3	■ Crossed at MPs 2.1 to 2.6	5.5
Quarter Horse Solar Site	Butler Farm–Clover Route 1	■ Crossed at MPs 7.3 to 11.9	66.3
	Butler Farm–Clover Route 2	■ Crossed at MPs 7.3 to 9.4	45.8

[17] Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 each use parallel and adjacent alignments where they cross the Friendship United Methodist Church property. If both routes are selected for the Project, their ROWs would create an approximately 160-foot-wide cleared corridor in the forested lands to the north of the church, leaving an approximately 65-foot-wide forested buffer in the area between the church building and ROW.

Solar Site	Route	Approximate MP Location	Acres of Impacts
Moody Creek Solar Site	Butler Farm–Clover Route 1	■ Crossed at MPs 9.6 to 10.2 ■ Crossed at MPs 10.7 to 10.9	9.9
Chase City Apartment Complex	Butler-Farm Clover Route 1	■ Crossed at MPs 16.8 to 17.2	4.4

MP = milepost

For all three planned solar developments and the Chase City Apartment Complex, Dominion has reached out to the developers to coordinate crossing the development and the ability for both projects to coexist in the area.

The Chase City Apartment Complex development has been approved by the Mecklenburg County Board of Directors and will be constructed in two phases. Dominion Energy has coordinated with the developer to configure the proposed route around their proposed buildings. Butler Farm–Clover Route 1 would cross along the eastern edge of the development through an open space area. Through communication with the developer and the Town of Chase City, each has expressed concerns with a route crossing the development. As a result, the Company developed Butler Farm–Clover Route Variation to avoid crossing the development. The route variation avoids the Chase City Apartment Complex development property by routing to the east. The transmission lines would be visible to residences located along the eastern edge of the development with both Butler Farm–Clover Route 1 and Butler Farm–Clover Route Variation; however, impacts would likely be limited to visual impacts.

Coordination is ongoing with Moody Creek Solar; however, Randolph Solar has approved the locations of the alternative routes across that development. Quarter Horse Solar is very early in the development stage and does not yet have a site plan for their development. Potential impacts to the solar developments would include the restriction of no solar panels within the ROW. The Company does not permit structures, homes, or other large infrastructure (i.e., solar panels) in their ROW. Access roads, feeder lines, and other electric lines associated with the solar developments would be allowed to cross the ROW. Butler Farm-Clover Route 1 is within 0.1 mile of the recently constructed and operational Bluestone Solar Site at MP 15.6. Because the route does not cross the solar facility, no impacts to the development are anticipated.

4.1.6.2 Butler Farm Substation

No existing or planned developments are located at the proposed Butler Farm Substation.

4.1.6.3 Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1 crosses the Chase City Apartment Complex development from MPs 4.7 to 5.0, encompassing approximately 4.4 acres. Butler Farm–Finneywood Route Variation avoids the Chase City Apartment Complex development property by routing around the eastern edge. Impacts would be the same as those discussed in Section 4.1.6.1, Butler Farm–Clover Line.

No other proposed or existing developments are crossed by the Butler Farm–Finneywood routes.

The proposed Finneywood Solar development is located 0.2 mile north of Butler Farm–Finneywood Routes 1 and 2 at MP 0.0. Because the Project does not cross the planned solar facility, no impacts are anticipated to this site.

The Butler Farm-Finneywood Route 1 is within 0.1 mile of the recently constructed and operational Bluestone Solar Site between MPs 3.1 and 3.7. Because the route does not cross the solar facility, no impacts are anticipated to this site.

4.1.6.4 Finneywood Switching Station

The proposed Finneywood Solar development is located 0.1 mile north of the proposed Finneywood Switching Station. Because the Project does not cross the planned solar facility, no impacts are anticipated to this site.

4.1.7 Land Use Planning

An overview of the land planning objectives and comprehensive plans for Halifax, Charlotte, and Mecklenburg counties is provided in Section 3.1.8, Land Use Planning.

In Halifax County, the majority of the land crossed by the routes is forested and collocated with the ROW for Dominion's existing Line #556. The county's Comprehensive Plan (Halifax County 2017) emphasizes the need for cost-effective facilities and services meeting community needs and accommodating managed future growth. In particular, one of the key recommendations in the plan is to encourage properly sited electric generation and transmission facilities.

In Charlotte County, the overall goal of the county as outlined in the county's Comprehensive Plan (Charlotte County 2017) is to allow suitable economic and physical development while retaining the County's natural assets and quality of life. The Project aims to adhere to this goal by collocating with existing transmission lines to reduce impacts within the county. The plan also acknowledges that infrastructure in the county is limited.

In Mecklenburg County, the alternative routes, with the exception of Butler Farm–Finneywood Route 2, would be collocated with existing transmission and pipeline corridors for at least half the length in the county. For the non-collocated segments, the routes are generally located in forested areas, where tree cover would limit the potential for visual impacts to surrounding residences and communities. The county's Comprehensive Plan (Mecklenburg County 2012) focuses on natural resources conservation as well as targeted economic growth, specifically with high profile technology companies. The route in Mecklenburg County would adhere to these goals by collocating with existing transmission lines to the extent practicable and by using existing vegetation, where feasible, to screen the route from nearby residents. The route would also better serve the needs of the customer.

All of the alternative routes would generally have the same impacts with regard to land use planning. All routes use collocation of existing transmission lines and other utility corridors; however, some routes use collocation more than others. Additionally, each route aims to reduce impacts to the aesthetic beauty of the area by routing adjacent to existing transmission lines or placing the route in areas with natural screening (e.g., vegetation, topography, and the built environment) that would reduce visual impacts to residences and surrounding communities.

Based on review of the Halifax, Charlotte, and Mecklenburg counties land planning objectives and coordination with county planning staff, the alternative routes would not conflict with the land planning objectives outlined in the Halifax County Comprehensive Plan (Halifax County 2017), the Charlotte County Comprehensive Plan (Charlotte County 2017), or the Mecklenburg Comprehensive Plan (Mecklenburg County 2012).

4.1.8 Easements

ERM reviewed various digital datasets and coordinated with local, state, and federal agencies to identify easements and other protected lands along the alternative routes and other facilities discussed in this study. Descriptions of the different easement types within the study area are provided in Section 3.1.9, Conservation and Other Easements. Crossings of easements along the Butler Farm–Clover routes by milepost are listed in Table 4.1-4. No easements are crossed by the Butler Farm–Finneywood routes.

4.1.8.1 Butler Farm–Clover Line

Portions of a USACE flowage easement, surrounding the Staunton River, are crossed by the Butler Farm–Clover Routes 1 through 3. Potential impacts on this easement is discussed below:

- **USACE Flowage Easement:** The common alignment of Butler Farm–Clover Routes 1, 2, and 3 crosses approximately 0.5 mile (7.9 acres) of a USACE flowage easement along both sides of the Staunton River between approximate MPs 1.7 and 2.3. This crossing of the Staunton River is approximately 0.5 mile northwest of Dominion's existing Line #556 river crossing. Based on preliminary engineering, approximately five to six new transmission structures would be installed within the easement area. The crossing occurs along a greenfield alignment with forest on the west bank and agricultural land to the east with river between approximate MPs 1.7 and 1.8. Dominion has and will continue to will work with the USACE on mitigation, if required, for placing structures within the flowage easement.

Table 4.1-4: Easements Crossed by the Butler Farm–Clover Routes

Easement	Routes Crossed
USACE Flowage Easement	■ Route 1: Crossed at MP 1.7 and MPs 1.8 to 2.3 ■ Route 2: Crossed at MP 1.7 and MPs 1.8 to 2.3 ■ Route 3: Crossed at MP 1.7 and MPs 1.8 to 2.3

MP = milepost; USACE = U.S. Army Corps of Engineers

4.1.9 Transportation—Roads and Railroads

Road crossings along the Butler Farm–Clover routes and Butler Farm–Finneywood routes are quantified in Table 4-1 and Table 4-2, respectively. All road crossings will be spanned and comply with applicable clearance requirements over the roads. Road crossings will be as near to perpendicular as practicable given the surrounding constraints, alignment of existing transmission infrastructure (where applicable), and the general orientation of the routes.

Temporary closures of roads and/or traffic lanes would be required during Project construction. No long-term impacts on roads are anticipated. Dominion will comply with VDOT requirements for access to the ROWs from public roads. At the appropriate time, Dominion will obtain the necessary VDOT permits as required and comply with permit conditions.

Butler Farm–Finneywood Route 1 and 2 will each cross the Norfolk Southern Railroad once: at MP 2.0 on Butler Farm–Finneywood Route 1 and at MP 7.3 on Butler Farm–Finneywood Route 2. The crossings will comply with applicable clearance requirements over the railroad.

4.1.10 Airports

Of the six airports listed in Table 3.1-13, only Chase City Municipal Airport is close enough to a route for a transmission structure to potentially impact navigable airspace. ERM conducted an airport analysis to determine if any of the FAA-defined airport imaginary surfaces at this airport could be penetrated by transmission structures associated with the Project. ERM reviewed the height limitations associated with the FAA-defined imaginary surfaces for runway 18/36 at the airport. Standard GIS tools, including ESRI's ArcMap 3D and Spatial Extension software, were used to create and geo-reference the imaginary surfaces in space and in relation to the locations and proposed heights of transmission structures. Ground surface data was derived by using a USGS 10 Meter Digital Elevation Model. Based on the results of this review and as discussed below, ERM determined there would be no potential for penetration into any of the imaginary surfaces. Thus, there would be no impacts to navigable airspace from the Project.

Civil airport imaginary surfaces have been established by the FAA with relation to each airport and each runway, including runway 18/36 at Chase Municipal Airport. The imaginary surfaces were developed to prevent existing or proposed objects from extending from the ground into navigable airspace. Specific to Chase City Municipal Airport, the civil airport imaginary surfaces include the following:

- **Horizontal surface at 653 feet above mean sea level (AMSL):** This is a horizontal plane 150 feet above the established airport elevation of 503 feet AMSL, the perimeter of which is constructed by swinging arcs with a radii of 10,000 feet from the center of each end of the primary surface of the runway and connecting the adjacent arcs by lines tangent to those arcs.
- **Conical surface**: This is a surface extending 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. The conical surfaces for this airport have an elevation that extends from 653 feet to 853 feet AMSL.
- **Primary surface**: This is a surface longitudinally centered on the runway. The primary surface extends 200 feet beyond each end of the runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline (503 feet AMSL). The width of the primary surface is 1,000 feet.
- **Approach surface**: This is a surface longitudinally centered on the extended runway centerline and extending outward and upward from the end of each primary surface. As the airport is classified as having a non-precision instrument runway, the inner edge of the approach surface is the same width as the primary surface, and it expands uniformly to a width of 4,000 feet. The approach surfaces extend for a horizontal distance of 10,000 feet at a slope of 34 to 1.
- **Transitional surface**: These surfaces extend outward and upward at right angles to the runway centerline, and the runway centerline extends at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces.

In addition to the civil airport imaginary surfaces, ERM reviewed TERPS surfaces associated with the Chase City Municipal Airport. The zone 1 departure surface, associated with TERPS, is the most restrictive surface associated with the airport. It has a slope ratio that extends upward and outward from the end of the runway at 50:1. The common alignment of Butler Farm–Clover Routes 2 and 3 passes approximately 4,600 feet south of Runway 36 of the Chase City Municipal Airport (approximately east of where the routes cross Highway 49 on the southeast side of Chase City). The ground elevation in the vicinity of the routes ranges from 430 to 505 feet AMSL. Based on the ground elevation and the distance from the end of the nearest runway, some structures in this area would be limited to a maximum height of 87 feet (see Figure 3.1-9 in Appendix A, Figures). Dominion is proposing the use of H-Frame structures for Butler Farm–Clover Routes 2 and 3, which would range from 70 to 90 feet in height and have the potential to be shorter if situations require.

Structures associated with Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 would be located 1.0 mile east of Runway 18/36. Because the routes would be located perpendicular to the runways, height restrictions for the structures are not as severe as they are along Butler Farm–Clover Routes 2 and 3. Structures installed on the Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 in this area would be limited to a maximum height limit of over 150 feet. Based on these findings, there would be no potential for impacts on any of the imaginary surfaces or TERPS imaginary surfaces associated with the Chase City Municipal Airport.

Since the FAA manages air traffic in the United States, it will evaluate any physical objects that may affect the safety of aeronautical operations through an obstruction evaluation. It is anticipated that if Butler Farm–Clover Route 2 or 3 are chosen for the Project, submittal of FAA Form 7460-1, Notice of Proposed Construction or Alteration, would be required pursuant to 14 CFR Part 77. Submittal of this notice would take place during the permitting phase of the Project.

4.2 Environmental Justice

The EJ desktop review analysis area (i.e., the area within 1.0 mile of each alternative route) is broad, extending beyond the areas where Project impacts on EJ populations are anticipated. The desktop review results suggest that construction of the Butler Farm–Clover and Butler Farm–Finneywood lines could potentially affect populations of color, low-income populations, or populations with education or age-based vulnerabilities in the review area.

Based on the EJ criteria thresholds identified in Section 3.2, Environmental Justice, nine CBGs containing potential EJ communities were identified within the review area. These include:

- One CBG containing a population of color
- Three CBGs containing low-income populations
- Five CBGs containing populations of color and low-income populations

Each of the nine CBGs additionally include populations with less than a high school education, and two of the CBGs contain populations over age 64. The nine CBGs are crossed by one or more of the alternative routes.

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 local organizations such as the Thyne Institute, as well as federally recognized tribes. The outreach program was designed to share Project materials through written and in-person methods (e.g., letters, open houses, virtual meetings), document comments provided by stakeholders, and respond to feedback by seeking ways to mitigate or avoid identified impacts, including any potential disproportionate impacts on vulnerable communities.

As part of the regulatory review process, Dominion will complete an evaluation of potential environmental, cultural, and historical impacts of the Project. Dominion will continue to engage with local and state agencies to complete these evaluations and mitigate any impacts from construction. In addition, Dominion will obtain all required environmental permits and comply with applicable permit conditions. Dominion anticipates that environmental impacts generally will be mitigated through design and construction best practices.

In assessing whether a community would bear a disproportionate impact of the negative environmental and health-related effects of the Project, ERM considered temporary construction impacts, visual impacts, property devaluation, and health impacts related to electric and magnetic fields as discussed in Sections 4.2.1 through 4.2.4.

4.2.1 Construction Activities

Impacts associated with Project construction are considered temporary, lasting between 12 and 18 months. Various regulations, industry standards, and best management practices would guide construction and restoration of the ROW. The short-term impacts associated with construction may include equipment noise, potential changes in traffic patterns, and general ground disturbance.

Noise is generally defined as unwanted sound. The primary noise receptors in the Project area would be residences and commercial and industrial properties. During construction, temporary, localized noise from heavy equipment and increased vehicle traffic is expected to occur during daytime hours. Exceedances of daytime noise limits are not expected; if they occur, the exceedances would be temporary.

Construction could occasionally cause lanes or roadways to be closed, although these closures would only last for the duration of the construction activity in a given area. No long-term impacts on roads are anticipated. At the appropriate time, the Company will obtain the required crossing permits from VDOT and comply with applicable permit conditions and any associated restrictions on the timing of construction or road and lane closures.

During construction, Dominion will minimize ground-disturbing activities to the extent practicable. Following construction, Dominion will remove construction-related equipment and debris from the ROW and restore the land within the ROW as closely as possible to pre-construction conditions.

4.2.2 Visual Impacts

The primary strategy for minimizing visual impacts was to identify routes that were most harmonious with the landscape. Mitigation measures include avoiding unique viewsheds, placing structures to take advantage of natural screening (e.g., tall trees), and avoiding the placement of structures directly in front of residences. ERM evaluated existing visual conditions by identifying visually sensitive areas, describing the landscape and viewer types (e.g., local residents), identifying KOPs, and preparing photo simulations to represent landscapes, sensitive areas, and viewer types. The overall change in visual conditions resulting from the installation of a transmission line represents negligible to minimal impacts on the identified viewer types (see Section 3.4, Visual Conditions, and Section 4.4, Visual Assessment).

4.2.3 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. Based on a review of peer-reviewed and industry research published in peer-reviewed journals and trade journals, residential property values and sales prices primarily are affected by factors unrelated to the presence of a transmission line. Other factors, such as location, type, and condition of improvements to the property; neighborhood; and local real estate market conditions, are shown through research to have greater influence on the value of residential property than the presence of a transmission line (Jackson and Pitts 2010; Anderson et al. 2017).

4.2.4 Health Impacts

The conclusions of multidisciplinary scientific review panels assembled by national and international scientific agencies during the past 2 decades are the foundation of Dominion's opinion that no adverse health effects would result from the operation of the transmission infrastructure. The general scientific consensus of agencies that have reviewed this research, relying on generally accepted scientific

methods, is that common sources of electromagnetic fields (EMF) in the environment, including from transmission lines and other parts of the electric system, appliances, etc., are not a cause of any adverse health effects.

Research on EMF and human health varies widely in approach. Some studies evaluate the effects of high, short-term EMF exposures not typically found in people's day-to-day lives on biological responses, while others evaluate the effects of common, lower EMF exposures found throughout communities. Studies also have evaluated the possibility of effects (e.g., cancer, neurodegenerative diseases, and reproductive effects) 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). Standard scientific procedures, such as weight-of-evidence methods, were used by the expert panels assembled by agencies to identify, review, and summarize the results of this large and diverse research.

The reviews of EMF biological and health research have been conducted by numerous scientific and health agencies, including 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; ICES 2019). The general scientific consensus of the agencies 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 transmission lines and other parts of the electric system, appliances, etc., are a cause of any adverse health effects.

The desktop review suggests that EJ populations would not bear disproportionate impacts associated with construction, visual aesthetics, property values, and health-related effects of the Project regardless of which alternative route is selected. Should outreach reveal that there are specific EJ community concerns in the Project area, Dominion will work directly with the communities to understand their concerns and determine appropriate measures to avoid or minimize impacts where possible.

4.3 Natural Resources

4.3.1 Wetlands

To minimize impacts on wetland areas, the alternative routes have been designed to span or avoid wetlands where possible. Most of the wetlands in the area are associated with streams and rivers, and it is anticipated that these features can be spanned, keeping structure locations outside of wetlands to the extent practicable. 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. There would be no change in contours or redirection of water flow, and the amount of spoil from foundation installation and structure placement would be minimal. Excess soil in wetlands generated through foundation construction would be removed from the wetland.

Mats would be used for construction equipment to travel over wetlands, as appropriate. Due to the absence of an existing ROW in some areas along the routes, new temporary access roads may be necessary. Additionally, if a route section cannot be accessed from existing roads, Dominion may need to install a culvert, ford, or temporary bridge along the ROW to cross small streams, where present. In such cases, some temporary fill material in wetlands adjacent to the crossings may be required. This fill would be placed on erosion control fabric and removed when work is completed, returning ground elevations to

original contours. Potential direct impacts on wetlands associated with construction would be temporary in nature. Where tree clearing within wetlands is necessary, forested wetlands would be permanently converted to scrub-shrub or emergent type wetlands after construction. Forested wetlands provide functions such as peak flood flow reduction, nutrient and sediment capture, filtration of pollutants to adjacent waterbodies, and diversity of habitat. The conversion of forested wetlands may reduce or eliminate some of these functions.

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 compliance with Sections 404 and 401 of the CWA and to minimize potential impacts on aquatic resources located within the transmission line corridor. The wetland impacts discussed for each alternative route below are based on ERM's desktop wetland and waterbody analysis (see Appendix D, Wetland and Waterbody Desktop Summary).[18]

4.3.1.1 Butler Farm–Clover Line

No wetlands are located within the footprint of the proposed Butler Farm Substation.

Butler Farm–Clover Route 1

Butler Farm–Clover Route 1 would affect 34.9 acres of wetlands, including:

- 21.1 acres of freshwater forested wetlands, of which 0.7 acre would be within existing Dominion ROW and 20.4 acres would be within new or expanded ROW
- 2.3 acres of freshwater scrub/shrub wetlands, all of which would be within new or expanded ROW
- 5.0 acres of freshwater emergent wetlands, of which 0.9 acre would be within existing Dominion ROW and 4.1 acres would be within new or expanded ROW
- 3.3 acres of riverine wetlands, of which 0.1 acre would be within existing Dominion ROW and 3.1 acres would be within new or expanded ROW
- 3.1 acres of freshwater ponds, of which 0.4 acre would be within existing Dominion ROW and 2.7 acres would be within new or expanded ROW

Butler Farm–Clover Route 2

Butler Farm–Clover Route 2 would affect 43.1 acres of wetlands, including:

- 30.5 acres of freshwater forested wetlands, of which 0.2 acre would be within existing Dominion ROW and 30.3 acres would be within new or expanded ROW
- 1.9 acres of freshwater emergent wetlands, of which 0.8 acre would be within existing Dominion ROW and 1.1 acres would be within new or expanded ROW
- 6.3 acres of riverine wetlands, of which 0.1 acre would be within existing Dominion ROW and 6.2 acres would be within new or expanded ROW
- 4.5 acres of freshwater ponds, of which 0.4 acre would be within existing Dominion ROW and 4.0 acres would be within new or expanded ROW

[18] In the discussion below, the sum of addends may not equal the totals due to rounding.

Butler Farm–Clover Route 3

Butler Farm–Clover Route 3 would affect 39.1 acres of wetlands, including:

- 25.1 acres of freshwater forested wetlands, of which 0.1 acre would be within existing Dominion ROW and 25.0 acres would be within new or expanded ROW
- 3.6 acres of freshwater emergent wetlands, of which 1.3 acres would be within existing Dominion ROW and 2.3 acres would be within new or expanded ROW
- 6.4 acres of riverine wetlands, of which 0.1 acre would be within existing Dominion ROW and 6.3 acres would be within new or expanded ROW
- 3.9 acres of freshwater ponds, of which 0.1 acre would be within existing Dominion ROW and 3.8 acres would be within new or expanded ROW

Butler Farm–Clover Route Variation

Butler Farm–Clover Route Variation would affect 3.5 acres of wetlands, all of which would be within new ROW, including:

- 2.5 acres of freshwater forested wetlands
- 0.4 acre of scrub-shrub wetlands
- 0.4 acre of riverine wetlands
- 0.2 acre of emergent wetlands

4.3.1.2 Butler Farm–Finneywood Line

No wetlands are located within the footprint of the proposed Finneywood Switching Station.

Butler Farm–Finneywood Route 1

Butler Farm–Finneywood Route 1 would affect 13.3 acres of wetlands, including:

- 8.1 acres of freshwater forested wetlands, all of which would be within new or expanded ROW
- 2.9 acre of freshwater scrub/shrub wetlands, all of which would be within new or expanded ROW
- 1.2 acre of freshwater emergent wetlands, of which 0.4 acre would be within existing Dominion ROW and 0.8 acre would be within new or expanded ROW
- 0.5 acre of riverine wetlands, all of which would be within new or expanded ROW
- 0.6 acre of freshwater ponds, all of which would be within new or expanded ROW

Butler Farm–Finneywood Route 2

Butler Farm–Finneywood Route 2 would affect 10.0 acres of wetlands, including:

- 7.4 acres of freshwater forested wetlands, all of which would be within new or expanded ROW
- 2.1 acres of freshwater emergent wetlands, all of which would be within new or expanded ROW
- 0.6 acre of riverine wetlands, all of which would be within new or expanded ROW

Butler Farm–Finneywood Route Variation

Butler Farm–Finneywood Route Variation would affect 2.5 acres of wetlands, all of which would be within new ROW, including:

- 1.5 acres of freshwater forested wetlands
- 0.4 acre of scrub-shrub wetlands
- 0.3 acre of riverine wetlands
- 0.3 acre of emergent wetlands

4.3.2 Waterbodies

Regardless of the routes selected for the Project, short-term, minor water quality impacts could occur during construction. Such impacts would be associated with the soils from disturbed areas being transported by storm water into adjacent surface waters during rain events. Increased turbidity and localized sedimentation of stream bottoms may occur as a result of runoff. However, these impacts would be significantly reduced by the implementation of Dominion's erosion-control measures, including the installation of erosion-control structures and materials, in addition to waterbody permit requirements.

Waterways crossed by the Project would be maintained for proper drainage through the use of 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, there may be some temporary fill material required that would be placed on erosion control fabric and removed when work is completed, returning the surface to original contours. Dominion would use sediment barriers along waterways and steep slopes during construction to protect waterways from soil erosion and sedimentation. Where clearing 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 above ground level, and there would be no grubbing of stumps. Required 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 modification from shading. Vegetation within the ROW would be allowed to return to maintained grasses and shrubs after construction, which would provide some filtration and stabilization to help protect waterbodies from pollutants.

4.3.2.1 Butler Farm–Clover Line

No waterbodies are located within the footprint of the proposed Butler Farm Substation.

Butler Farm–Clover Route 1

Butler Farm–Clover Route 1 crosses 51 waterbodies, including 12 perennial waterbodies, 31 intermittent waterbodies, 2 canal/ditches, and 6 lakes/ponds. Based on ERM's desktop wetland and waterbody analysis, the Butler Farm–Clover Route 1 ROW encompasses approximately 3.3 acres of riverine waterbodies and 3.1 acres of open water.

Butler Farm–Clover Route 2

Butler Farm–Clover Route 2 has a total of 61 waterbody crossings, including 10 perennial waterbodies, 42 intermittent waterbodies, 2 canal/ditches, and 7 lakes/ponds. Based on ERM's desktop wetland and waterbody analysis, the Butler–Clover Route 2 ROW encompasses approximately 6.3 acres of riverine waterbodies and 4.5 acres of open water.

Butler Farm–Clover Route 3

Butler Farm–Clover Route 3 crosses 64 waterbodies, including 13 perennial waterbodies, 41 intermittent waterbodies, 2 canal/ditches, and 8 lakes/ponds. Based on ERM's desktop wetland and waterbody analysis, the Butler Farm–Clover Route 3 ROW encompasses approximately 6.4 acres of riverine waterbodies and 3.9 acres of open water.

Butler Farm–Clover Route Variation

Butler Farm–Clover Route Variation crosses one unnamed perennial tributary to Little Bluestone Creek four times. Based on ERM's desktop wetland and waterbody analysis, the Butler Farm–Clover Route Variation ROW encompasses approximately 0.4 acre of riverine waterbodies.

4.3.2.2 Butler Farm–Finneywood Line

No waterbodies are located within the footprint of the proposed Finneywood Switching Station.

Butler Farm–Finneywood Route 1

Butler Farm–Finneywood Route 1 has a total of 11 waterbody crossings, including two perennial and nine intermittent waterbodies. Based on ERM's desktop wetland and waterbody analysis, the Butler Farm–Finneywood Route 1 ROW encompasses approximately 0.4 acre of riverine waterbodies and 0.6 acre of open water.

Butler Farm–Finneywood Route 2

Butler Farm–Finneywood Route 2 crosses 11 waterbodies, including 3 perennial, 7 intermittent, and 1 lake/pond. Based on ERM's desktop wetland and waterbody analysis, the Butler Farm–Finneywood Route 2 ROW encompasses approximately 0.6 acre of riverine waterbodies.

Butler Farm–Finneywood Route Variation

Butler Farm–Finneywood Route Variation crosses one unnamed perennial tributary to Little Bluestone Creek three times. Based on ERM's desktop wetland and waterbody analysis, the Butler Farm–Finneywood Route Variation ROW encompasses approximately 0.3 acre of riverine waterbodies.

4.3.3 Areas of Ecological Significance

The VDCR review of the Project dated May 2, 2022 (VDCR 2022a), found that the Sandy Creek SCU and Bluestone Creek–Devils Creek SCU are crossed by one or more of the alternate transmission line routes. The VDCR also determined that the routes intersect multiple ecological cores ranging in rank from C3 (high ecological integrity) to C5 (general ecological integrity). An assessment of impacts on these resources is provided below.

4.3.3.1 Sandy Creek Stream Conservation Unit

Butler Farm–Clover Route 3 intersects the Sandy Creek SCU at seven individual stream crossings. These occur at approximate MPs 4.4, 4.9, 5.4, 5.5, 5.8, 6.0, and 6.1 along a greenfield segment of the route, with the crossings collectively measuring less than 0.1 mile in length and encompassing approximately 1.1 acres (310 feet), nearly all of which is forested within the unit. None of the other alternative routes cross the Sandy Creek SCU.

4.3.3.2 Bluestone Creek–Devils Creek Stream Conservation Unit

Butler Farm–Clover Route 1 and Butler Farm–Clover Route 2 each cross the Bluestone Creek–Devils Creek SCU. The Butler Farm–Clover Route 1 crossing occurs at approximate MP 9.6 for an approximate length of 16 feet encompassing less than 0.1 acre. The Butler Farm–Clover Route 2 crossing occurs at approximate MP 10.4 for approximately 22 feet encompassing approximately 0.1 acre. Both crossings are forested, requiring tree removal within the unit. The Butler Farm–Clover Route 1 crossing occurs along a segment where the route is within and adjacent to Dominion's existing ROW for Line #556, which would reduce the overall impacts to the unit. The Butler Farm–Clover Route 2 crossing occurs along a greenfield segment of the route, requiring all new ROW.

4.3.3.3 Ecological Cores

Each alternative route crosses multiple ecological cores. According to the VDCR, 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 2022b). Impacts on ecological cores from the Project would result from tree clearing associated with widening existing or creating new ROWs.

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Butler Farm–Clover Route 1 crosses 13 ecological cores encompassing approximately 89.4 acres with VDCR rankings of C3 to C5. Table 4.3-1 summarizes the impact by core unit and rank. Nine of the 13 crossings, encompassing 4.2 miles, are in areas where the route is collocated with existing transmission corridors, whereby the crossings would only affect the edges of the cores and impacts on core interiors would be limited. The four crossings that are not collocated with existing ROWs, encompassing 2.0 miles, would pass through and bisect the core. Crossings of these four cores would reduce their size and character, potentially affecting their ranking and/or eligibility for designation as a core.

Table 4.3-1: Ecological Cores along Butler Farm–Clover Route 1

Ecological Core ID	Ecological Core Rank	Crossing Collocated with existing Corridors	Crossing Length (mi)	Acres of Impact per Unit	Acres of Impact per Rank
71446	C3—High	Yes	1.1	15.7	15.7 (C3)
71061	C4—Moderate	No	1.0	14.8	50.8 (C4)
71211	C4—Moderate	No	0.5	6.9	
71423	C4—Moderate	Yes	0.3	3.9	
71479	C4—Moderate	Yes	0.9	13.8	
71480	C4—Moderate	Yes	0.3	5.9	
72718	C4—Moderate	No	0.4	5.5	
71411	C5—General	Yes	0.3	4.3	22.9 (C5)
71426	C5—General	Yes	0.4	5.7	
71496	C5—General	Yes	0.4	5.5	
71631	C5—General	Yes	0.2	2.7	

Ecological Core ID	Ecological Core Rank	Crossing Collocated with existing Corridors	Crossing Length (mi)	Acres of Impact per Unit	Acres of Impact per Rank
72316	C5—General	Yes	0.3	3.4	
72952	C5—General	No	0.1	1.3	

Note: The sum of the addends may not equal the totals due to rounding.

Butler Farm–Clover Route 2

Butler Farm–Clover Route 2 crosses 18 ecological cores encompassing approximately 114.2 acres with VDCR rankings of C3 to C5. Table 4.3-2 summarizes the impact by core unit and rank. Nine of the 18 crossings, encompassing 3.1 miles, are in areas where the route is collocated with existing transmission or pipeline corridors, whereby the crossings would only affect the edges of the core and impacts on core interiors would be limited. The nine crossings that are not collocated with existing ROWs, encompassing 4.9 miles, would pass through and bisect a portion of the core. Crossings of these nine cores would reduce their size and character, potentially affecting their ranking and/or eligibility for designation as a core. Most notably is the crossing of core 72587 with a ranking of C3—High. This is a very large core encompassing over 1,700 acres. Butler Farm–Clover Route 2 would bisect the far eastern portion of the core, removing approximately 40 acres of forest from the core.

Table 4.3-2: Ecological Cores along Butler Farm–Clover Route 2

Ecological Core ID	Ecological Core Rank	Crossing Collocated with existing Corridors	Crossing Length (mi)	Acres of Impact per Unit	Acres of Impact per Rank
71446	C3—High	Yes	1.1	15.7	22.3 (C3)
72587	C3—High	No	0.5	6.6	
71061	C4—Moderate	No	1.0	14.8	52.0 (C4)
71211	C4—Moderate	No	0.5	6.9	
71423	C4—Moderate	Yes	0.3	3.9	
71479	C4—Moderate	No	0.4	6.2	
71910	C4—Moderate	No	0.3	3.6	
72116	C4—Moderate	No	1.2	16.6	
71411	C5—General	Yes	0.3	4.3	39.8 (C5)
71496	C5—General	Yes	0.4	5.7	
71426	C5—General	Yes	0.4	5.5	
71675	C5—General	No	0.5	7.1	
72607	C5—General	No	0.2	2.9	
72961	C5—General	Yes	0.2	3.6	
73175	C5—General	Yes	0.1	1.4	
73290	C5—General	Yes	<0.1	4.4	
73238	C5—General	Yes	0.3	4.3	
73180	C5—General	No	0.3	0.6	

Note: The sum of the addends may not equal the totals due to rounding.

Butler Farm–Clover Route 3

Butler Farm–Clover Route 3 crosses 15 ecological cores encompassing approximately 66.4 acres with VDCR rankings of C3 to C5. Table 4.3-3 summarizes the impact by core unit and rank. Eight of the 15 crossings, encompassing 1.5 miles, are in areas where the route is collocated with existing transmission and pipeline corridors, whereby the crossing would only affect the edges of the core and impacts on the core interior would be limited. The seven crossings that are not collocated, encompassing 2.9 miles, would pass through and bisect a portion of the core. Crossings of these seven cores would reduce their size and character, potentially affecting their ranking and/or eligibility for designation as a core. Most notable is the crossing of core 72587 with a ranking of C3—High. This is a very large core at over 1,700 acres. Butler Farm–Clover Route 3 would bisect the far eastern portion of the core, removing approximately 40 acres of forest from the core.

Table 4.3-3: Ecological Cores along Butler Farm–Clover Route 3

Ecological Core ID	Ecological Core Rank	Crossing Collocated with existing Corridors	Crossing Length (mi)	Acres of Impact per Unit	Acres of Impact per Rank
72587	C3—High	No	0.5	6.6	6.6 (C3)
71061	C4—Moderate	No	1.0	14.8	18.4 (C4)
72281	C4—Moderate	Yes	0.2	0.2	
72116	C4—Moderate	Yes	<0.1	3.4	
71411	C5—General	Yes	0.3	4.3	41.3 (C5)
71496	C5—General	Yes	0.4	5.5	
71478	C5—General	No	0.4	6.2	
71930	C5—General	No	0.1	2.1	
72071	C5—General	No	0.4	5.9	
72607	C5—General	No	0.2	2.9	
72961	C5—General	Yes	0.2	3.6	
73175	C5—General	Yes	0.1	1.4	
73290	C5—General	Yes	<0.1	0.6	
73238	C5—General	Yes	0.3	4.3	
73180	C5—General	No	0.3	4.4	

Note: The sum of the addends may not equal the totals due to rounding.

Butler Farm–Clover Route Variation

Butler Farm–Clover Route Variation crosses 2 ecological cores encompassing approximately 6.8 acres (0.5 mile crossed) with VDCR rankings of C4 to C5. Table 4.3-4 summarizes the impact by core unit and rank. Both crossings are in areas where the crossings are greenfield. Crossing of Core 72952 would be located along the northern edge of the core limiting the overall impact to the core. Crossing of Core 72718 would bisect the eastern portion of the core, removing approximately 28 acres of forest from the core.

Table 4.3-4: Ecological Cores along Butler Farm–Clover Route Variation

Ecological Core ID	Ecological Core Rank	Crossing Collocated with existing Corridors	Crossing Length (mile)	Acres of Impact per Unit	Acres of Impact per Rank
72718	C4—Moderate	No	0.4	6.0	6.0 (C4)
72952	C5—General	No	0.1	0.8	0.8 (C5)

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Butler Farm–Finneywood Route 1 crosses five ecological cores encompassing approximately 33.8 acres with VDCR rankings of C4 to C5. Table 4.3-9 summarizes the impact by core unit and rank. Three of the five crossings, encompassing 0.9 mile, are in areas where the route is collocated with existing transmission corridors, whereby the crossings would only affect the edges of the area and impacts on the core interior would be limited. The two crossings that would not be collocated and bisect the core encompass 0.5 mile. The crossing of core 72952 would only impact a small portion of the core such that impacts would be limited. The route would bisect core 72718, significantly impacting the eastern portion of the core by removing approximately 45.8 acres of forest within the core.

Table 4.3-5: Ecological Cores along Butler Farm–Finneywood Route 1

Ecological Core ID	Ecological Core Rank	Crossing Collocated with existing Corridors	Crossing Length (mi)	Acres of Impact per Unit	Acres of Impact per Rank
71632	C4—Moderate	Yes	0.4	19.8	25.3 (C4)
72718	C4—Moderate	No	0.4	5.5	
71755	C5—General	Yes	0.2	2.2	8.5 (C5)
72316	C5—General	Yes	0.3	4.7	
72952	C5—General	No	0.1	1.6	

Note: The sum of the addends may not equal the totals due to rounding.

Butler Farm–Finneywood Route 2

Butler Farm–Finneywood Route 2 crosses six ecological cores encompassing approximately 73.5 acres with VDCR rankings of C3 to C5. Table 4.3-10 summarizes the impact by core unit and rank. One of the six crossings, encompassing 0.7 mile, is in an area where the route is collocated with existing transmission corridors, whereby the crossing would only affect the edges of the core and impacts on the core interior would be limited. The remaining five crossings, encompassing 3.3 miles, are not collocated and would pass through and bisect the core. Crossings of these five cores would reduce their size and character, potentially affecting their ranking and/or eligibility for designation as a core. Most notably are the three C3—High cores where all three crossings would affect a large portion of the core, reducing its overall size and creating a new cleared corridor through the core.

Table 4.3-6: Ecological Cores along Butler Farm–Finneywood Route 2

Ecological Core ID	Ecological Core Rank	Crossing Collocated with existing Corridors	Crossing Length (mi)	Acres of Impact per Unit	Acres of Impact per Rank
71424	C3—High	No	1.2	18.1	43.9 (C3)
71600	C3—High	No	0.8	12.4	
72849	C3—High	No	0.9	13.3	
71632	C4—Moderate	Yes	0.7	23.9	23.9 (C4)
72409	C5—General	No	0.4	5.6	5.7 (C5)
72710	C5—General	No	<0.1	<0.1	<0.1

Note: The sum of the addends may not equal the totals due to rounding.

Butler Farm–Finneywood Route Variation

Butler Farm–Finneywood Route Variation crosses 2 ecological cores encompassing approximately 6.9 acres (0.5 mile crossed) with VDCR rankings of C4 to C5. Table 4.3-37 summarizes the impact by core unit and rank. Both crossings are in areas where the crossings are greenfield. Crossing of Core 72952 would be located along the northern edge of the core limiting the overall impact to the core. Crossing of Core 72718 would bisect the eastern portion of the core, removing approximately 28 acres of forest from the core.

Table 4.3-7: Ecological Cores along Butler Farm–Finneywood Route Variation

Ecological Core ID	Ecological Core Rank	Crossing Collocated with existing Corridors	Crossing Length (mi)	Acres of Impact per Unit	Acres of Impact per Rank
72718	C4—Moderate	No	0.4	5.9	5.9 (C4)
72952	C5—General	No	0.1	1.0	1.0 (C5)

4.3.4 Protected Species

4.3.4.1 Federally and/or State-Listed Species

One federally listed and seven state-listed species were identified that may potentially occur within the study area. Dominion will coordinate with state and federal agencies as needed to determine if any surveys, construction-timing windows, or other mitigations for impacts on federally or state-listed species would be required for the Project.

Butler Farm–Clover Line

Five of the eight federally and state-listed species have been documented by VDCR or VDWR as having potential habitat in areas immediately adjacent to or crossed by the Butler Farm–Clover routes, including Northern long-eared bat, Little brown bat, Tri-colored bat, Henslow's Sparrow, and Loggerhead Shrike. Two of the eight federally and state-listed species—Carolina darter and Whitemouth shiner—have been documented as species occurrences in areas immediately adjacent to or crossed by the Butler Farm–Clover routes. Potential habitat and species occurrences have not been documented for eastern big-eared bat along the Butler Farm–Clover alternate routes.

Potential impacts on habitat for federally and state-listed species along the Butler Farm–Clover routes are presented in Table 4.3-8 and summarized for each route below:

- Butler Farm–Clover Route 1 would affect 136.5 acres of forest, which could impact summer habitat for Northern long-eared bat, Little brown bat, and Tri-colored bat; 79.9 acres of agricultural land, which could impact habitat for Henslow's Sparrow and Loggerhead Shrike; and 7.1 acres of VDCR-predicted suitable stream habitat for Carolina darter and Whitemouth shiner.
- Butler Farm–Clover Route 2 would affect 165.2 acres of forest, which could impact summer habitat for Northern long-eared bat, Little brown bat, and Tri-colored bat; 61.6 acres of agricultural land, which could impact habitat for Henslow's Sparrow and Loggerhead Shrike; and 15.8 acres of VDCR-predicted suitable stream habitat for Carolina darter and Whitemouth shiner.
- Butler Farm–Clover Route 3 would affect 161.9 acres of forest, which could impact summer habitat for Northern long-eared bat, Little brown bat, and Tri-colored bat; 61.4 acres of agricultural land, which could impact habitat for Henslow's Sparrow and Loggerhead Shrike; and 12.6 acres of VDCR-predicted suitable stream habitat for Carolina darter and Whitemouth shiner.
- Butler Farm–Clover Route Variation would affect 15.3 acres of forest, which could impact habitat for Northern long-eared bat, Little brown bat, and Tri-colored bat; and 7.0 acre of agricultural land, which could impact habitat for Henslow's Sparrow and Loggerhead Shrike. No VDCR-predicted suitable stream habitat would be affected.

Table 4.3-8: Butler Farm–Clover Line and Butler Farm to Finneywood Line Federal and State-Listed Species Impacts

Common Name	Scientific Name	Species Information/Habitat	Potential Impacts
FEDERALLY LISTED SPECIES			
Mammals			
Northern long-eared bat	*Myotis septentrionalis*	Generally associated with old-growth or late successional interior forests. Partially dead or decaying trees are used for breeding, summer day roosting, and foraging. Hibernation occurs primarily in caves, mines, and tunnels.	Summer foraging habitat present, but no hibernacula or roost trees identified within a 0.5-mile radius of the route alternatives. No impacts are anticipated if trees are cleared during the winter.
STATE-LISTED SPECIES			
Mammals			
Eastern big-eared bat	*Corynorhinus rafinesquii macrotis*	Hollow trees or abandoned buildings; mature forests near waterbodies.	Predicted suitable habitat indicated by the VDCR. Coordination with the VDCR and VDWR may be needed to determine if surveys and/or construction timing windows are warranted for the Project.
Little brown bat	*Myotis lucifugus*	Roosts in caves, buildings, rocks, trees, under bridges, and in mines and tunnels. Found in all forested regions of the state.	Summer foraging habitat present, but no hibernacula or roost trees identified within 0.5-mile radius of the alternative routes. No impacts are anticipated if trees are cleared during the winter.
Tri-colored bat	*Perimyotis subflavus*	Typically roost in trees near forest edges during summer. Hibernate deep in caves or mines in areas	Summer foraging habitat present, but no hibernacula or roost trees identified within 0.5-mile radius of the alternative

Common Name	Scientific Name	Species Information/Habitat	Potential Impacts
		with warm, stable temperatures during winter.	routes. No impacts are anticipated if trees are cleared during the winter.
Fish			
Carolina darter	*Etheostoma collis*	Small to moderate-sized streams in areas of low current velocity	No impacts are anticipated if construction methods meet VDWR guidelines.
Whitemouth shiner	*Notropis alborus*	Warm, clear or somewhat turbid, small to medium sized creeks	No impacts are anticipated if construction methods meet VDWR guidelines.
Birds			
Henslow's Sparrow	*Ammodramus henslowii*	Open grasslands with few or no woody plants and tall dense grasses and litter layer.	Confirmed as "Potential" in VaFWIS Search Report. Coordination with the VDWR will be needed to determine if surveys and/or construction timing windows are warranted for the Project.
Loggerhead Shrike	*Lanius ludovicianus*	Open country with scattered shrubs and trees or other tall structures for perching.	VaFWIS Search Report listed as confirmed. Coordination with the VDWR will be needed to determine if surveys and/or construction timing windows are warranted for the Project.

Sources: USFWS 2022; VDCR 2022b; VDWR 2022a, 2022b

VaFWIS = Virginia Fish and Wildlife Information Service; VDCR = Virginia Department of Conservation and Recreation; VDWR = Virginia Department of Wildlife Resources

Butler Farm–Finneywood Line

Six of the eight federally and state-listed species have been documented by the VDCR or VDWR as having potential habitat in areas immediately adjacent to or crossed by Butler Farm–Finneywood alternative routes, including Northern long-eared bat, Eastern big-eared bat, Little brown bat, Tri-colored bat, Henslow's Sparrow, and Loggerhead Shrike. None of the eight federally and state-listed species have been documented in areas immediately adjacent to or crossed by each of the Butler Farm–Finneywood routes or within or adjacent to the Finneywood Switching Station or Butler Farm Substation.

Potential impacts on federally and state-listed species identified for the Butler Farm–Finneywood Line are presented in Table 4.3-8 and summarized for each route below:

- Butler Farm–Finneywood Route 1 would affect 72.2 acres of forest, which could impact potential habitat for Northern long-eared bat, Little brown bat, and Tri-colored bat; and 18.8 acres of agricultural land, which could impact habitat for Henslow's Sparrow and Loggerhead Shrike.
- Butler Farm–Finneywood Route 2 would affect 94.4 acres of forest, which could impact habitat for Northern long-eared bat, Little brown bat, and Tri-colored bat; 0.9 acre of forest in VDCR-predicted suitable habitat for Eastern big-eared bat; 16.0 acres of agricultural land, which could impact habitat for Henslow's Sparrow and Loggerhead Shrike, and 2.9 acres of VDCR-predicted suitable stream habitat for Carolina darter and Whitemouth shiner.
- Butler Farm–Finneywood Route Variation would affect 14.8 acres of forest, which could impact habitat for Northern long-eared bat, Little brown bat, and Nri-colored bat; and 7.8 acres of agricultural land, which could impact habitat for Henslow's Sparrow and Loggerhead Shrike. No VDCR-predicted suitable stream habitat would be affected.

- The Finneywood Switching Station would affect 15.2 acres of forest, which could impact potential habitat for Northern long-eared bat, Little brown bat, and Tri-colored bat. No agricultural land would be affected.
- The Butler Farm Substation would affect no forested area; however, it would affect 14.5 acres of agricultural land, which could impact habitat for Henslow's Sparrow and Loggerhead Shrike.

4.3.4.2 Bald Eagle Management

The study area is not located within an eagle concentration area. Additionally, none of the Butler Farm–Clover or Butler Farm–Finneywood alternative routes are located within the primary or secondary buffers of any documented eagle nest locations. The closest bald eagle nest to the alternative routes (Nest ID HF0601) is located approximately 2.3 miles northwest of the Clover Switching Station. None of the alternative routes are within the 660-foot management buffer for this nest. If additional eagle nests are identified within 660 feet of the route selected for the Project, Dominion will work with the appropriate jurisdictional agencies to minimize impacts on this species.

4.3.4.3 Species of Concern and Other Documented Occurrences

The VDCR indicated that two rare species have the potential to occur in the study area: Speckled killifish and Roanoke slabshell. VDCR data shows that Specked killifish is associated with Sandy Creek and Berles Creek within the Sandy Creek SCU crossed by Butler Farm–Clover Route 3. Specifically, Butler Farm–Clover Route 3 crosses the Sandy Creek SCU at seven individual stream crossings (described in Section 4.3.3.1 above). All seven stream crossings within the SCU occur within a forested riparian corridor requiring tree clearing for the new ROW. In total, approximately 1.1 acres of forest would be cleared within the Sandy Creek SCU if Butler Farm–Clover Route 3 is selected for the Project.

VDCR data indicates that Roanoke slabshell is associated with Bluestone Creek in the Bluestone Creek–Devils Creek SCU crossed by Butler Farm–Clover Routes 1 and Butler Farm–Clover Route 2 (described in Section 4.3.3.2 above).

Potential impacts on the species could include reduction in habitat quality due to water quality degradation within or adjacent to the aforementioned crossings. Dominion would implement erosion control measures along the waterbodies to prevent sediment laden runoff from entering the water, which would minimize impacts on the species.

4.3.5 Vegetation

ERM identified vegetation cover types along the alternative routes as discussed in Section 3.1.2, Existing Land Use and Land Cover. Herbaceous vegetation associated with agricultural and open land could be temporarily affected by construction and vehicular movement. Forested lands are highly valued for the benefits they provide, including watershed and riparian buffers, wildlife habitat, enhanced biodiversity, carbon sequestration, water filtration, flood control/protection, and aesthetic appeal. In forested areas, trees would be cleared from the ROW during construction with the ROW maintained with an herbaceous cover during Project operations. Disturbed areas resulting from use of temporary workspace would revert back to preconstruction vegetative conditions.

4.3.5.1 Butler Farm–Clover Line

As shown in Table 4.3-5, vegetation resources primarily affected by the Butler Farm–Clover routes include vegetation associated with agricultural and forested land.

Table 4.3-9: Butler Farm–Clover Line Vegetation Impacts

Vegetation Type	Route 1 (acres)	Route 2 (acres)	Route 3 (acres)	Route Variation	Comparison Segment of Route Variation
Agricultural	79.9	61.67	61.4	7.0	11.2
Forested	136.5	165.2	161.9	15.3	14.4

Each of the Butler Farm–Clover routes are variably collocated with existing transmission lines, a pipeline, and/or a road. Butler Farm–Clover Route 1 is collocated for approximately 11.3 miles (59 percent of the route), which would reduce fragmentation impacts on forest. In greenfield areas, the route would fragment forests, which can limit the movement of animals and the ecological diversity of the area. By comparison, Butler Farm–Clover Route 2 and Route 3 are collocated for 10.5 miles (50 percent of the route) and 10.6 miles (52 percent of the route), respectively.

4.3.5.2 Butler Farm–Finneywood Line

As shown in Table 4.3-10 vegetation resources primarily affected by the Butler Farm–Finneywood routes include vegetation associated with agricultural and forested land.

Table 4.3-10: Butler Farm–Finneywood Line Vegetation Impacts

Vegetation Type	Route 1 (acres)	Route 2 (acres)	Route Variation	Comparison Segment of Route Variation
Agricultural	18.8	16.0	7.8	12.0
Forested	72.2	94.4	14.8	13.9

Each of the Butler Farm–Finneywood routes are variably collocated with existing transmission lines. Butler Farm–Finneywood Route 1 is collocated for 3.3 miles (47 percent of the route), which would reduce fragmentation impacts on forest. As noted above, fragmentation of forests can limit the movement of animals and the ecological diversity of the area. In comparison to Butler Farm–Finneywood Route 1, Butler Farm–Finneywood Route 2 is collocated for 0.9 mile (12 percent of the route).

4.3.5.3 Forest Conservation Values

As shown in Table 4.3-11 through Table 4.3-17, acreage impacts on forest with Outstanding and Very High Forest Conservation Values (FCV) are low. During construction, trees will be removed from the ROW, which will be maintained in an herbaceous state during Project operations.

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Butler Farm–Clover Route 1 crosses approximately 1.1 miles of forest with Outstanding or Very High FCV encompassing approximately 16.3 acres. Table 4.3-11 summarizes the impact in miles crossed and acres by value.

Table 4.3-11: Forest Conservation Values along Butler Farm–Clover Route 1

Forest Conservation Value	Miles Crossed	Acres of Impact per Value
Outstanding (5)	0.1	1.5
Very High (4)	1.0	14.8

Forest Conservation Value	Miles Crossed	Acres of Impact per Value
Total	**1.1**	**16.3**

Butler Farm–Clover Route 2

Butler Farm–Clover Route 2 crosses approximately 2.0 miles of forest with Outstanding and Very High FCV encompassing approximately 28.8 acres. Table 4.3-12 summarizes the impact in miles crossed and acres by value.

Table 4.3-12: Forest Conservation Values along Butler Farm–Clover Route 2

Forest Conservation Value	Miles Crossed	Acres of Impact per Value
Outstanding (5)	0.5	8.1
Very High (4)	1.5	20.7
Total	**2.0**	**28.8**

Butler Farm–Clover Route 3

Butler Farm–Clover Route 3 crosses approximately 1.3 miles of forest with Outstanding and Very High FCV encompassing approximately 18.1 acres. Table 4.3-13 summarizes the impact in miles crossed and acres by value.

Table 4.3-13: Forest Conservation Values along Butler Farm–Clover Route 3

Forest Conservation Value	Miles Crossed	Acres of Impact per Value
Outstanding (5)	0.4	5.8
Very High (4)	0.9	12.3
Total	**1.3**	**18.1**

Butler Farm–Clover Route Variation

Butler Farm–Clover Route Variation crosses approximately 0.3 mile of forest with Outstanding and Very High FCV, encompassing approximately 4.9 acres. Table 4.3-14 summarizes the impact in miles crossed and acres by value.

Table 4.3-14: Forest Conservation Values along Butler Farm–Clover Route Variation

Forest Conservation Value	Miles Crossed	Acres of Impact per Value
Outstanding (5)	0.0	0.2
Very High (4)	0.3	4.7
Total	**0.3**	**4.9**

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Butler Farm–Finneywood Route 1 crosses approximately 0.3 mile of forest with Outstanding and Very High FCV encompassing approximately 4.5 acres. Table 4.3-15 summarizes the impact in miles crossed and acres by value.

Table 4.3-15: Forest Conservation Values along Butler Farm–Finneywood Route 1

Forest Conservation Value	Miles Crossed	Acres of Impact per Value
Outstanding (5)	0.0	0.0
Very High (4)	0.3	4.5
Total	**0.3**	**4.5**

Butler Farm–Finneywood Route 2

Butler Farm–Finneywood Route 2 crosses approximately 1.3 miles of forest with Outstanding and Very High FCV encompassing approximately 19.6 acres. Table 4.3-16 summarizes the impact in miles crossed and acres by value.

Table 4.3-16: Forest Conservation Values along Butler Farm–Finneywood Route 2

Forest Conservation Value	Miles Crossed	Acres of Impact per Value
Outstanding (5)	0.2	3.6
Very High (4)	1.1	16.0
Total	**1.3**	**19.6**

Butler Farm–Finneywood Route Variation

Butler Farm–Finneywood Route Variation crosses approximately 0.3 mile of forest with Outstanding and Very High FCV encompassing approximately 4.4 acres. Table 4.3-17 summarizes the impact in miles crossed and acres by value.

Table 4.3-17: Forest Conservation Values along Butler Farm–Finneywood Route Variation

Forest Conservation Value	Miles Crossed	Acres of Impact per Value
Outstanding (5)	0.0	0.0
Very High (4)	0.3	4.4
Total	**0.3**	**4.4**

4.4 Visual Assessment

4.4.1 Key Observation Points

In evaluating visual impacts for the Project, KOPs were identified in consultation with Dominion. KOP coordinates were loaded into a resource-grade global positioning system for data collection. Simulations were prepared for a representative selection of nine KOPs providing future condition views of the

proposed transmission infrastructure. The simulations were chosen to represent the following criteria or conditions:

- Illustrate visibility from specific VSRs.
- Illustrate representative views for different user groups.
- Illustrate the proposed new transmission infrastructure along the various alternative routes.
- Provide open views of the proposed structures and associated vegetative clearing.

Information on each KOP is provided in Table 3.4-2.

4.4.2 Visual Simulations

4.4.2.1 Visualization Tools Approach

Visual resources in both urban and rural environments are becoming increasingly important to the public. Often these impacts are perceived rather than actual. This analysis relies on visual simulations to accurately depict potential changes to the landscape due to construction and operation of the Project.

A visual simulation is a photorealistic computer representation of a proposed project based on site photography and engineered data. These types of simulations are routinely used to demonstrate before and after construction conditions, alternatives analyses, material/design comparisons, mitigation measures, and long-term maintenance and monitoring plans. Visual simulations explain visual changes to the environment within the context of a public viewshed.

4.4.2.2 Visual Simulation Methodology

Visual simulations of the proposed Project were developed according to the steps and conditions described below:

- Photographic imagery: Imagery was captured using the appropriate focal length to accurately represent the proposed technology.
- Reference conditions: The following conditions/information were documented to enhance rendering accuracy:

Date, time of day (hour/minutes): Determines color of sunlight, shadow location, and irradiance levels.

Atmospheric conditions: Haze and light diffusion have an impact on contrast at distance and amount of ambient light.

Lens length: Determines amount of parallax and depth of field between objects in view.

Available reference photography: Used to accurately represent color, saturation, and contrast.

- Three-dimensional (3D) existing conditions modeling: An existing conditions 3D model of the study area, including terrain, vegetation, and structures, was created. The 3D model was geo-referenced and compiled with aerial imagery and available LiDAR data to ensure spatial accuracy. Structures, vegetation clusters, and skylines were cross-referenced with LiDAR data and reference imagery to ensure accurate representation of scale and placement within the visual simulation.
- 3D sun and atmospheric conditions: Atmospheric data were imported into the 3D model to develop a sun and atmospheric system that matches the location specific reference data.
- 3D project development: Based on computer-aided GIS and power line systems design data provided by Dominion, a 3D model of the Project was constructed. All information was imported into the 3D existing conditions model using the same geo-reference, and the projection was validated for

accuracy. 3D materials and associated specular reflectance information was applied to the 3D information.

- Visual simulation: After all information was properly located in the 3D model, a photograph that best represents the resource highlighted is aligned, atmospherics checked, and materials applied. The 3D information was then rendered using highly accurate raytraced render engines. Rendered elements were separated into multiple passes including foreground and background layers to allow for precise compositing and fine-tuning using photo-editing software.
- Photo-editing software: The use of photo-editing software was necessary to achieve realistic representation of referenced 3D components within the photograph. Atmospherics, grunge, and vegetation depicted in the 3D model were then fine-tuned to match the existing conditions photo. Additional imagery was cross-referenced to ensure accurate depiction camera effects like chromatic aberration, noise, and depth of field.

Below is an assessment of the existing conditions and potential changes that may occur from the Project at a representative selection of nine KOPs. The narratives below provide a description of the various conditions that may result from the Project with visual simulations from the KOPs provided in Appendix E. The additional visual simulations in Table 4.4-1 provide important additional visual understanding of the potential impact.

4.4.3 Visual Simulation Results

Key Observation Point 2

Existing conditions: KOP 2 faces north from Rocky Branch Road in an area adjacent to an agricultural field. Roanoke Station Road is a two-way rural paved access road with no striping. The dominant use of the road is to provide access for local residents and workers traversing the area. A mature hedgerow consisting of mixed deciduous and evergreen trees bulges in the middle ground from the background vegetation. The road corridor slicing through the vegetation becomes the focus of the view much the same as at various additional KOPs. The scenic quality of the existing conditions view is medium.

Visual Simulation: The simulation illustrates the change in visual conditions at this KOP that would result from installation of the transmission line along Butler Farm–Clover Route 3. The most noticeable change in the future conditions image is the removal of vegetation from the middle of the view. The new metal h-frame structures along the route would mostly remain hidden behind adjacent vegetation with only the conductors visible where they cross the agricultural field and the road. The very top of a proposed h-frame structure is visible on the left side of the road interspersed with the top of the vegetation.

It is unlikely that viewers sensitive to landscape changes would be present on this road or experience this KOP. Based on the existing surrounding activities, sensitivity to visual change would be low. The change in landscape that would result from the introduction of the transmission line would have a medium impact on scenic quality at this KOP, and the overall impact would be low to minimal.

Key Observation Point 3

Existing conditions: KOP 3 is looking west from Kings Highway toward Dominion's existing ROW for Line #556, which contains lattice structures. Kings Highway is a four-lane, limited-access, divided roadway providing access for commuters, through-travelers, recreationalists, and tourists to get to their destinations. A mature hedgerow consisting of mixed deciduous and evergreen trees aligns with the roadside and abuts the clearing for the existing transmission ROW. Directly in the center of the view, an existing galvanized lattice transmission structure dominates the ROW clearing. Low growing vegetation underneath the existing line screens all but the top of one additional lattice structure in the corridor. The

four-lane, divided road corridor travels through the view, with the smooth texture and contrasting color of the pavement as the focus. Scenic quality in the existing conditions view is low.

Visual Simulation: The simulation illustrates the change in visual conditions at this KOP that would result from installation of the transmission line along Butler Farm–Clover Routes 1 and 2. The most noticeable change in the future conditions image from the installation of the transmission line is the addition of three weathering steel h-frame structures and associated conductors. Next is the removal of vegetation from the middle of the view, required for the new ROW south of the existing structures. With the exception of one existing structure in the foreground, the other existing structures in the view largely remain hidden behind vegetation. It is expected that vegetation would re-grow in the new ROW to mimic the look of the existing ROW while screening the new h-frame structures located farthest to the west in the view.

It is unlikely that viewers sensitive to landscape changes would be present on this road or experience this KOP. Based on the existing surrounding activities, sensitivity to visual change would be low. The change in landscape that would result from the introduction of the transmission line would have a low impact on scenic quality at this KOP, and the overall impact would be low.

Key Observation Point 6

Existing conditions: KOP 6 faces south from Hill Road toward an open agricultural field. A roadside distribution line is visible on the west side of the road. Hill Road is a two-way paved road with no striping. The roadway is used by local residents and workers throughout their daily lives. A mature hedgerow consisting of mixed deciduous and evergreen trees creates a backdrop for the agricultural fields and associated fencing in the view. Slight topographic relief is present with a hill coming down on the left side of the photo. The scenic quality of the existing conditions view is medium.

Visual Simulation: The simulation illustrates the change in visual conditions at the KOP that would result from installation of the transmission line along Butler Farm–Clover Route 2. The most noticeable change in the future conditions image from the installation of the transmission line is the introduction of a single weathering steel h-frame structure and accompanying conductors that now occupy what used to be open space in the middle ground of the view. The structure rises above the tree line and into the blue sky creating a strong contrast.

It is unlikely that viewers sensitive to landscape changes would be present on this road or experience this KOP. Based on the existing surrounding conditions, sensitivity to visual change would be medium. The change in landscape that would result from the introduction of the transmission line would have a medium impact on scenic quality at this KOP, and a medium overall impact.

Key Observation Point 7

Existing conditions: KOP 7 faces west from Tinker Road toward an existing Dominion transmission ROW containing two lines. One line consists of wooden h-frame structures while the other is comprised of weathering steel h-frames. Tinker Road is a two-way rural paved access road with no striping. The dominant use of the road is to provide access for local residents and workers traversing the area. The large transmission ROW dominates the view with multiple structures from each line visible. A mix of vegetation creates the background for the view. The scenic quality of the existing conditions image is low.

Visual Simulation: The simulation illustrates the change in visual conditions at the KOP that would result from installation of the transmission line along Butler Farm–Clover Route 3. There is no immediately noticeable change besides the addition of a new h-frame structure and associated conductors because of the existing conditions and no need for additional vegetation removal in this section of the ROW.

Based on the existing surrounding activities, sensitivity to visual change in this area would be low. The change in landscape that would result from the introduction of the transmission line would have a low impact on scenic quality at this KOP, and the overall impact would be negligible.

Key Observation Point 9

Existing conditions: KOP 9 faces southeast from Cutesy Hill Road at an existing cleared ROW crossing for a Transco natural gas pipeline. Cutesy Hill Road is a two-way, rural paved access road with no striping. The dominant use of the road is to provide access for local residents and workers traversing the study area. A mature hedgerow consisting of mixed deciduous and evergreen trees aligns with the natural gas pipeline ROW and creates a vegetated backstop within the view. The road corridor slicing through the vegetation becomes the focus of the view. Metal gates and wood fencing associated with the pipeline are present in the foreground of the view. The scenic quality in the existing conditions image is medium.

Visual Simulation: The simulation illustrates the change in visual conditions at this KOP that would result from installation of the transmission line along Butler Farm–Clover Routes 2 and 3. The most noticeable change in the future conditions image is the introduction of metal h-frame structures and conductors. Next is the removal of vegetation from the foreground to the background on the south side of the existing ROW. Two new transmission line structures are visible within the view. The structure closer to the viewer appears above the vegetation as a dominant feature. The second structure, which is located farther from the viewer, appears within the tree line and is less noticeable. The weathering steel structures blend into the vegetative background, which is more apparent on the structure that is farther from the viewer.

It is unlikely that viewers sensitive to landscape changes would be present on this road or experience this KOP. Based on the existing surrounding activities, sensitivity to visual change would be low. The change in landscape that would result from the introduction of the transmission line would have a medium impact on scenic quality at this KOP, and the overall impact would be minimal.

Key Observation Point 10

Existing conditions: KOP 10 faces south from Highway 49 toward an existing residential home and thick background vegetation. Highway 49 is a two-way, paved roadway with center and shoulder striping. The dominant use of the road is to provide access for local residents and workers; however, commuters and through-travelers may also be present. A mix of mature deciduous and evergreen trees makes up the bulk of the view, rising well above the single-story residence. The scenic quality of the existing conditions image is medium.

Visual Simulation: The simulation illustrates the change in visual conditions at this KOP that would result from installation of the transmission line along both Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1.[19] The most noticeable change in the future conditions image from the installation of the transmission line is the introduction of structures rising above the existing mature vegetation mixing with the tree tops; however, the conductors crossing the highway are all visible. Minimal vegetation removal is visible in the background, but would not likely be noticeable to adjacent viewers. Because of the vegetative screening left in place, the visual impact from this KOP would be low.

Travelers on Highway 49 are likely to have viewers that are moderately sensitive to landscape changes. Based on the remaining vegetation within the view, sensitivity to visual change at the KOP would be medium. The change in landscape that would result from the introduction of the transmission lines would have a low impact on scenic quality at this KOP, and the overall impact would be minimal.

[19] The simulation from this KOP assumes that both Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 are selected for the Project.

Key Observation Point 11

Existing conditions: KOP 11 faces west down Highway 92 with mixed commercial development on the right side of the view and a chain-link fence with wire on the top around an open field to the left. Highway 92 is a two-way, paved roadway with center and shoulder striping. The road provides access for local residents and workers as well as commuters and through-travelers traversing the area. An abundance of existing transmission and distribution lines crisscross the frame with a communications tower in the center of the image backlit by the sky. The scenic quality of the existing conditions view is low.

Visual Simulation: The simulation illustrates the change in visual conditions at the KOP that would result from installation of the transmission line along both Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1.[20] New transmission structures cross in the middle ground, remaining below the existing transmission and distribution structures and horizon line in the view.

It is unlikely that viewers sensitive to landscape changes would be present on this road or experience this KOP. Based on the existing infrastructure and activities, sensitivity to visual change would be low. The change in landscape that would result from the introduction of the new transmission infrastructure would have a low impact on scenic quality at this KOP, and the overall impact would be low to negligible.

Key Observation Point 12

Existing conditions: KOP 12 faces north from High House Road along Dominion's existing ROW for Line #1012. High House Road is a two-way, paved road with center and shoulder striping. The roadway is used by local residents and workers throughout their daily lives. A mature hedgerow consisting of mixed deciduous and evergreen trees starts in the foreground right side of the photograph and continues into the background. This vegetation creates the horizon line between ground and sky. Smaller single trees and large shrubs are located in the center of the frame adjacent to the roadway. The road corridor makes up a small portion of the view and does not catch the viewer's eye. Existing roadside distribution lines and poles dominate the view with an existing transmission structure visible above the vegetated horizon. The scenic quality in the existing conditions image is low to medium.

Visual Simulation: The simulation illustrates the change in visual conditions at this KOP that would result from installation of the transmission line along Butler Farm–Clover Route 1. The most noticeable change in the future conditions image is the introduction of the metal h-frame structures and conductors in the middle ground of the view. Although similar in size and color to the existing transmission structure, the new structures occupy a different portion of the view. Minimal removal of vegetation from the center of the frame is noticeable; however, the foreground and background horizon hedge remains intact. Two new transmission line structures are visible within the view, yet the greater impact comes from the conductors crossing the existing distribution line and roadway.

It is unlikely that viewers sensitive to landscape changes would be present on this road or experience this KOP. Based on the existing surrounding conditions, sensitivity to visual change would be low. The change in landscape that would result from the introduction of the transmission line would have a low impact on scenic quality at this KOP, and a low overall impact.

Key Observation Point 17

Existing conditions: KOP 17 faces east from Country Club Drive toward a rural homestead consisting of the main residence and associated barns and outbuildings. Country Club Drive is a two-way, rural paved

[20] The simulation from this KOP assumes that both Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 are selected for the Project.

access road with no striping. The dominant use of the road is to provide access for local residents and workers traversing the area. Mature vegetation is visible sparingly along the road side and concentrated at the homestead. Hedgerows are not present as the vegetation makeup is more single-specimen trees. The scenic quality of the existing conditions view is medium.

Visual Simulation: The simulation illustrates the change in visual conditions at this KOP that would result from installation of the transmission line along Butler Farm–Finneywood Route 2. The most noticeable change in the future conditions image is the introduction of the weathering steel monopole structures and associated conductors. The structures introduce a new land use and character to the view by piercing the sky, becoming backlit and highly visible. No vegetation removal is noticeable with the dominant feature being the structures themselves.

Based on the existing surrounding activities, sensitivity to visual change would be medium. The change in landscape that would result from the introduction of the transmission line would have a medium impact on scenic quality at this KOP, and the overall impact would be medium.

4.4.4 Impact Assessment for Visually Sensitive Resources

An assessment of impacts on VSRs along the alternative routes is presented in Table 4.4-1.

Table 4.4-1: Visually Sensitive Resource Impact Results

VSR Number	VSR Name	Representative KOP(s)	Description of Impact	Potential Impact Rating
Scenic Resources				
1	Highway 47 Scenic Byway	12, 13, and 16	Butler Farm–Clover Route 1 crosses the byway in two places (located approximately 0.8 mile apart), near the populated center known as Black Branch, northeast of Chase City. The southern crossing is along a greenfield segment of the route, introducing new transmission infrastructure into the viewshed; however, no clearing of vegetation would be required in this area. The northern crossing occurs along a route segment adjacent to an existing transmission ROW where minimal additional clearing would be required. The route parallels Highway 47 between the two crossings mostly along an existing transmission ROW, but would be behind residential properties that screen views from the byway. The crossing of the byway along Butler Farm–Finneywood Route 1 occurs just north of Thynedale in an area where the route is adjacent to an existing transmission ROW. The crossing angle would be perpendicular, expanding the width of the existing corridor and adding additional transmission infrastructure into the viewshed. The crossing of the byway along Butler Farm–Finneywood Route 2 occurs near Scotts Crossroad along a greenfield segment of the route. The crossing angle would be perpendicular, requiring vegetation removal on both the north and south sides of the byway, introducing new transmission infrastructure into the viewshed.	Medium
2	Staunton River Blueway	NA	Butler Farm–Clover Routes 1, 2, and 3 each cross the Staunton River Blueway about 0.2 mile north of the Company's existing ROW for Line #556. The crossing would be along a greenfield segment of the route, requiring vegetation clearing on the west bank of the river and introducing new transmission infrastructure to the viewshed. There are no boat launches or other developed recreational facilities at or near the crossing.	Low
Recreational Resources				
3	Staunton River Scenic River	NA	See the description above for Staunton River Blueway.	Low

VSR Number	VSR Name	Representative KOP(s)	Description of Impact	Potential Impact Rating
4	Mecklenburg Country Club	17	Butler Farm–Finneywood Route 2 is adjacent to the parcel containing the golf course, but is several hundred feet from the nearest fairway (the closest feature to the route is the tee box on hole 3/12). The route crosses forested lands where it passes due east of the course, then crosses through mostly open fields and fallow-reverting-cropland as it approaches Country Club Drive. Vegetation clearing would not be highly visible from the course. There would be a chance of visibility to the new ROW from fairway #2, but the view would be limited to the very tops of structures above the remaining vegetative screening. Additionally, the course is bisected by an existing Dominion transmission ROW (Line #40).	Low
Historic Resources				
5	Staunton River Battlefield State Park	NA	Visibility of the new transmission infrastructure along the common alignment of Butler Farm–Clover Routes 1, 2, and 3 would be negligible from all of the park grounds, including the aforementioned trail network within the park, because of intervening topography and vegetation.	Negligible
6	Tobacco Heritage Trail	16	The section of trail crossed by Butler Farm–Finneywood Route 2 is the on-road portion following Highway 47 (see the description of impact above for the Highway 47 Scenic Byway). The sensitivity to visual impacts along on-road segments of the trail is lower than for off-road segments of the trail.	Low
Cultural Resources				
7	Friendship United Methodist Church	NA	Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 each cross the northern portion of the church property (at Highway 49) along greenfield segments of the routes. The centerlines of the two routes would be offset by 40 feet in this area. Significant tree removal would be required along the new ROW, particularly if both routes are selected for the Project. The routes would introduce new transmission infrastructure into the viewshed at the crossing.	High
Road Corridors				
8	U.S. Route 15	3, 4, and, 5	Butler Farm–Clover Routes 1 and 2 each cross U.S. Route 15 about 0.2 mile from where this road diverges south from Kings Highway. The crossing is adjacent to an existing transmission ROW. Minimal additional clearing of scattered trees and brush would be required to install the new transmission infrastructure within the expanded ROW. Butler Farm–Clover Route 3 crosses U.S. Route 15 about 0.8 mile from the intersection of this road with Highway 92. The crossing is adjacent to an existing transmission ROW. Minimal additional clearing of scattered trees and brush would be required to install the new transmission infrastructure.	Low

VSR Number	VSR Name	Representative KOP(s)	Description of Impact	Potential Impact Rating
9	Kings Highway (U.S. Route 360)	3	Butler Farm–Clover Routes 1 and 2 each cross Kings Highway adjacent to an existing transmission ROW that passes through open fields on both the north and south sides of the roadway. Minimal additional clearing would be required to install the new transmission infrastructure within the expanded ROW. Butler Farm–Clover Route 3 crosses Kings Highway along a greenfield segment approximately 2.8 miles southwest of the Butler Farm–Clover Routes 1 and 2 crossings. The crossing as designed would require installation of the new transmission infrastructure on an angle at the road crossing, adding additional visual contrast within the new ROW.	Low
10	Highway 47	16	See the description above for the Highway 47 Scenic Byway.	Low
11	Highway 49	9, 10 and 15	Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 each cross Highway 49 along greenfield segments of the routes. The centerlines of the two routes would be offset by 40 feet in this area. Significant tree removal would be required along the new ROW, particularly if both routes are selected for the Project. The routes would introduce new transmission infrastructure into the viewshed at the crossing. Friendship United Methodist Church is present at this crossing. Butler Farm–Clover Routes 2 and 3 each cross Highway 40 along a common greenfield alignment passing near an existing natural gas pipeline ROW. The crossing would require tree clearing on both sides of the road and introduce new transmission infrastructure into the viewshed; however, the crossing occurs along a segment of highway lacking adjacent residences and businesses. Butler Farm–Finneywood Route 2 crosses Highway 49 north of Chase City in an area where the route is adjacent to an existing Dominion transmission ROW. The crossing would require tree clearing on both sides of the road and introduce new transmission infrastructure into the viewshed; however, the crossing occurs along a segment of highway lacking adjacent residences and businesses.	Low

VSR Number	VSR Name	Representative KOP(s)	Description of Impact	Potential Impact Rating
12	Highway 92	7 and 11	Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 each cross Highway 92 along greenfield segments, with mature vegetation on the north and open fields on the south sides of the crossing. The centerlines of the two routes would be offset by 40 feet in this area requiring expansive tree removal on the north side of the crossing, particularly if both routes are selected for the Project. The routes would introduce new transmission infrastructure into the viewshed at the crossing. Butler Farm–Clover Route Variation and Butler Farm–Finneywood Route Variation cross Highway 92 at an open field to the north and the western side of a business lot to the south, before requiring vegetation clearing as the routes continue south. There would also be vegetation clearing on the north side of the road. The crossings would introduce new transmission infrastructure into the viewshed. Butler Farm–Clover Routes 2 and 3 each cross Highway 92 along a common greenfield alignment passing near adjacent residential properties. The crossing would require clearing of mature vegetation on both sides of the road and introduce new transmission infrastructure and an industrial character to the area. Butler Farm–Finneywood Route 2 crosses Highway 92 adjacent to an existing natural gas pipeline ROW. The crossing would require additional ROW clearing on both sides of the road and introduce new transmission infrastructure into the currently empty clearing. The area of the crossing is lacking adjacent resources.	Low
Areas of High Public Concentration				
13	Chase City	NA	Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 each pass to the west of the Chase City municipal boundaries. Because the routes are outside the city limits, users/viewers enjoying or visiting the city would have limited interaction with Project infrastructure when in the city.	Low
14	Fairview	NA	Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 each pass to the west of Fairview. There would be limited views to the routes from within Fairview.	Low
15	Wylliesburg	NA	Butler Farm–Clover Routes 1 and 2 each pass to the south of Wylliesburg near the crossing of U.S. Route 15. There would be negligible views to the routes from the small, 4-corner intersection in the center of Wylliesburg due to intervening topography and vegetation.	Low

KOP = key observation point; NA = not applicable; ROW = right-of-way; U.S. = United States; VSR = visually sensitive resource

4.4.5 Impact Assessment by Route

The impact of changes in visual conditions is a function of both the nature of the change (i.e., the presence of new Project structures and ROWs, where no such development currently exists) as well as the sensitivity of user groups to such changes. User group/viewer sensitivity is inherently subjective, and each user group has their own opinion of what constitutes a positive or negative change in visual conditions within the landscape. However, as discussed in Section 3.4, Visual Conditions, specific user groups have a preset interaction with visual changes to the landscape.

This analysis identifies VSRs within the study area, identifies corresponding user groups and their associated sensitivity to visual changes in the landscape, and provides visual simulations that represent various representative views that would be experienced throughout the study area as a whole. This analysis indicates that overall visual impacts from the Project would be relatively low for all alternative routes and would not be perceived as a fundamental change in landscape conditions within the study area. The visibility of the transmission structures for the alternative routes and vegetative clearing from the nine KOPs evaluated is broadly representative of views and potential Project impacts within the study area. Based on the identified VSRs, potential user groups, and visual simulations, Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 would have the least predicted visual impact on identified VSRs and the study area as a whole.

Butler Farm–Clover Route 1 would have less road crossings overall with half along route segments adjacent to existing transmission ROWs. Butler Farm–Clover Routes 2 and 3 each would have more greenfield road crossings and more road crossings overall, resulting in greater impacts on the local residents and workers using the roadways. See Table 4.4-2 for additional information on the various routes.

Although Butler Farm–Clover Route 1 is proximate to more VSRs than Butler Farm–Clover Routes 2 and 3, impacts would be minimized due to the greater use of routing opportunities (primarily existing Dominion transmission ROWs) along Butler Farm–Clover Route 1 compared to the other alternatives. The greatest potential impact is to the Friendship United Methodist Church due to the addition of new ROW across part of the church property.

Butler Farm–Finneywood Route 1 would have less impact than Butler Farm–Finneywood Route 2 based both on interactions between viewer groups and VSRs along the routes and the greater use of collocation routing opportunities along Butler Farm–Finneywood Route 1.

Table 4.4-2: Visually Sensitive Resource Impact Results

Route	Potentially Impacted VSRs	Description of Impact	Potential Impact Rating
Butler Farm–Clover Line			
Route 1	1, 2, 3, 5, 7, 8, 9, 10, 11, 12, 13, 14, and 15 **Total 13**	Road crossings:[21] Collocated – 8 New ROW – 8 Private – 4 **Total – 20** Sensitive VSRs: Highway 47 Scenic Byway Staunton River Scenic River Friendship United Methodist Church Impacted User Groups: Local residents/workers Commuters/through-travelers Recreationalists/tourists **Total:**	Low Low Medium **Low**
Route 2	2, 3, 5, 8, 9, 11, 12, and 15 **Total 8**	Road crossings: Collocated – 10 New ROW – 8 Private – 2 **Total – 20** Sensitive VSRs: Staunton River Scenic River Tobacco Heritage Trail Impacted User Groups: Local residents/workers Commuters/through-travelers Recreationalists/tourists **Total:**	Medium Low Medium **Medium**
Route 3	2, 3, 5, 8, 9, 11, and 12 **Total 7**	Road crossings: Collocated – 11 New ROW – 8 Private – 2 **Total – 21** Sensitive VSRs: Staunton River Scenic River Impacted User Groups: Local residents/workers Recreationalists/tourists **Total:**	Medium Low Medium **Medium**

[21] Includes all public roads.

Route	Potentially Impacted VSRs	Description of Impact	Potential Impact Rating
Route Variation	12 and 13 **Total 2**	Road crossings: New ROW – 2 **Total – 2** Impacted User Groups: Local residents/workers Commuters/through-travelers Recreationalists/tourists **Total:**	Low Low **Low**
Butler Farm–Finneywood Line			
Route 1	1, 7, 10, 11, 12, 13, and 14 **Total 7**	Road crossings: Collocated – 3 New ROW – 4 **Total – 7** Sensitive VSRs: Highway 47 Scenic Byway Staunton River Scenic River Friendship United Methodist Church Impacted User Groups: Local residents/workers Recreationalists/tourists **Total:**	Low Medium Low **Low**
Route 2	1, 4, 6, 10, 11, and 12 **Total 6**	Road crossings: Collocated – 0 New ROW – 5 Private – 0 **Total – 5** Sensitive VSRs: Highway 47 Scenic Byway Staunton River Scenic River Mecklenburg Country Club Impacted User Groups: Local residents/workers Recreationalists/tourists **Total:**	Low/medium Medium Low **Low/Medium**
Route Variation	12 and 13 **Total 2**	Road crossings: New ROW – 2 **Total – 2** Impacted User Groups: Local residents/workers Commuters/through-travelers Recreationalists/tourists **Total:**	Low Low **Low**

ROW = right-of-way; VSR = visually sensitive resource

4.5 Cultural Resources

Effects on the considered cultural resources relevant to the Butler Farm–Clover routes and Butler Farm–Finneywood routes are discussed below. The *Stage I Pre-Application Analysis of Cultural Resources* report for the Project is provided in Appendix F.

4.5.1 Butler Farm–Clover Line

4.5.1.1 Archaeology Findings

Two previously recorded archaeological sites would be within the ROW of one or more of the alternative routes, as follows:

- Butler Farm–Clover Routes 1, 2, and 3 would each cross 44HA0228 where the routes share a common alignment within and adjacent to Dominion's existing ROW for Line #556.
- Butler Farm–Clover Routes 2 and 3 would each cross 44MC0902 where the routes share a common alignment adjacent to an existing pipeline ROW.

The sites that would be impacted by each alternative route are discussed below, along with current NRHP status and desktop reconnaissance-level information about each site's condition. A confident determination about the nature of archaeological deposits at each site and the extent of impacts from prior land use activities would be required to verify the desktop analysis.

No previously recorded archaeological sites are located within the footprint of the proposed Butler Farm Substation or Butler Farm–Clover Route Variation.

Site 44HA0228

Site 44HA0228 is recorded as a camp with no temporal affiliation provided. The site is located approximately 58 feet to the north of the centerline along a common alignment of Butler Farms–Clover Routes 1, 2, and 3 in Halifax County. The site boundaries are entirely within Dominion's existing ROW for Line #556. The overall condition of the site is unknown, but site integrity could have been impacted by previous clearing and construction within the existing ROW. Regardless of the route selected for the Project, no new transmission structures are planned to be installed within the site.

Site 44MC0902

Site 44MC0902 consists of an Early Woodland lithic quarry and scatter located in Mecklenburg County. The ROW for the common alignment of Butler Farms–Clover Routes 2 and 3 crosses the southern half of the site. The overall condition of the site is unknown, but site integrity could have been impacted by construction of the existing pipeline. If Butler Farms–Clover Routes 2 or 3 are selected for the Project, construction across the site would require vegetation and tree clearing, which could result in ground disturbing activities with the potential to affect cultural deposits at the site. However, no transmission structures are planned to be installed within the site boundary.

4.5.1.2 Aboveground Historic Properties

Several previously recorded historic architectural resources fall within the VDHR study tiers for the alternative routes. Since portions of several routes follow the same or similar alignments, impacts on some historic resources would be the same regardless of the alternative route selected for the Project.

A comparison of the number of resources that would be impacted and the degree of impact on these resources for each alternative route is presented in Table 4.5-1. Based on desktop analysis and visual simulations (see Appendix F, Stage I Pre-Application Analysis of Cultural Resource) prepared for the

Butler Farm–Clover routes, it appears that Butler Farm–Clover Route 3 would result in the fewest number of affected resources, with a minimal impact on one resource and no impact on another as discussed below. In contrast, Butler Farm–Clover Route 2 would result in a minimal impact on one resource and no impact on three, while Butler Farm–Clover Route 1 would result in a minimal impact on two resources and no impact on five. Butler Farm–Clover Route Variation would result in no impact to three resources. Thus, if the route variation is chosen for the section of the Butler Farm–Clover Route 1, an additional resource would be included in the VDHR study tiers for Butler Farm–Clover Route 1, although it would result in no impact. No previously recorded historic architectural resources fall within the VDHR study tiers for Butler Farm Substation.

The specific resources affected for each alternative route are discussed in the following sections.

Table 4.5-1: Comparison of Alternative Route Impacts on Historic Resources in the Study Area of Butler Farm–Clover Line

	Number of Considered Resources in Each Impact Category				
Alternative Route	No Impact	Minimal Impact	Moderate Impact	Severe Impact	Total
Butler Farm–Clover Route 1	5	2	0	0	7
Butler Farm–Clover Route 2	3	1	0	0	4
Butler Farm–Clover Route 3	1	1	0	0	2
Butler Farm–Clover Route Variation	3	0	0	0	3

Butler Farm–Clover Route 1

Seven aboveground historic resources were identified within the VDHR study tiers for Butler Farm–Clover Route 1 (Table 4.5-2). Construction and operation of the new facilities along this route would have no impact on five resources (041-0006, 186-0002, 186-5005, 019-0073, and 019-0075) and a minimal impact on two resources (019-5190 and 058-0274).

Black Walnut (041-0006) is approximately 0.7 mile to the southwest of the route at approximate MP 0.0 in Halifax County, while Chase City High School (186-0002) and the Chase City Warehouse and Commercial Historic District (186-5005) are located approximately 0.94 mile and 0.82 mile, respectively, to the southeast of the route at approximate MP 16.1. All three resources would have no view of the new infrastructure installed along the route due to distance and intervening vegetation. Thus, the route would result in no impact on these resources.

The farmstead associated with 019-0073 is approximately 0.3 mile to the south of the route at approximate MP 4.6 in Charlotte County. The route uses a greenfield alignment, requiring all new ROW in this area. However, the area between the resource and the route contains Dominion's existing ROW for Line #556, with dense forest on both sides of this corridor. Relative to the resource, Butler Farm–Clover Route 1 is north of the existing ROW and behind the forested area. Due to the distance and intervening vegetation and topography, there would be no view to the route from 019-0073. Therefore, the route would have no impact on 019-0073.

The Vernacular I-House associated with 019-0075 is located approximately 0.27 mile to the north of Butler Farm–Clover Route 1 at approximate MP 6.0 in Charlotte County. The view to the route from this resource would be from behind a tree line and the existing ROW for Dominion's Line #556 (which is not visible from the resource). Thus, Butler Farm–Clover Route 1 would result in no impact on 019-0075.

The Staunton River Bridge Battlefield (019-5190) is located approximately 400 feet to the west of Butler Farm–Clover Route 1 at approximate MP 0.0 in Halifax County. In this area, the route is within and adjacent to Dominion's existing ROW for Line #556. Similar to 019-0075, the view to the route from 019-5190 would also be from behind a tree line and the ROW for Dominion's existing Line #556 (which is not visible from the nearest public road to the resource). However, the portion of the resource closest to the route is a railroad, which is directly adjacent to (west of) of the existing Clover Switching Station. Here, there is a break in the trees, through which new transmission infrastructure installed along the route could be visible from the resource. This area is not widely accessible, and only visitors or employees traveling via the railroad, when directly adjacent to the station, would be able to see the existing or new transmission infrastructure within the Line #556 ROW or along Butler Farm–Clover Route 1. Thus, Butler Farm–Clover Route 1 would have a minimal impact on 019-5190.

Pleasant Hill Farm (058-0274) is located approximately 0.16 mile to the north of the Butler Farm–Clover Route 1 at approximate MP 12.0 in Mecklenburg County. This segment of the route utilizes a greenfield alignment, requiring all new ROW. However, existing transmission lines are located to the north and east of the resource, which have diminished the integrity of 058-0274's viewshed. Most of the southern view would be obscured due to the route's placement behind a tree line. The route may be visible when looking southwest and west from the resource, but due to distance, this is not likely. Nevertheless, construction of the Butler Farm–Clover Line along the route would add modern infrastructure to the west and south of the site, where there currently are no transmission lines. Thus, use of this route for the Project would result in a minimal impact on 058-0274.

Table 4.5-2: Impacts on Historic Resources in the VDHR Study Tiers for Butler Farm–Clover Route 1

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	NA	NA	NA
0.5 to 1.0	National Register Properties (Listed)	041-0006	Black Walnut	None
		186-0002	Chase City High School/Maple Manor Apartments	None
		186-5005	Chase City Warehouse and Commercial Historic District	None
0.0 to 0.5	National Register—eligible	019-0073	Farmstead	None
		019-0075	Vernacular I-House	None
		058-0274	Pleasant Hill Farm/Roberts Plantation/Wooten Farm	Minimal
	National Register—potentially eligible	019-5190	Staunton River Bridge Battlefield	Minimal
0.0 (within ROW)	National Historic Landmarks, National Register Properties (Listed, eligible)	NA	NA	NA

NA = not applicable; ROW = right-of-way; VDHR = Virginia Department of Historic Resources

Butler Farm–Clover Route 2

Four aboveground historic resources were identified within the VDHR study tiers for Butler Farm–Clover Route 2 (Table 4.5-3). The route follows the same alignment and uses the same design as Butler Farm–

Clover Route 1 where it passes near all four resources.[22] Therefore, impacts on these resources would be the same as described above for Butler Farm–Clover Route 1. The route would have no impact on three resources (041-0006, 019-0073, and 019-0075) and a minimal impact on one resource (and 019-5190).

Table 4.5-3: Impacts on Historic Resources in the VDHR Study Tiers for Butler Farm–Clover Route 2

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	NA	NA	NA
0.5 to 1.0	National Register Properties (Listed)	041-0006	Black Walnut	None
0.0 to 0.5	National Register—eligible	019-0073	Farmstead	None
		019-0075	Vernacular I-House	None
	National Register—potentially eligible	019-5190	Staunton River Bridge Battlefield	Minimal
0.0 (within ROW)	National Historic Landmarks, National Register Properties (Listed, eligible)	NA	NA	NA

NA = not applicable; ROW = right-of-way; VDHR = Virginia Department of Historic Resources

Butler Farm–Clover Route 3

Two aboveground historic resources were identified within the VDHR study tiers for Butler Farm–Clover Route 3 (Table 4.5-4). The route follows the same alignment and uses the same design as Butler Farm–Clover Routes 1 and 2, where it passes near both resources.[23] Impacts on these resources would be the same as described above for Butler Farm–Clover Route 1. The route would have no impact on 041-0006 and a minimal impact on 019-5190.

Table 4.5-4: Impacts on Historic Resources in the VDHR Study Tiers for Butler Farm–Clover Route 3

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	NA	NA	NA
0.5 to 1.0	National Register Properties (Listed)	041-0006	Black Walnut	None
0.0 to 0.5	National Register—eligible	NA	NA	NA
	National Register—potentially eligible	019-5190	Staunton River Bridge Battlefield	Minimal
0.0 (within ROW)	National Historic Landmarks, National Register Properties (Listed, eligible)	NA	NA	NA

NA = not applicable; ROW = right-of-way; VDHR = Virginia Department of Historic

[22] The nearest MP along Butler Farm–Clover Route 2 to each resource is: 041-0006 (MP 0.0); 019-0073 (MP 4.6); 019-0075 (MP 6.0); and 019-5190 (MP 0.0).

[23] The nearest MP along Butler Farm–Clover Route 3 to each resource is: 041-006 (MP 0.0); and 019-5191 (MP 0.0).

Butler Farm–Clover Route Variation

Three aboveground historic resources were identified within the VDHR study tiers for Butler Farm–Clover Route Variation (Table 4.5-5). Construction and operations of the new facilities along this route would have no impact to three resources (186-0002, 186-5004, 186-5005).

Chase City High School (186-0002) and Shadow Lawn (186-5004) are located approximately 0.77 mile and 0.99 mile, respectively, to the southeast of the route variation at approximate MP 0.5. Chase City Warehouse and Commercial Historic District (186-5005) is located approximately 0.80 mile to the east of the route variation at approximate MP 0.5. All three resources would have no view of the new infrastructure installed along the route due to distance and intervening vegetation. Thus, the route would result in no impact on these resources.

Table 4.5-5: Impacts on Historic Resources in the VDHR Study Tiers for Butler Farm–Clover Route Variation

Buffer (mile)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	NA	NA	NA
0.5 to 1.0	National Register Properties (Listed)	186-0002	Chase City High School/Maple Manor Apartments	None
		186-5004	Shadow Lawn	None
		186-5005	Chase City Warehouse and Commercial Historic District	None
0.0 to 0.5	National Register—eligible	NA	NA	NA
0.0 (within ROW)	National Historic Landmarks, National Register Properties (Listed, eligible)	NA	NA	NA

NA = not applicable; ROW = right-of-way; VDHR = Virginia Department of Historic Resources

4.5.2 Butler Farm–Finneywood Line

4.5.2.1 Archaeology Findings

There are no previously recorded archaeological sites identified within the ROWs associated with Butler Farm–Finneywood Routes 1, 2, Route Variation, or within the footprint of the proposed Finneywood Switching Station.

4.5.2.2 Aboveground Historic Properties

Two previously recorded historic architectural resources fall within the VDHR study tiers for Butler Farm–Finneywood Route 1 and Butler Farm–Finneywood Route Variation (Table 4.5-6). Based on desktop analysis and visual simulations (see Appendix F, Stage I Pre-Application Analysis of Cultural Resources), both Butler Farm–Finneywood Route 1 and Butler Farm–Finneywood Route Variation would result in no impacts to these resources as discussed in more detail below. No previously recorded historic architectural resources fall within the VDHR study tiers for Butler Farm–Finneywood Route 2 or the Finneywood Switching Station.

Table 4.5-6: Comparison of Alternative Route Impacts on Historic Resources in the Study Area of Butler Farm–Finneywood Line

Alternative Route	Number of Considered Resources in Each Impact Category				
	No Impact	Minimal Impact	Moderate Impact	Severe Impact	Total
Butler Farm–Finneywood Route 1	2	0	0	0	2
Butler Farm–Finneywood Route 2	0	0	0	0	0
Butler Farm–Finneywood Route Variation	2	0	0	0	0

Butler Farm–Finneywood Route 1

Two aboveground historic resources were identified within the VDHR study tiers for Butler Farm–Finneywood Route 1 (Table 4.5-7). The route follows the same general alignment and uses the same general design as Butler Farm–Clover Route 1 where the routes pass near Chase City High School (186-0002) and the Chase City Warehouse and Commercial Historic District (186-5005). Impacts on these resources would be the same as described above for Butler Farm–Clover Route 1 (i.e., no impact).[24]

Table 4.5-7: Impacts on Historic Resources in the VDHR Study Tiers for Butler Farm–Finneywood Route 1

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	NA	NA	NA
0.5 to 1.0	National Register Properties (Listed)	186-0002	Chase City High School/Maple Manor Apartments	None
		186-5005	Chase City Warehouse and Commercial Historic District	None
0.0 to 0.5	National Register—eligible	NA	NA	NA
0.0 (within ROW)	National Historic Landmarks, National Register Properties (Listed, eligible)	NA	NA	NA

NA = not applicable; ROW = right-of-way; VDHR = Virginia Department of Historic Resources

Butler Farm–Finneywood Route Variation

Two aboveground historic resources were identified within the VDHR study tiers for Butler Farm–Finneywood Route Variation (Table 4.5-8). The route follows the same general alignment and uses the same general design as Butler Farm–Clover Route Variation where the route pass near Chase City High School (186-0002) and the Chase City Warehouse and Commercial Historic District (186-5005). Impacts on these resources would be the same as described above for Butler Farm–Clover Route Variation (i.e., no impact).[25]

[24] The nearest MP along Butler Farm–Finneywood Route 1 to each resource is 186-0002 (MP 4.9) and 186-5005 (MP 4.6).

[25] The nearest MP along Butler Farm–Finneywood Route Variation to each resource is 186-0002 (MP 0.5) and 186-5005 (MP 0.5).

Table 4.5-8: Impacts on Historic Resources in the VDHR Study Tiers for Butler Farm–Finneywood Route Variation

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	NA	NA	NA
0.5 to 1.0	National Register Properties (Listed)	186-0002	Chase City High School/Maple Manor Apartments	None
		186-5005	Chase City Warehouse and Commercial Historic District	None
0.0 to 0.5	National Register—eligible	NA	NA	NA
0.0 (within ROW)	National Historic Landmarks, National Register Properties (Listed, eligible)	NA	NA	NA

NA = not applicable; ROW = right-of-way; VDHR = Virginia Department of Historic Resources

4.6 Geological Constraints

Butler Farm–Clover Line

No identified active mineral resources were identified within 0.25 mile of the Butler Farm–Clover routes (or the associated Butler Farm Substation); as such, the alternative routes are not anticipated to impact mineral resources in the area.

Butler Farm–Finneywood Line

No identified active mineral resources were identified within 0.25 mile of the Butler Farm–Finneywood routes (or the associated Finneywood Switching Station); as such, the alternative routes are not anticipated to impact mineral resources in the area.

4.7 Collocation Opportunities

ERM identified potential routing opportunities (i.e., existing linear corridor features) within the study area through review of recent digital aerial photography, data on Dominion's existing transmission system, and various publicly available data layers. A summary of the use of routing opportunities by route is provided.

Butler Farm–Clover Line

Route 1

Approximately 11.3 miles (59 percent) of Route 1 uses collocation routing opportunities including:

- 8.1 miles within and adjacent to the ROW for Dominion's existing Line #556
- 2.6 miles within and adjacent to the ROW for Dominion's existing Line #1012
- 0.6 mile within and adjacent to the ROW for Dominion's existing Line #1012/#235

Route 2

Approximately 10.5 miles (49 percent) of Route 2 uses collocation routing opportunities including:

- 6.6 miles within and adjacent to the ROW for Dominion's existing Line #556
- 1.9 miles within and adjacent to the ROW for Dominion's existing Line #36
- 1.8 miles adjacent to the ROW for an existing Williams natural gas pipeline corridor

- 0.2 mile adjacent to a road

Route 3

Approximately 10.6 miles (52 percent) of Route 3 uses collocation routing opportunities including:

- 2.2 miles within and adjacent to the ROW for Dominion's existing transmission Line #556
- 4.5 miles within and adjacent to the ROW for Dominion's existing transmission Line #235
- 1.9 miles within and adjacent to the ROW for Dominion's existing transmission Line #36
- 1.8 miles adjacent to the ROW for an existing Williams natural gas pipeline corridor
- 0.2 mile adjacent to a road

Route Variation

No portion of Butler Farm–Clover Route Variation uses collocation routing opportunities.

Butler Farm–Finneywood Line

Route 1

Approximately 3.3 miles (47 percent) of Route 1 uses collocation routing opportunities including:

- 2.6 miles within and adjacent to the ROW for Dominion's existing Line #235
- 0.1 mile within and adjacent to the ROW for Dominion's existing Line #1012
- 0.6 mile within and adjacent to the ROW for Dominion's existing Line #1012/#235

Route 2

Approximately 0.9 mile (12 percent) of Route 2 is within and adjacent to the ROW for Dominion's existing Line #556.

Route Variation

No portion of Butler Farm–Finneywood Route Variation uses collocation routing opportunities.

5. COMPARISON OF ALTERNATIVES

This section provides a summary of the advantages and disadvantages of the Butler Farm–Clover and Butler Farm–Finneywood alternative routes and related facilities. The potential environmental impacts associated with each route are quantified in Tables 4-1 and 4-2 in Chapter 4, Resources Affected.

5.1 Butler Farm–Clover Line

5.1.1 Route Length and Construction Footprint

Of the alternative routes, Butler Farm–Clover Route 1, is the shortest in overall length. At 19.1 miles, it is 1.1 miles shorter than Butler Farm–Clover Route 3 and 2.0 miles shorter than Butler Farm–Clover Route 2. Additionally, Butler Farm–Clover Route 1 has the smallest construction footprint of the three alternative routes. Butler Farm–Clover Route 1 encompasses 278.4 acres (21.6 acres of existing ROW and 256.8 acres of new or expanded ROW). In contrast, Butler Farm–Clover Route 2 encompasses 306.3 acres (16.8 acres of existing ROW and 289.5 acres of new or expanded ROW) and Butler Farm–Clover Route 3 encompasses 294.2 acres (17.6 acres of existing ROW and 276.5 acres of new or expanded ROW). Thus, Butler Farm–Clover Route 1 uses more existing ROW (by 4.8 acres and 4.0 acres, respectively) and less new or expanded ROW (by 32.7 acres and 19.7 acres, respectively) than Butler Farm–Clover Routes 2 or 3. Finally, Butler Farm–Clover Route 1 crosses fewer parcels (74) than Route 2 (90) or Route 3 (101).

5.1.2 Routing Opportunities

Butler Farm–Clover Route 1 uses more collocation routing opportunities than Butler Farm–Clover Routes 2 or 3. Approximately 11.3 miles of Route 1 (59 percent) is collocated with existing Dominion transmission ROWs. Butler Farm–Clover Routes 2 and 3 are collocated with existing Dominion transmission ROWs, an existing pipeline corridor, or roads for 10.5 miles (50 percent) and 10.6 miles (52 percent), respectively.

The SCC's routing guidelines prioritize the use of existing ROWs for expanded or new transmission infrastructure.[26] More of Butler Farm–Clover Route 1 would be within and adjacent to existing Dominion transmission ROWs than either Butler Farm–Clover Routes 2 or 3. Butler Farm–Clover Route 1 would be within and adjacent to existing transmission ROWs for 11.3 miles (59 percent), compared with 8.5 miles (40 percent) for Butler Farm–Clover Route 2 and 8.6 miles (43 percent) for Butler Farm–Clover Route 3.

5.1.3 Land Use and Land Cover

Land use and land cover types crossed by the alternative routes (i.e., developed land, open space, forested land, agricultural land, and open water) are quantified in Table 4-1. Installation of the transmission lines would not substantively alter existing land uses or cover types in developed lands, open space, agricultural lands, and open water areas; therefore, potential impacts in these areas would not meaningfully differentiate the alternative routes. In forested areas, installation of the transmission lines would result in a permanent change in existing conditions (from forest to open space) within the maintained ROW. This is significant because forested lands are highly valued for the benefits they provide, including watershed and riparian buffers, wildlife habitat, enhanced biodiversity, carbon sequestration, water filtration, flood control/protection, and aesthetic appeal. Of the three alternative

[26] This is consistent with the Virginia Code's requirement that before acquiring any new ROW for transmission lines, Dominion must consider the availability of using its existing ROW (Va. Code § 56-259(C)).

routes, Butler Farm–Clover Route 1 crosses less forested land (136.5 acres) than either Butler Farm–Clover Routes 2 or 3 (165.3 acres and 162.0 acres, respectively).

Based on the above, Butler Farm–Clover Route 1 would impact 28.8 acres less forest than Butler Farm–Clover Route 2 and 25.5 acres less forest than Butler Farm–Clover Route 3. The difference between the routes is due to the shorter length of Butler Farm–Clover Route 1 and better utilization of Dominion's existing transmission infrastructure as collocation routing opportunities than the other two routes. In particular, the substantial overlap of Butler Farm–Clover Route 1 with Dominion's existing ROW for Line #556 (approximately 8.1 miles) would minimize the amount of forested clearing required along this alignment.

Agricultural and open space lands are valued by the counties in the study area. Based on outreach to county staff, the counties prefer routes that avoid agricultural and open space lands where possible. Butler Farm–Clover Route 1 crosses the most agricultural land (79.9 acres) but the least amount of open space (51.5 acres) of the three alternative routes. By comparison, Butler Farm–Clover Route 2 crosses 61.6 acres of agricultural land and 64.8 acres of open space, and Butler Farm–Clover Route 3 crosses 61.4 acres of agricultural land and 55.9 acres of open space. As noted above, the transmission line would not substantively affect agricultural activities during Project operations.

5.1.4 Environmental Justice

ERM's EJ assessment (see Section 3.2 and Section 4.2 of this study) found that none of the routes would result in a disproportionate impact on populations of color, low-income populations, age-based vulnerable communities, linguistically isolated communities, or populations with educational attainment less than high school.

5.1.5 Recreational Areas

The common alignment of Butler Farm–Clover Routes 1, 2, and 3 crosses the Staunton River Scenic River and Staunton River Blueway at approximate MP 1.7 using the same alignment and design. The crossing would be along a new greenfield alignment located approximately 0.4 mile northwest of the existing Line #556 crossing of the river. Land cover is forested on the west side of the river at the crossing, with open fields or pasture to the east. The ROW for each route would create a new approximately 120-foot-wide cleared corridor across the river. While the transmission infrastructure would not affect uses of the river, such as canoeing or fishing, the new structures and conductors would modify existing visual conditions at the crossing. The post-construction viewshed would be similar to existing conditions along and within the existing Line #556 ROW where it crosses the river.

The common alignment of Butler Farm–Clover Routes 1 and 2 each cross the Staunton Loop of the Virginia Birding and Wildlife Trail System once along greenfield alignments: at approximate MP 16.5 along Route 1 and approximate MP 13.8 along Butler Farm–Clover Route 2. Both crossings would require tree clearing within the ROW on one or both sides of Highway 92. In contrast, Butler Farm–Clover Route 3 crosses the Staunton Loop in three locations: at approximate MPs 6.9, 10.2, and 12.9. Two of the crossings occur along greenfield segments of the route, requiring tree clearing on both sides of the loop. The third crossing occurs where the route is collocated with the ROW for Dominion's existing Line #235, where additional tree clearing would be required on the west side of the loop. No sites associated with the loop are located near any of the crossings of the Staunton Loop. The new transmission infrastructure would not affect use of the loop but would modify existing viewshed conditions at each crossing.

Butler Farm–Clover Route 1 crosses the Highway 47 Scenic Byway at two locations: MPs 13.5 and 14.2. The crossing at MP 13.5 is in a location where the route is collocated with Dominion's existing Line #1012. Land cover on either side of the crossing is predominantly open and/or agricultural. The crossing

at MP 14.2 occurs along a greenfield segment of the route, which deviates from the existing Line #1012 to avoid residences approximately at the intersection of Highway 47 and High House Road. Land cover along either side of this crossing is predominantly open or agricultural. New transmission infrastructure installed along the route would not affect use of the highway but would alter existing viewsheds at each crossing, particularly the greenfield crossing at MP 14.2.

Based on the above discussion, Butler Farm–Clover Routes 1, 2, and 3 would result in identical impacts on the Staunton River Scenic River and Staunton Blueway. Butler Farm–Clover Routes 1 and 2 would have similar impacts on the Staunton Loop, each requiring a new greenfield crossing of this feature. Butler Farm–Clover Route 3 would cross the Staunton Loop in three locations, including two new greenfield crossings, resulting in greater cumulative impact on the resource than the other routes. Butler Farm–Clover Route 1 is the only alternative route that crosses the Highway 47 Scenic Byway.

Visual impacts on recreational resources are discussed below in Section 5.1.16, Visual Resources.

5.1.6 Residences

As discussed in Section 3.1.4, Residences, Residential Areas, and Commercial Structures, ERM tabulated the number of residences within 100 feet, 250 feet, and 500 feet of the centerline of each route (see Table 3.1-3). To better focus the analysis on areas where new impacts would occur, ERM sorted the results to differentiate between route segments classified as greenfield and those that would be within and adjacent to existing Dominion transmission ROWs (see Table 4.1-1). The results of this analysis are as follows:

- Butler Farm–Clover Route 1: In total, there are no residences within 100 feet, 5 residences within 250 feet, and 17 residences within 500 feet of the centerline of this route. Of these, there are no residences within 250 feet and two residences within 500 feet in areas where the route is within and adjacent to existing Dominion transmission ROWs. There are 5 residences within 250 feet and 15 residences within 500 feet of the centerline along greenfield segments of the route.
- Butler Farm–Clover Route 2: In total, there are no residences within 100 feet, 9 residences within 250 feet, and 34 residences within 500 feet of the centerline of this route. Of these, 1 residence within 100 feet, 4 residences within 250 feet, and 11 residences within 500 feet are in areas where the route is within and adjacent to existing Dominion transmission ROWs. There are no residences within 100 feet, 5 residences within 250 feet, and 23 residences within 500 feet of the centerline along greenfield segments of this route.
- Butler Farm–Clover Route 3: In total, there are no residences within 100 feet, 8 residences within 250 feet, and 41 residences within 500 feet of the centerline of this route. Of these, zero residences within 100 feet, 6 residences within 250 feet, and 18 residences within 500 feet are in areas where the route is within and adjacent to existing Dominion transmission ROWs. There is 1 residence within 100 feet, 2 residences within 250 feet, and 23 residences within 500 feet of the centerline along greenfield segments of this route.

Thus, among the alternative routes, Butler Farm–Clover Route 1 has the fewest number of residences within 100 feet, 250 feet, and 500 feet of the centerline overall as well as along greenfield segments of each route.

5.1.7 Cemeteries and Places of Worship

5.1.7.1 Cemeteries

One cemetery each is located within 500 feet of Butler Farm–Clover Routes 1 and 2. Butler Farm–Clover Route 1 passes approximately 390 feet to the northeast of Friendship United Methodist Church Cemetery

at approximate MP 18.0 along Highway 49 in Mecklenburg County. The ROW for Butler Farm–Clover Route 1 would create a new, cleared corridor in forested lands to the north of the cemetery from which transmission structures and conductors could be visible above the tree line. Butler Farm–Clover Route 2 passes within 180 feet of Cemetery No. 3 at approximate MP 9.8 in Charlotte County. The cemetery is within a copse of trees in the middle of an agricultural field. While the trees within the cemetery would provide screening, transmission structures and conductors could be visible from within the cemetery where they cross the agricultural field. There are no cemeteries within 500 feet of Butler–Clover Route 3.

Visual impacts are addressed in Section 5.1.16, Visual Resources.

5.1.7.2 Places of Worship

Butler Farm–Clover Route 1 crosses the parcel containing Friendship United Methodist Church between approximate MPs 17.9 and 18.0 along Highway 49 in Mecklenburg County. The church grounds are partially open and partially forested, with the main church building about 295 feet south of the centerline. The ROW for Route 1 would cross forested lands along the northern edge of the parcel, creating a new, cleared corridor through this area. While transmission structures and conductors could be visible from the church above the tree line, an approximately 100-foot-wide forested buffer would remain between the church building and ROW, providing visual screening.[27] There are no places of worship within 500 feet of Butler Farm–Clover Routes 2 and 3.

Visual impacts are addressed in Section 5.1.16, Visual Resources.

5.1.8 Planned Developments

Each of the alternative routes cross solar developments in various stages of planning. Butler Farm–Clover Routes 1 and 2 cross approximately 3.4 miles of the Randolph Solar Site encompassing 49.4 acres, whereas Butler Farm–Clover Route 3 crosses 0.4 mile encompassing 5.5 acres. Based on discussions with the developer, none of the crossings would conflict with this development. Butler Farm–Clover Route 1 crosses 4.6 miles of the Quarter Horse Solar Site encompassing 66.5 acres, while Butler Farm–Clover Route 2 crosses 3.2 miles encompassing 45.8 acres and Butler Farm–Clover Route 3 avoids the site altogether. The Quarter Horse Solar Site development is early in the planning stages and does not yet have a site plan for the proposed facility. Butler Farm–Clover Route 1 crosses about 0.7 mile of the Moody Creek Solar Site encompassing 9.9 acres; there are no crossings of this development along Butler Farm–Clover Routes 2 or 3. Coordination with the developer for the Moody Creek Solar Site is ongoing.

For each crossing, solar panels and other large infrastructure would be prohibited within the ROW for the chosen route. Dominion has and will continue to coordinate with the developers to resolve potential conflicts between the solar facilities and new transmission infrastructure required for the Project.

Butler Farm–Clover Route 1 also crosses the Chase City Apartment Complex for 0.3 mile encompassing 4.4 acres. The crossing is located east of the building developments in an open space section of the development. Views of the transmission line would be visible from apartments located on the east side of the development.

5.1.9 Easements

Butler Farm–Clover Routes 1, 2, and 3 follow the same alignment across a USACE flowage easement, affecting approximately 7.9 acres of the easement. The crossing would be in a new greenfield area,

[27] Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 each utilize parallel and adjacent alignments where they cross the Friendship United Methodist Church property. If both routes are selected for the Project, the width of the forested buffer remaining between the church and the ROW would be reduced to about 65 feet.

located north of the existing Line #556 crossing over the Staunton River. The USACE has advised Dominion that it will allow a crossing of the flowage easement at this location. Dominion will work with the USACE regarding mitigation requirements, if any, for placing transmission structures within the easement.

5.1.10 Airports

ERM reviewed Butler Farm–Clover Routes 1, 2, and 3 to assess potential impacts on airspace associated with the Chase City Municipal Airport. Based on that review, none of the planned transmission structures along the alternative routes would penetrate any of the imaginary surfaces at the airport.

5.1.11 Wetlands

Butler Farm–Clover Route 1 crosses a combined total of 34.9 acres of wetland (2.2 acres within existing Dominion ROW and 32.7 acres within new or expanded ROW). Butler Farm–Clover Routes 2 and 3 each cross more wetland, including more acres of wetland in new or expanded ROW. Butler Farm–Clover Route 2 crosses 43.1 acres of wetland (1.5 acres within existing Dominion ROW and 41.6 acres within new or expanded ROW), while Butler Farm–Clover Route 3 crosses 39.1 acres of wetland (1.7 acres within existing Dominion ROW and 37.4 acres within new or expanded ROW). Overall, Butler Farm–Clover Route 1 would affect 5.7 fewer acres of wetland than Butler Farm–Clover Route 2 and 1.7 fewer acres of wetland than Butler Farm–Clover Route 3. Focusing on new or expanded ROW areas, Butler Farm–Clover Route 1 would affect 6.4 acres and 2.1 acres less previously undisturbed wetland than Butler Farm–Clover Routes 2 and 3, respectively.

The clearing of forested wetlands will be an important consideration by both federal (USACE) and state (VDEQ) regulators because of the sensitivity of this particular wetland type. In the new or expanded ROW areas for the transmission line, forested wetlands would be permanently converted to emergent or scrub/shrub types. Focusing on forested wetlands, Butler Farm–Clover Route 1 would have less impact than Butler Farm–Clover Routes 2 or 3. Butler Farm–Clover Route 1 crosses 21.1 acres of forested wetland (0.7 acre within existing Dominion ROW and 20.4 acres within new or expanded ROW); Butler Farm–Clover Route 2 crosses 30.5 acres (0.2 acre within existing Dominion ROW and 30.3 acres within new or expanded ROW); and Butler Farm–Clover Route 3 crosses 25.1 acres (0.1 acre of existing Dominion ROW and 25.0 acres of new or expanded ROW). Thus, Butler Farm–Clover Route 1 would affect 9.4 acres and 4.0 acres less forested wetland, respectively, than Butler Farm–Clover Routes 2 and 3.

5.1.12 Waterbodies

Waterbody impacts would be similar for each of the alternative routes. All three routes cross the Staunton River, a state scenic waterway and a blueway (paddle trail), in the same location. Butler Farm–Clover Route 1 crosses the fewest waterbodies overall with 51 crossings (12 perennial, 31 intermittent, 2 canal/ditch, and 6 lakes/ponds); Butler Farm–Clover Route 2 crosses 61 waterbodies (10 perennial, 42 intermittent, 2 canal/ditch, and 7 lakes/ponds); and Butler Farm–Clover Route 3 crosses 64 waterbodies (13 perennial, 41 intermittent, 2 canal/ditch, and 8 lakes/ponds).

5.1.13 Areas of Ecological Significance

Butler Farm–Clover Route 1 crosses the Bluestone Creek–Devils Creek SCU at one location with a crossing length about 16 feet. Butler Farm–Clover Route 2 similarly crosses the Bluestone Creek–Devils Creek SCU at one location with a crossing length of about 22 feet. Butler Farm–Clover Route 3 crosses the Sandy Creek SCU at seven separate individual crossings with a combined crossing length of about 0.1 mile (310 feet). Therefore, Butler Farm-Clover Route 1 would have less impact to SCUs than Routes 2 or 3.

5.1.14 Ecological Cores

Ecological cores are areas identified by the VDCR that contain at least 100 acres of unfragmented natural cover, providing habitat for numerous species. The cores are ranked based on the diversity of habitat they contain. For each of the routes, ERM identified and compared crossings of cores ranked C3 (high significance) and higher as these are considered the most sensitive by the VDCR. No cores with a ranking of C2 (very high) or C1 (outstanding) are crossed by any of the alternative routes.

Butler Farm–Clover Route 3 crosses the least amount of C3-ranked core at 6.6 acres, followed by Butler Farm–Clover Route 1 at 15.7 acres and Butler Farm–Clover Route 2 at 22.3 acres. Butler Farm–Clover Routes 1 and 2 each cross a C3 core (core ID 71446) where the routes are adjacent to the ROW for Dominion's existing Line #556 on the periphery of the core; impacts in this area would be confined to the edge of the core resulting in no new fragments to the resource. In contrast, Butler Farm–Clover Routes 2 and 3 each cross the interior of a C3 core (core ID 72587) along a greenfield alignment; impacts for this crossing would result in two new fragments within the core, isolating two areas of forest from the core.

ERM additionally reviewed the crossing locations of the routes relative to all cores (cores ranked C5–C3). Butler Farm–Clover Route 1 is collocated with existing transmission lines at 9 of the 13 core crossings along the route (accounting for 4.2 miles of the total 6.2 miles of core crossings for this alternative route). Route 1 crosses these nine cores at their edges, which would reduce the amount of tree clearing required and overall impacts to the core. By comparison, Butler Farm–Clover Route 2 is collocated with existing transmission lines at 9 of the 18 core crossings along the route (accounting for 3.1 miles of the total 8.0 miles of core crossings for this alternative route). Similarly, Butler Farm–Clover Route 3 is collocated with existing transmission lines at 8 of the 15 core crossings along the route (accounting for 1.5 miles of the total 4.4 miles of core crossings for this alternative route).

5.1.15 Federal and Commonwealth-Listed Species

Because habitat mapping and field surveys have not been completed for the routes, land use and land cover as well as wetlands were used as a proxy for assessing potential impacts on suitable habitat for federal- and state-listed species. Forested lands (including forested wetlands) provide habitat for a number of species, including Northern long-eared bat, Eastern big-eared bat, Little brown bat, and Tri-colored bat. Impacts on forested habitat would be permanent due to tree removal and the conversion of forest to an herbaceous cover type in the maintained ROW during Project operations. As discussed above, Butler Farm–Clover Route 1 would impact approximately 136.5 acres of forested lands compared to 165.3 acres by Butler Farm–Clover Route 2 and 162.0 acres by Butler Farm–Clover Route 3.

Each of the alternative routes would cross varying amounts of open space and agricultural lands, which may contain nearby artificial structures, such as fences and utility poles, suitable for loggerhead shrike perching. Because installation and operation of the Butler Farm–Clover Line would not substantively alter existing land uses or cover types in these areas, crossings of open space and agricultural lands would not meaningfully differentiate the alternative routes with regard to habitat for these species. The new transmission infrastructure, however, could create additional opportunities for perching along greenfield segments of the overhead routes.

In addition to the species listed above, the VDCR indicated that two rare species known to occur in the study area, particularly within the Bluestone Creek–Devils Creek SCU (Roanoke slabshell) and Sandy Creek SCU (speckled killifish). Butler Farm–Clover Route 1 would have less impacts to these species as the route crosses the Bluestone Creek-Devils Creek SCU at one location with a crossing length of 16 feet and avoids crossing the Sandy Creek SCU altogether. Butler Farm–Clover Route 2 similarly crosses this resource in one location with a crossing length of 22 feet and avoids the Sandy Creek SCU. In contrast, while Butler Farm–Clover Route 3 avoids Sandy Creek SCU, it crosses the Bluestone Creek–Devils Creek SCU at seven locations with a combined crossing length of 0.1 mile.

5.1.16 Visual Resources

Each of the alternative routes would introduce new, visible transmission infrastructure and/or vegetation clearing in predominantly undeveloped rural forested or agricultural areas and some rural residential areas. Installation of the new infrastructure, where not co-located with an existing ROW, would add visual contrast to the landscape, with strong vertical and horizontal linear elements, smooth surfaces, and brown (weathering steel) and black (conductor) colors. The weathering steel structures would blend with the predominantly green (colors vary by season) background and irregular color pattern that is present from the mix of agricultural and forested areas. Where the route uses all new ROW, contrast in color and scale (height and mass) of the transmission structures combined with new vegetation clearing (through forested areas) relative to existing conditions would make the Project noticeable, if not the dominant feature.

The highest concentration of viewers along and near the routes would be local residents/workers followed by commuters/travelers and then recreationalists/tourists. Out of the identified viewer groups, local residents would likely have the highest sensitivity to visual changes in the landscape, especially along route segments that would not be adjacent to existing transmission ROWs. Viewers in areas where the route is adjacent to existing transmission ROWs, especially where no additional vegetative clearing is necessary, would likely be less sensitive to visual changes in the landscape. Below is a comparison of the overall potential impact from each alternative routes.

Butler Farm–Clover Route 1 encompasses 20 road crossings. The analysis illustrates that 8 of the road crossings are through greenfield areas where there is no existing transmission infrastructure or ROW clearing, and 12 road crossings either collocated with existing ROWs or go over private drives. The route may potentially impact 13 VSRs, of which 3 would experience a change in existing conditions ranked above negligible/low. All three identified user groups could potentially be impacted by the installation of the new transmission infrastructure along the route. The analysis concluded that potential impact ratings would be low for road crossings based on the use of collocation, low for VSRs with the highest amount of potential change at the Friendship United Methodist Church, and medium for user groups as all three groups would potentially be impacted at different sensitivity levels. Based on this analysis, ERM assessed the potential visual impact rating for this route as low.

Butler Farm–Clover Route 2 also encompasses 20 road crossings, including 8 through greenfield areas. As compared to Butler Farm–Clover Route 1, two additional public road crossings occur along this alignment. The route may potentially impact eight VSRs, of which two would experience a change in existing conditions ranked above negligible/low. All three identified user groups could potentially be impacted by the installation of transmission infrastructure along the route. The analysis concluded that potential impact ratings would be medium for road crossings (based on the number of public crossings), low for VSRs, and medium for user groups because all three groups would potentially be impacted. Based on this analysis, ERM assessed the potential visual impact rating for this route as medium.

Butler Farm–Clover Route 3 crosses 21 road corridors, including 8 that traverse greenfield areas. The route crosses two more public roads than Butler Farm–Clover Route 1 and one more than Butler Farm–Clover Route 2. The route may potentially impact a total of seven VSRs, the lowest of the three routes. Two of the three identified user groups could potentially be impacted by the installation of transmission infrastructure along the route. The analysis concluded that potential impact ratings would be medium for road crossings (based on the overall number of crossings), low for the minimal number of potentially impacted VSRs, and medium for user groups because the route would have additional impacts on the local residents/workers group who are more sensitive to visual/scenic changes in the landscape than the other alternatives. Based on this analysis, ERM assessed the potential visual impact rating for this route as medium.

The analysis provided above illustrates that Butler Farm–Clover Route 1, if constructed as described in this report, would have the least amount of potential visual impact on identified VSRs, user groups, and

the landscape as a whole. This is based on the evaluation of the number and type of ROW crossings, potentially impacted VSRs, and how the identified user groups would interact with the addition of the Project to the landscape.

5.1.17 Cultural Resources

5.1.17.1 Archaeological Sites

Butler Farm–Clover Routes 2 and 3 each cross 2 previously recorded archaeological sites compared with 1 site for Route 1. For each route, impacts on most archaeological sites could likely be avoided through selective structure placement if intact archaeological deposits are confirmed at the sites. Site 44MC0902 (crossed by Butler Farm–Clover Routes 2 and 3) is an Early Woodland lithic quarry and artifact scatter. Construction would necessitate vegetation clearing and tree removal resulting in impacts to the site. Site 44HA0228 (crossed by Routes 1, 2, and 3) is a camp with an unknown temporal affiliation. The site is wholly located within existing Dominion transmission ROW. Regardless of the route selected for the Project, field investigation would be needed to evaluate the significance of the archaeological deposits at the previously recorded sites and to survey for as-yet unrecorded sites.

5.1.17.2 Historic Architectural Sites

The following seven previously recorded historic architectural sites are within the VDHR study tiers for Butler Farm–Clover Route 1 as discussed in Section 3.5, Cultural Resources: Black Walnut (041-0006), Chase City High School (186-0002), Chase City Warehouse and Commercial Historic District (186-5005), a farmstead (019-0073), Staunton River Bridge Battlefield (019-5190), a vernacular I-House (019-0075), and Pleasant Hill Farm (058-0274). Construction and operation of the new transmission infrastructure on Route 1 would have no impact on five resources (041-0006, 186-0002, 186-5005, 019-0073 and 019-0075) and a minimal impact on two resources (019-5190 and 058-0274). Sites 041-0006, 186-0002, 186-5005, 019-0073 and 019-0075 are all greater than 0.3 mile from the route and would have no view of transmission structures and conductors installed along this alignment due to distance and intervening vegetation. New transmission infrastructure would be partially visible from 019-5190 as well as from 058-0274 from at least one viewpoint.

There are four previously recorded historic architectural sites within the VDHR study tiers for Butler Farm–Clover Route 2: Black Walnut (041-0006), a farmstead (019-0073), Staunton River Bridge Battlefield (019-5190), and a vernacular I-House (019-0075). Butler Farm–Clover Route 2 uses the same alignment and design as Butler Farm–Clover Route 1 where it passes near these sites. Therefore, construction and operation of the new facilities along this route would have no impact on Sites 041-0006, 019-0073, and 019-0075, and a minimal impact on Site 019-5190.

There are two previously recorded historic architectural sites identified within the VDHR study tiers for Butler Farm–Clover Route 3: Black Walnut (041-0006) and Staunton River Bridge Battlefield (019-5190). Butler Farm–Clover Route 3 uses the same alignment and design as Butler Farm–Clover Route 1 where it passes near these sites. Therefore, construction and operation of the new facilities along this route would have no impact on Site 041-0006 and a minimal impact on Site 019-5190.

Thus, while more previously recorded historic architectural resources are found along and near Butler Farm–Clover Route 1, impacts would be similar for the three alternative routes: Route 1 would result in a minimal impact on two resources compared with a minimal impact on one site each for Routes 2 and 3.

5.2 Butler Farm–Finneywood Line

5.2.1 Route Length and Construction Footprint

At 7.0 miles, Butler Farm–Finneywood Route 1 is 0.8 mile shorter than Butler Farm–Finneywood Route 2. Butler Farm–Finneywood Route 1 additionally has a smaller construction footprint requiring less new or expanded ROW than Butler Farm–Finneywood Route 2. Butler Farm–Finneywood Route 1 encompasses 116.8 acres (9.7 acres of existing ROW and 107.1 acres of new or expanded ROW), whereas Butler Farm–Finneywood Route 2 encompasses 128.0 acres (5.7 acres of existing ROW and 121.5 acres of new or expanded ROW). Thus, Butler Farm–Finneywood Route 1 uses more existing ROW (by 4.0 acres) and less new or expanded ROW (by 14.4 acres) than Butler Farm–Finneywood Route 2.

5.2.2 Routing Opportunities

Butler Farm–Finneywood Route 1 uses more collocation routing opportunities than Butler Farm–Finneywood Route 2. Approximately 3.3 miles of Route 1 (47 percent) are collocated with existing Dominion transmission ROWs, whereas Butler Farm–Finneywood Route 2 is collocated with existing Dominion transmission ROWs for 0.9 mile (12 percent). As noted above, the SCC's routing guidelines prioritize the use of existing ROWs for expanded or new transmission infrastructure.

5.2.3 Land Use and Land Cover

Land use and land cover types crossed by the alternative routes are quantified in Table 4-2. Installation of the transmission lines would not substantively alter existing land uses or cover types in developed lands, open space, agricultural lands, and open water areas; therefore, potential impacts in these areas would not meaningfully differentiate the alternative routes. In forested areas, installation of the transmission lines would result in a permanent change in existing conditions (from forest to open space) within the maintained ROW. Of the two alternative routes, Butler Farm–Finneywood Route 1 crosses approximately 72.2 acres of forested lands compared to 94.4 acres for Butler Farm–Finneywood Route 2, a difference of 22.2 acres.

As noted above, agricultural and open space lands are valued by the counties in the study area, who prefer routes that avoid these land use/land cover types where possible. Butler Farm–Finneywood Routes 1 and 2 cross similar amounts of agricultural land at 18.8 acres and 16.0 acres, respectively; however, Route 2 crosses about 7.8 acres less open space than Route 1. As noted above, the transmission line would not substantively affect agricultural activities during Project operations.

5.2.4 Environmental Justice

ERM's EJ assessment (see Section 3.2 and Section 4.2 of this study) found that neither routes would result in a disproportionate impact on populations of color, low-income populations, age-based vulnerable communities, linguistically isolated communities, or populations with educational attainment less than high school.

5.2.5 Recreational Areas

Butler Farm–Finneywood Route 1 crosses the Staunton Loop of the Virginia Birding and Wildlife Trail System once at approximate MP 4.7 along a greenfield segment of the route. The crossing would require tree clearing creating a new cleared corridor on the north side of the loop, with open or agricultural land to the south. The new transmission infrastructure would not affect use of the loop but would modify the existing viewshed at the crossing.

Butler Farm–Finneywood Routes 1 and 2 cross the Highway 47 Scenic Byway at one location each. Butler Farm–Finneywood Route 1 crosses the byway at approximate MP 2.6 where the route is collocated with Dominion's existing ROW for Line #235. Land cover at the crossing consists of forest on the north side of the highway and open or agricultural land to the south. While the new transmission infrastructure proposed for the Project would modify the existing viewshed at the crossing, the impact would be consistent with existing conditions along and within the Line #235 ROW.

Butler Farm–Finneywood Route 2 crosses the Highway 47 Scenic Byway at approximate MP 4.0 along a greenfield segment of the route. Highway 47 in this area is part of the Tobacco Heritage Trail in addition to the scenic byway. Land cover is forested on either side of the crossing. The ROW along this route would require tree clearing on both sides of the highway, creating a new cleared corridor across the byway/trail. The new transmission infrastructure would not affect use of the byway but would modify existing viewshed conditions at the crossing.

In addition to the other crossings, Butler Farm–Finneywood Route 2 is adjacent to the Mecklenburg Country Club approximately between MPs 4.2 and 4.3. The route passes about 300 feet east of the nearest fairway, crossing forested lands and intersecting the Company's existing Line #40 ROW, which bisects the golf course from west to east. Use of Butler Farm–Finneywood Route 2 for the Project would create a new cleared corridor through the forested lands adjacent to (east of) the course. While new transmission structures and conductors could potentially be visible above the tree line by golfers, a band of forested land measuring between about 250 and 300 feet in width would remain between the new ROW and the nearest fairway. The installation of new transmission infrastructure along the route would not affect use of the course by golfers or require modifications of fairways, tee boxes, or greens.

Based on the above, Butler Farm–Finneywood Route 2 would have greater impact on recreational resources overall than Butler Farm–Finneywood Route 1. Butler Farm–Finneywood Route 2 avoids the Staunton Loop but crosses the Highway 47 Scenic Byway and Tobacco Heritage Trail along a greenfield segment with forested lands on either side of the crossing. Butler Farm–Finneywood Route 2 additionally passes adjacent to the Mecklenburg County Club, which Butler Farm–Finneywood Route 1 avoids. In contrast, Butler Farm–Finneywood Route 1 requires a greenfield crossing of the Staunton Loop but intersects the Highway 47 Scenic Byway adjacent to an existing Dominion transmission ROW.

Visual impacts are addressed in Section 5.1.16, Visual Resources.

5.2.6 Residences

As discussed in Section 3.1.4, Residences, Residential Areas, and Commercial Structures, ERM tabulated the number of residences within 100 feet, 250 feet, and 500 feet of the centerline of each route (see Table 3.1-4). To better focus the analysis on areas where new impacts would occur, ERM sorted the results to differentiate between route segments classified as greenfield and those that would be within and adjacent to existing Dominion transmission ROWs (see Table 4.1-2). The results of this analysis are as follows:

- Butler Farm–Finneywood Route 1: In total, there are no residences within 100 feet, 4 residences within 250 feet, and 15 residences within 500 feet of the centerline of this route. Of these, two residences within 250 feet and eight residences within 500 feet are in areas where the route is within and adjacent to existing Dominion transmission ROWs. There are two residences within 250 feet and seven residences within 500 feet of the centerline along greenfield segments of the route.
- Butler Farm–Finneywood Route 2: In total, there are no residences within 100 feet, no residences within 250 feet, and seven residences within 500 feet of the centerline. All seven residences are located along greenfield segments of the route.

Butler Farm–Finneywood Route 2 has the same number of residences overall within 100 feet and fewer residences within 250 feet and 500 feet of the centerline than Butler Farm–Finneywood Route 1. However, there are two more residences within 500 feet of the centerline along Route 2 in greenfield areas than there are along Route 1.

5.2.7 Cemeteries and Places of Worship

5.2.7.1 Cemeteries

At approximate MP 6.0, Butler Farm–Finneywood Route 1 passes about 350 feet to the northeast of Friendship United Methodist Church Cemetery where the route crosses Highway 49. The ROW for the route would create a new cleared corridor in the forested area to the north of the cemetery. While transmission structures and conductors could be visible from parts of the cemetery above the tree line, the forested land remaining between the burial ground and ROW (with a width of about 340 feet) would provide visual screening. There are no cemeteries within 500 feet of Butler Farm–Finneywood Route 2.

Visual impacts are addressed in Section 5.1.16, Visual Resources.

5.2.7.2 Places of Worship

Between approximate MPs 5.8 and 5.9, Butler Farm–Finneywood Route 1 crosses the parcel containing Friendship United Methodist Church along a greenfield alignment where the route intersects Highway 49. The main church building is situated approximately 255 feet to the south/southwest of the route. The ROW for Route 1 crosses forested lands along the northern edge of the parcel, which would create a new, cleared corridor through this area. While transmission structures and conductors could be visible from the church above the tree line, an approximately 65-foot-wide forested buffer would remain between the church building and ROW, which would provide visual screening. There are no places of worship within 500 feet of Butler Farm–Finneywood Route 2.

Visual impacts are addressed in Section 5.1.16, Visual Resources.

5.2.8 Planned Developments

Butler Farm–Finneywood Route 1 crosses the Chase City Apartment Complex for 0.3 mile encompassing 4.4 acres. The crossing is located east of the building developments in an open space section of the development. Views of the transmission line would be visible from apartments located on the east side of the development.

No planned developments are crossed by Butler Farm–Finneywood Route 2.

5.2.9 Easements

No easements are crossed by either Butler Farm–Finneywood Routes 1 or 2.

5.2.10 Wetlands

Butler Farm–Finneywood Route 1 crosses 13.3 acres of wetland (0.5 acre within existing Dominion ROW and 12.8 acres within new or expanded ROW). In comparison, Butler Farm–Finneywood Route 2 crosses 10.0 acres of wetland (all within new or expanded ROW). The routes additionally would affect similar amounts of forested wetland, with Butler Farm–Finneywood Route 1 crossing 8.1 acres compared to 7.4 acres for Butler Farm–Finneywood Route 2. Thus, Butler Farm–Finneywood Route 2 would impact less wetlands overall and less forested wetlands than Butler Farm–Finneywood Route 1.

5.2.11 Waterbodies

Waterbody impacts would be similar for the two alternative routes. Butler Farm–Finneywood Route 1 crosses 12 waterbodies (5 perennial, 6 intermittent and 1 lake/pond) compared to 11 waterbodies (3 perennial, 7 intermittent, and 1 lake/pond) for Butler Farm–Finneywood Route 2.

5.2.12 Ecological Cores

ERM identified and compared crossings of ecological cores ranked C3 (high significance) and higher as these are considered the most sensitive by the VDCR. No cores with a ranking of C2 (very high) or C1 (outstanding) are crossed by either of the routes. While Butler Farm–Finneywood Route 1 avoids crossing C3 ranked cores, Butler Farm–Finneywood Route 2 impacts 43.9 acres of C3-ranked cores. The crossings of the C3 cores occur along greenfield segments of the route, which would fragment the cores, reducing the size and quality of interior core habitat in these areas.

Additionally, the crossing locations of the routes were reviewed relative to all cores crossed (cores ranked C5-C3). Butler Farm–Finneywood Route 1 is collocated with existing transmission lines at three of the five core crossings along the route (accounting for 0.9 mile of the total 1.4 miles of core crossings for this alternative route). Route 1 crosses these three cores at their edges, which would reduce the amount of tree clearing required and overall impacts to the core. By comparison, Butler Farm–Finneywood Route 2 is collocated with existing transmission lines at one of the six core crossings along the route (accounting for 0.7 mile of the total 4.0 miles of core crossings for this alternative route).

5.2.13 Federal and Commonwealth-Listed Species

As noted above, because habitat mapping and field surveys have not been completed for the routes, land use and land cover as well as wetlands were used as a proxy for assessing potential impacts on suitable habitat for federal- and state-listed species. Forested lands (including forested wetlands) provide habitat for Northern long-eared bat, Eastern big-eared bat, Little brown bat, and Tri-colored bat. Impacts on forested habitat would be permanent due to tree removal and the conversion of forest to an herbaceous cover type in the maintained ROW during Project operations. As discussed above, Butler Farm–Finneywood Route 1 crosses approximately 72.2 acres of forested lands compared to 94.4 acres by Butler Farm–Finneywood Route 2.

Each alternative route crosses varying amounts of open space and agricultural lands, which may contain nearby artificial structures such as fences and utility poles suitable for loggerhead shrike perching. Because installation and operation of the Butler Farm-Finneywood Line would not substantively alter existing land uses or cover types in these areas, crossings of open space and agricultural lands would not meaningfully differentiate the alternative routes with regard to habitat for these species. The new transmission infrastructure, however, could create additional opportunities for perching along greenfield segments of the overhead routes.

5.2.14 Visual Resources

The proposed alternative routes would both introduce new, visible transmission infrastructure and/or vegetation clearing in predominantly undeveloped rural forested or agricultural areas and some rural residential areas. Installation of the new infrastructure, where not collocated with an existing ROW, would add visual contrast to the landscape, with strong vertical and horizontal linear elements, smooth surfaces, and brown (weathering steel) and black (conductor) colors. The weathering steel structures would blend with the predominantly green (colors vary by season) background, and irregular color pattern that is present from the mix of agricultural and forested areas. Where the route follows new ROW, contrast in color and scale (height and mass) of the transmission structures combined with new vegetation clearing

(through forested areas) relative to existing conditions would make the Project noticeable, if not the dominant feature.

The highest concentration of viewers along and near the routes would be local residents/workers followed by commuters/travelers and then recreationalists/tourists. Out of the identified viewer groups, local residents would likely have the highest sensitivity to visual changes in the landscape, especially along route segments that would not be adjacent to existing transmission ROWs. Viewers in areas where the route is adjacent to existing transmission ROWs, especially where no additional vegetative clearing is necessary, would likely be less sensitive to visual changes in the landscape. Below is a comparison of the overall potential impact from each alternative route.

Butler Farm–Finneywood Route 1 encompasses seven road crossings, of which four crossings are through greenfield areas where there is no existing transmission infrastructure or ROW clearing. The route may potentially impact seven identified VSRs, of which three would experience a change in existing conditions ranked above negligible/low. Local residents/workers and recreationalists/tourists are the user groups that potentially could be impacted by the installation of transmission infrastructure along the route. The analysis concluded that potential impact ratings would be low for road crossings based on the use of collocation and medium for VSRs with the highest amount of potential change at the Friendship United Methodist Church. If both Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 are selected for the Project (as opposed to one of these routes), additional clearing and infrastructure would be added to the view; however, the overall impact would remain at a rating of medium for the crossing. User groups would experience an overall low rating based on potential sensitivity to the changes in the landscape. Based on this analysis, ERM assessed the potential visual impact rating for this route as low.

Butler Farm–Finneywood Route 2 crosses five road corridors along greenfield segments of the route. The route may potentially impact six identified VSRs, including the Mecklenburg Country Club. Local residents/workers and recreationalists/tourists are the user groups that could potentially be impacted by the installation of transmission infrastructure along this route. The analysis concluded that potential impact ratings for road crossings would be low/medium based on the number of crossings in greenfield areas, a rating of medium for VSRs with the highest amount of potential change occurring near the country club and at scenic byway crossing. User groups would experience an overall rating of low based on potential sensitivity to the changes in the landscape from recreational activities. Based on this analysis, ERM assessed the potential visual impact rating for this route as low.

The analysis provided above illustrates that Butler Farm–Finneywood Route 1, if constructed as evaluated in this report, would have less potential visual impact on identified VSRs, user groups, and the landscape as a whole compared to Butler Farm–Finneywood Route 2. This is based on the evaluation of road crossings, identified user groups, and the minimal number of potentially impacted VSRs along the route.

5.2.15 Cultural Resources

5.2.15.1 Archaeological Sites

No previously recorded archaeological sites were identified within the ROW for Butler Farm–Finneywood Routes 1 or 2. This is likely due to the limited extent of previous archaeological surveys along the routes.

5.2.15.2 Historic Architectural Sites

Two previously recorded historic architectural sites are within the VDHR study tiers for Butler Farm–Finneywood Route 1: Chase City High School (186-0002) and Chase City Warehouse and Commercial Historic District (186-5005). Construction and operation of the proposed transmission infrastructure along Route 1 would have no impact on these resources due to distance and intervening vegetation,

topography, and buildings. There are no previously recorded historic architectural sites within the VDHR study tiers for Butler Farm–Finneywood Route 2. Therefore, there would be no difference in impacts on known historic architectural resources between the two routes.

5.3 Route Variations

This section of the routing study compares the advantages and disadvantages of Butler Farm–Clover Route Variation to the applicable corresponding segment of Butler Farm–Clover Route 1 (Section 7.3.1), and those of Butler Farm–Finneywood Route Variation to the applicable corresponding segment of Butler Farm–Finneywood Route 1 (Section 7.3.2). The potential environmental impacts associated with the route variations are quantified in Table 4-1 and Table 4-2 in Chapter 4, Resources Affected. The following discussion focuses on the characteristics that would differentiate the route variations from the comparable segments of Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1.

5.3.1 Butler Farm–Clover Route Variation

Butler Farm–Clover Route Variation is 1.7 miles long or approximately 0.1 mile shorter than the corresponding segment of Butler Farm–Clover Route 1 (Butler Farm–Clover corresponding segment). Construction of the route variation would disturb 24.5 acres compared with 26.3 acres for the corresponding segment. Thus, Butler Farm–Clover Route Variation would disturb 1.8 acres less land overall than the Butler Farm–Clover corresponding segment. The route variation crosses more parcels (13 versus 9) than the Butler Farm–Clover corresponding segment; all parcels crossed by both routes are privately owned.

No portion of Butler Farm–Clover Route Variation or the Butler Farm–Clover corresponding segment are collocated with existing linear corridors.

Butler Farm–Clover Route Variation would require the clearing of approximately 15.3 acres of forested lands, compared with approximately 14.4 acres for the Butler Farm–Clover corresponding segment. Thus, Butler Farm–Clover Route Variation would require the clearing of approximately 0.9 more acre of forested lands than the Butler Farm–Clover corresponding segment.

Butler Farm–Clover Route Variation passes near more residences than the Butler Farm–Clover corresponding segment. The number of residences within 100, 250, and 500 feet of the route variation centerline are 0, 6, and 27, respectively. The number of residences within these distances of the centerline for the Butler Farm–Clover corresponding segment are 0, 2, and 4, respectively. All residences along Butler Farm–Clover Route Variation and the Butler Farm–Clover comparable segment are in areas where new ROW would be required. Therefore, the route variation would likely result in visual impacts on more residents than the corresponding segment.

The same two CBGs crossed by Butler Farm–Clover Route Variation are also crossed by the Butler Farm–Clover corresponding segment. These CBGs (CT 9304, BG 2 and CT 9304, BG 3) each meet the thresholds for containing populations of color and low-income populations. The route variation is located significantly closer to a residence and the 84-unit Green Acres Mobile Home Park at the intersection of Blankenship Road and Bailey Road than the comparable segment. At their closest points, the single-family residence is about 150 feet to the west and the mobile home park about 135 feet to the east of the route variation.

Butler Farm–Clover Route Variation does not cross any planned developments. The Butler Farm–Clover corresponding segment passes through the proposed Chase City Apartment Complex development, encompassing 4.3 acres. The crossing of the property occurs within wetland areas and areas directly adjacent to the wetlands.

At the south end of Butler Farm–Clover Route Variation where the route reconnects with Butler Farm–Clover Route 1, the route is 330 feet northwest of Friendship United Methodist Church. As this is the closest point to the church, the route variation and corresponding segment would have the same minimal impact to the property, in that some transmission structures could be visible from the church grounds above the tree line that would remain between the church and the new ROW for the routes.

Butler Farm–Clover Route Variation would have less wetland impact overall (3.5 acres) than the Butler Farm–Clover corresponding segment (4.8 acres); however, the route variation (at 2.5 acres) would affect more forested wetland than the corresponding segment (at 2.1 acres).

Butler Farm–Clover Route Variation and the Butler Farm–Clover corresponding segment each cross a total of four waterbodies. All four of the crossings along the route variation are perennial streams, compared to one perennial and three intermittent crossings along the corresponding segment.

Butler Farm–Clover Route Variation and the Butler Farm–Clover corresponding segment each cross two roads. The route may potentially impact the VSR on Highway 92. The analysis concluded that potential impact ratings would be low for road crossings and the affected VSR. Commuters/travelers would be the primary group affected by this route. Based on this analysis, ERM assessed the potential visual impact rating for the route variation as low, similar to the Butler Farm–Clover corresponding segment.

No previously recorded archaeological sites are located within the ROW of Butler Farm–Clover Route Variation or the Butler Farm–Clover corresponding segment. Three previously recorded historic architectural sites are within the VDHR study tiers for Butler Farm–Clover Route Variation and two for the Butler Farm-Clover corresponding segment, as discussed in Section 3.5, Cultural Resources. The Chase City High School (186-0002) and the Chase City Warehouse and Commercial Historic District (186-5005) are both located 0.8 mile from the route variation and 0.9 and 0.8 mile, respectively, from the Butler Farm–Clover corresponding segment; Shadow Lawn (186-5004) is located about 1.0 mile from the route variation. There would be no view of transmission structures and conductors from either site along the routes.

5.3.2 Butler Farm–Finneywood Route Variation

Butler Farm–Finneywood Route Variation is 1.7 miles long or approximately 0.1 mile shorter than the corresponding segment of Butler Farm–Finneywood Route 1 (Butler Farm–Finneywood corresponding segment). Construction of the route variation would disturb 24.6 acres compared with 26.5 acres for the corresponding segment. Thus, Butler Farm–Finneywood Route Variation would disturb 1.9 acres less land overall than the Butler Farm–Finneywood corresponding segment. The route variation would cross more parcels (14 versus 9) than the Butler Farm–Finneywood corresponding segment; all parcels along the two routes are privately owned.

No portion of Butler Farm–Finneywood Route Variation or the Butler Farm–Finneywood corresponding segment are collocated with existing linear corridors.

Butler Farm–Finneywood Route Variation would require the clearing of approximately 14.8 acres of forested lands, whereas the Butler Farm–Finneywood corresponding segment would require the clearing of approximately 13.9 acres of forested lands. Thus, the route variation would require the clearing of approximately 0.9 more acre of forested lands than the Butler Farm–Finneywood corresponding segment.

Butler Farm–Finneywood Route Variation passes near more residences than the Butler Farm–Finneywood corresponding segment. The number of residences within 100, 250, and 500 feet of the route variation centerline are 0, 3, and 24, respectively. The number of residences within these distances of the centerline for the Butler Farm–Finneywood corresponding segment are 0, 1, and 4, respectively. All residences along the route variation and the comparable segment are in areas where new ROW would be

required. Therefore, the route variation would likely result in visual impacts on more residents than the corresponding segment.

The two CBGs crossed by Butler Farm–Finneywood Route Variation are also crossed by the corresponding segment of the route. These CBGs (CT 9304, BG 2 and CT 9304, BG 3) each meet the thresholds for containing populations of color and low-income populations. Butler Farm–Finneywood Route Variation is located significantly closer to a residence and the 84-unit Green Acres Mobile Home Park at the intersection of Blankenship Road and Bailey Road than the corresponding segment. At their closest, a single-family residence is about 110 feet west and the mobile home park about 175 feet east of the route variation.

Butler Farm–Finneywood Route Variation does not cross any planned developments. The Butler Farm–Finneywood corresponding segment passes through the proposed Chase City Apartment Complex development, encompassing 4.3 acres. The crossing of the property occurs within wetland areas and areas directly adjacent to the wetlands.

At the south end of Butler Farm–Finneywood Route Variation, where the route reconnects with Butler Farm–Finneywood Route 1, the route is 330 feet northwest of the Friendship United Methodist Church. As this is the closest point to the church, the route variation and corresponding segment would have the same minimal impact to the property, in that some transmission structures could be visible from the church grounds above the tree line that would remain between the church and the new ROW for the routes.

Butler Farm–Finneywood Route Variation would result in less wetland impact overall (2.5 acres) than the Butler Farm–Finneywood corresponding segment (5.4 acres); additionally, the route variation (at 1.5 acres) would affect less forested wetlands than the corresponding segment (at 2.0 acres).

Butler Farm–Finneywood Route Variation crosses fewer waterbodies (i.e., three) than the Butler Farm–Finneywood corresponding segment (i.e., four). All three crossings along the Butler Farm–Finneywood corresponding segment are of perennial streams, however, compared to one perennial and three intermittent crossings along the Butler Farm–Finneywood corresponding segment.

Butler Farm-Finneywood Route Variation and the Butler Farm–Finneywood corresponding segment each cross two roads. The route may potentially impact the VSR on Highway 92. The analysis concluded that potential impact ratings would be low for road crossings and the affected VSR. Commuters/travelers would be the primary group affected by this route. Based on this analysis, ERM assessed the potential visual impact rating for this route as low, similar to the Butler Farm–Clover corresponding segment.

No previously recorded archaeological sites are located within the ROW of Butler Farm–Finneywood Route Variation or the Butler Farm–Finneywood corresponding segment. Two previously recorded historic architectural sites are within the VDHR study tiers for both Butler Farm–Finneywood Route Variation and the Butler Farm–Finneywood corresponding segment, as discussed in Section 3.5, Cultural Resources. The Chase City High School (186-0002) and the Chase City Warehouse and Commercial Historic District (186-5005) are both located 0.8 mile from the route variation and 0.9 and 0.8 mile, respectively, from the Butler Farm–Finneywood corresponding segment. There would be no view of transmission structures and conductors from either site along the routes.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Butler Farm–Clover Line

ERM identified, assessed, and compared three alternative routes for the Butler Farm–Clover Line component of the Project. Based on a comparison of the advantages and disadvantages of these routes as discussed in Chapter 5, Comparison of Alternatives, Dominion concluded that Butler Farm–Clover Route 1 would reasonably minimize adverse impacts on scenic assets, historic resources, and the environment of the area concerned; therefore, Dominion recommends Butler Farm–Clover Route 1 as the preferred route. This conclusion is based on the following:

- Of the three Butler Farm–Clover alternative routes, Route 1 would have the shortest alignment at 19.1 miles compared to Route 2 (21.1 miles) and Route 3 (20.2 miles). Route 1 additionally would have the smallest overall footprint of the routes at 278.4 acres, compared to Route 2 (306.3 acres) and Route 3 (294.2 acres).
- Butler Farm–Clover Route 1 would use more collocation routing opportunities (11.3 miles accounting for 59 percent of the route) than either Route 2 (10.5 miles accounting for 50 percent of the route) or Route 3 (10.6 miles accounting for 52 percent of the route).
- Butler Farm–Clover Route 1 would use more existing ROW (by 4.8 acres and 4.0 acres, respectively) and less new or expanded ROW (by 32.7 acres and 19.7 acres, respectively) than Routes 2 or 3.
- Butler Farm–Clover Route 1 would cross fewer private parcels (74) than Route 2 (90) and Route 3 (101).
- Butler Farm–Clover Route 1 would affect less forested land (136.5 acres) than Route 2 (165.3 acres) and Route 3 (162.0 acres).
- None of the alternative routes would result in disproportionate impacts on identified EJ communities.
- Butler Farm–Clover Routes 1, 2, and 3 would result in identical impacts on the Staunton River Scenic River and Staunton Blueway, while Routes 1 and 2 would have similar impacts on the Staunton Loop. Route 1 is the only alternative route that crosses the Highway 47 Scenic Byway.
- Butler Farm–Clover Route 1 would pass near fewer residences within 100 feet (zero), 250 feet (5) and 500 feet (17) of its centerline than Route 2 (0, 9, and 34 residences, respectively) and Route 3 (0, 8, and 42 residences, respectively). Some of the homes are in areas where the route is planned to be within or adjacent to existing transmission lines. When focusing on greenfield segments of the routes, Route 1 would have 15 residences within 500 feet of the centerline compared to 23 residences each for Routes 2 and 3. Thus, Route 1 would have less impact on dwellings in areas currently unaffected by transmission infrastructure than Routes 2 or 3.
- Butler Farm–Clover Routes 1 and 2 pass within 500 feet of one cemetery each (Friendship United Methodist Church Cemetery and Cemetery No. 3, respectively). There are no cemeteries within 500 feet of Route 3. Route 1 is the only alternative route to pass within 500 feet of a church (Friendship United Methodist Church).
- Each of the routes cross approximately 7.9 acres within a USACE flowage easement along the Staunton River.
- Route 1 would have fewer total wetland impacts (34.9 acres) then Route 2 (43.1 acres) and Route 3 (39.1 acres). Additionally, impacts to forested wetlands would be less for Route 1 (21.1 acres) than

for Route 2 (30.5 acres) and Route 3 (25.1 acres). Forested wetland impacts will be a key factor considered by federal (USACE) and state (VDEQ) regulators reviewing the Project.

- Butler Farm–Clover Route 1 would cross fewer waterbodies overall (51) than Route 2 (61) or Route 3 (64).
- Butler Farm–Clover Route 1 would have less impact on SCUs than Routes 2 or 3. Route 1 crosses 16 feet of the Bluestone Creek-Devils Creek SCU, while Route 2 crosses 22 feet of this SCU and Route 3 crosses 310 feet of the Sandy Creek SCU.
- Butler Farm–Clover Route 1 would cross 13 ecological cores with a VDCR ranking of C3 to C5. The majority of the cores (nine) would be crossed in areas where the route is collocated with existing transmission ROWs (accounting for 4.2 miles of the total 6.2 miles of core crossings for this alternative route). By contrast, Route 2 crosses 18 cores with 9 of the crossings collocated with existing ROWs (accounting for 3.1 miles of the total 8.0 miles of core crossings for this alternative route). Route 3 crosses 15 cores with 8 of the crossings collocated with existing ROWs (accounting for 1.5 miles of the total 4.4 miles of core crossings for this alternative route).
- Impacts on protected species would be similar for the three routes; however, Butler Farm–Clover Route 1 crosses less forested land (which provides habitat for several listed bat species) than Routes 2 or 3.
- Butler Farm–Clover Route 1 would result in the least predicted visual impact on VSRs and the study area as a whole compared to the other alternative routes.
- More previously recorded historic architectural resources are found along and near Butler Farm–Clover Route 1 than Routes 2 and 3; however, impacts on historic resources overall would be similar for the three alternative routes. Route 1 would result in a minimal impact on two resources (019-5190 and 058-0274) compared with a minimal impact on one resource each (019-5190) for Routes 2 and 3.

Based on the above, while Butler Farm–Clover Route 1 would have greater impacts on some resources (i.e., recreational sites, cemeteries, and churches), it would require less ROW, make greater use of routing opportunities, and minimize impacts on private parcels, forested lands, residences, wetlands (including forested wetlands), waterbodies, stream conservation units, ecological cores, and visual resources than the other alternative routes. Impacts on easements, protected species, and cultural resources would be similar or identical for the three alternative routes.

6.2 Butler Farm–Finneywood Line

For the Butler Farm–Finneywood Line, ERM identified, evaluated, and compared two alternative routes. Based on a comparison of the advantages and disadvantages of each route as discussed in Chapter 5, Comparison of Alternatives, Dominion concluded that Butler Farm–Finneywood Route 1 would reasonably minimize adverse impacts on scenic assets, historic resources, and the environment of the area concerned, and therefore recommends Butler Farm–Finneywood Route 1 as the preferred route. This conclusion is based on the following:

- Of the two Butler Farm–Finneywood alternative routes, Route 1 would have a shorter alignment (7.0 miles) than Route 2 (7.8 miles). Route 1 additionally would have a smaller construction footprint (116.8 acres), requiring less new or expanded ROW (106.2 acres) than Route 2 (at 128.0 acres and 121.5 acres, respectively).
- Butler Farm–Finneywood Route 1 would utilize more collocation routing opportunities (3.3 miles accounting for 47 percent of the alignment) than Route 2 (0.9 miles accounting for 12 percent of the

route). Collocation routing opportunities along both routes are limited to existing Dominion transmission ROWs.

- Butler Farm–Finneywood Route 1 would cross more private parcels (41) that Route 2 (23).
- Butler Farm–Finneywood Route 1 would affect less forested land (72.2 acres) than Route 2 (94.4 acres).
- Neither route would result in a disproportionate impact on identified EJ communities within the study area.
- Butler Farm–Finneywood Route 1 requires a greenfield crossing of the Staunton Loop but intersects the Highway 47 Scenic Byway adjacent to an existing Dominion transmission ROW. Route 2 avoids the Staunton Loop but crosses the Highway 47 Scenic Byway and Tobacco Heritage Trail along a greenfield segment with forested lands on either side of the crossing. Route 2 additionally passes adjacent to the Mecklenburg County Club, which Route 1 avoids.
- Butler Farm–Finneywood Route 1 would pass near more residences overall within 250 feet (4) and 500 feet (15) of its centerline than Route 2 (zero and 7 residences, respectively). When focusing on greenfield segments of the routes, Route 1 would have two residences within 250 feet and seven residences within 500 feet of the centerline compared to zero and seven residences, respectively, for Route 2.
- Butler Farm–Finneywood Route 1 would pass within 500 feet of one cemetery (Friendship United Church Cemetery) and one church (Friendship United Methodist Church). There are no cemeteries or churches within 500 feet of Route 2.
- No easements are crossed by either route.
- Butler Farm–Finneywood Route 1 would have more overall wetland impacts at 13.3 acres compared to Route 2 at 10.0 acres. Additionally, Route 1 would impact 8.1 acres of forested impacts and compared to 7.4 acres for Route 2.
- Butler Farm–Finneywood Route 1 would cross one more waterbody (12 versus 11) than Route 2.
- Butler Farm–Finneywood Route 1 would cross five ecological cores with a VDCR ranking of C3 to C5. Three of the cores would be crossed where the route is collocated with existing transmission ROWs (accounting for 0.9 mile of the total 1.4 miles of core crossings for this alternative route). By comparison, Route 2 would cross six cores with 1 of the crossings collocated with existing transmission ROWs (accounting for 0.7 miles of the total 4.0 miles of core crossings for this alternative route).
- Impacts on protected species would be similar for each route; however, Route 1 crosses less forested land (which provides habitat for several listed bat species) than Route 2.
- Butler Farm–Finneywood Route 1 would result in the least predicted visual impact on VSRs and the study area as a whole compared with Route 2.
- While there are two historic architectural sites proximate to Route 1 (compared with none for Route 2), there would be no visual impact on these sites due to their distance from the route and intervening buildings and vegetation. Therefore, impacts on historic architectural resources would be identical for the two routes.

Based on the above, while Route 1 would have greater impacts on some resources (i.e., private parcels, residences, cemeteries, churches, and wetlands), it would require less ROW, make greater use of routing opportunities, and minimize impacts on recreational resources, ecological cores, and visual resources

than the other alternative route. Impacts on protected species and cultural resources would be similar or identical for the two routes.

Finally, if both Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 are selected for the Project, the routes would be collocated with one another for approximately 4.0 miles. Within this area, the centerlines of the two routes would be offset by 40 feet within a shared ROW measuring 160 feet in width. This would result in a net reduction of 80 feet of ROW for the collocated segments compared to any other combination of Butler Farm–Clover and Butler Farm–Finneywood alternative routes.

6.3 Route Variations

6.3.1 Butler Farm–Clover Route Variation

Based on the discussion in Section 5.3.1, Butler Farm–Clover Route Variation, Dominion concluded that the disadvantages of the Butler Farm–Clover Route Variation outweigh the advantages when compared with the corresponding segment of Butler Farm–Clover Route 1. Consequently, Dominion does not prefer this route variation but is proposing it for notice to the public and consideration by the SCC. The Company's conclusion is justified by the following:

- The route variation is 0.1 mile shorter and would affect 1.8 acres less land than the Butler Farm–Clover corresponding segment.
- The route variation would affect more privately owned parcels (13) than the Butler Farm–Clover corresponding segment (9).
- The route variation would require the clearing of more forested lands (15.3 acres) than the Butler Farm–Clover corresponding segment (14.4 acres).
- Substantially more residences are located within proximity to the route variation than the Butler Farm–Clover corresponding segment. There are 0, 6, and 27 residences within 100, 250, and 500 feet of the route variation centerline, respectively. In comparison, the number of residences within these distances of the centerline for the Butler Farm–Clover corresponding segment are 0, 2, and 4, respectively.
- Both the route variation and the Butler Farm–Clover corresponding segment cross two CBGs that each meet the thresholds for containing populations of color and low-income populations. However, the route variation is significantly closer to a residence and the 84-unit Green Acres Mobile Home Park than the corresponding segment.
- The route variation would result in less wetland impact overall (3.5 acres) than the Butler Farm–Clover corresponding segment (4.8 acres); however, the route variation (at 2.5 acres) would result in greater impact on forested wetland than the corresponding segment (at 2.1 acres).
- The route variation and the Butler Farm–Clover corresponding segment each cross four waterbodies. All three crossings along the route variation are perennial streams compared to one perennial and three intermittent streams crossed by the Butler Farm–Clover corresponding segment.
- There are no previously recorded archaeological sites along either route. The route variation is proximate to one more previously recorded historical architectural site, but neither route would be visible from the sites.

While the route variation has some advantages over the corresponding segment (e.g., length and affected area, wetlands), it would have greater impact on forested lands, forested wetlands, perennial waterbodies, and especially residences, and would be proximate to more homes in CBGs identified as containing populations of color and low-income populations than the corresponding segment.

6.3.2 Butler Farm–Finneywood Route Variation

Based on the discussion in Section 5.3.2, Butler Farm–Finneywood Route Variation, Dominion concluded that the disadvantages of the Butler Farm–Finneywood Route Variation outweigh its advantages when compared with the corresponding segment of Butler Farm–Finneywood Route 1. Consequently, Dominion does not prefer this route variation, but is proposing it for notice to the public and consideration by the Commission. The Company's conclusion is justified by the following:

- The route variation is 0.1 mile shorter and would affect 1.9 acres less land than the Butler Farm–Finneywood corresponding segment.
- The route variation would affect more privately owned parcels (14) than the Butler Farm–Finneywood corresponding segment (9).
- The route variation would require the clearing of more forested lands (14.8 acres) than the Butler Farm–Finneywood corresponding segment (13.9 acres).
- More residences would be located within proximity to the route variation than the Butler Farm–Finneywood corresponding segment. There are 0, 3, and 24 residences, respectively, within 100, 250, and 500 feet of the route variation centerline, respectively. In comparison, the number of residences within these distances of the centerline for the Butler Farm–Finneywood corresponding segment are 0, 1, and 4, respectively.
- Both the route variation and the Butler Farm–Finneywood corresponding segment cross two CBGs that each meet the thresholds for containing populations of color and low-income populations. However, the route variation is significantly closer to a residence and the 84-unit Green Acres Mobile Home Park than the corresponding segment.
- The route variation would result in less wetland impact overall (2.5 acres compared to 5.4 acres for the corresponding segment) as well as less impact on forested wetland (at 1.5 acres compared to 2.0 acres for the corresponding segment).
- The route variation crosses fewer waterbodies (three) overall than the Butler Farm–Finneywood corresponding segment (four), but more perennial waterbodies (three) than the corresponding segment (one).
- There are no previously recorded archaeological sites along either route. Two historic architectural sites are proximate to both routes; however, neither route would be visible from the sites.

While the route variation has some advantages over the corresponding segment (e.g., length and affected area, wetlands affected), it would have greater impact on forested lands, perennial waterbodies, and especially residences, and would be proximate to more homes in CBGs identified as containing populations of color and low-income populations.

7. REFERENCES

2.0 Methodology

NCED (National Conservation Easement database). 2022. Accessed: June 2022. Retrieved from: https://www.conservationeasement.us/

Mecklenburg County. 2022. GIS Apps and Maps. Accessed: 2022. Retrieved from: https://www.mecknc.gov/LUESA/GIS/Pages/GIS-Data-Center.aspx

USEPA (United States Environmental Protection Agency). 2020. *EJSCREEN: Environmental Justice Screening and Mapping Tool*. Accessed: June 2022. Retrieved from: https://www.epa.gov/ejscreen

USFWS (U.S. Fish and Wildlife Service). 2022. National Wetland Inventory (NWI): Wetlands Mapper. Accessed: June 2022. Retrieved from: https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper

VDCR (Virginia Department of Conservation and Recreation). 2022. Virginia Conservation Lands Database. Accessed: June 2022. Retrieved from: https://www.dcr.virginia.gov/natural-heritage/clinfo

VDHR (Virginia Department of Historic Resources). 2022. *Virginia Cultural Resource Information System database and GIS server.* Accessed: June 2022. Retrieved from: https://www.dhr.virginia.gov/v-cris/

VDOT (Virginia Department of Transportation). 2022. The Future of Transportation in Virginia. Accessed: June 2022. Retrieved from: https://www.virginiadot.org/projects/

3.1 Land Use

CBI (Conservation Biology Institute). 2016. Protected Areas Database of the United States, PAD-US. Accessed: May 2022. Retrieved from: https://consbio.org/products/projects/pad-us-cbi-edition

Charlotte County. 2017. Comprehensive Plan. Charlotte County Planning Commission. Accessed: April 2022. Retrieved from: https://www.charlotteva.com/comp_plan.htm

Chase City. 2012. Town of Chase City Comprehensive Plan. Chase City Planning Commission. Accessed: April 2022. Retrieved from: https://www.chasecity.org/the-town/downloads#/

Commonwealth of Virginia. 1997. *Code of Virginia Agricultural and Forestal District Act*. Accessed: August 2021. Retrieved from: https://law.lis.virginia.gov/vacodepopularnames/agricultural-and-forestal-districts-act/

findagrave.com. 2022. Digital Gravesite Collection. Accessed: May 2022. Retrieved from: https://www.findagrave.com/

ESRI. 2022. Digital Aerial Photography (2020) Accessed through ArcGIS Online. Accessed: May 2022. Retrieved from: https://www.arcgis.com

Federal Aviation Administration (FAA). 2022. *Circle Search for Airports*. Accessed: June 2022. Retrieved from: https://oeaaa.faa.gov/oeaaa/external/searchAction.jsp?action=showCircleSearchAirportsForm

GolfLink. 2022. Webpage for Mecklenburg County Club. Accessed: May 2022. Retrieved from: https://www.golflink.com/golf-courses/va/chase-city/mecklenburg-country-club-inc

Halifax County. 2017. 2017 – 2035 Comprehensive Plan. Halifax County Planning & Zoning Department. Accessed: April 2022. Retrieved from: https://www.halifaxcountyva.gov/index.asp?Type=B_DIR&SEC=%7B90522713-D4FA-488E-BB5A-D8995B5CC452%7D

Mecklenburg County. 2012. 2035 Long Range Plan. Mecklenburg County Planning Commission. Accessed: April 2022. Retrieved from: https://va-mecklenburgcounty.civicplus.com/DocumentCenter/View/284/Mecklenburg-County-Comprehensive-Plan?bidId=.

National Rivers Project. 2022. Staunton River Blueway Website. Accessed: May 2022. Retrieved from: http://www.nationalriversproject.com/va/roanoke-river-staunton-river-blueway

Real Estate Portal USA, LLC. 2021a. Charlotte County, Virginia Digital Parcel Data. Accessed: November 2021. Retrieved from: https://reportallusa.com/purchase-shapefiles/Virginia/51037

Real Estate Portal USA, LLC. 2021b. Halifax County, Virginia Digital Parcel Data. Accessed: November 2021. Retrieved from: https://reportallusa.com/purchase-shapefiles/Virginia/51083

Real Estate Portal USA, LLC. 2021c. Lunenburg County, Virginia Digital Parcel Data. Accessed: November 2021. Retrieved from: https://reportallusa.com/purchase-shapefiles/Virginia/51111

Real Estate Portal USA, LLC. 2021d. Mecklenburg County, Virginia Digital Parcel Data. Accessed: November 2021. Retrieved from: https://reportallusa.com/purchase-shapefiles/Virginia/51117

Stewart, M., M. Bowers, and I. Wuebber. 1989. Cultural Resource Investigations of the Clover Site, Old Dominion Electric Cooperative, Halifax County, Virginia. Prepared by The Cultural Resource Group at Louis Berger and Associates, Inc. On file, VDHR.

VDCR (Virginia Department of Conservation and Recreation). 2022a. Water Access, Trails, and Blueways, Website. Accessed: May 2022. Retrieved from: https://www.dcr.virginia.gov/recreational-planning/water-trails

VDCR (Virginia Department of Conservation and Recreation). 2022b. Scenic Rivers Program Website. Accessed: May 2022. Retrieved from: https://www.dcr.virginia.gov/recreational-planning/srmain

VDCR (Virginia Department of Conservation and Recreation). 2022c. Virginia Conservation Lands Database. Accessed: May 2022. Retrieved from: https://www.dcr.virginia.gov/natural-heritage/clinfo

VDHR (Virginia Department of Historic Resources). 2022. Virginia Cultural Resources Information System (VCRIS). Accessed: May 2022. Retrieved from: https://www.dhr.virginia.gov/v-cris/

VDOT (Virginia Department of Transportation). 2022a. Virginia Department of Transportation Website for Virginia's Scenic Byways. Accessed: May 2022. Retrieved from: https://www.virginiadot.org/programs/prog-byways.asp

VDOT (Virginia Department of Transportation). 2022b. The Future of Transportation in Virginia. Accessed: June 2022. Retrieved from: https://www.virginiadot.org/projects/

VDWR (Virginia Department of Wildlife Resources). 2022. Virginia Bird & Wildlife Trail – Staunton Loop Website. Accessed: May 2022. Retrieved from: https://dwr.virginia.gov/vbwt/piedmont-trail/PSR/

Virginia Geographic Information Network. 2016. *Virginia Geographic Information Network, Land Cover Dataset.* Accessed: August 2021. Retrieved from: https://www.arcgis.com/home/item.html?id=d3d51bb5431a4d26a313f586c7c2c848

USACE (U.S. Army Corps of Engineers). 2022. Wilmington District Website for the John H. Kerr Dam and Reservoir. Accessed: May 2022. Retrieved from: https://www.saw.usace.army.mil/Locations/District-Lakes-and-Dams/John-H-Kerr/

USGS (United States Geological Survey). 2022. USGS Historical Topographic Map Explorer. Accessed: May 2022. Retrieved from: https://livingatlas.arcgis.com/topoexplorer/index.html

Virginia Outdoor Foundation (VOF). 2022. *Open-Space Easements*. Accessed: April 2022. Retrieved from: https://www.vof.org/protect/easements/

3.2 Environmental Justice

U.S. Census Bureau. 2019. *2015–2019 American Community Survey*. Accessed: June 2022. Retrieved from: https://data.census.gov/cedsci/advanced

USEPA (United States Environmental Protection Agency). 2022. *EJSCREEN: Environmental Justice Screening and Mapping Tool*. Accessed: June 2022. Retrieved from: https://www.epa.gov/ejscreen

3.3 Natural Resources

CCB (Center for Conservation Biology). 2022. *Eagle Nest Locator*. Accessed: September 2021. Retrieved from: https://ccbbirds.org/what-we-do/research/species-of-concern/virginia-eagles/nest-locator/

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Fish and Wildlife Service. FWS/OBS-79/31. Washington, DC. Accessed: June 2022. Retrieved from: https://www.nrc.gov/docs/ML1801/ML18019A904.pdf

ESRI. 2022. Digital Aerial Photography (2020) Accessed through ArcGIS Online. Accessed: May 2022. Retrieved from: https://www.arcgis.com

USDA-NRCS (U.S. Department of Agriculture-Natural Resources Conservation Service). 2022. Soil Survey Geographic (SSURGO) Database. Accessed: May 2022. Retrieved from: https://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/

USFWS (U.S. Fish and Wildlife Service). 2022. Information for Planning and Consultation (IPaC). Online System. Accessed: June 2022. Retrieved from: https://ecos.fws.gov/ipac/

USGS (United States Geological Survey). 2022. USGS Historical Topographic Map Explorer. Accessed: May 2022. Retrieved from: https://livingatlas.arcgis.com/topoexplorer/index.html

USGS (United States Geological Survey). 2022b. National Hydrography Dataset (NHD). Accessed: May 2022. Retrieved from: https://www.usgs.gov/national-hydrography/national-hydrography-dataset

VDCR (Virginia Department of Conservation and Recreation). 2022a. *Virginia Natural Heritage Database Search*. Accessed: May 2022. Retrieved from: https://vanhde.org/species-search

VDCR (Virginia Department of Conservation and Recreation). 2022b. Water Access, Trails, and Blueways, Website. Accessed: June 2022. Retrieved from: https://www.dcr.virginia.gov/recreational-planning/water-trails

VDCR (Virginia Department of Conservation and Recreation). 2022c. Forest Conservation Values, Website. Accessed: May 2022. Retrieved from: https://www.dcr.virginia.gov/natural-heritage/vaconvisforest

VDCR (Virginia Department of Conservation and Recreation). 2022d. 0615787, Clover-Butler-Finneywood. Letter from S. René Hypes, Natural Heritage Project Review Coordinator, to Chris Senfield, Environmental Resources Management. May 2, 2022.

VDGIF and CCB (Virginia Department of Game and Inland Fisheries and the Center for Conservation Biology at the College of William and Mary and Virginia Commonwealth University). 2012. *Management of bald eagle nests, concentration areas, and communal roosts in Virginia: A guide for landowners*. Richmond, VA. Accessed: June 2022. Retrieved from: https://dwr.virginia.gov/wp-content/uploads/virginia-bald-eagle-guidelines-for-landowners.pdf

VDWR (Virginia Department of Wildlife Resources). 2018. Wildlife Environmental Review Map Service (WERMS). Accessed: June 2022. Retrieved from: https://dwr.virginia.gov/gis/werms/

VDWR (Virginia Department of Wildlife Resources). 2022a. *Virginia Fish and Wildlife Information Service*. Accessed: June 2022. Retrieved from: https://vafwis.dgif.virginia.gov/fwis/

VDWR (Virginia Department of Wildlife Resources). 2022b. NLEB Winter Habitat & Roost Tree Application. Accessed: June 2022.Retrieved from: https://dgif-virginia.maps.arcgis.com/apps/webappviewer/index.html?id=32ea4ee4935942c092e41ddcd19e5ec5

VDWR (Virginia Department of Wildlife Resources). 2022c. *Little Brown Bat and Tri-colored Bat Winter Habitat and Roosts Application.* Accessed: June 2022. Retrieved from: https://dwr.virginia.gov/wildlife/bats/little-brown-bat-tri-colored-bat-winter-habitat-roosts-application/

3.4 Visual Conditions

U.S. Census Bureau. 2019. *2015–2019 American Community Survey*. Accessed: June 2022. Retrieved from: https://data.census.gov/cedsci/advanced

VDOT (Virginia Department of Transportation). 2022. VDOT Traffic Volume - 2020. Online database. Updated: February 10, 2022. Accessed: June 2022. Retrieved from: https://vdot.maps.arcgis.com/home/item.html?id=a8da35dd9ce54993b25f64487c3717ec

3.5 Cultural Resources

VDHR (Virginia Department of Historic Resources). 2008. *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia*. Accessed: June 2022. Retrieved from: https://www.dhr.virginia.gov/wp-content/uploads/2018/08/DHR_Guidelines_for_Transmission_Line_Assessment.pdf

3.6 Geological Constraints

USGS (United States Geological Survey). 2005. Open-file Report 2005-1325, Preliminary integrated geologic map databases for the United States: Delaware, Maryland, New York, Pennsylvania, and Virginia. Accessed: May 2022. Retrieved from: https://pubs.usgs.gov/of/2005/1325/#VA

Virginia Energy. 2022. *Mineral Mining Map*. Virginia Department of Energy. Accessed: May 2022. Retrieved from: https://energy.virginia.gov/webmaps/MineralMining/

William and Mary Department of Geology. 2022. *Geology of Virginia*. Accessed: May 2022. Retrieved from: http://geology.blogs.wm.edu/

4.1 Land Use

Charlotte County. 2017. Comprehensive Plan. Charlotte County Planning Commission. Accessed: April 2022. Retrieved from: https://www.charlotteva.com/comp_plan.htm

Halifax County. 2017. 2017–2035 Comprehensive Plan. Halifax County Planning & Zoning Department. Accessed: April 2022. Retrieved from: https://www.halifaxcountyva.gov/index.asp?Type=B_DIR&SEC=%7B90522713-D4FA-488E-BB5A-D8995B5CC452%7D

Mecklenburg County. 2012. 2035 Long Range Plan. Mecklenburg County Planning Commission. Accessed: April 2022. Retrieved from: https://va-mecklenburgcounty.civicplus.com/DocumentCenter/View/284/Mecklenburg-County-Comprehensive-Plan?bidId=.

4.2 Environmental Justice

Anderson, O.C., J. Williamson, and A. Wohl. 2017. The Effect of High-Voltage Overhead Transmission Lines on Property Values: A Review of the Literature Since 2010. *The Appraisal Journal*, Summer 2017, 179-193.

ICES (International Committee on Electromagnetic Safety). 2019. IEEE Standard for Safety Levels with Respect to Human Exposure to Electromagnetic Fields 0 to 300 GHz. IEEE Std C95.1-2019. New York, NY.

ICNIRP (International Commission on Non-ionizing Radiation Protection). 2010. “Guidelines for Limiting Exposure to Time-varying Electric and Magnetic Fields (1 Hz to 100 kHz).” *Health Phys* 99: 818.

Jackson, T., and J. Pitts. 2010. “The Effects of Electric Transmission Lines on Property Values: A Literature Review.” *Journal of Real Estate Literature* 18(2) 239-259.

SCENIHR (Scientific Committee on Emerging and Newly Identified Health Risks). 2009. Health Effects of Exposure to EMF. Brussels, Belgium: European Commission.

SCENIHR (Scientific Committee on Emerging and Newly Identified Health Risks). 2015. Opinion on Potential Health Effects of Exposure to Electromagnetic Fields (EMF). Brussels, Belgium: European Commission.

SSM (Swedish Radiation Safety Authority). 2015. Research 2015:19. Recent Research on EMF and Health Risk - Tenth report from SSM’s Scientific Council on Electromagnetic Fields. Stockholm, Sweden.

SSM (Swedish Radiation Safety Authority). 2016. Research 2016:15. Recent Research on EMF and Health Risk - Eleventh report from SSM’s Scientific Council on Electromagnetic Fields, 2016. Including Thirteen years of electromagnetic field research monitored by SSM’s Scientific Council on EMF and health: How has the evidence changed over time? Stockholm, Sweden.

SSM (Swedish Radiation Safety Authority). 2018. Research 2018:09. Recent Research on EMF and Health Risk - Twelfth report from SSM’s Scientific Council on Electromagnetic Fields, 2017. Stockholm, Sweden.

SSM (Swedish Radiation Safety Authority). 2019. Research 2019:08. Recent Research on EMF and Health Risk – Thirteenth Report from SSM’s Scientific Council on Electromagnetic Fields, 2018. Stockholm, Sweden.

SSM (Swedish Radiation Safety Authority). 2020. Research 2020:04. Recent Research on EMF and Health Risk – Fourteenth Report from SSM's Scientific Council on Electromagnetic Fields, 2019. Stockholm, Sweden.

SSM (Swedish Radiation Safety Authority). 2021. Research 2021:08. Recent Research on EMF and Health Risk – Fifteenth report from SSM's Scientific Council on Electromagnetic Fields, 2020. Stockholm, Sweden.

WHO (World Health Organization). 2007. Environmental Health Criteria 238: Extremely Low Frequency (ELF) Fields. Geneva, Switzerland.

4.3 Natural Resources

USFWS (U.S. Fish and Wildlife Service). 2022. Information for Planning and Consultation (IPaC). Online System. Accessed: June 2022. Retrieved from: https://ecos.fws.gov/ipac/

VDCR (Virginia Department of Conservation and Recreation). 2022a. 0615787, Clover-Butler-Finneywood. Letter from S. René Hypes, Natural Heritage Project Review Coordinator, to Chris Senfield, Environmental Resources Management. May 2, 2022.

VDCR (Virginia Department of Conservation and Recreation). 2022b. Virginia Natural Heritage Database Search. Accessed: May 2022. Retrieved from: https://vanhde.org/species search

VDWR (Virginia Department of Wildlife Resources). 2022a. Virginia Fish and Wildlife Information Service. Accessed: June 2022. Retrieved from: https://vafwis.dgif.virginia.gov/fwis/

VDWR (Virginia Department of Wildlife Resources). 2022b. NLEB Winter Habitat & Roost Tree Application. Accessed: June 2022. Retrieved from: https://dgif-virginia.maps.arcgis.com/apps/webappviewer/index.html?id=32ea4ee4935942c092e41ddcd19e5ec5

APPENDIX A FIGURES

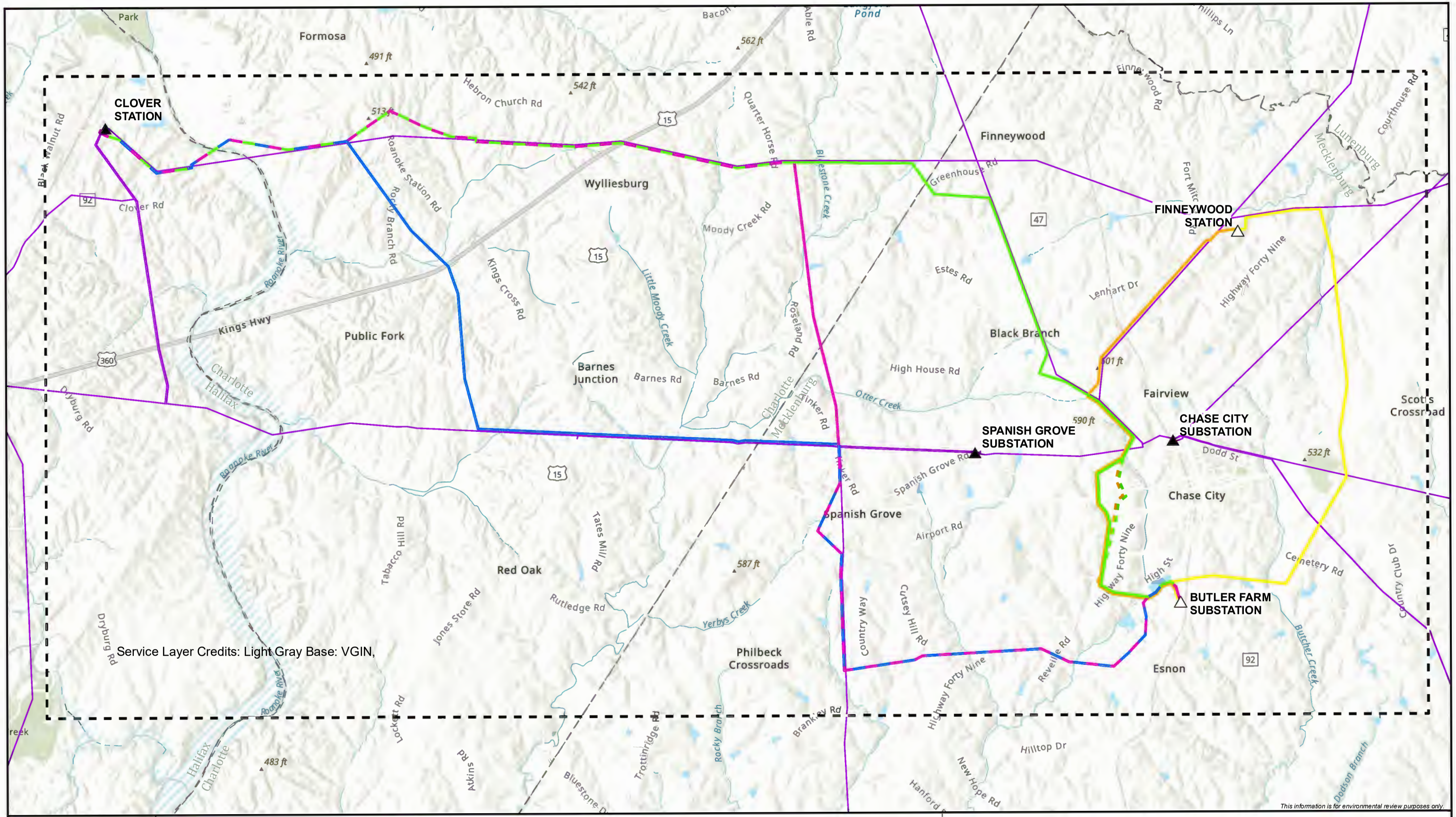


Figure 2-2
Topographic Overview
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

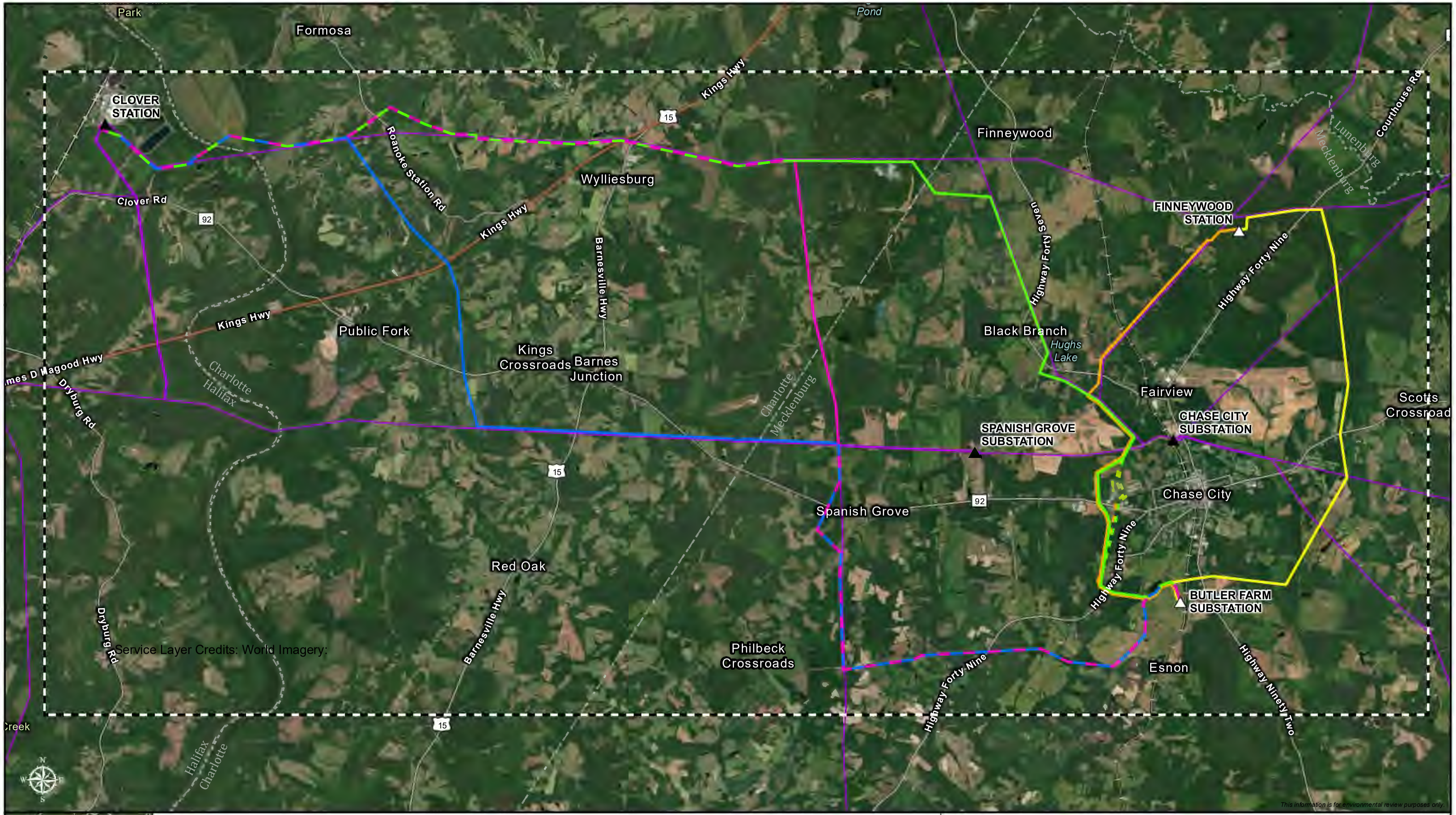
Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_2-2_Overview_Topo | REVISED: 10/10/2022 | SCALE: 1:72,000 when printed at 11x17

DRAWN BY: NAD



Existing Substation
Proposed Substation
Existing Dominion Transmission Line

Butler Farm–Clover Line

Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2
Study Area

0 0.5 1
Miles

1:72,000

Figure 2-1
Aerial Overview
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_2-1_Overview_Aerial | REVISED: 10/10/2022 | SCALE: 1:72,000 when printed at 11x17 DRAWN BY: NAD

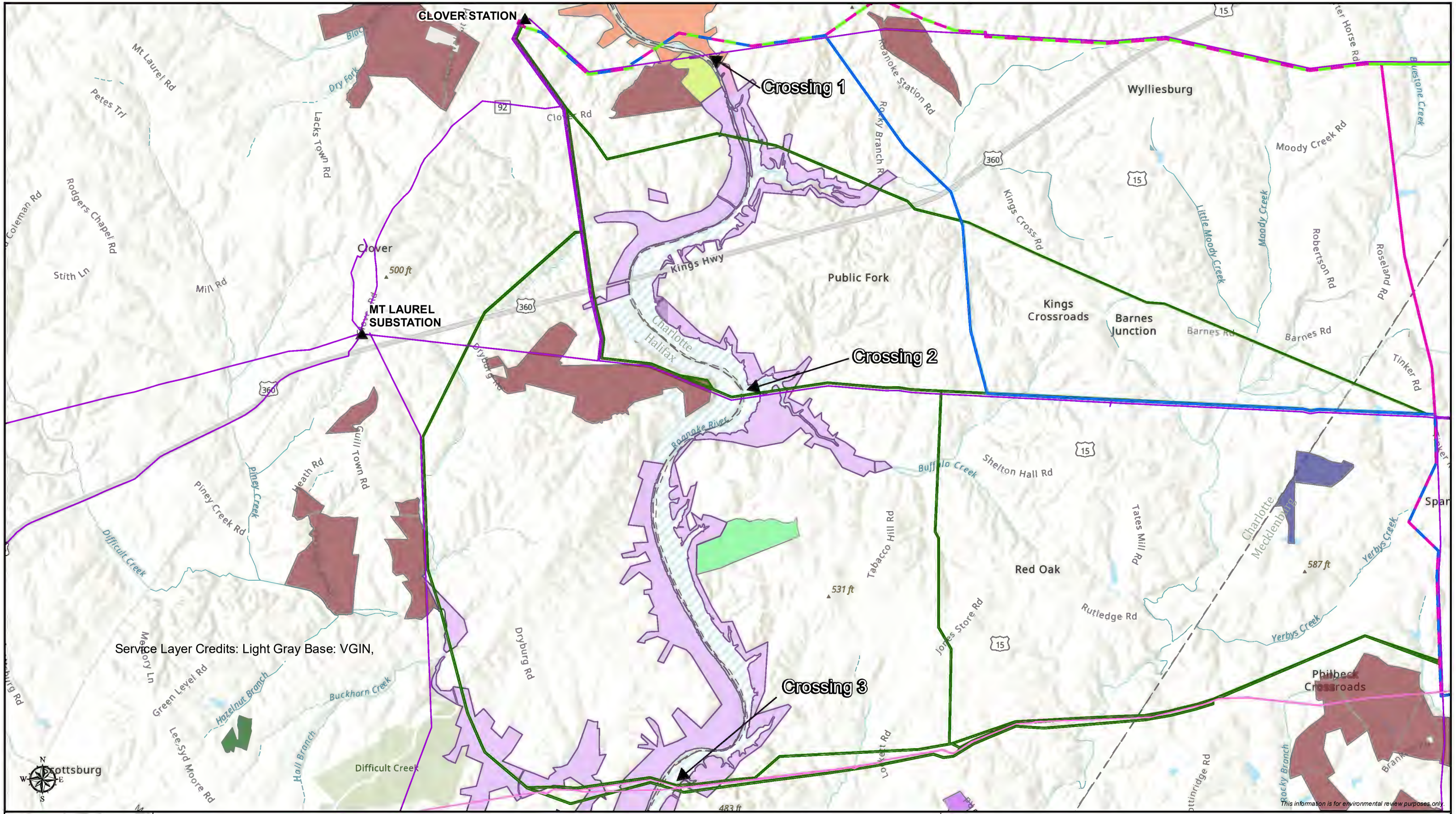
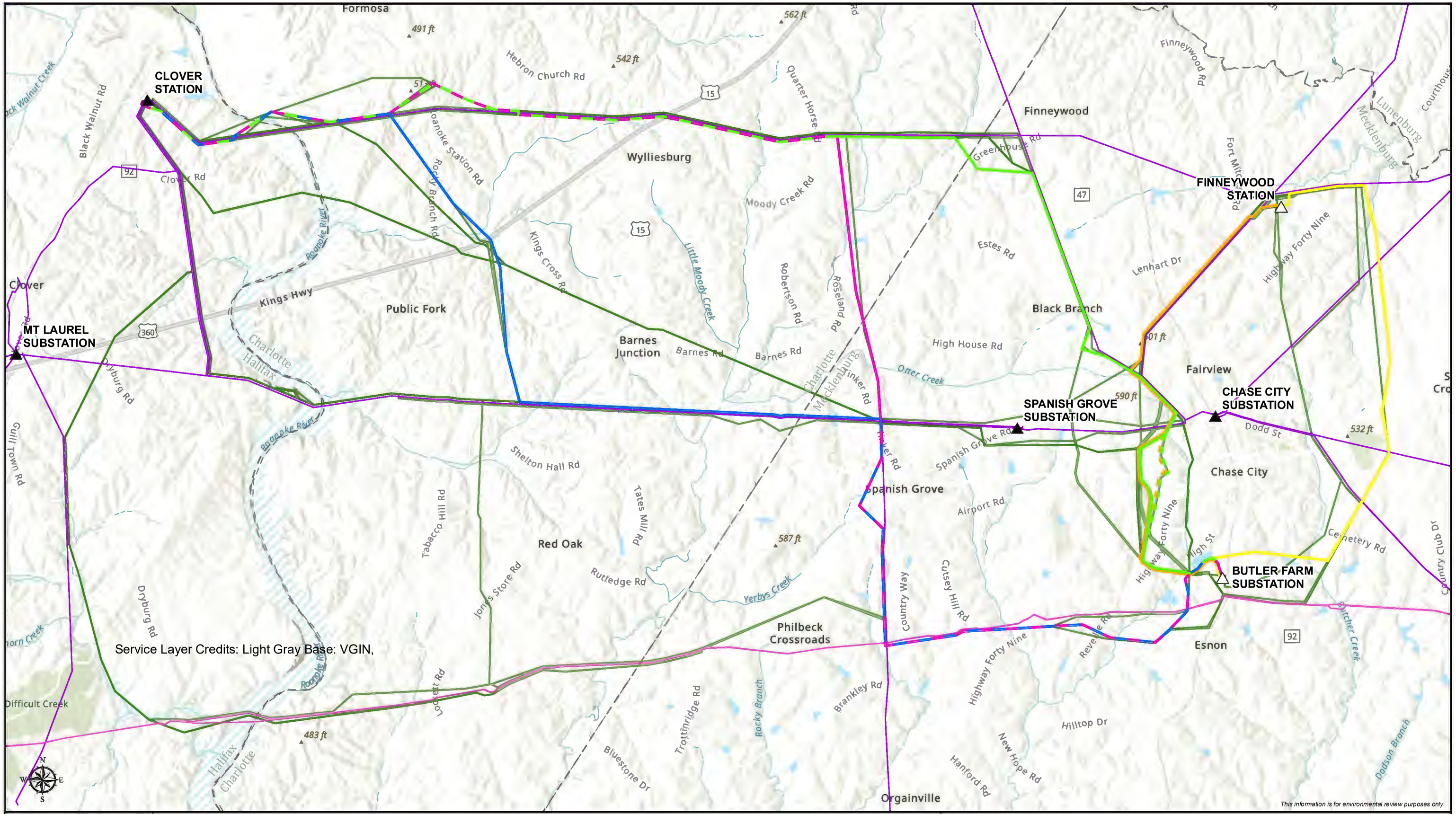


Figure 2.5-1
Initial Proposed Staunton River Crossing Locations
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_2.5-1_RiverCrossing | REVISED: 10/11/2022 | SCALE: 1:58,000 when printed at 11x17 | DRAWN BY: NAD



Existing Substation
Proposed Substation

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2
Retired Route
Existing Dominion Transmission Line
Natural Gas Pipeline

0 0.5 1
Miles
1:72,000

Figure 2.5-2
Routes Removed from Further Consideration
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_2.5-2_RejectedRoutes | REVISED: 10/10/2022 | SCALE: 1:72,000 when printed at 11x17 | DRAWN BY: RL

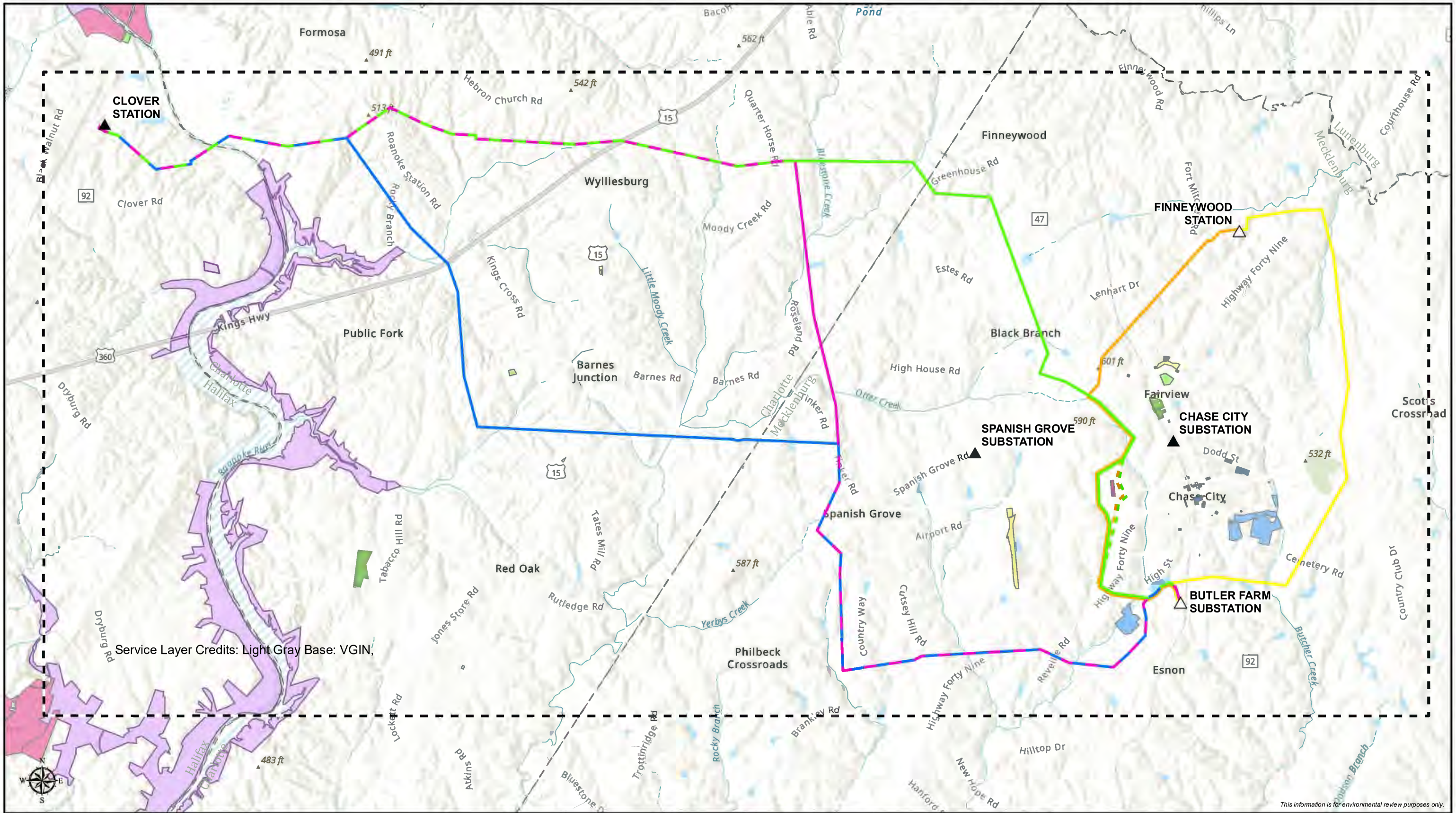


Figure 3.1-1
Land Ownership
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-1_LandOwnership | REVISED: 10/10/2022 | SCALE: 1:72,000 when printed at 11x17 DRAWN BY: NAD

CLOVER STATION
FINNEYWOOD STATION
SPANISH GROVE SUBSTATION
CHASE CITY SUBSTATION
BUTLER FARM SUBSTATION
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
Formosa
Wylliesburg
Finneywood
Black Branch
Fairview
Scotts Crossroad
Chase City
Spanish Grove
Barnes Junction
Public Fork
Red Oak
Philbeck Crossroads
Esnon
Clover Rd
Kings Hwy
Jeb Stuart Hwy
Dryburg Rd
Highway Forty Nine
Finneywood Creek
Bluestone Creek
Moody Creek
Otter Creek
Horsepen Creek
Butcher Creek
Little Bluestone Creek
531 ft
360
15
92
Service Layer Credits: Light Gray Base: VGIN,
This information is for environmental review purposes only.

Existing Substation
Proposed Substation

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2
Index Page

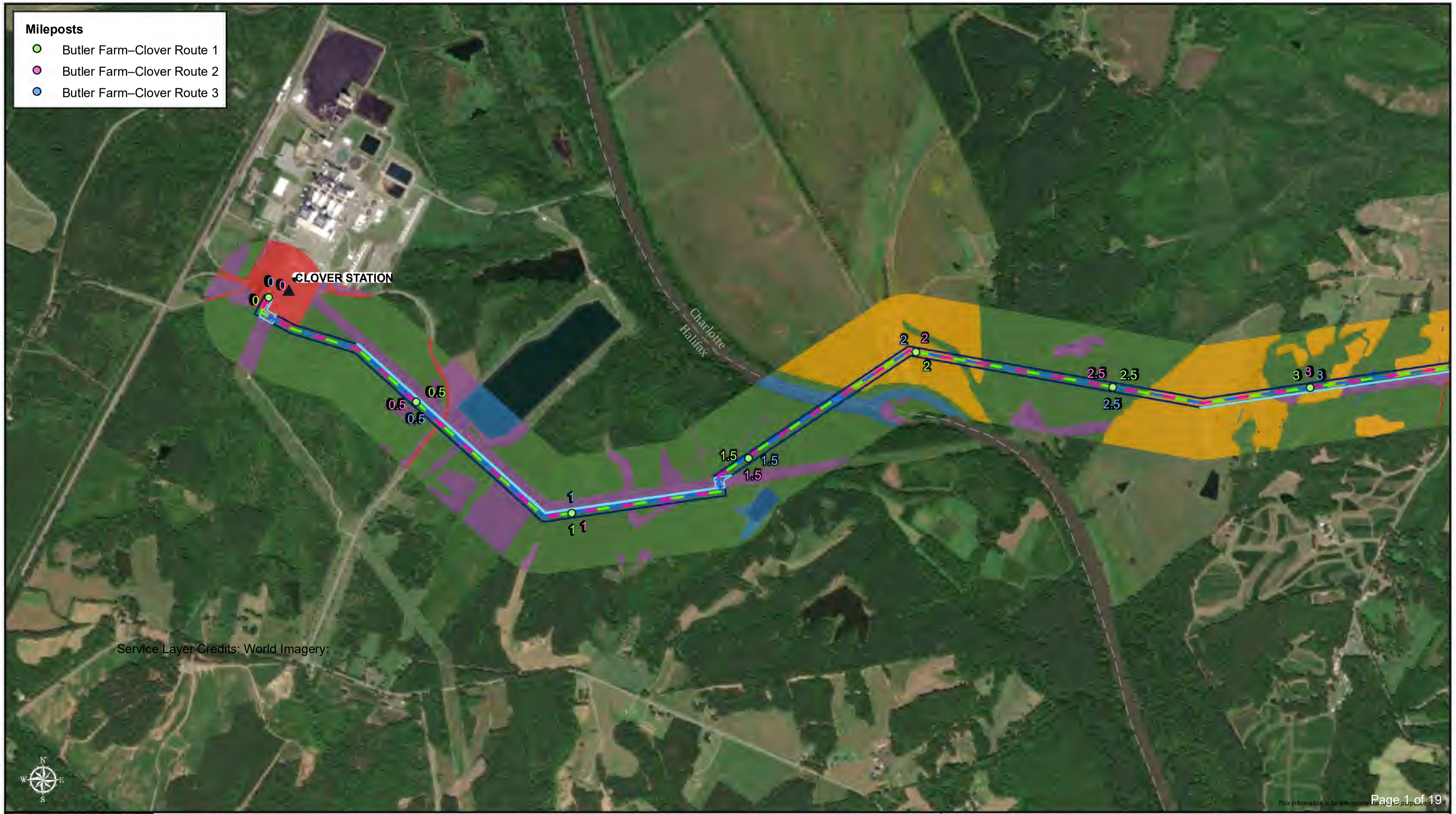
0 0.5 1
Miles
1:76,000

Figure 3.1-2 Index
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_Index | REVISED: 10/05/2022 | SCALE: 1:76,000 when printed at 11x17

DRAWN BY: NAD



Existing Substation

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Butler Farm–Clover Route 2

Butler Farm–Clover Route 3

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

Land Use

Agriculture

Developed

Forested

Open Space

Open Water

0 500 1,000

Feet

1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Mileposts
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Service Layer Credits: World Imagery:

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

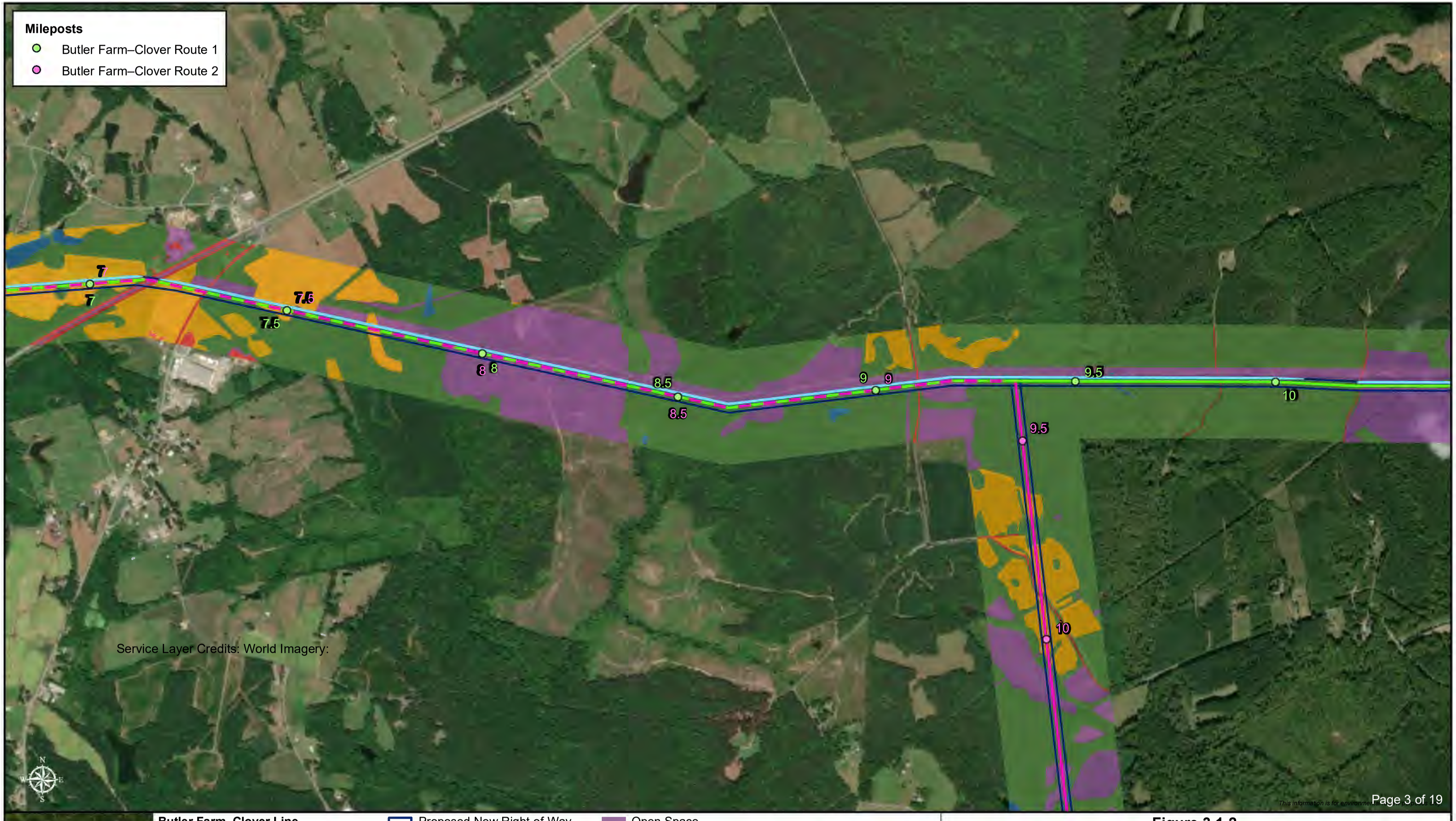
Land Use
- Agriculture
- Developed
- Forested
- Open Space
- Open Water

0 500 1,000
Feet
1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 | DRAWN BY: NAD



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

Land Use
- Agriculture
- Developed
- Forested
- Open Space
- Open Water

0 500 1,000
Feet

1:14,400

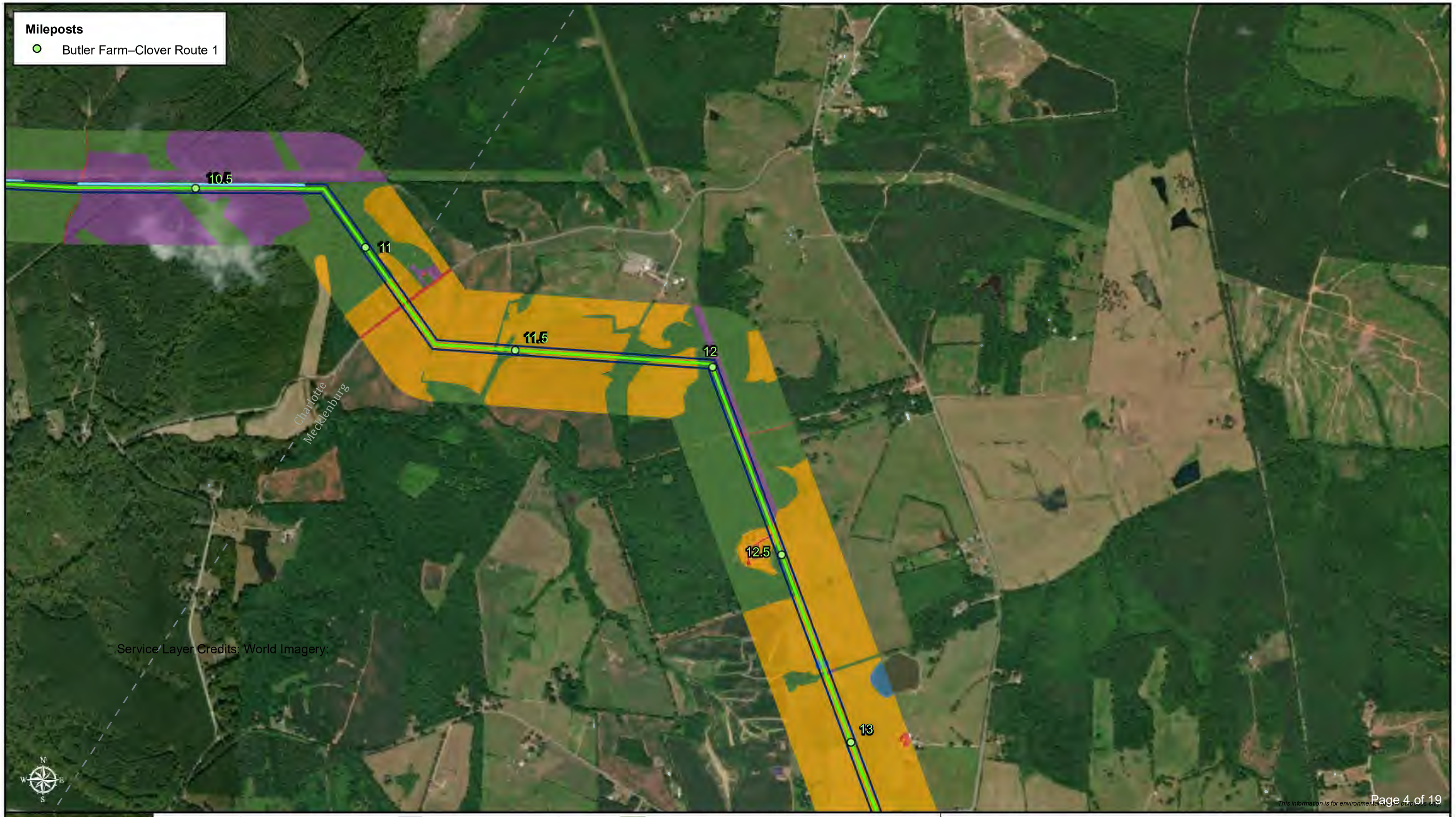
Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

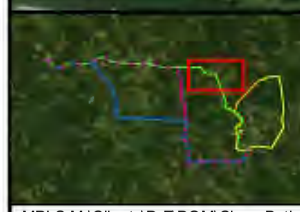
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD





Butler Farm–Clover Line
Butler Farm–Clover Route 1
Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
Land Use
Agriculture
Developed
Forested
Open Space
Open Water

0 500 1,000
Feet
1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: NAD

Mileposts
- Butler Farm–Finneywood Route 1
- Butler Farm–Finneywood Route 2

0
0
0.5
1
1.5
2
2.5
FINNEYWOOD STATION

Service Layer Credits: World Imagery:

- Proposed Substation
- **Butler Farm–Finneywood Line**
- Butler Farm–Finneywood Route 1
- Butler Farm–Finneywood Route 2
- **Right-of-Way Type**
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- Aboveground Facility - Finneywood Switching Station
- **Land Use**
- Agriculture
- Developed
- Forested
- Open Space
- Open Water

0 500 1,000
Feet
1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Mileposts
- Butler Farm–Clover Route 1
- Butler Farm–Finneywood Route 1

13.5
14
14.5
15
3
15.5
3.5
2.5
2
1.5

Service Layer Credits: World Imagery:

CHASE CITY SUBSTATION

▲ Existing Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

Land Use
- Agriculture
- Developed
- Forested
- Open Space
- Open Water

0 500 1,000
Feet

1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Mileposts

Butler Farm–Clover Route 3

4

4.5

5

5.5

6

Service Layer Credits: World Imagery:

N

W E

S

Butler Farm–Clover Line

Butler Farm–Clover Route 3

Right-of-Way Type

Proposed New Right-of-Way

Land Use

Agriculture

Developed

Forested

Open Space

Open Water

0 500 1,000

Feet

1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Mileposts

Butler Farm–Clover Route 3

6.5

7

7.5

8

8.5

9

Service Layer Credits: World Imagery:

Butler Farm–Clover Line

Butler Farm–Clover Route 3

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

Land Use

Agriculture

Developed

Forested

Open Space

Open Water

0 500 1,000

Feet

1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

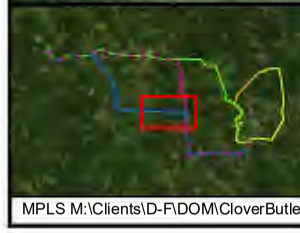
Mileposts
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

9.5
10
10.5
11
11.5
12
12.5
13
13.5

Charlotte
Mecklenburg

Service Layer Credits: World Imagery:

N
W
E
S



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

Land Use
- Agriculture
- Developed
- Forested
- Open Space
- Open Water

0 500 1,000
Feet

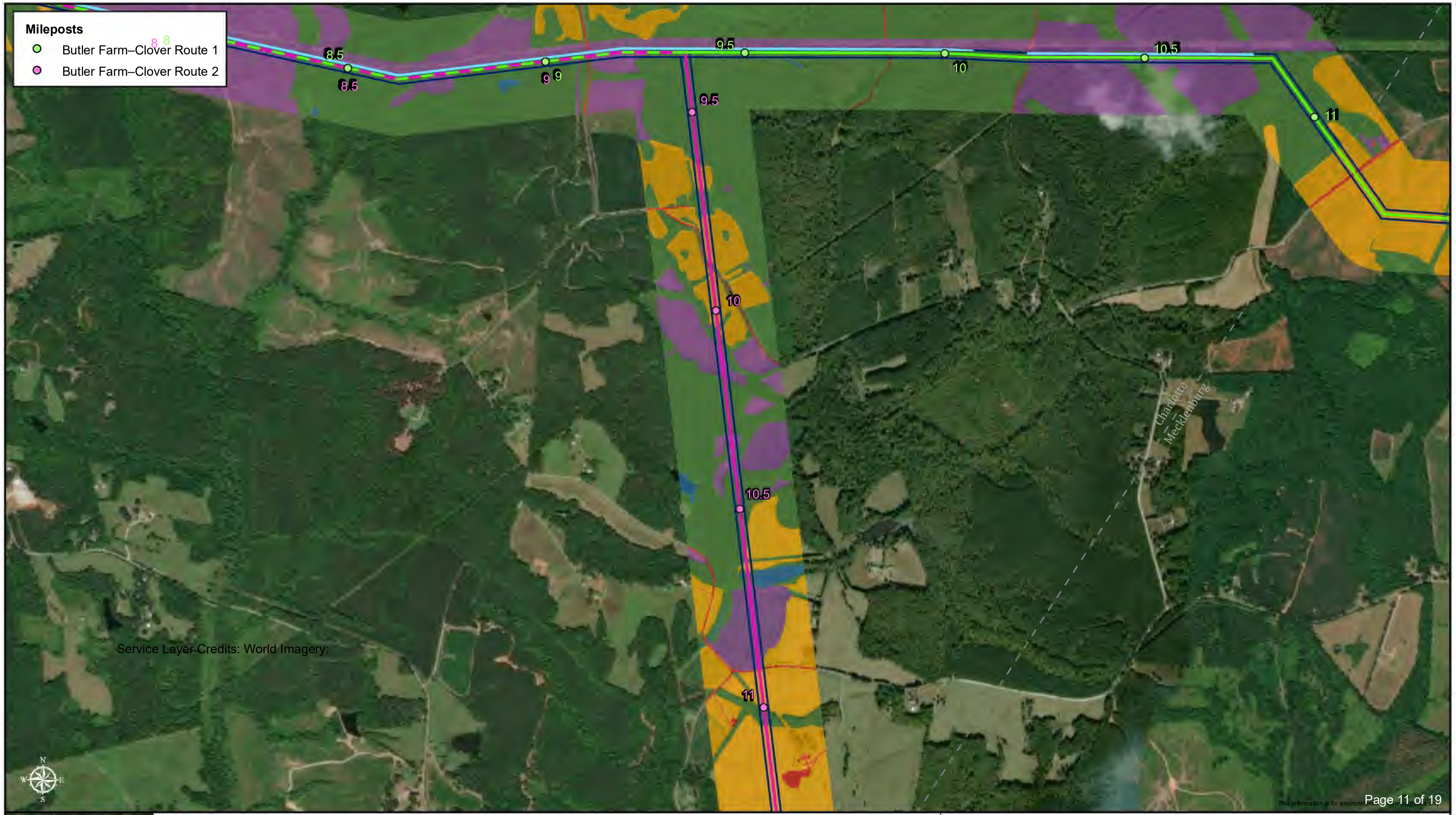
1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm–Clover Route 2

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way

Land Use
Agriculture
Developed
Forested
Open Space
Open Water

0 500 1,000
Feet

1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

Land Use
- Agriculture
- Developed
- Forested
- Open Space
- Open Water

0 500 1,000
Feet

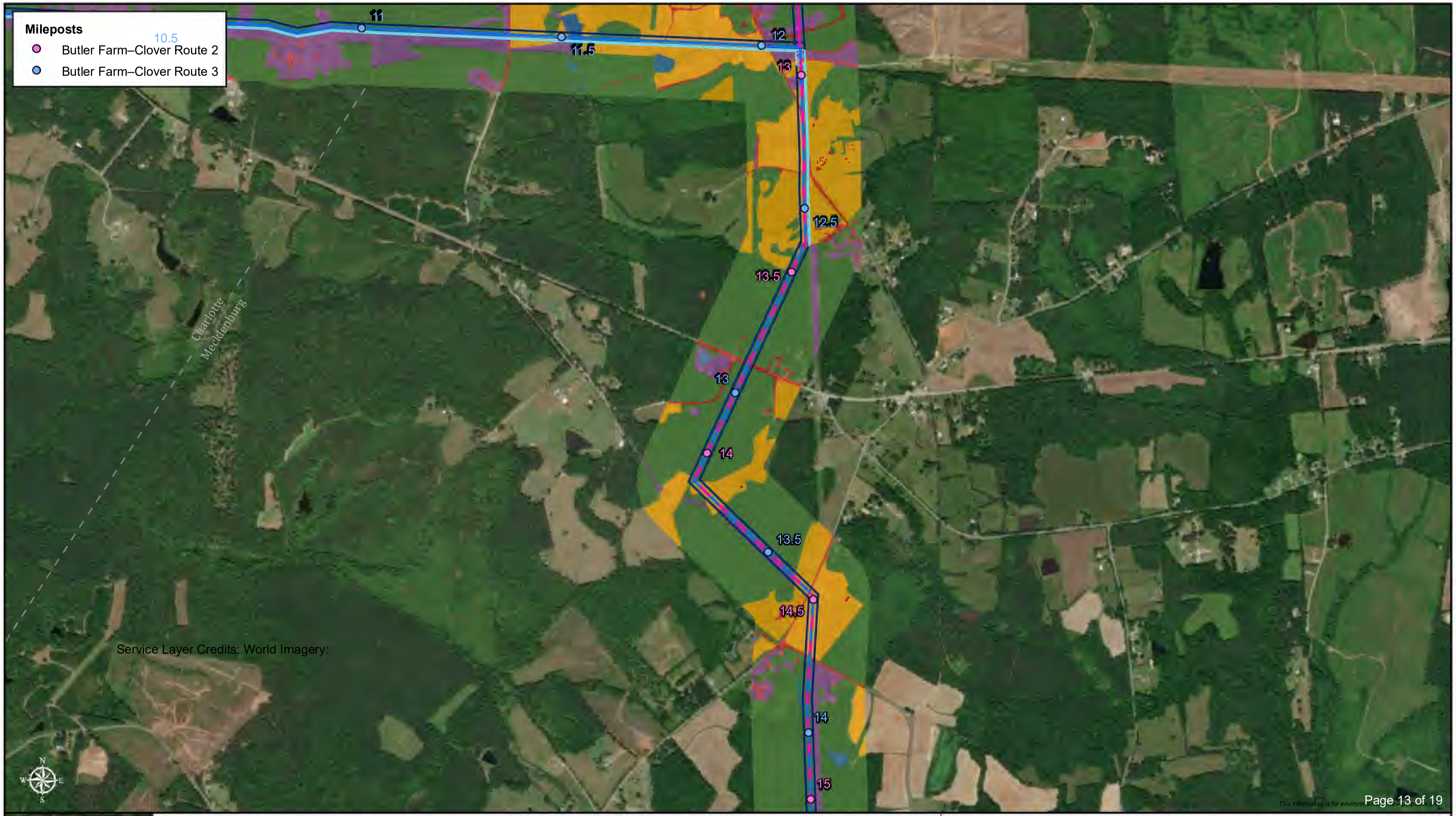
1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

Land Use
- Agriculture
- Developed
- Forested
- Open Space
- Open Water

0 500 1,000
Feet

1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Proposed New Right-of-Way

Land Use
- Agriculture
- Developed
- Forested
- Open Space
- Open Water

0 500 1,000
Feet

1:14,400

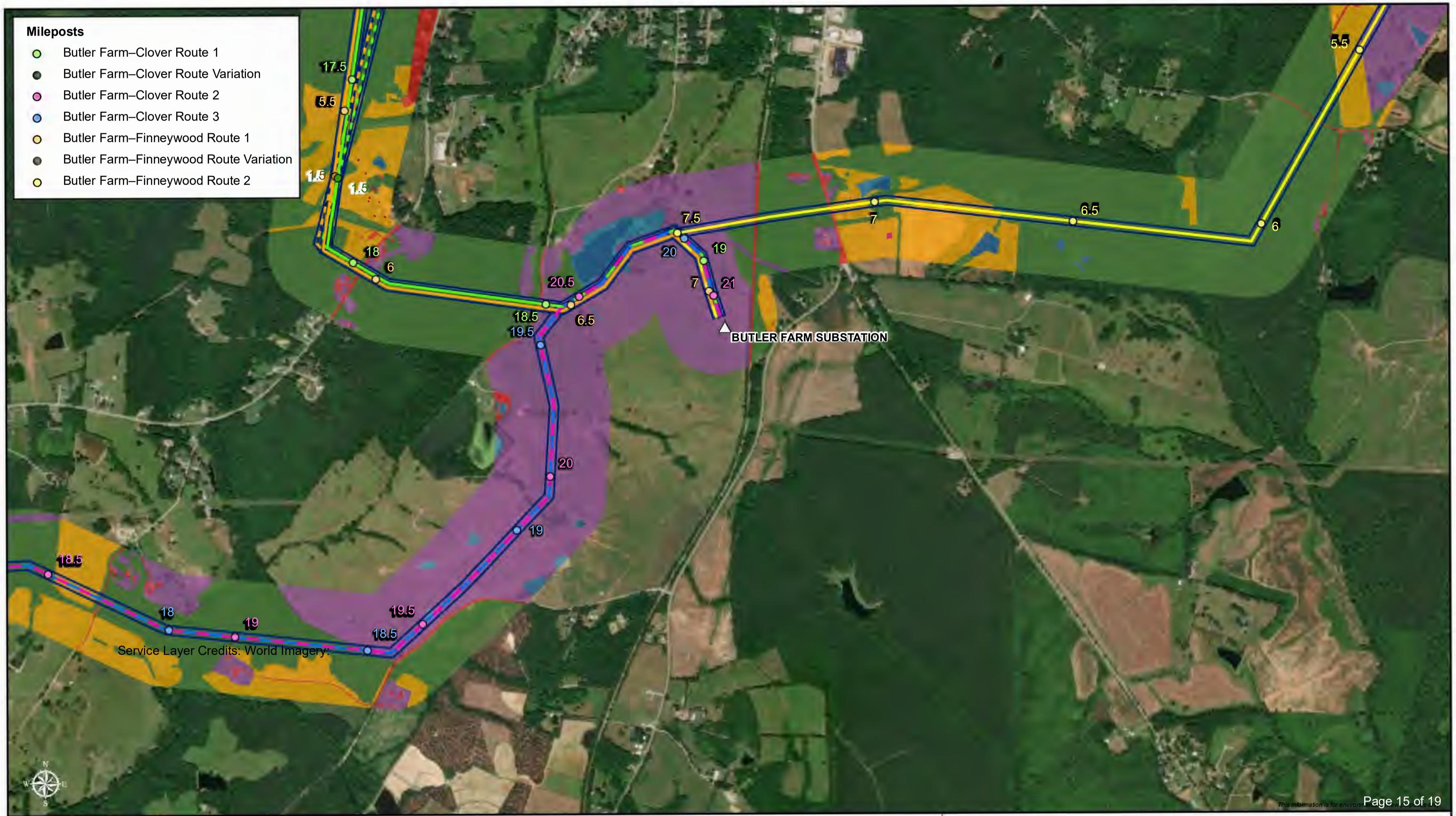
Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2

Right-of-Way Type
- Proposed New Right-of-Way

Land Use
- Agriculture
- Developed
- Forested
- Open Space
- Open Water

0 500 1,000
Feet

1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Proposed Substation

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Butler Farm–Finneywood Route 2

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

Aboveground Facility - Finneywood Switching Station

Land Use

Agriculture

Developed

Forested

Open Space

Open Water

0 500 1,000

Feet

1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Mileposts

Butler Farm–Finneywood Route 2

2

2.5

3

3.5

Service Layer Credits: World Imagery:

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 2

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

Land Use

Agriculture

Developed

Forested

Open Space

Open Water

0 500 1,000

Feet

1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 2

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

Land Use

Agriculture

Developed

Forested

Open Space

Open Water

0 500 1,000

Feet

1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Mileposts

- Butler Farm–Clover Route 1
- Butler Farm–Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Butler Farm–Finneywood Route 1
- Butler Farm–Finneywood Route Variation
- Butler Farm–Finneywood Route 2

17.5
5.5
1.5
1.5
18
6
20.5
18.5
19.5
6.5
7.5
20
19
7
21
7
6.5
6
5.5
BUTLER FARM SUBSTATION
20
19
18.5
18
19
19.5
18.5

Service Layer Credits: World Imagery:

Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2

Right-of-Way Type
- Proposed New Right-of-Way

Land Use
- Agriculture
- Developed
- Forested
- Open Space
- Open Water

0 500 1,000
Feet

1:14,400

Figure 3.1-2
Land Use/Land Cover
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-2_LandUse | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

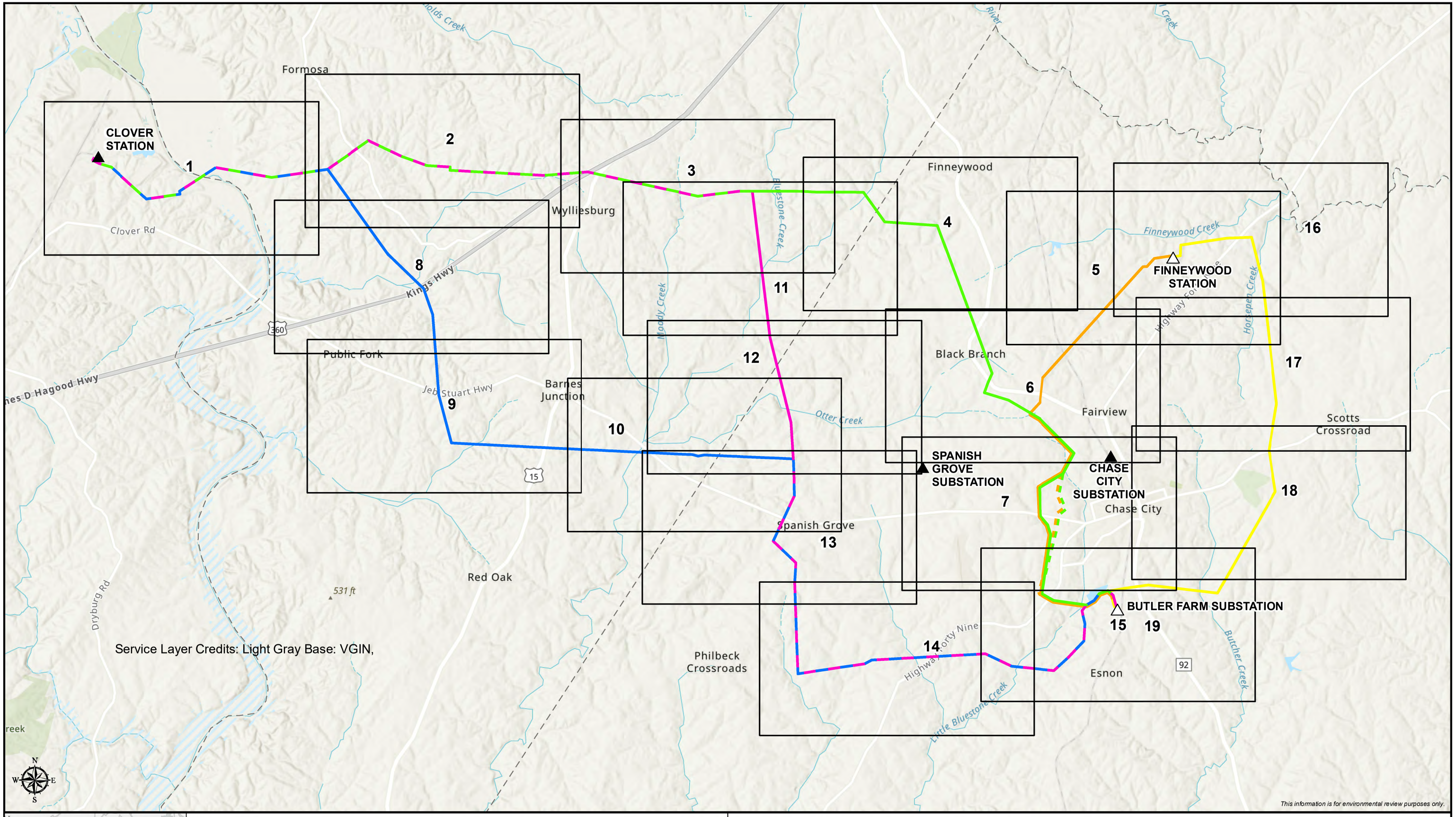


Figure 3.1-3 Index
Recreational Areas within 0.25 mile of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_Index | REVISED: 10/05/2022 | SCALE: 1:76,000 when printed at 11x17

DRAWN BY: NAD

Mileposts
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

CLOVER STATION

0 0 0

0.5 0.5 0.5

1 1 1

1.5 1.5 1.5

2 2 2

2.5 2.5 2.5

3 3 3

Charlotte

Halifax

Service Layer Credits: World Imagery:

N W E S

▲ Existing Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- Staunton River: State Scenic Waterway
- Staunton River Blueway
- Staunton Loop of the Virginia Birding and Wildlife Trail
- John H. Kerr Dam and Reservoir
- 0.25 Mile Buffer

0 500 1,000
Feet

1:14,400

Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Mileposts
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

4 4 4.5 4.5 5 5 5.5 5.5 6 6 6.5 6.5 7 7

3.5 3.5 3.5

4

Service Layer Credits: World Imagery:

N W E S

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- 0.25 Mile Buffer

0 500 1,000
Feet

1:14,400

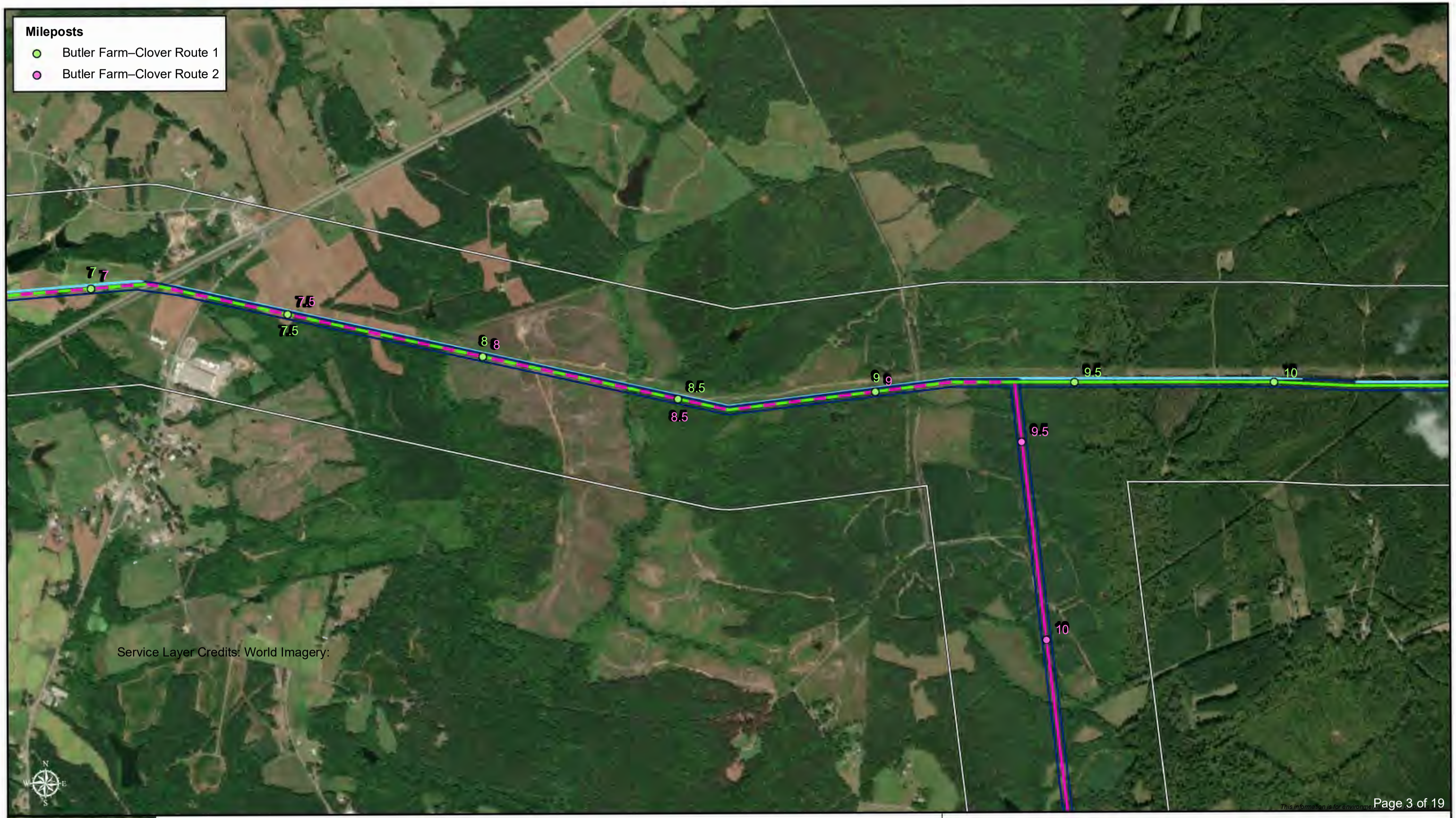
Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- 0.25 Mile Buffer

0 500 1,000
Feet

1:14,400

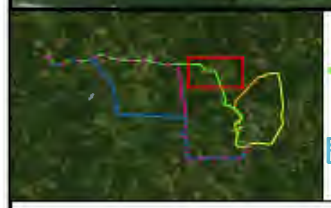
Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



Butler Farm–Clover Line
Butler Farm–Clover Route 1
Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
Scenic Byway 47N
0.25 Mile Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17
DRAWN BY: NAD

Proposed Substation

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Butler Farm–Finneywood Route 2

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

Aboveground Facility - Finneywood Switching Station

0.25 Mile Buffer

0 500 1,000

Feet

1:14,400

Figure 3.1-3

Recreational Areas within 0.25 mile of Alternative Routes

Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

▲ Existing Substation

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

Scenic Byway 47N

Tobacco Heritage Trail

0.25 Mile Buffer

0 500 1,000

Feet

1:14,400

Figure 3.1-3

Recreational Areas within 0.25 mile of Alternative Routes

Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

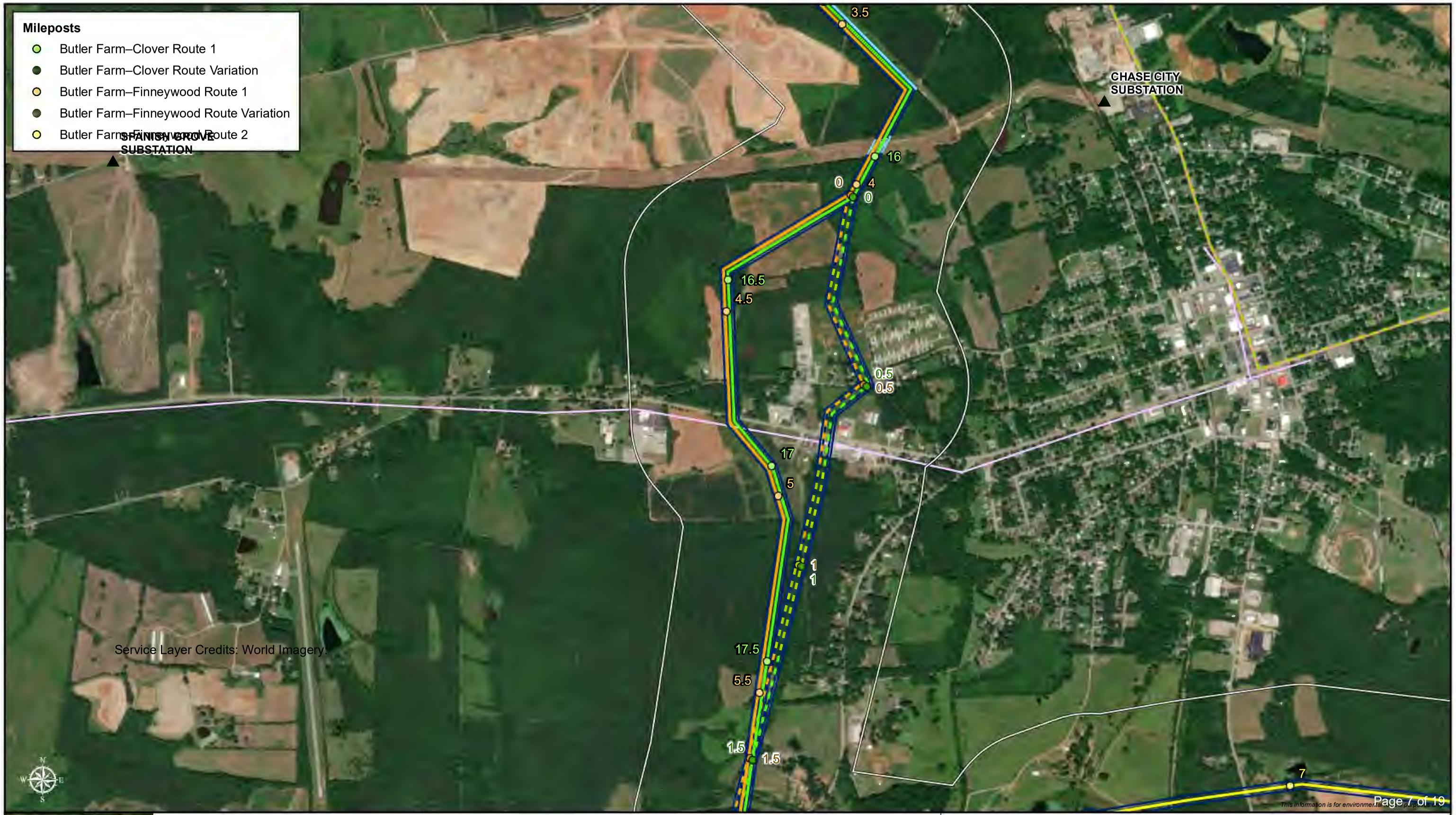


Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Butler Farm–Clover Line
Butler Farm–Clover Route 3
Right-of-Way Type
Proposed New Right-of-Way
Staunton Loop of the Virginia Birding and Wildlife Trail
John H. Kerr Dam and Reservoir
0.25 Mile Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: NAD

Mileposts
- Butler Farm–Clover Route 3

6.5
7
7.5
8
8.5
9

Service Layer Credits: World Imagery:

N
W
E
S

Butler Farm–Clover Line
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- Staunton Loop of the Virginia Birding and Wildlife Trail
- John H. Kerr Dam and Reservoir
- 0.25 Mile Buffer

0 500 1,000
Feet

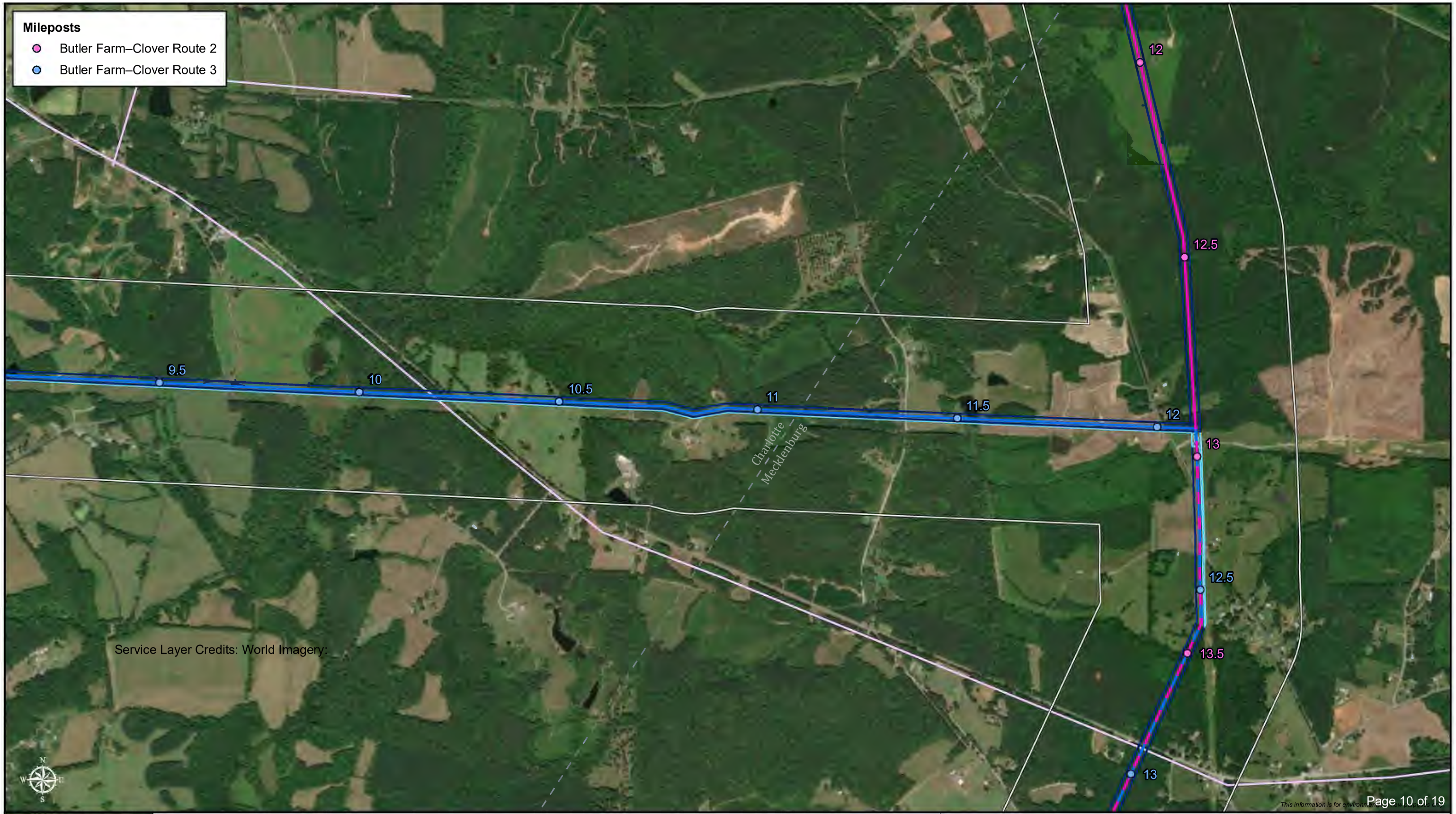
1:14,400

Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- Staunton Loop of the Virginia Birding and Wildlife Trail
- 0.25 Mile Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Mileposts
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2

8 8 8.5 8.5 9 9 9.5 9.5 10 10 10.5 10.5 11 11

Charlotte
Mecklenburg

Service Layer Credits: World Imagery:

N W E S

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- 0.25 Mile Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- Staunton Loop of the Virginia Birding and Wildlife Trail
- 0.25 Mile Buffer

0 500 1,000
Feet

1:14,400

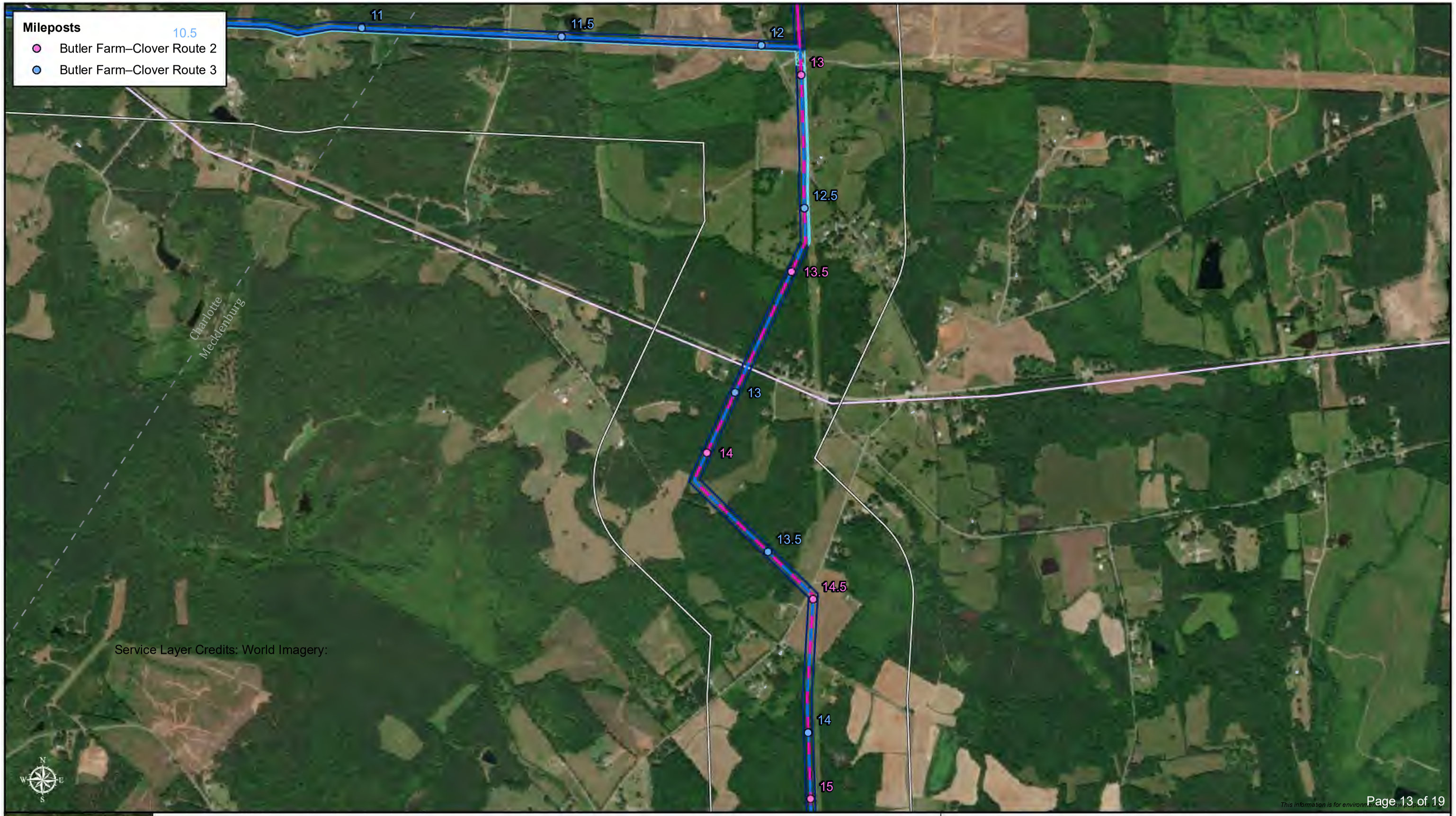
Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- Staunton Loop of the Virginia Birding and Wildlife Trail
- 0.25 Mile Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: NAD

Butler Farm–Clover Line

- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type

- Proposed New Right-of-Way
- 0.25 Mile Buffer

0 500 1,000
Feet

1:14,400

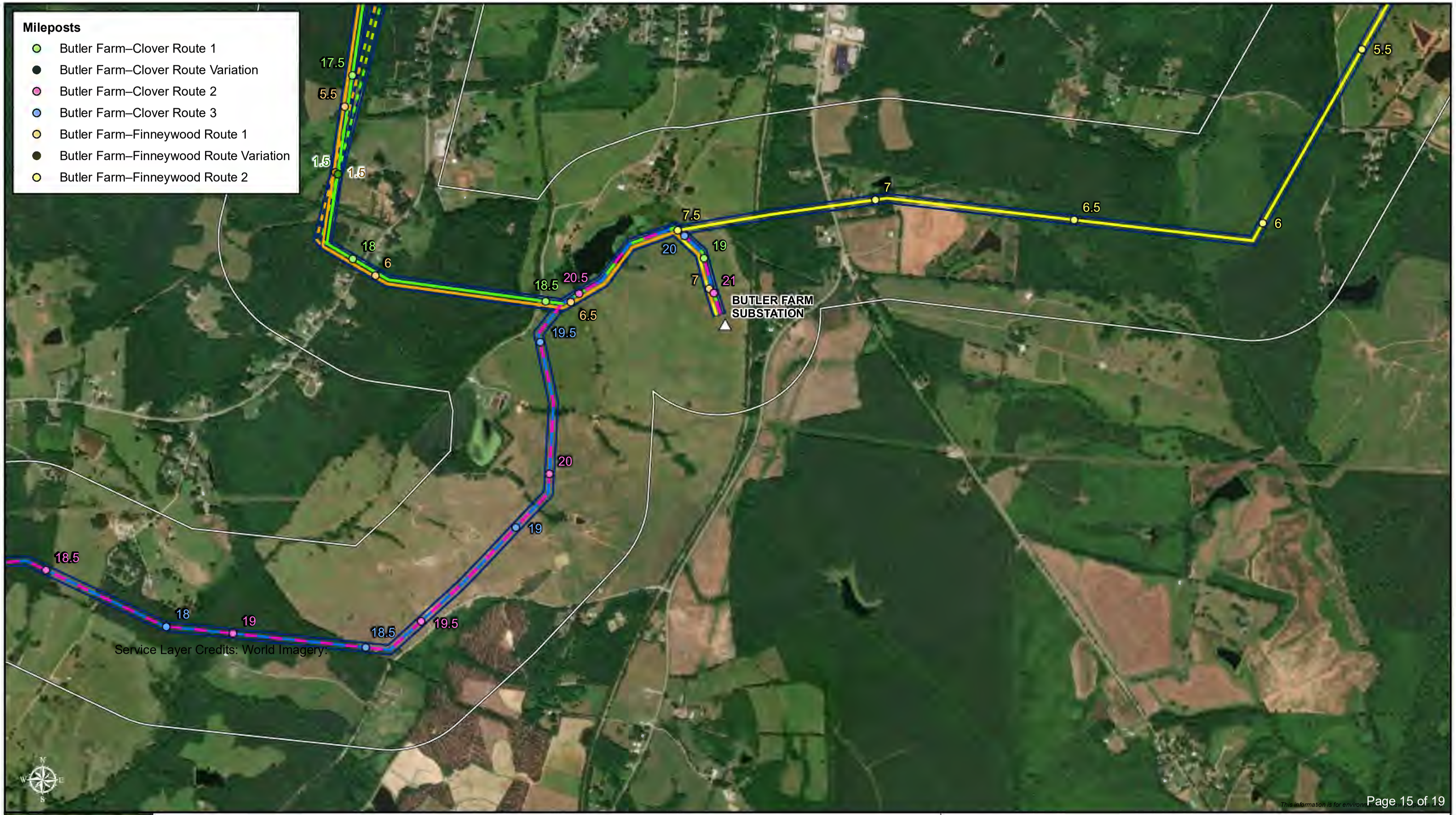
Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2

Right-of-Way Type
- Proposed New Right-of-Way
- 0.25 Mile Buffer

0 500 1,000
Feet

1:14,400

Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy®

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

△ Proposed Substation

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Butler Farm–Finneywood Route 2

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

Aboveground Facility - Finneywood Switching Station

0.25 Mile Buffer

0 500 1,000

Feet

1:14,400

Figure 3.1-3

Recreational Areas within 0.25 mile of Alternative Routes

Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 2

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
Scenic Byway 47N
Tobacco Heritage Trail
0.25 Mile Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: NAD

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 2

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way

Scenic Byway 47N
Tobacco Heritage Trail
Staunton Loop of the Virginia Birding and Wildlife Trail
Mecklenburg Country Club
0.25 Mile Buffer

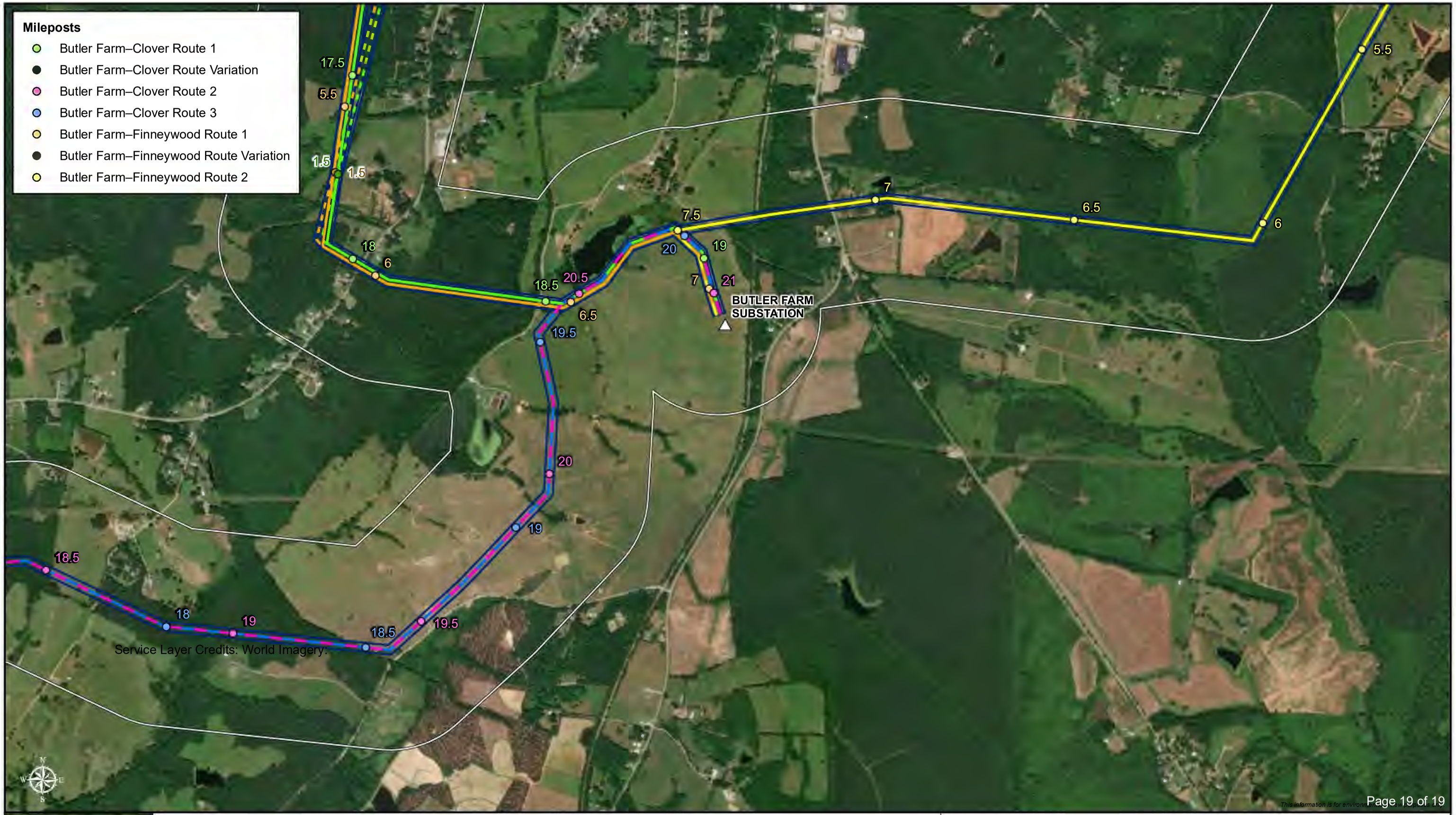
0 500 1,000
Feet
1:14,400

Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



△ Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2

Right-of-Way Type
- Proposed New Right-of-Way
- 0.25 Mile Buffer

0 500 1,000
Feet

1:14,400

Figure 3.1-3
Recreational Areas within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy®

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-3_RecAreas | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

CLOVER STATION
FINNEYWOOD STATION
SPANISH GROVE SUBSTATION
CHASE CITY SUBSTATION
BUTLER FARM SUBSTATION
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
Formosa
Wylliesburg
Finneywood
Black Branch
Fairview
Scotts Crossroad
Chase City
Spanish Grove
Barnes Junction
Public Fork
Red Oak
Philbeck Crossroads
Esnon
Clover Rd
Kings Hwy
Jeb Stuart Hwy
Dryburg Rd
Highway Forty Nine
Finneywood Creek
Bluestone Creek
Moody Creek
Otter Creek
Horsepen Creek
Butcher Creek
Little Bluestone Creek
531 ft
360
15
92
Service Layer Credits: Light Gray Base: VGIN,
This information is for environmental review purposes only.
Washington
Richmond
Norfolk
Existing Substation
Proposed Substation
Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3
Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2
Index Page
0 0.5 1
Miles
1:76,000

Figure 3.1-4 Index
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Index | REVISED: 10/05/2022 | SCALE: 1:76,000 when printed at 11x17

DRAWN BY: NAD

Existing Substation
Commercial Structure
Non-Residential

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
500 Foot Buffer

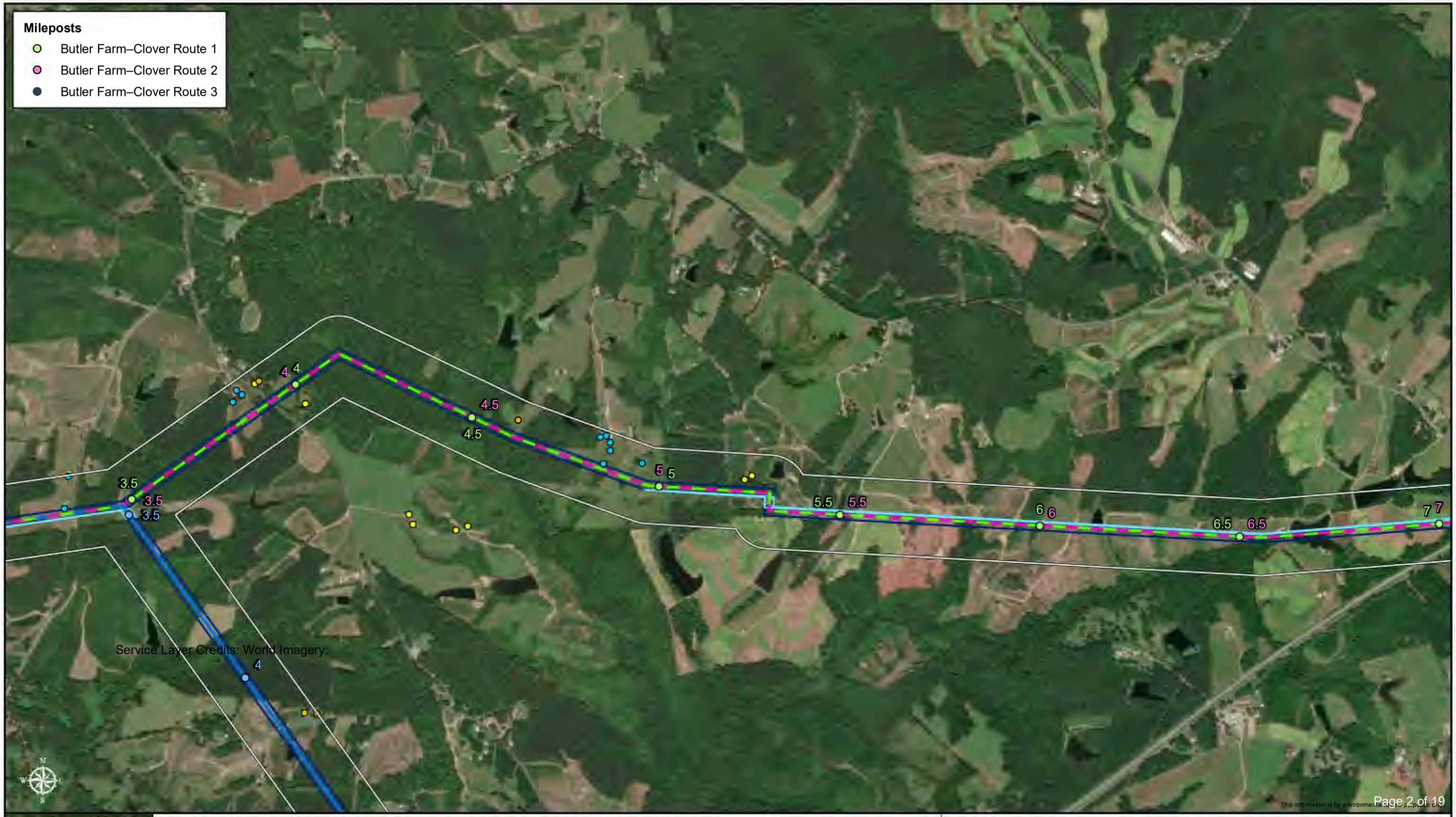
0 500 1,000
Feet
1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPL:S M:\Clients\D-F\DOM\Clover\Butler\Finney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL



Commercial Structure
Non-Residential
Single-Family Residence

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
500 Foot Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

Mileposts

- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2

7 7

7.5 7.5

8 8

8.5 8.5

9 9

9.5

10

9.5

10

Service Layer Credits: World Imagery:

N W E S

- Commercial Structure
- Non-Residential

Butler Farm–Clover Line

- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2

Right-of-Way Type

- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

500 Foot Buffer

0 500 1,000

Feet

1:14,400

Figure 3.1-4

Existing Structures within 500 feet of Alternative Route

Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLES M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: PL

Commercial Structure
Single-Family Residence

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Right-of-Way Type

Existing Overhead Right-of-Way
Proposed New Right-of-Way
500 Foot Buffer

0 500 1,000
Feet

1:14,400

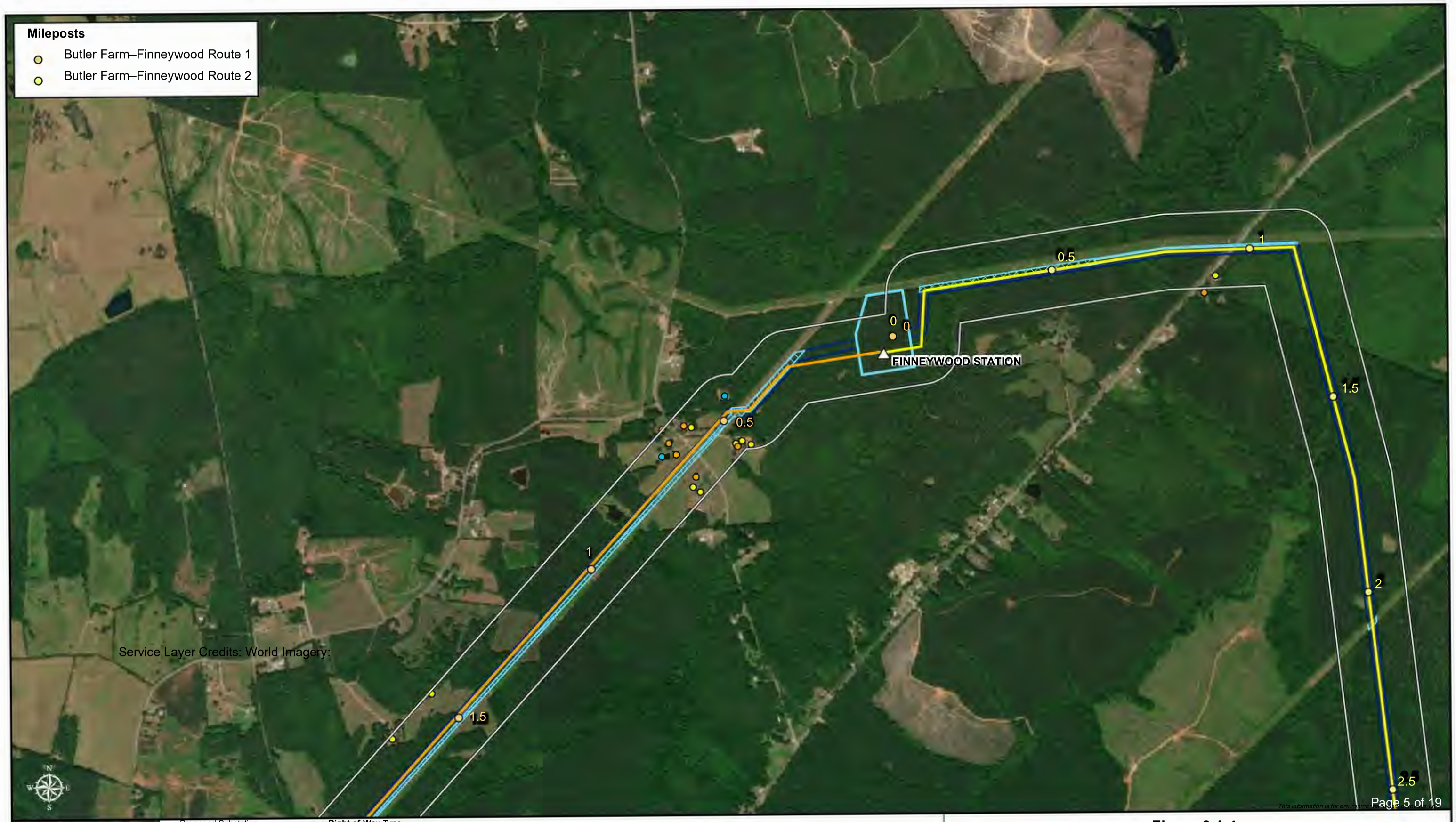
Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL



Proposed Substation
Commercial Structure
Non-Residential
Single-Family Residence

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm–Finneywood Route 2

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
Aboveground Facility - Finneywood Switching Station
500 Foot Buffer

0 500 1,000
Feet

1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MXD PATH: M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

Existing Substation
Commercial Structure
Non-Residential
Single-Family Residence

Butler Farm–Clover Line
Butler Farm–Clover Route 1

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1

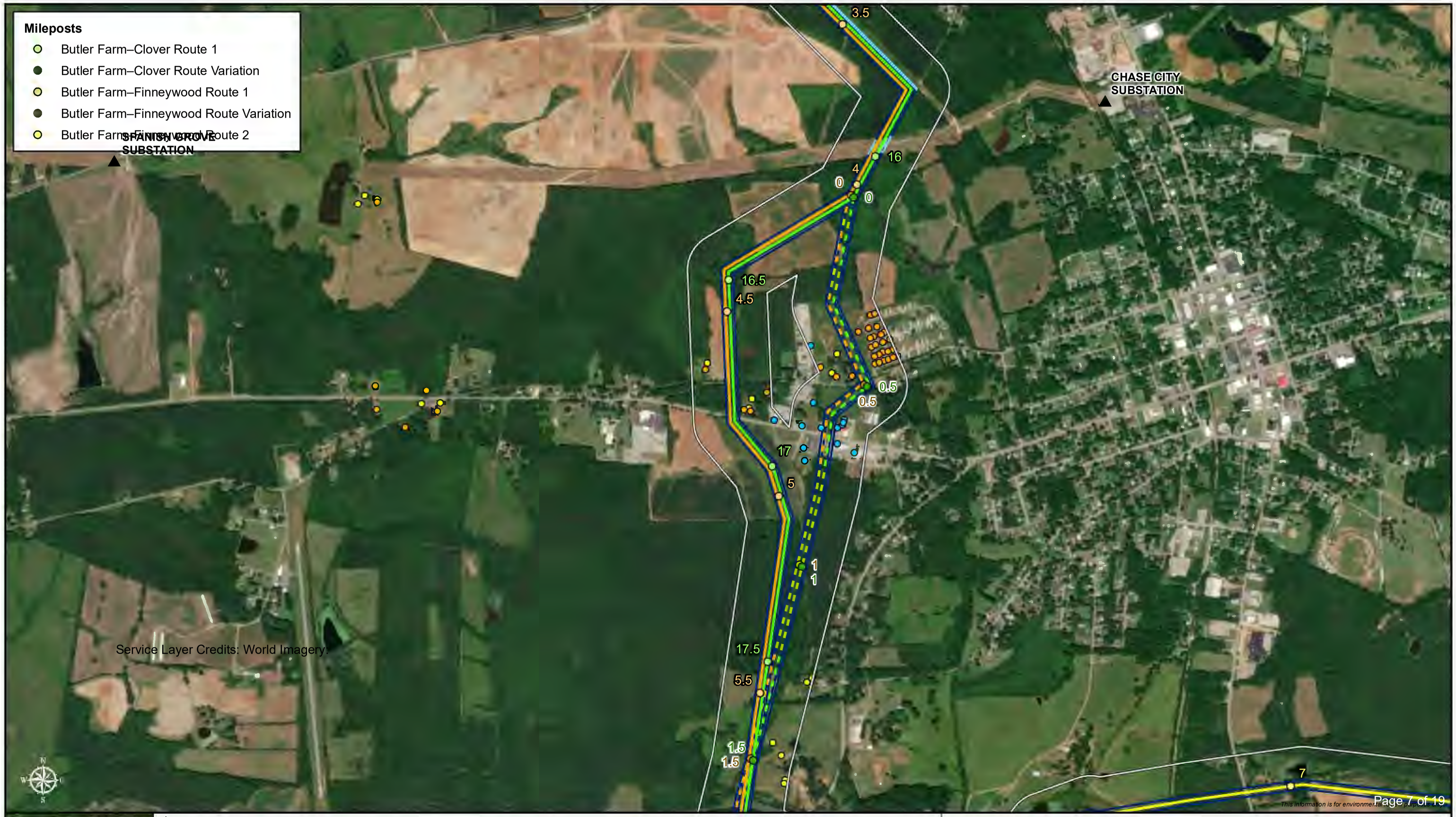
Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
500 Foot Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: RL



Existing Substation
Commercial Structure
Non-Residential
Single-Family Residence

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
500 Foot Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

Non-Residential
Single-Family Residence

Butler Farm–Clover Line
Butler Farm–Clover Route 3

Right-of-Way Type
Proposed New Right-of-Way
500 Foot Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

Mileposts

- Butler Farm–Clover Route 3

6.5

7

7.5

8

8.5

9

Service Layer Credits: World Imagery:

N W E S

- Non-Residential
- Single-Family Residence

Butler Farm–Clover Line

- Butler Farm–Clover Route 3

Right-of-Way Type

- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- 500 Foot Buffer

0 500 1,000

Feet

1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

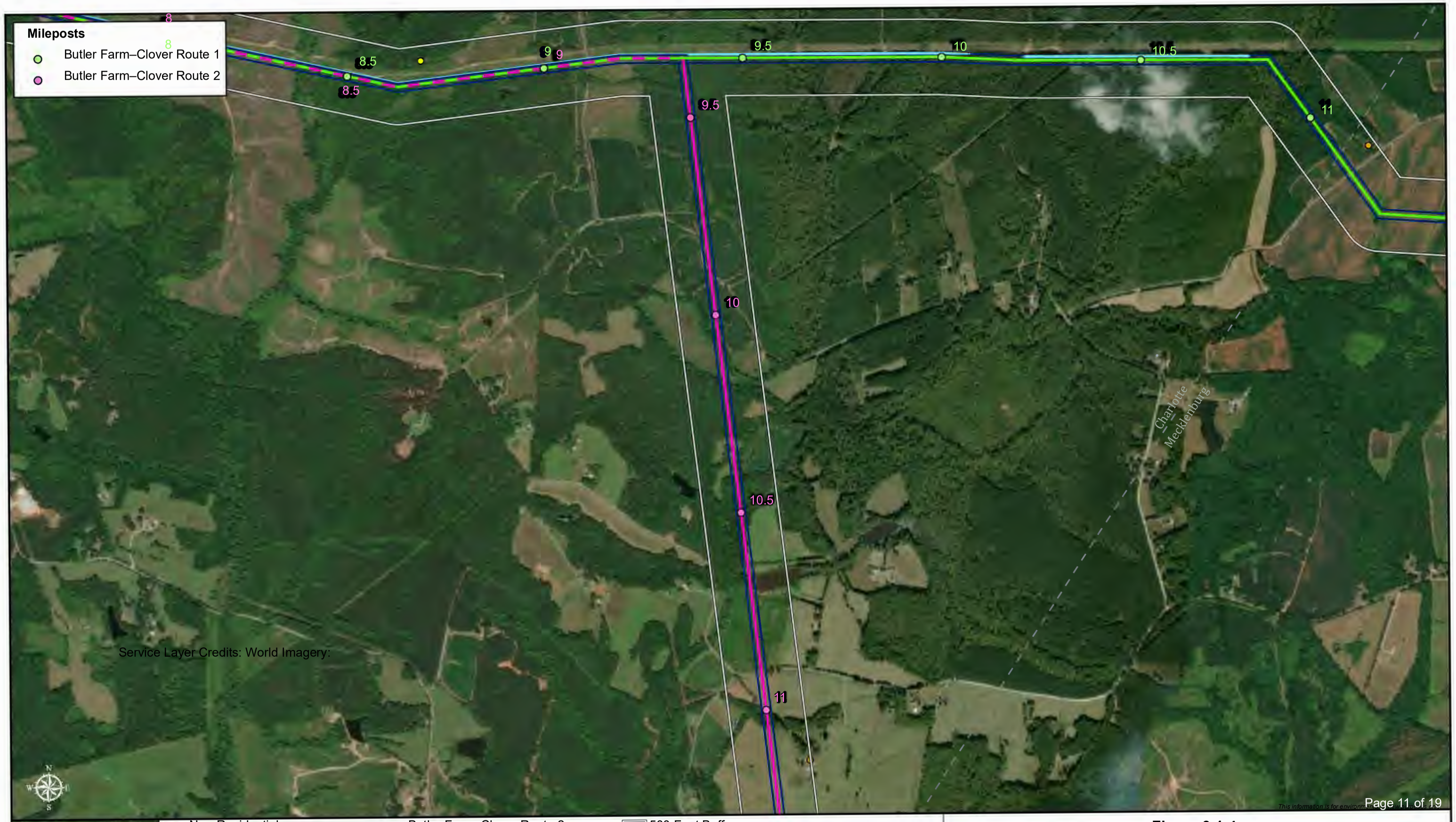
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: RL



Non-Residential
Single-Family Residence

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Butler Farm–Clover Route 2

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

500 Foot Buffer

0 500 1,000
Feet

1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

M:\PLS M:\Clients\D-F\DOM\Clover\ButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

Mileposts

- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

11.5

12

12.5

Charlotte
Mecklenburg

Service Layer Credits: World Imagery:

10.5

11

11.5

12

13

N
W
E
S

- Non-Residential
- Single-Family Residence

Butler Farm–Clover Line

- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type

- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

500 Foot Buffer

0 500 1,000
Feet

1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

M:\PLS M:\Clients\D-F\DOM\Clover\ButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

Non-Residential
Single-Family Residence

Butler Farm–Clover Line
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

500 Foot Buffer

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way

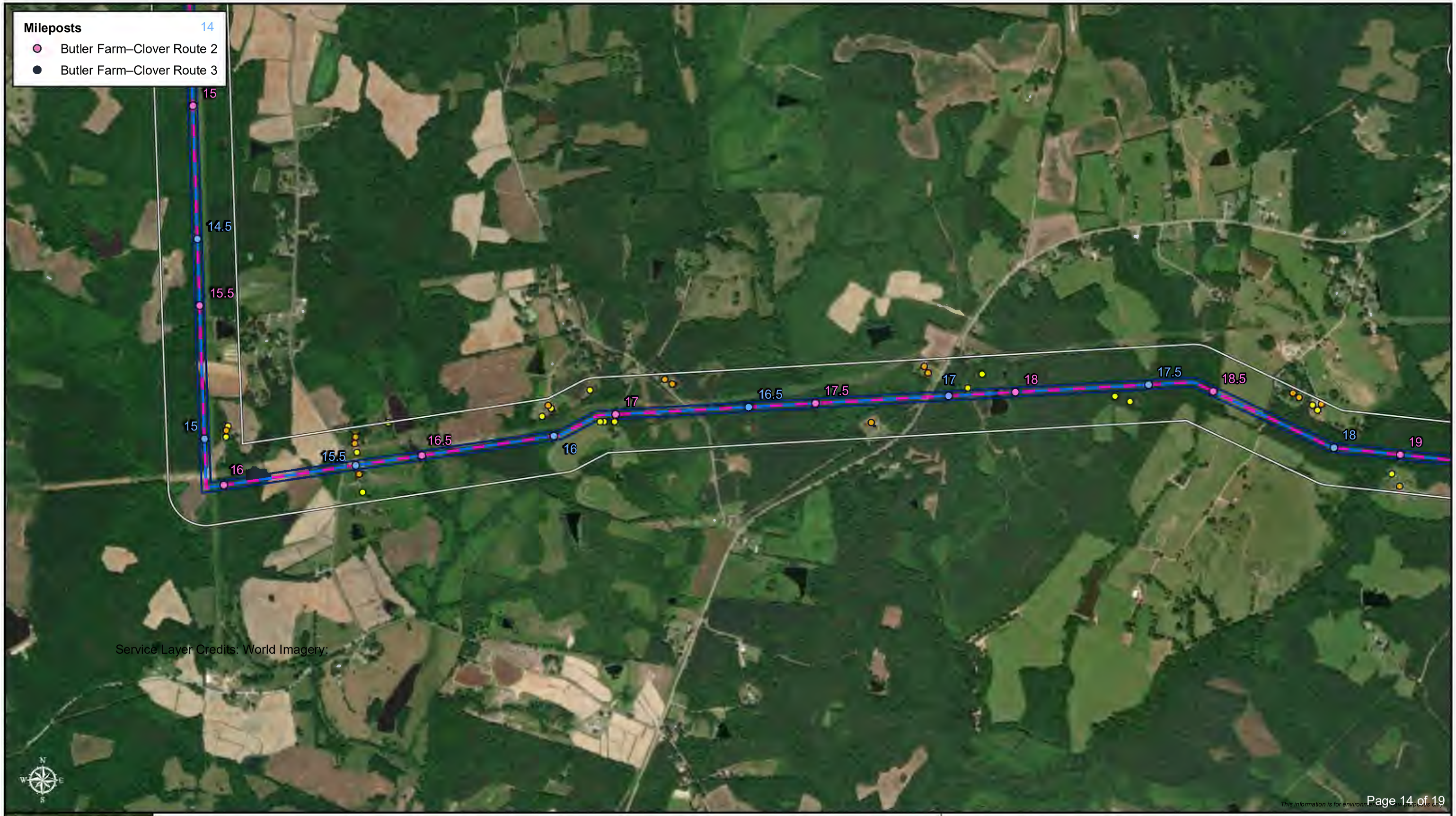
0 500 1,000
Feet
1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL



Non-Residential
Single-Family Residence

Butler Farm–Clover Line
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Right-of-Way Type
Proposed New Right-of-Way
500 Foot Buffer

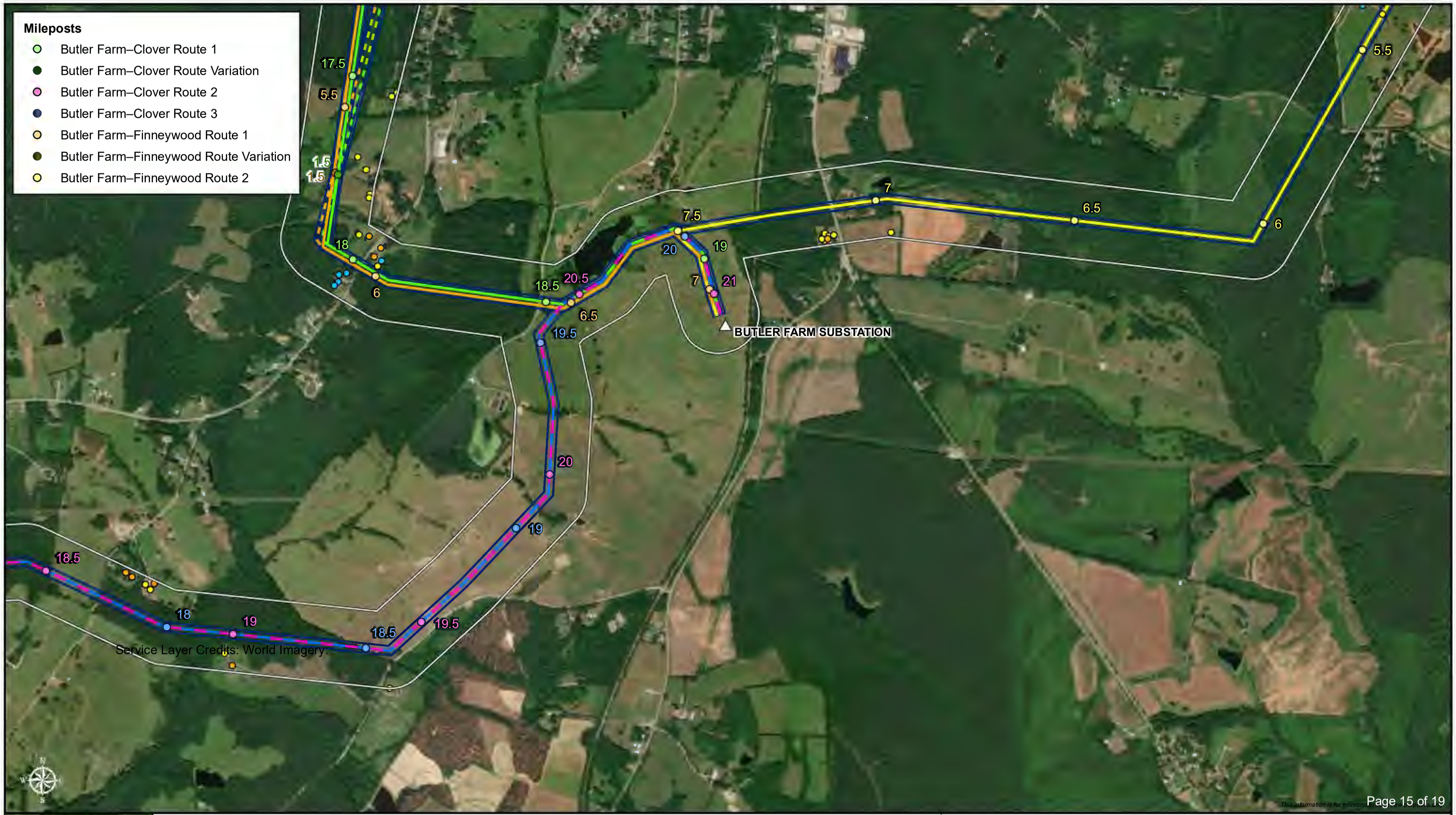
0 500 1,000
Feet
1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL



Proposed Substation
Commercial Structure
Non-Residential
Single-Family Residence

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm–Finneywood Route Variation
Butler Farm–Finneywood Route 2

Right-of-Way Type
Proposed New Right-of-Way
500 Foot Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 | DRAWN BY: RL

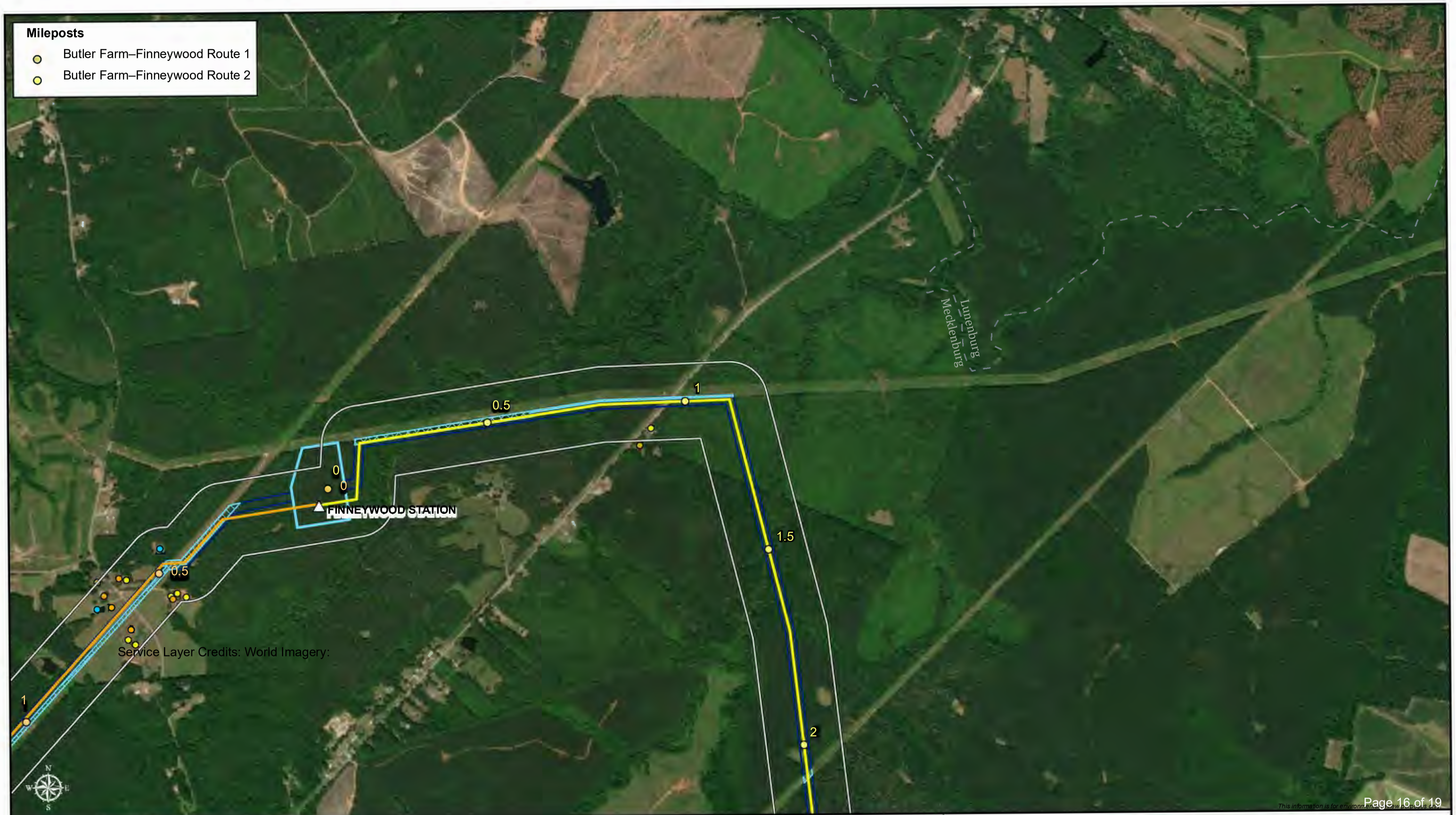


Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLES M:\Clients\D-F\DOM\Clover\ButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

Commercial Structure
Non-Residential
Single-Family Residence

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 2

Right-of-Way Type
Existing Overhead Right-of-Way

Proposed New Right-of-Way
500 Foot Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

Mileposts

Butler Farm–Finneywood Route 2

4

4.5

5

5.5

Service Layer Credits: World Imagery:

- Commercial Structure
- Non-Residential
- Single-Family Residence

Butler Farm–Finneywood Line

- Butler Farm–Finneywood Route 2

Right-of-Way Type

- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- 500 Foot Buffer

0 500 1,000

Feet

1:14,400

Figure 3.1-4

Existing Structures within 500 feet of Alternative Route

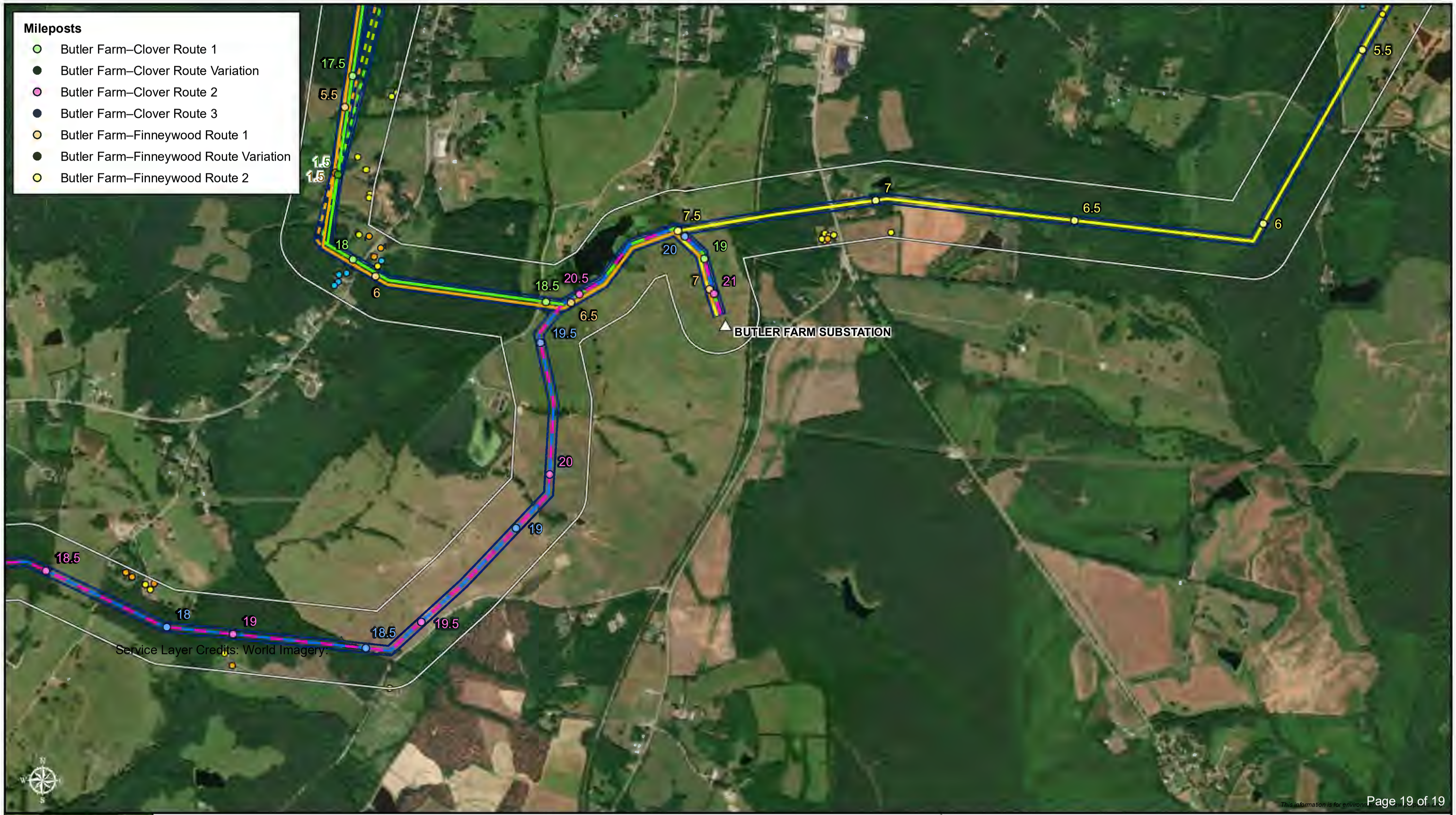
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL



Proposed Substation
Commercial Structure
Non-Residential
Single-Family Residence

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2

Right-of-Way Type
Proposed New Right-of-Way
500 Foot Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-4
Existing Structures within 500 feet of Alternative Route
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-4_Existing_Structures | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 | DRAWN BY: RL

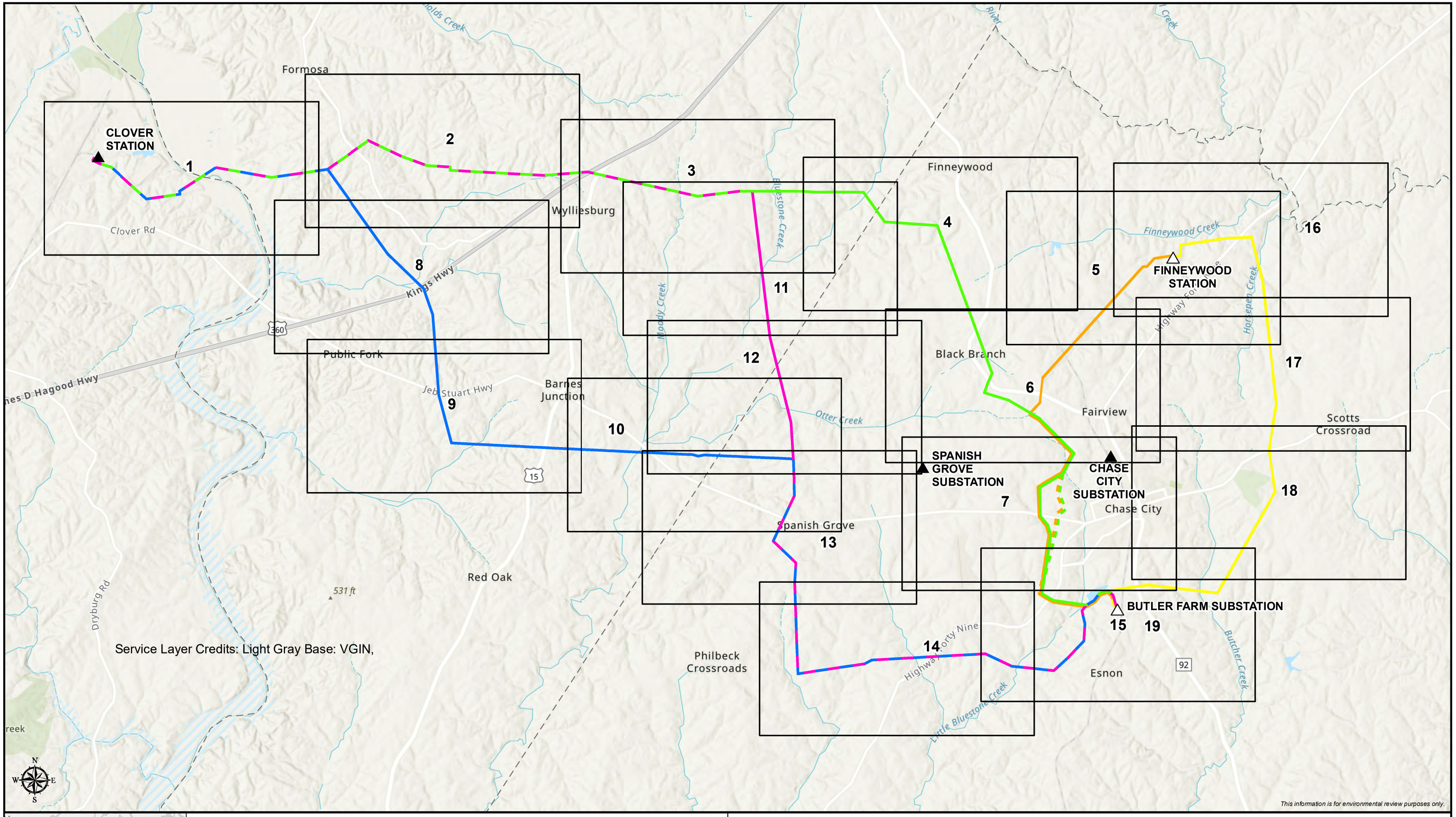


Figure 3.1-5 Index
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_Index | REVISED: 10/05/2022 | SCALE: 1:76,000 when printed at 11x17 DRAWN BY: NAD

Mileposts
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Cemetery No. 1

CLOVER STATION

Charlotte
Halifax

Service Layer Credits: World Imagery:

Cemetery
Existing Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- 0.25 Mile Buffer

0 500 1,000
Feet

1:14,400

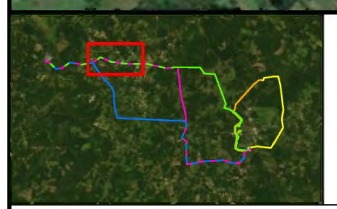
Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL



School
Place of Worship
Cemetery

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

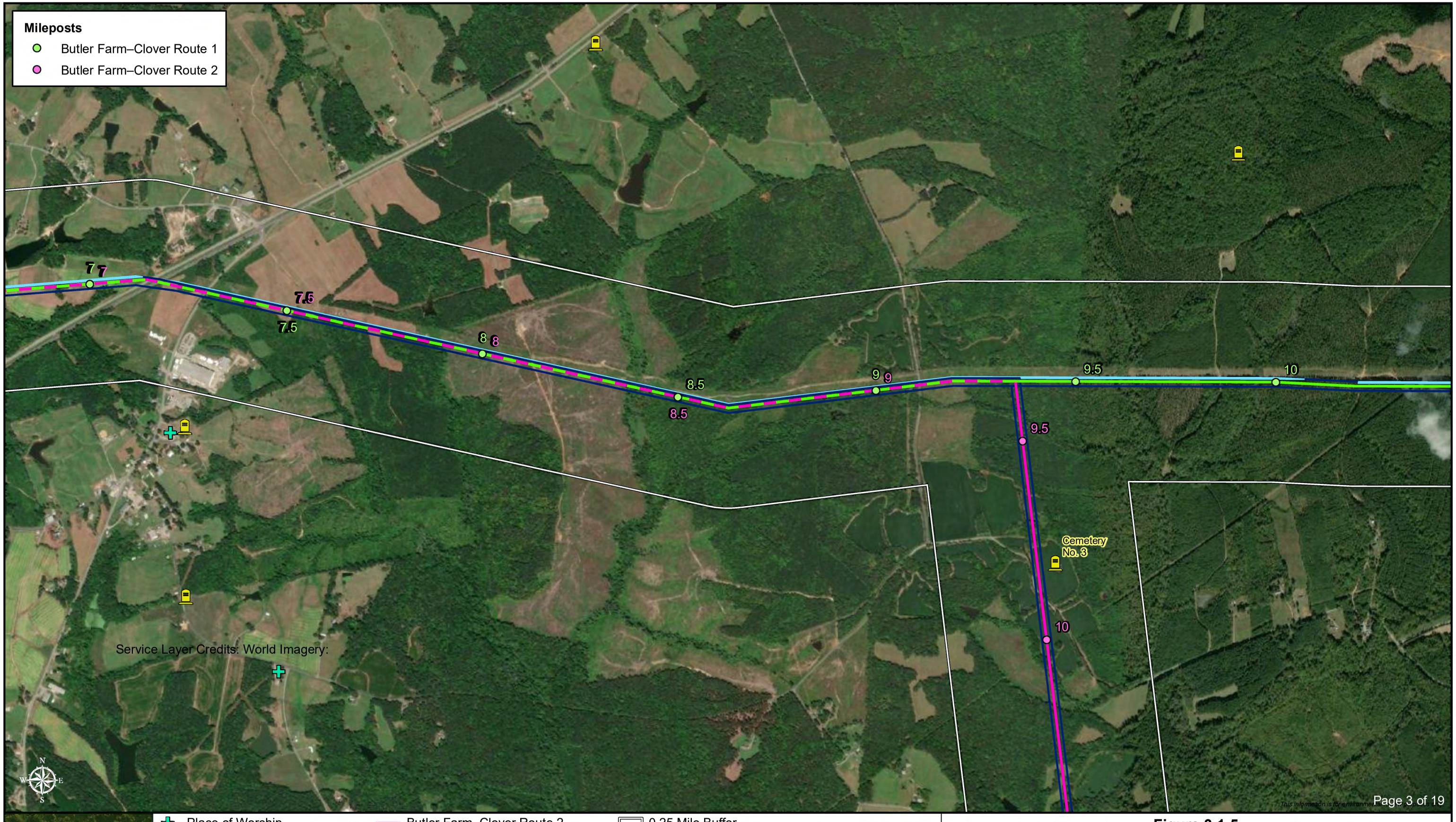
Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
0.25 Mile Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: RL



Place of Worship
Cemetery

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm–Clover Route 2

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way

0.25 Mile Buffer

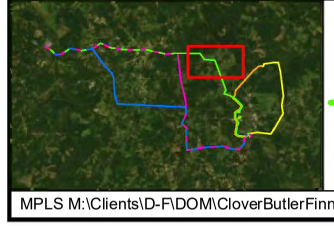
0 500 1,000
Feet
1:14,400

Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL



Cemetery

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

0.25 Mile Buffer

0 500 1,000

Feet

1:14,400

Figure 3.1-5

Cemeteries, Schools, Places of Worship

Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

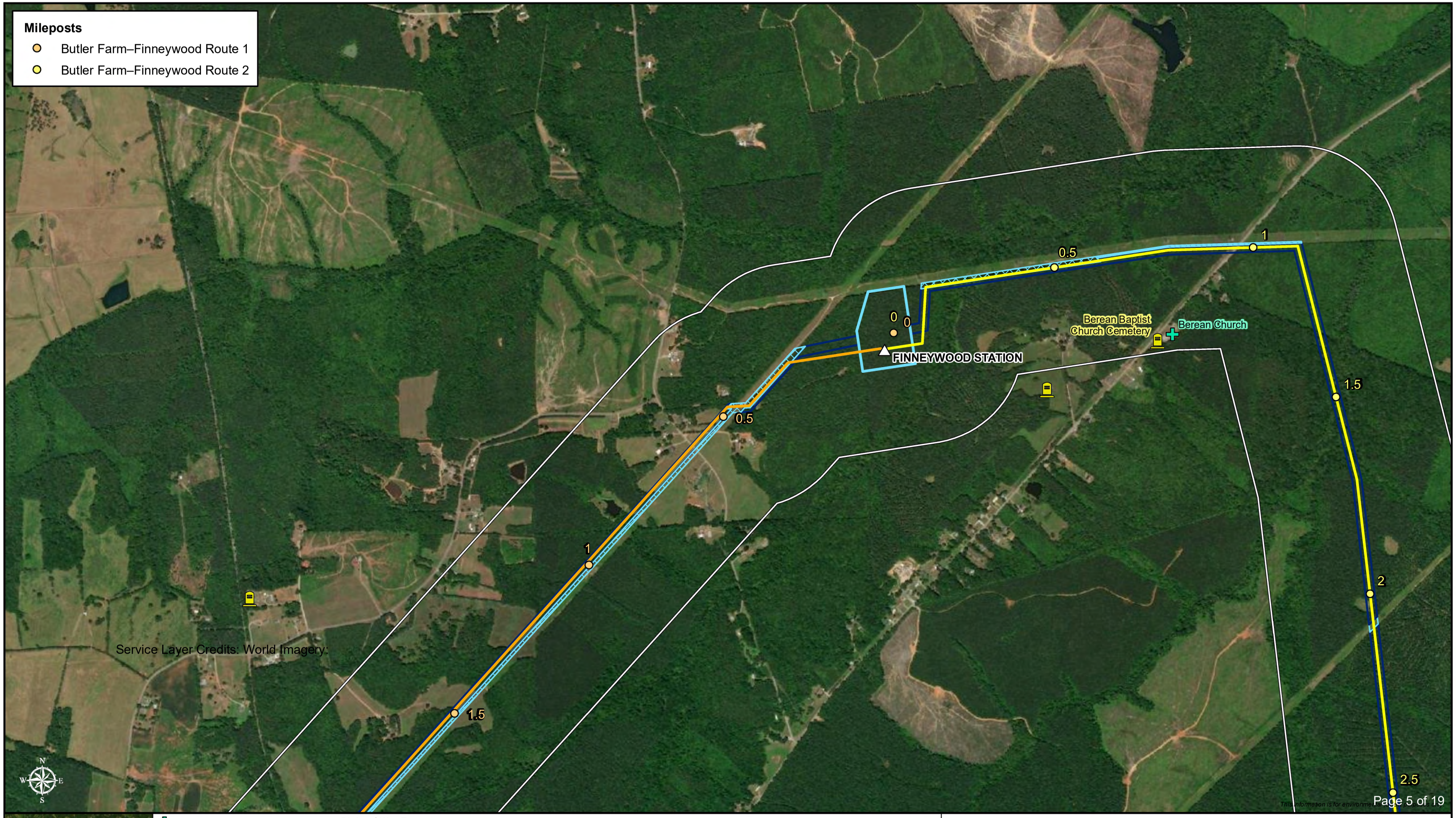
Halifax, Charlotte, and Mecklenburg Counties, VA

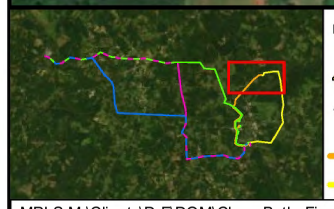
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL





Place of Worship
Cemetery
Proposed Substation

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm–Finneywood Route 2

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
Aboveground Facility - Finneywood Switching Station
0.25 Mile Buffer

0 500 1,000
Feet

1:14,400

Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: RL

School
Place of Worship
Cemetery
Existing Substation

Butler Farm–Clover Line
Butler Farm–Clover Route 1

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
0.25 Mile Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 | DRAWN BY: RL

Mileposts

- Butler Farm–Clover Route 1
- Butler Farm–Clover Route Variation
- Butler Farm–Finneywood Route 1
- Butler Farm–Finneywood Route Variation
- Butler Farm–Finneywood Route 2

SPANISH GROVE SUBSTATION

CHASE CITY SUBSTATION

Cemetery No. 6

3.5
16
0
4
0
16.5
4.5
0.5
0.5
17
5
1
1
17.5
5.5
1.5
1.5
7

Service Layer Credits: World Imagery

School
Place of Worship
Cemetery
Existing Substation

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
0.25 Mile Buffer

0 500 1,000
Feet

1:14,400

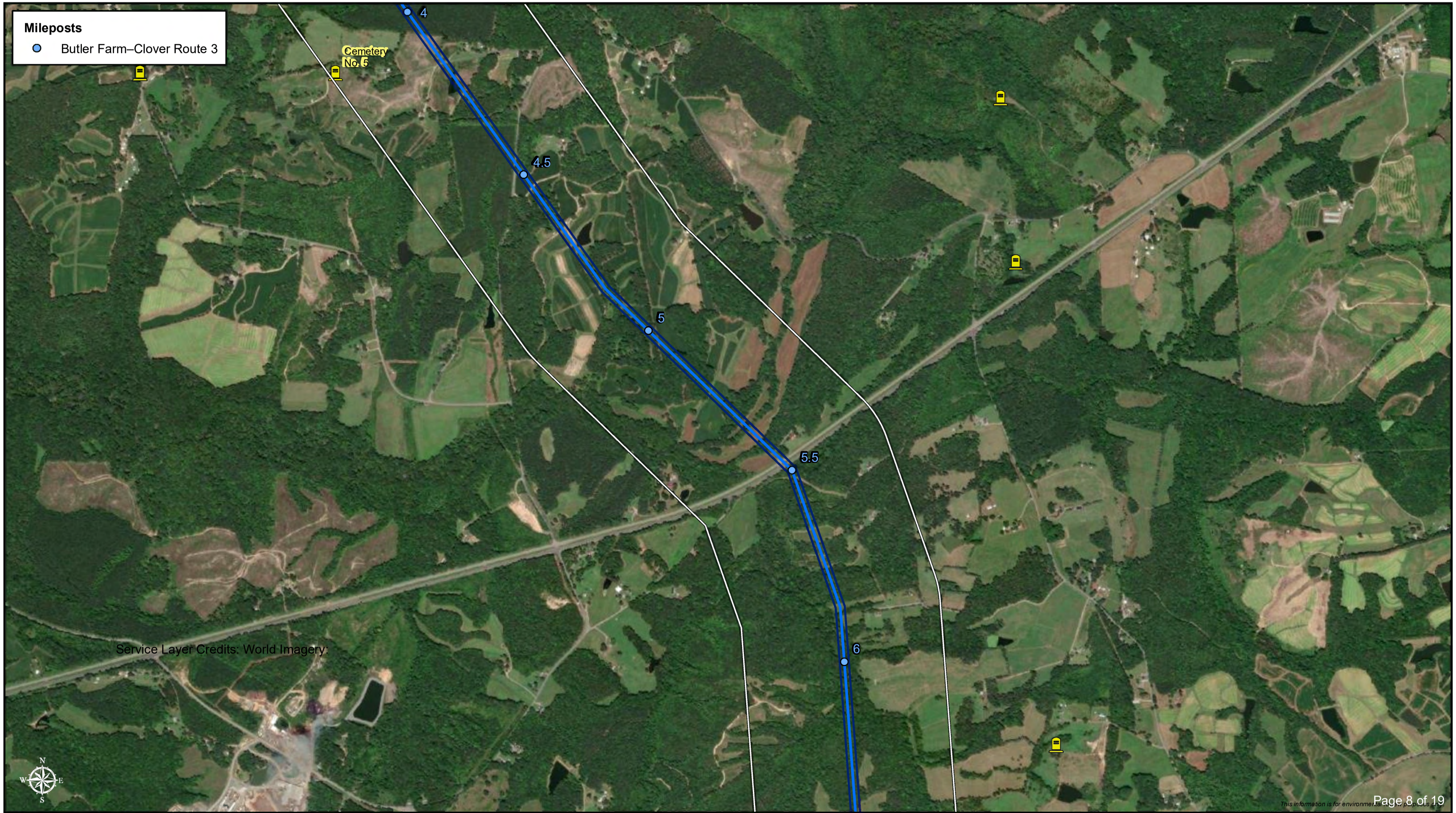
Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

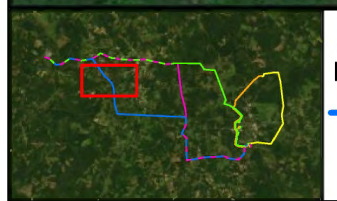
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL





Cemetery

Butler Farm–Clover Line

Butler Farm–Clover Route 3

Right-of-Way Type

Proposed New Right-of-Way

0.25 Mile Buffer

0 500 1,000

Feet

1:14,400

Figure 3.1-5

Cemeteries, Schools, Places of Worship

Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

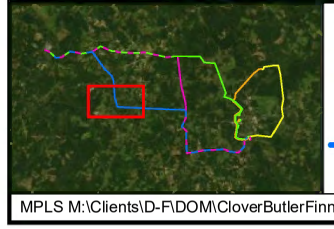
DRAWN BY: RL

Mileposts
- Butler Farm–Clover Route 3

6.5
7
7.5
8
8.5
9

Service Layer Credits: World Imagery:

N
W
E
S



- Place of Worship
- Cemetery

Butler Farm–Clover Line
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- 0.25 Mile Buffer

0 500 1,000
Feet

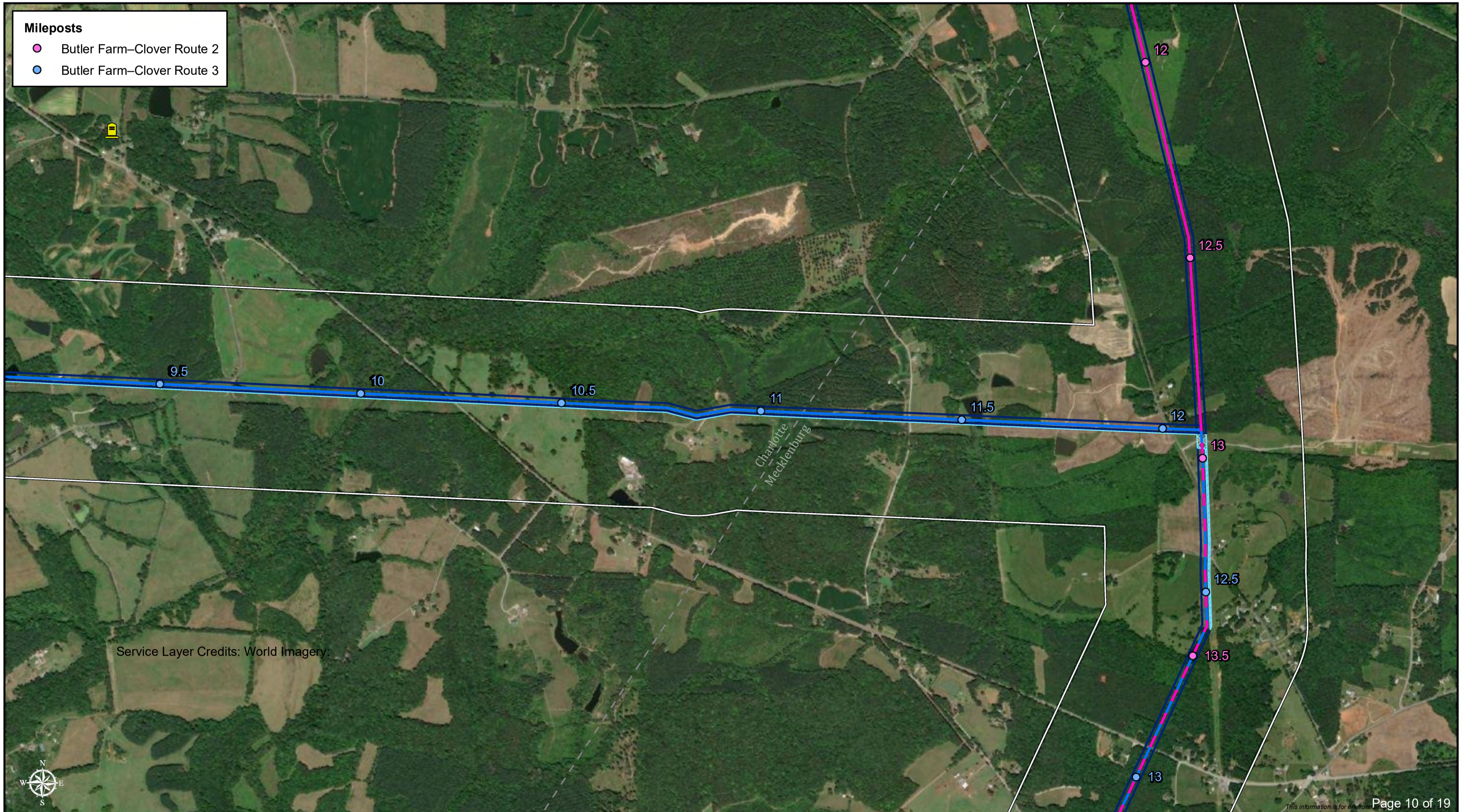
1:14,400

Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL



Cemetery

Butler Farm–Clover Line

Butler Farm–Clover Route 2

Butler Farm–Clover Route 3

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

0.25 Mile Buffer

0 500 1,000

Feet

1:14,400

Figure 3.1-5

Cemeteries, Schools, Places of Worship

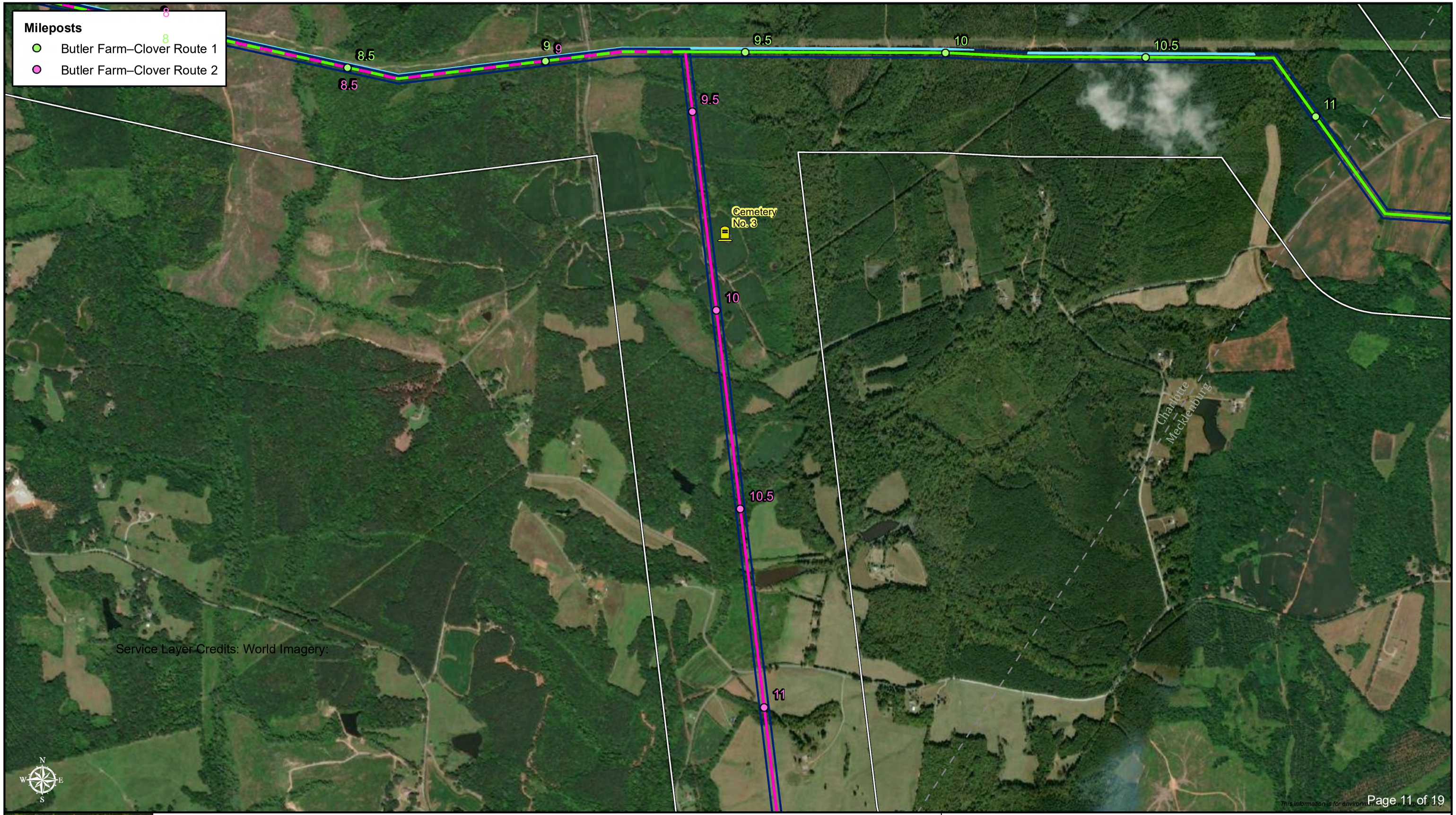
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL



Cemetery

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Butler Farm–Clover Route 2

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

0.25 Mile Buffer

0 500 1,000

Feet

1:14,400

Figure 3.1-5

Cemeteries, Schools, Places of Worship

Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

Page 12 of 19

Place of Worship
Cemetery

Butler Farm–Clover Line
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way

0.25 Mile Buffer

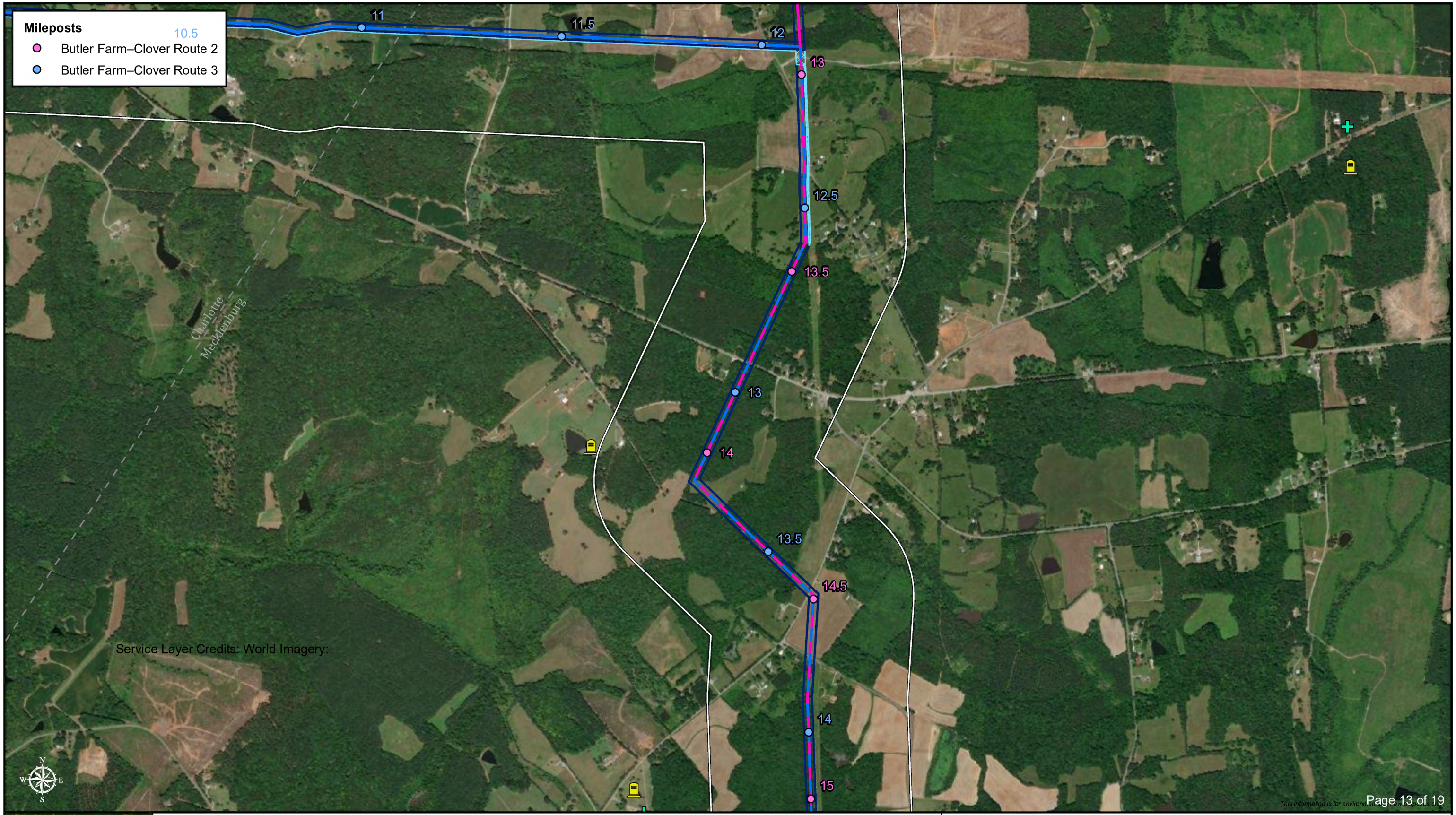
0 500 1,000
Feet
1:14,400

Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

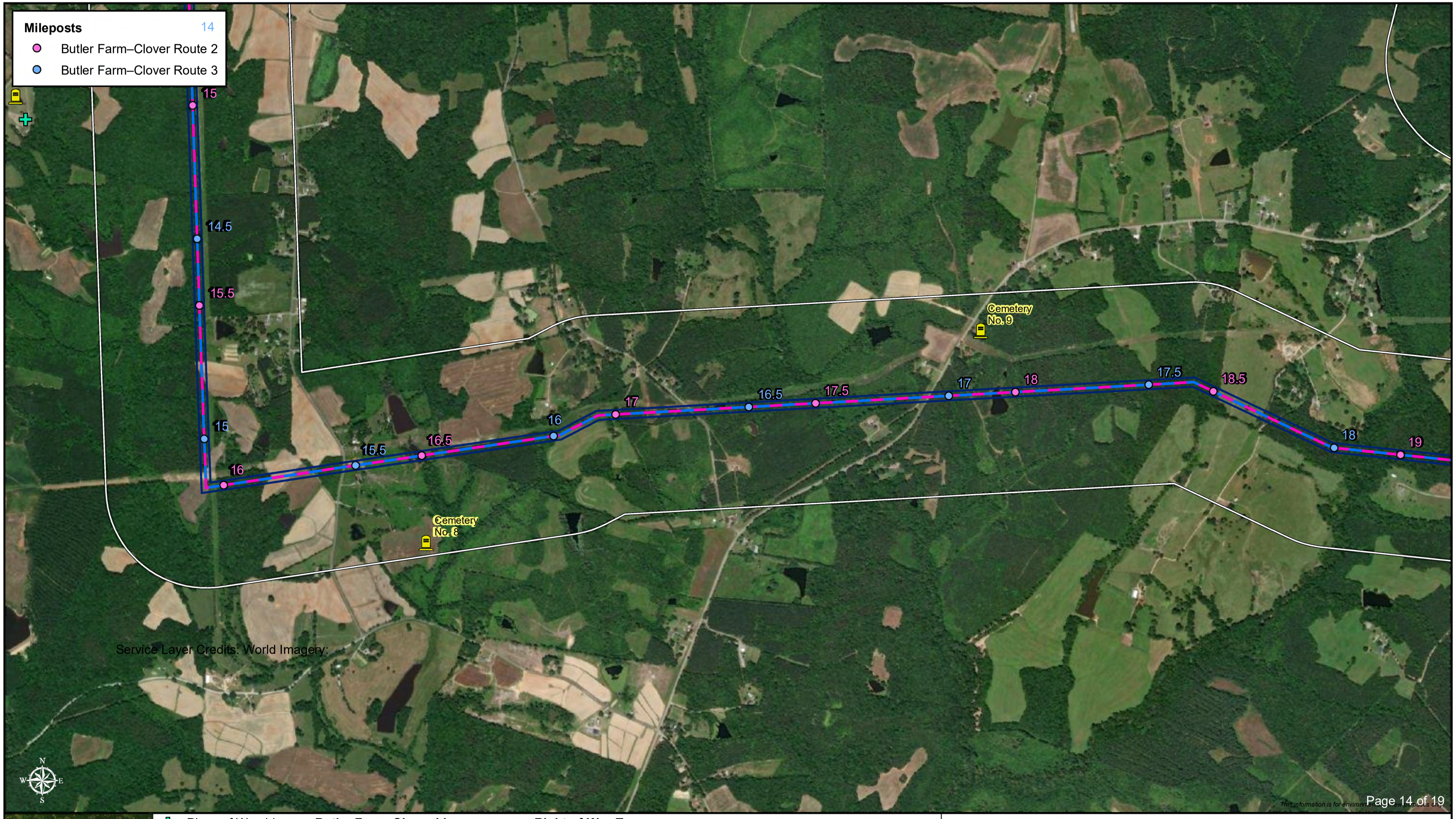


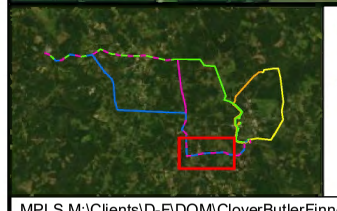
Place of Worship
Cemetery
Butler Farm–Clover Line
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3
Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
0.25 Mile Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: RL





Place of Worship
Cemetery

Butler Farm–Clover Line
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Right-of-Way Type
Proposed New Right-of-Way
0.25 Mile Buffer

0 500 1,000
Feet

1:14,400

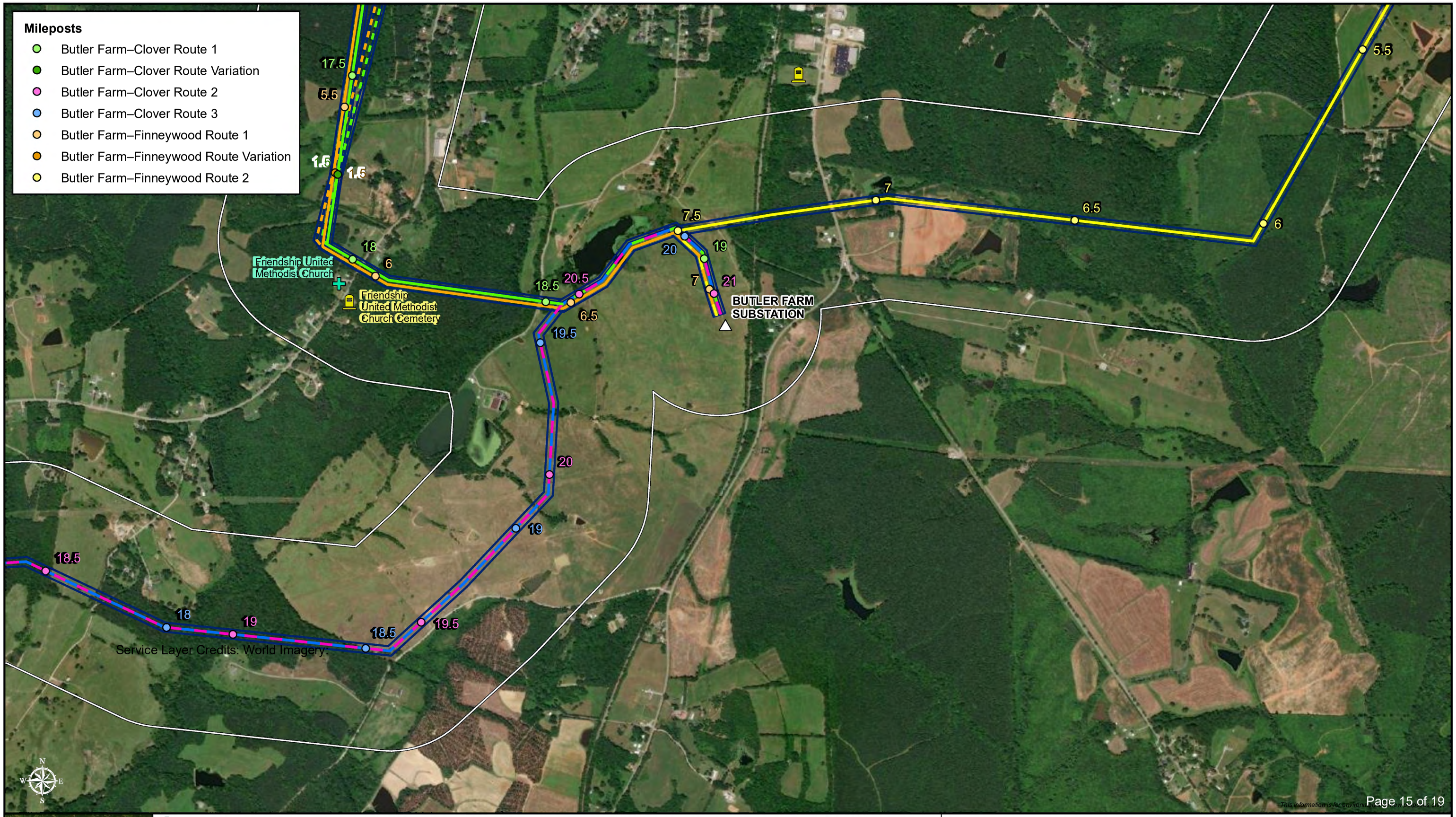
Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL



Place of Worship
Cemetery
Proposed Substation

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2

Right-of-Way Type
Proposed New Right-of-Way
0.25 Mile Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

Place of Worship
Cemetery
Proposed Substation

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm–Finneywood Route 2

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
Aboveground Facility - Finneywood Switching Station
0.25 Mile Buffer

0 500 1,000
Feet

1:14,400

Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 2

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

0.25 Mile Buffer

0 500 1,000

Feet

1:14,400

Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

School
Place of Worship
Cemetery

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 2

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
0.25 Mile Buffer

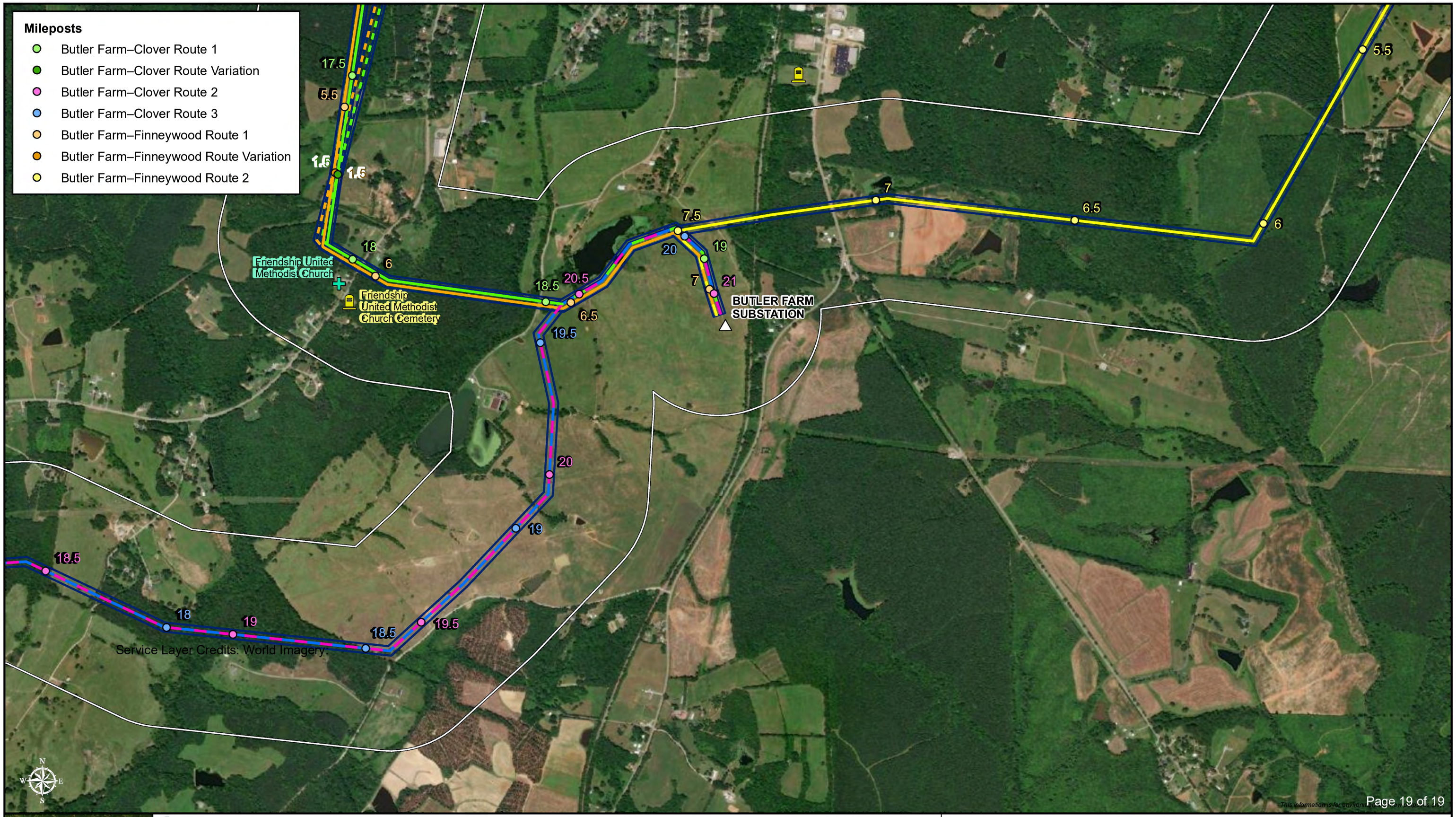
0 500 1,000
Feet
1:14,400

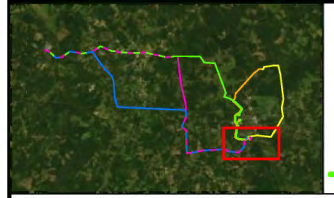
Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL





Place of Worship
Cemetery
Proposed Substation

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2

Right-of-Way Type
Proposed New Right-of-Way
0.25 Mile Buffer

0 500 1,000
Feet
1:14,400

Figure 3.1-5
Cemeteries, Schools, Places of Worship
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-5_School_Church_Cemetery | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: RL

CLOVER STATION

FINNEYWOOD STATION

SPANISH GROVE SUBSTATION

CHASE CITY SUBSTATION

BUTLER FARM SUBSTATION

1

2

3

4

5

6

Formosa

Wylliesburg

Finneywood

Clover Rd

Kings Hwy

360

Public Fork

Black Branch

Barnes Junction

Jeb Stuart Hwy

Otter Creek

Fairview

Scotts Crossroad

Chase City

Spanish Grove

15

Red Oak

531 ft

Dryburg Rd

Philbeck Crossroads

Highway Forty Nine

Esnon

92

Bluestone Creek

Moody Creek

Horsepen Creek

Butcher Creek

Service Layer Credits: Light Gray Base: VGIN,

This information is for environmental review purposes only.

Washington

Richmond

Norfolk

Existing Substation

Proposed Substation

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Butler Farm-Clover Route Variation

Butler Farm–Clover Route 2

Butler Farm–Clover Route 3

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Butler Farm-Finneywood Route Variation

Butler Farm–Finneywood Route 2

Index Page

0 0.5 1

Miles

1:76,000

Figure 3.1-6 Index
Planned Developments within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-6_Index | REVISED: 10/10/2022 | SCALE: 1:76,000 when printed at 11x17

DRAWN BY: NAD

Mileposts

- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

CLOVER STATION

Randolph Solar

Charlotte
Halifax

Service Layer Credits: World Imagery:

Page 1 of 6

▲ Existing Substation

Butler Farm–Clover Line

- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- 0.25 Mile Buffer

Developments

- Proposed Solar Development

0 750 1,500
Feet

1:24,000

Figure 3.1-6
Planned Developments within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-6_Planned_Developments | REVISED: 10/10/2022 | SCALE: 1:24,000 when printed at 11x17

DRAWN BY: RL

Mileposts
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2

Randolph Solar

Moody Creek

Quarter Horse

Charlotte
Mecklenburg

Service Layer Credits: World Imagery:

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2

0.25 Mile Buffer

Developments
- Proposed Solar Development

0 750 1,500
Feet

1:24,000

Figure 3.1-6
Planned Developments within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-6_Planned_Developments | REVISED: 10/10/2022 | SCALE: 1:24,000 when printed at 11x17

DRAWN BY: RL

▲ Existing Substation
△ Proposed Substation

Butler Farm–Clover Line
Butler Farm–Clover Route 1

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm–Finneywood Route 2
0.25 Mile Buffer

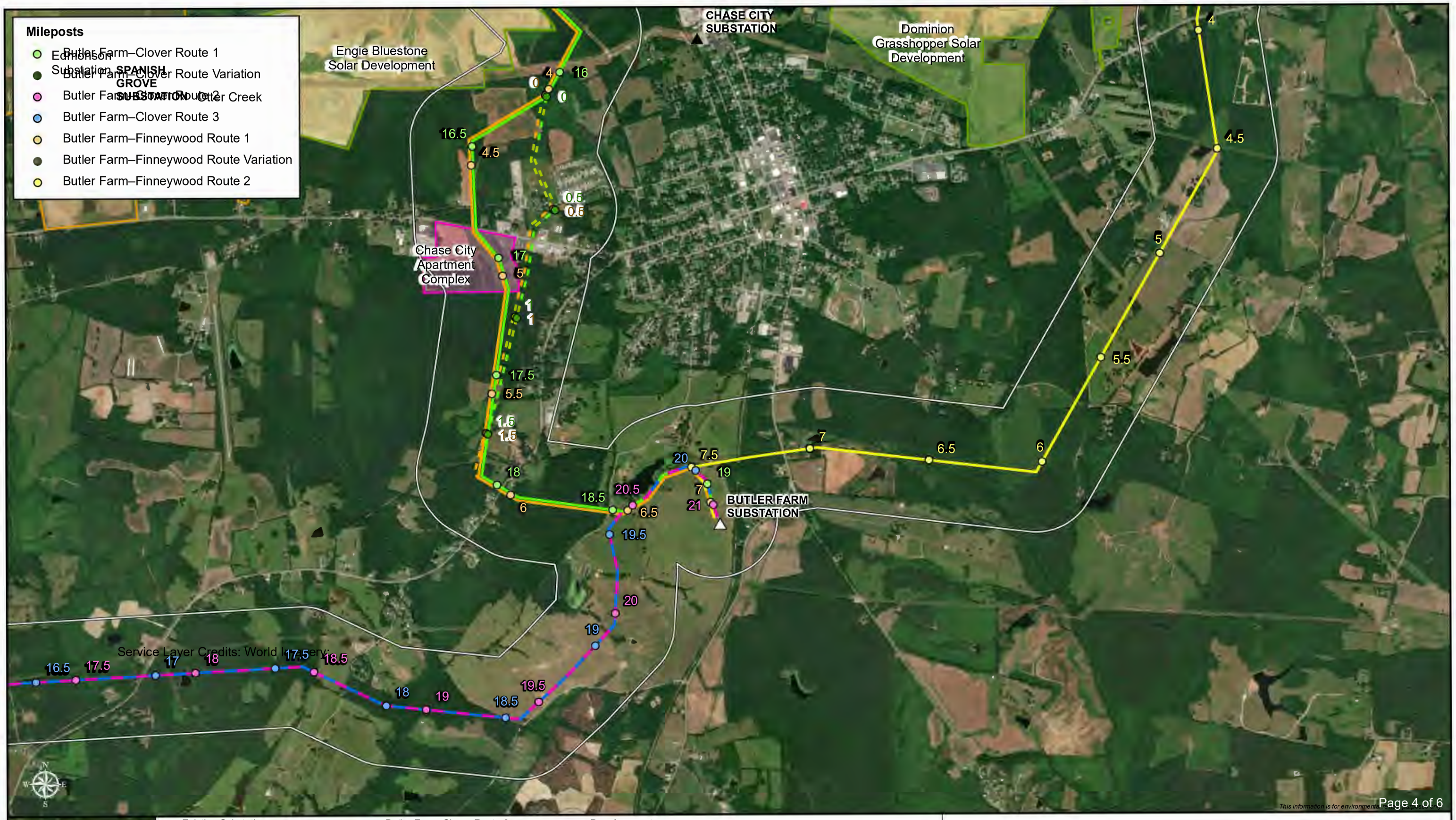
Developments
Proposed Solar Development
Newly Constructed Solar Facility

0 750 1,500
Feet
1:24,000

Figure 3.1-6
Planned Developments within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-6_Planned_Developments | REVISED: 10/10/2022 | SCALE: 1:24,000 when printed at 11x17 DRAWN BY: RL



Existing Substation
Proposed Substation

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2
0.25 Mile Buffer

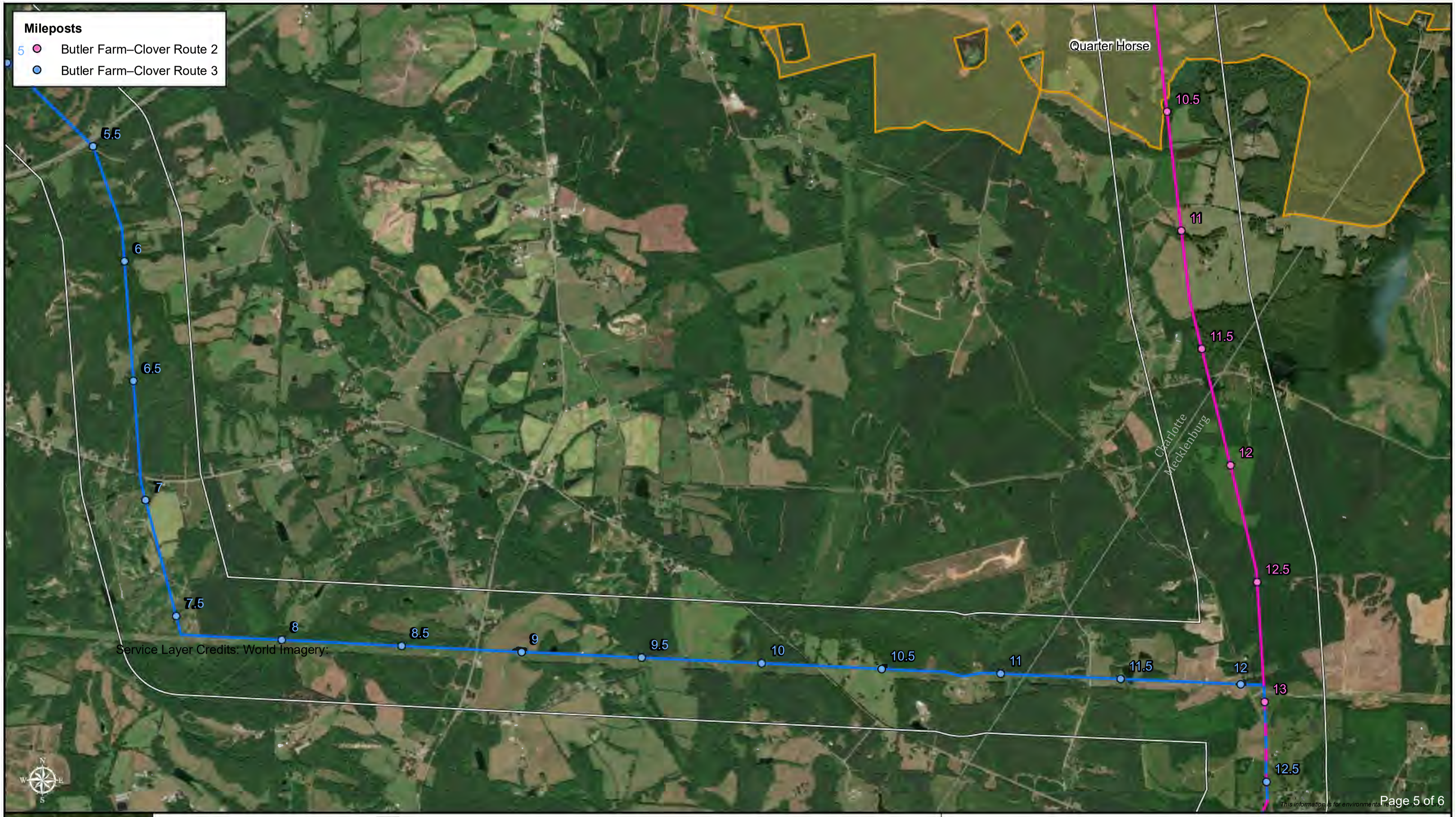
Developments
Proposed Solar Development
Newly Constructed Solar Facility
Substation
Proposed Residential

0 750 1,500
Feet
1:24,000

Figure 3.1-6
Planned Developments within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-6_Planned_Developments | REVISED: 10/10/2022 | SCALE: 1:24,000 when printed at 11x17

DRAWN BY: RL



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

0.25 Mile Buffer

Developments
- Proposed Solar Development

0 750 1,500
Feet

1:24,000

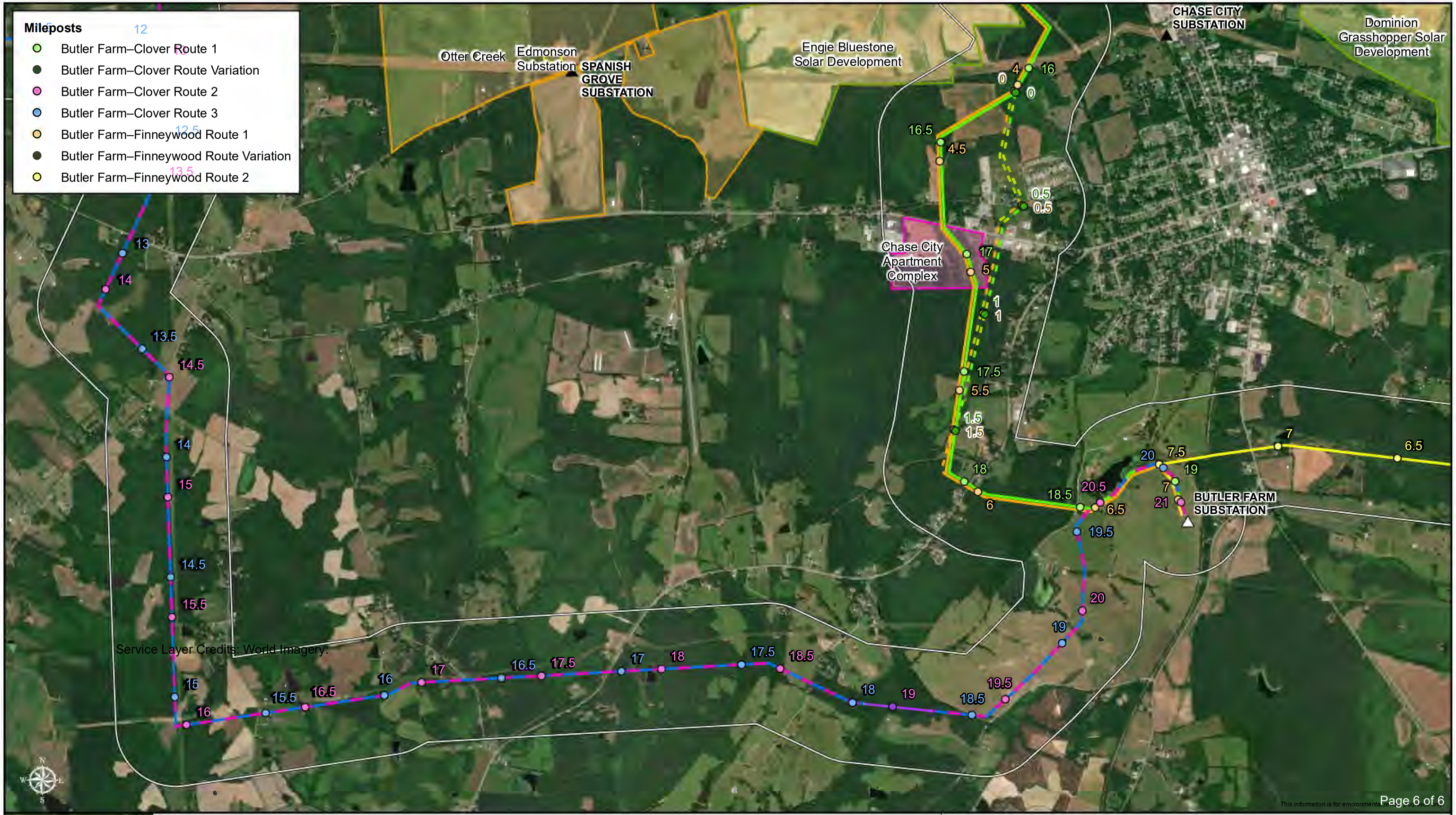
Figure 3.1-6
Planned Developments within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-6_Planned_Developments | REVISED: 10/10/2022 | SCALE: 1:24,000 when printed at 11x17

DRAWN BY: RL



Existing Substation
Proposed Substation

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm–Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

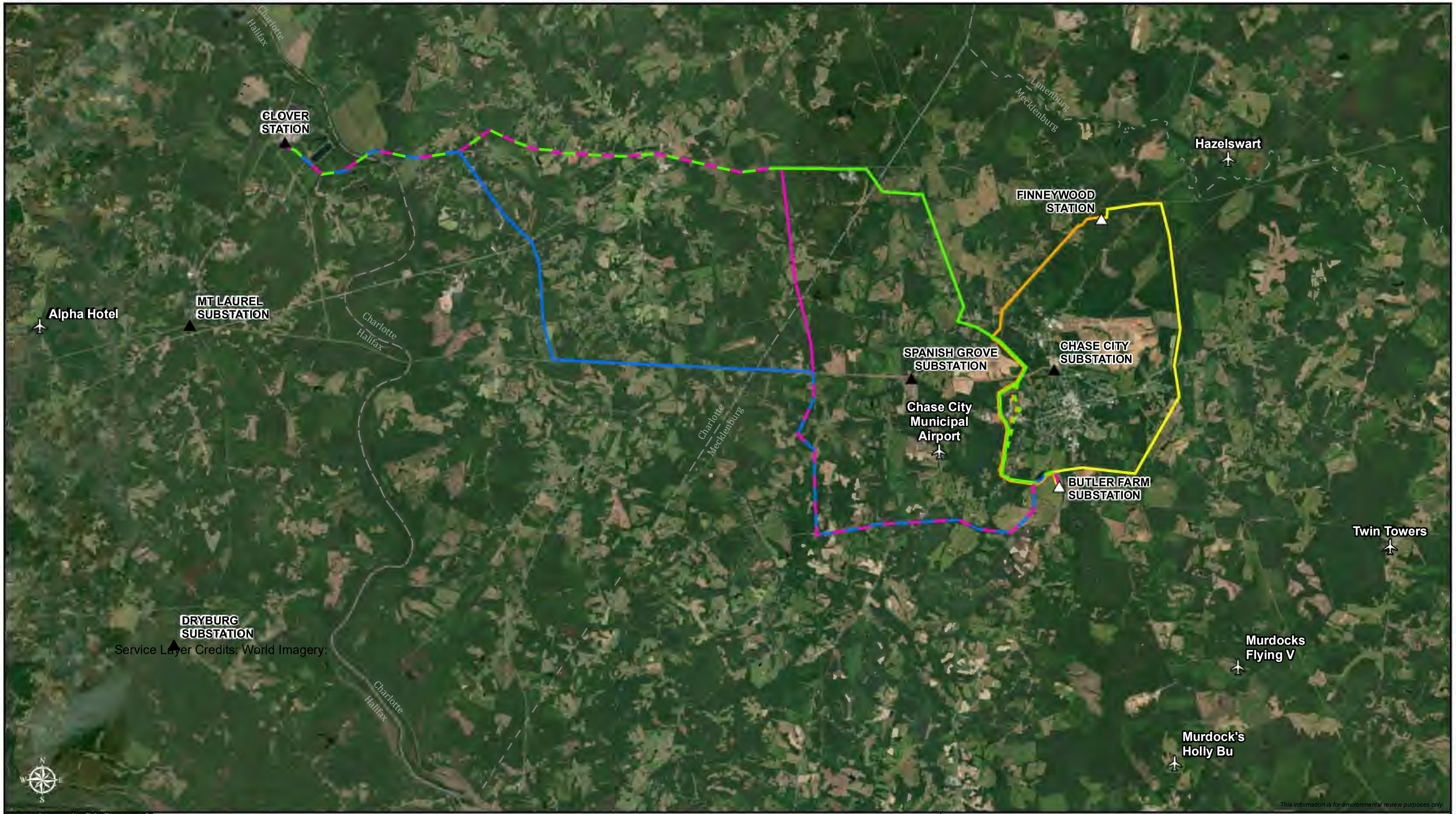
Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2
0.25 Mile Buffer

Developments
Proposed Solar Development
Newly Constructed Solar Facility
Substation
Proposed Residential

0 750 1,500
Feet
1:24,000

Figure 3.1-6
Planned Developments within 0.25 mile of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-6_Planned_Developments | REVISED: 10/10/2022 | SCALE: 1:24,000 when printed at 11x17 | DRAWN BY: RL



Existing Substation
Proposed Substation
Airport

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

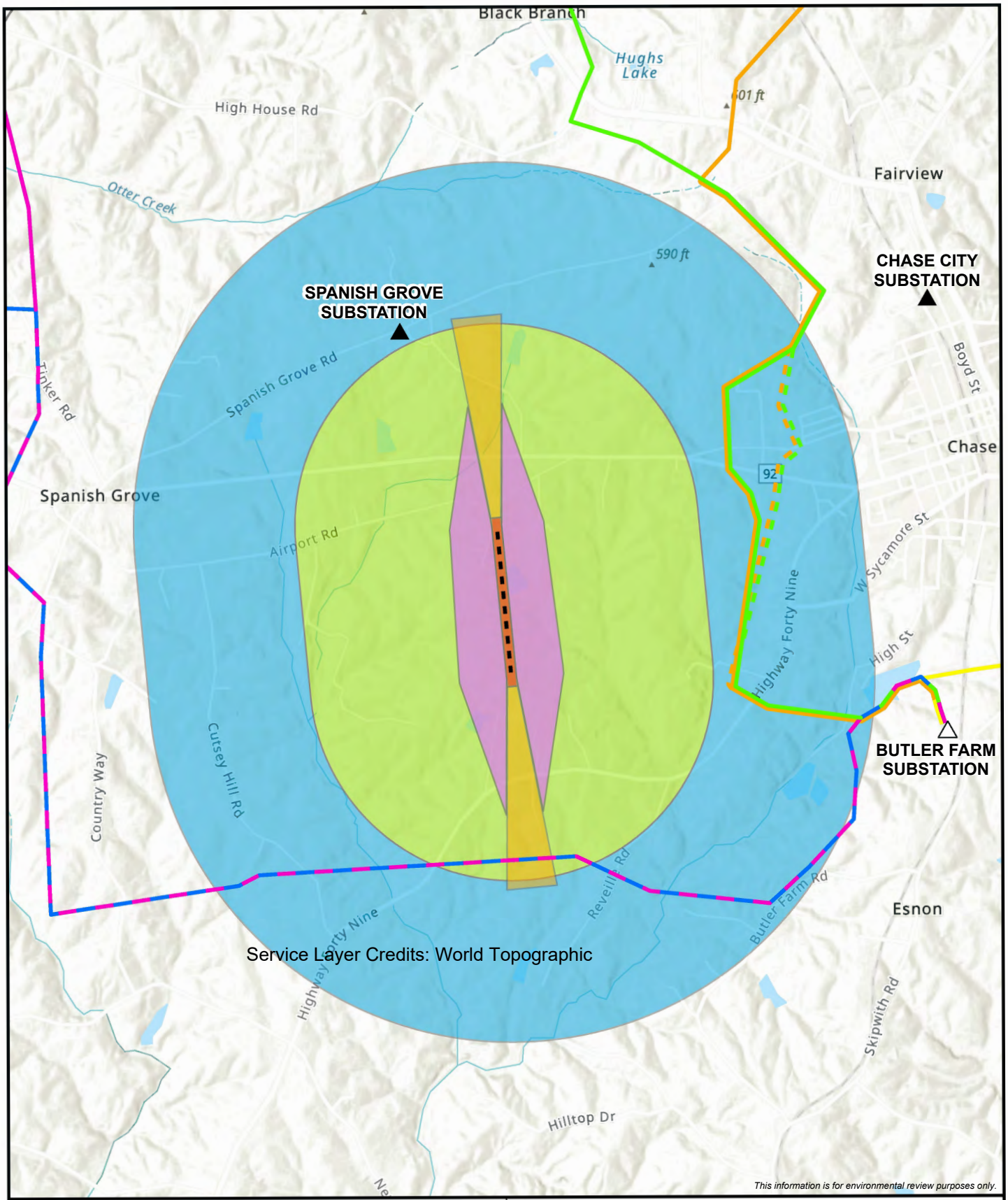
Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2

0 0.5 1
Miles
1:100,000

Figure 3.1-7
Airports and Heliports within 10 miles of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-7_Airports | REVISED: 10/05/2022 | SCALE: 1:100,000 when printed at 11x17 DRAWN BY: NAD



Existing Substation
Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2

Runway Centerline
Primary-Clear Zone Surfaces
Approach Surface
Transitional Surfaces
Inner Horizontal Surface
Conical Surface

1:40,000
0 1,000 2,000 Feet

Figure 3.1-8
Civil Airport Imaginary Surfaces for the Chase City Municipal Airport
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-8_AirportSurfaces | REVISED: 10/10/2022 | SCALE: 1:40,000 DRAWN BY: NAD

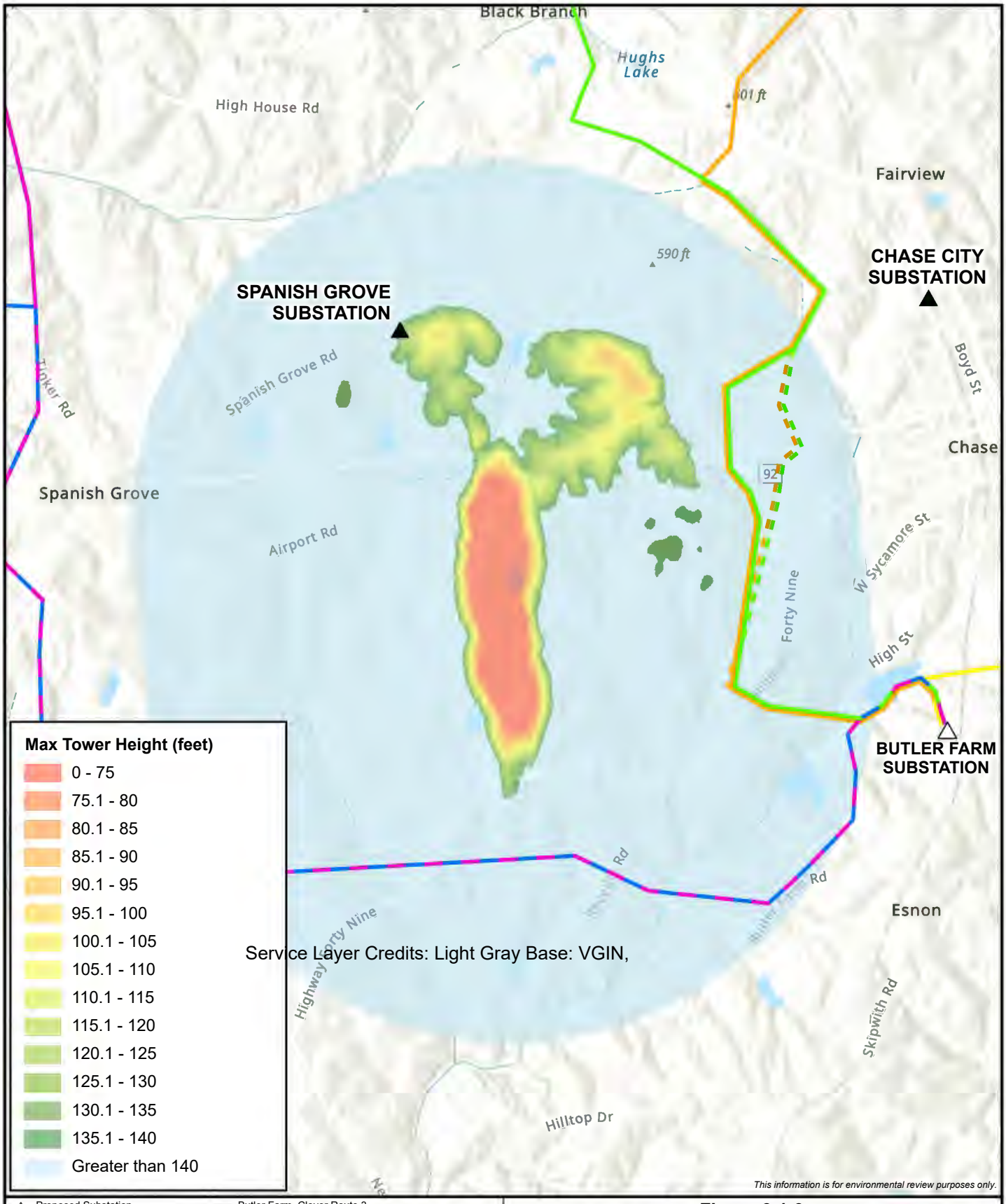


Figure 3.1-9
Maximum Tower Heights near the Chase City Municipal Airport
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.1-9_HeightRestriction | REVISED: 10/10/2022 | SCALE: 1:40,000 DRAWN BY: NAD

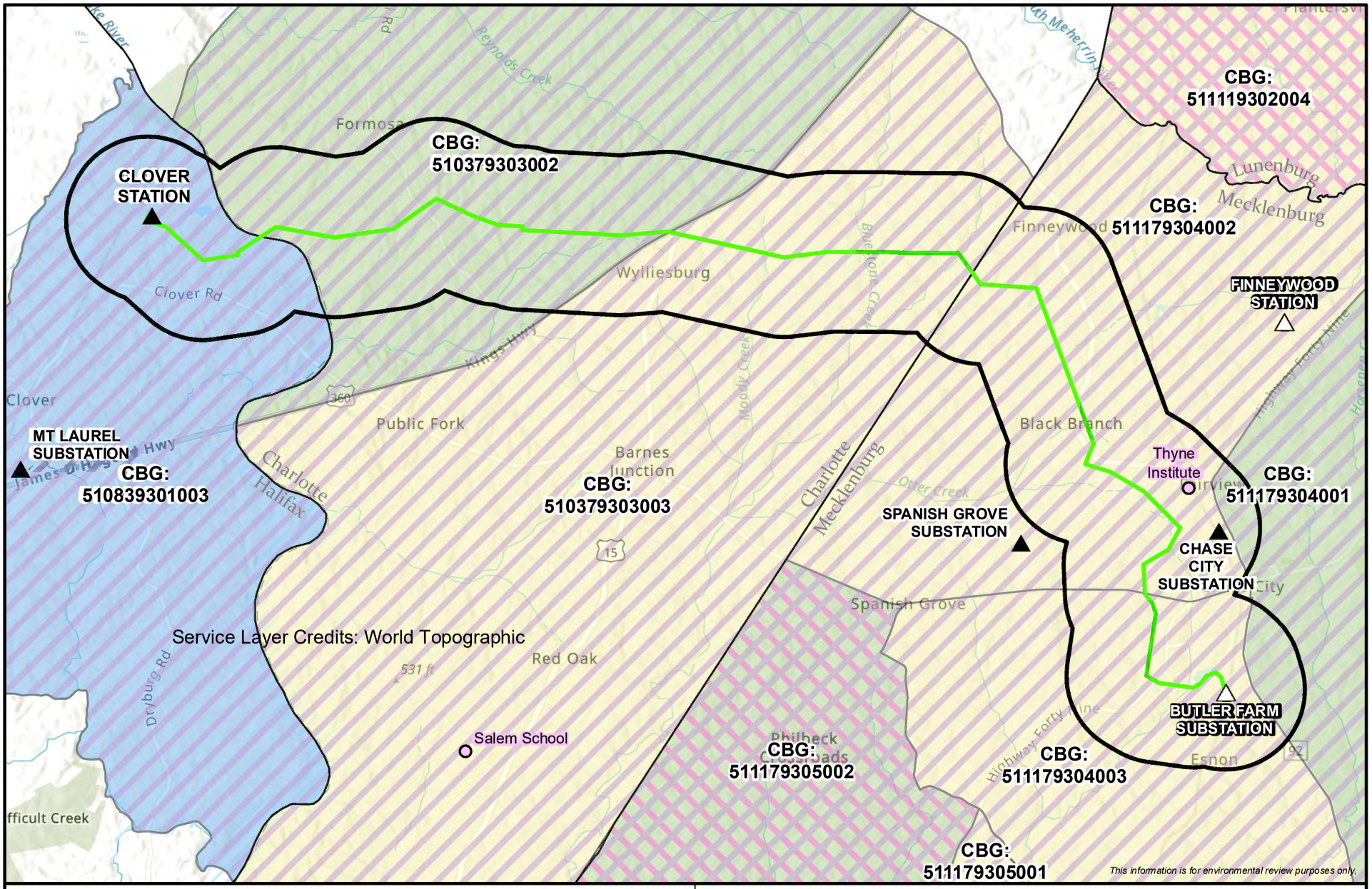


Figure 3.2-1
Butler Farm–Clover Route 1 Demographic Indicators
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.2-x_EJ_Screening_By_Route | REVISED: 10/10/2022 | SCALE: 1:109,000 DRAWN BY: NAD

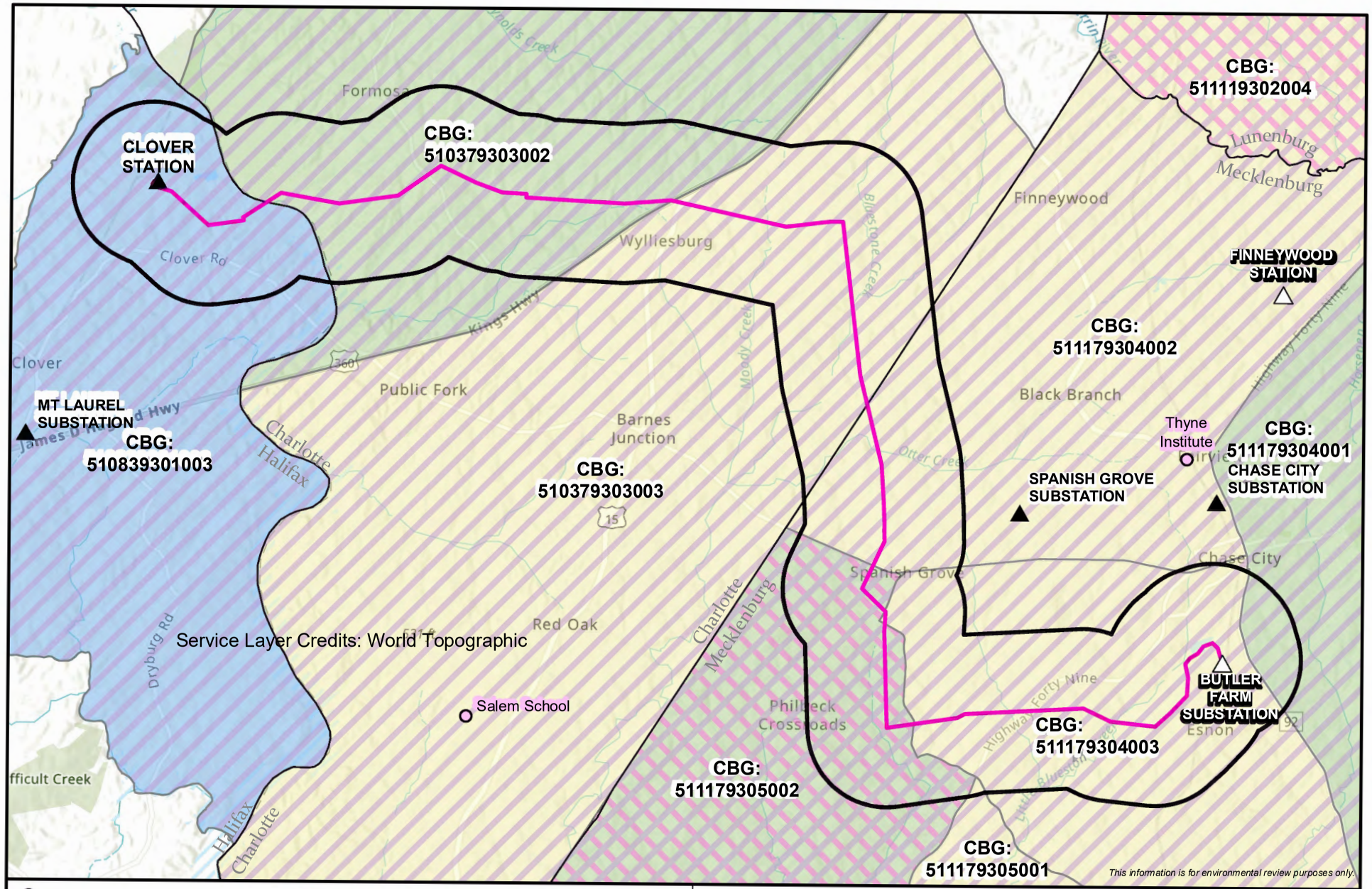
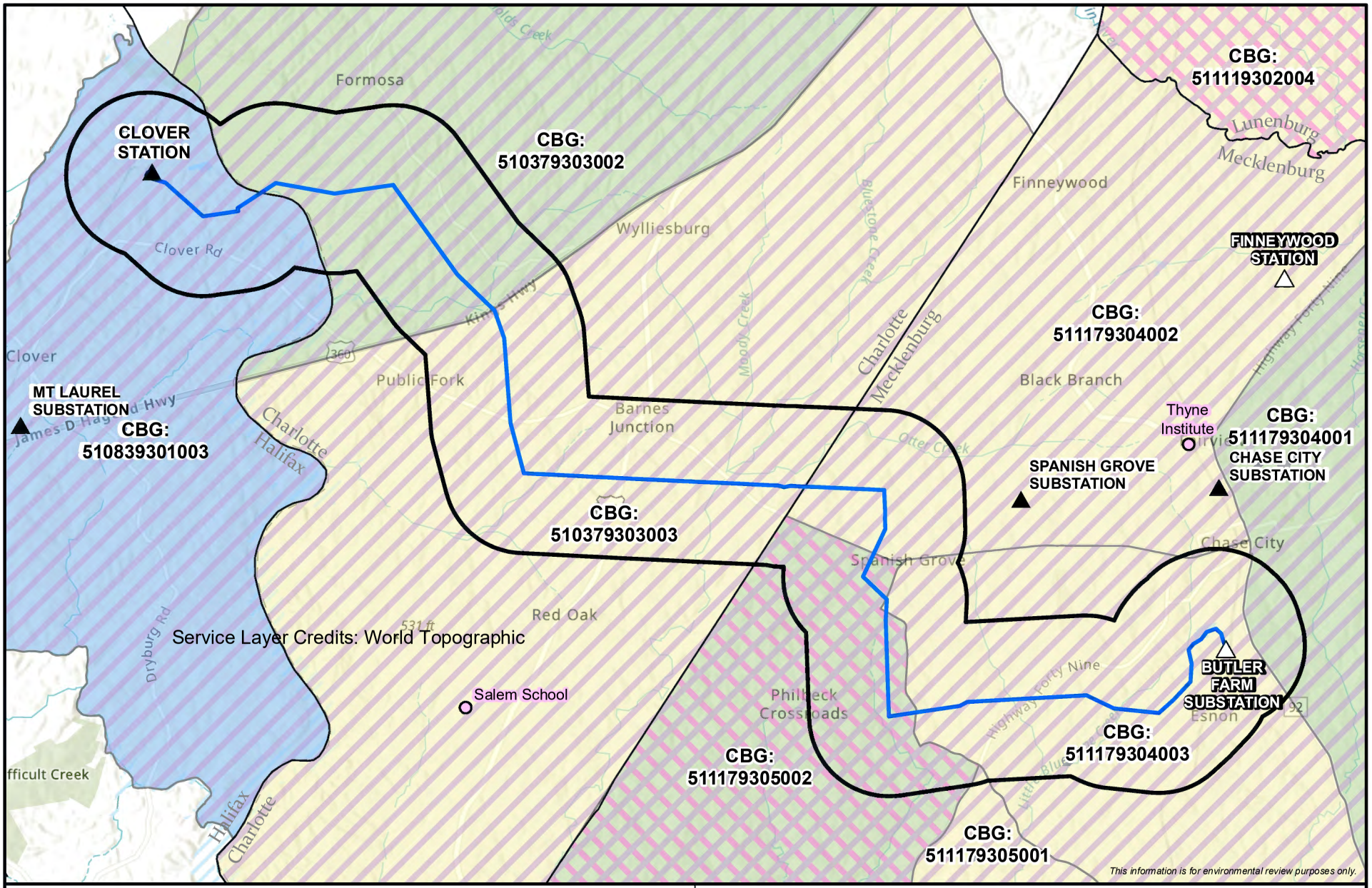


Figure 3.2-2
Butler Farm–Clover Route 2 Demographic Indicators
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.2-x_EJ_Screening_By_Route | REVISED: 10/10/2022 | SCALE: 1:109,000 DRAWN BY: NAD

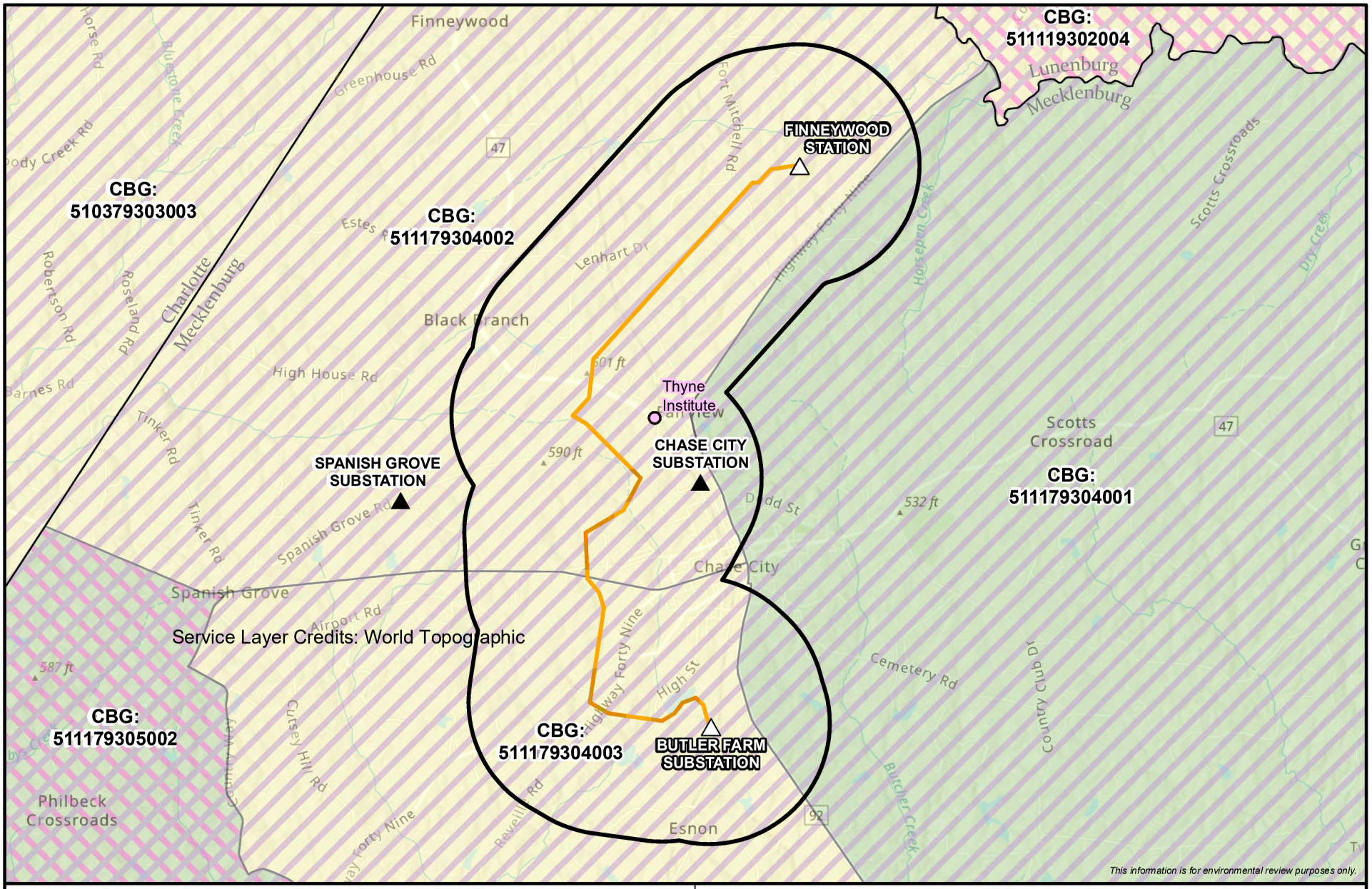


Civil Rights in Education Heritage Trail Markers
Proposed Substation
Butler Farm–Clover Route 3
1 Mile Buffer
Less than High School Education
Over Age 64
Populations of Color (>38%) and Low-Income Populations (>30 %)
Low-Income Populations (>30 %)
Populations of Color (>38%)

1:109,000
0 0.5 1 Miles

Figure 3.2-3
Butler Farm–Clover Route 3 Demographic Indicators
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.2-x_EJ_Screening_By_Route | REVISED: 10/10/2022 | SCALE: 1:109,000 DRAWN BY: NAD



Civil Rights in Education Heritage Trail Markers
Proposed Substation
Butler Farm–Finneywood Route 1
1 Mile Buffer

Less than High School Education
Over Age 64
Populations of Color (>38%) and Low-Income Populations (>30 %)
Low-Income Populations (>30 %)

N

1:72,000

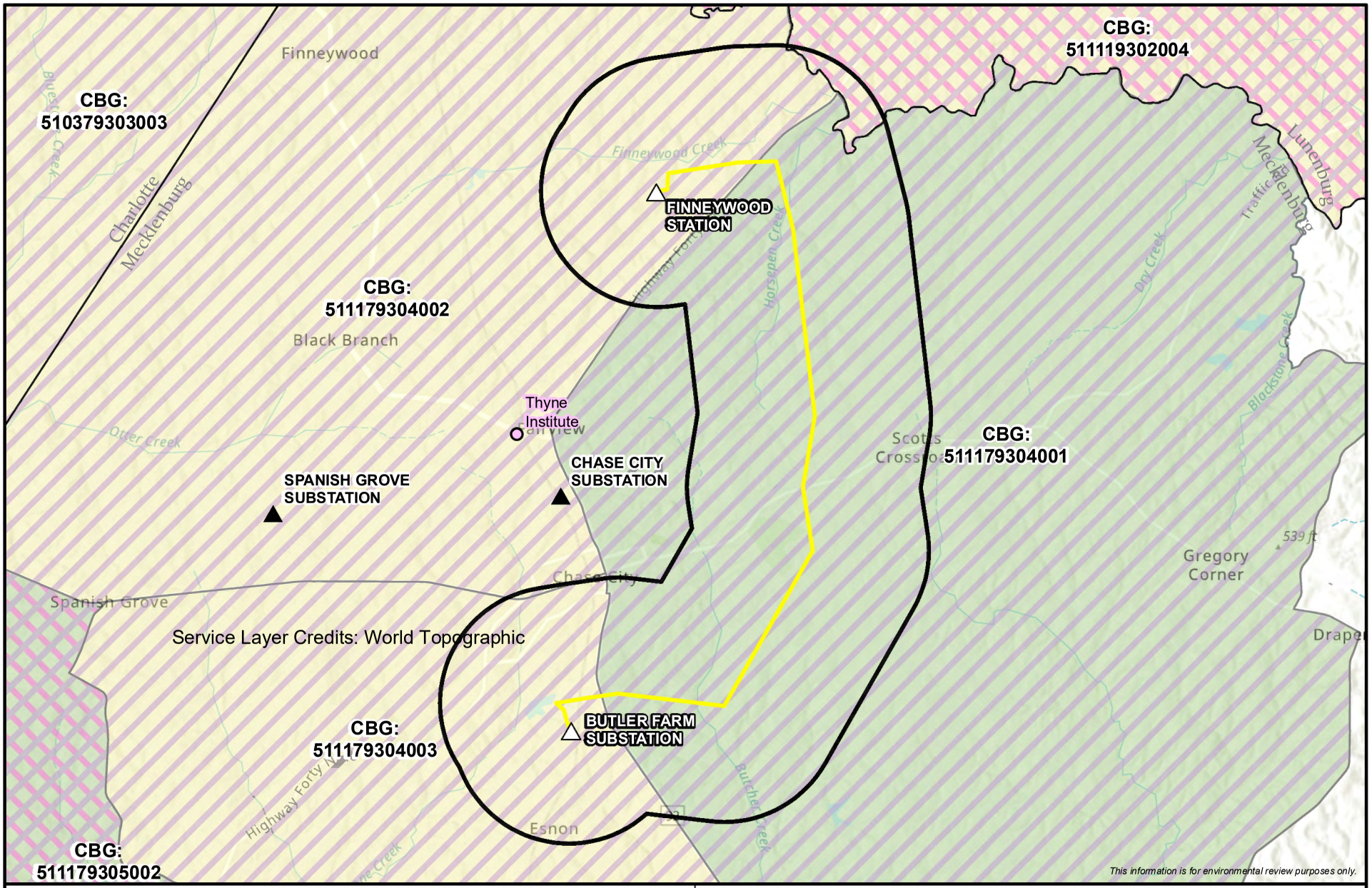
0 0.5 1 Miles

Figure 3.2-4
Butler Farm–Finneywood Route 1 Demographic Indicators
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.2-x_EJ_Screening_By_Route | REVISED: 10/10/2022 | SCALE: 1:72,000 DRAWN BY: NAD



Civil Rights in Education Heritage Trail Markers
Proposed Substation
Butler Farm–Finneywood Route 2
1 Mile Buffer
Less than High School Education
Over Age 64
Populations of Color (>38%) and Low-Income Populations (>30 %)
Low-Income Populations (>30 %)

1:75,000
0 0.5 1 Miles

Figure 3.2-5
Butler Farm–Finneywood Route 2 Demographic Indicators
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.2-x_EJ_Screening_By_Route | REVISED: 10/10/2022 | SCALE: 1:75,000 DRAWN BY: NAD

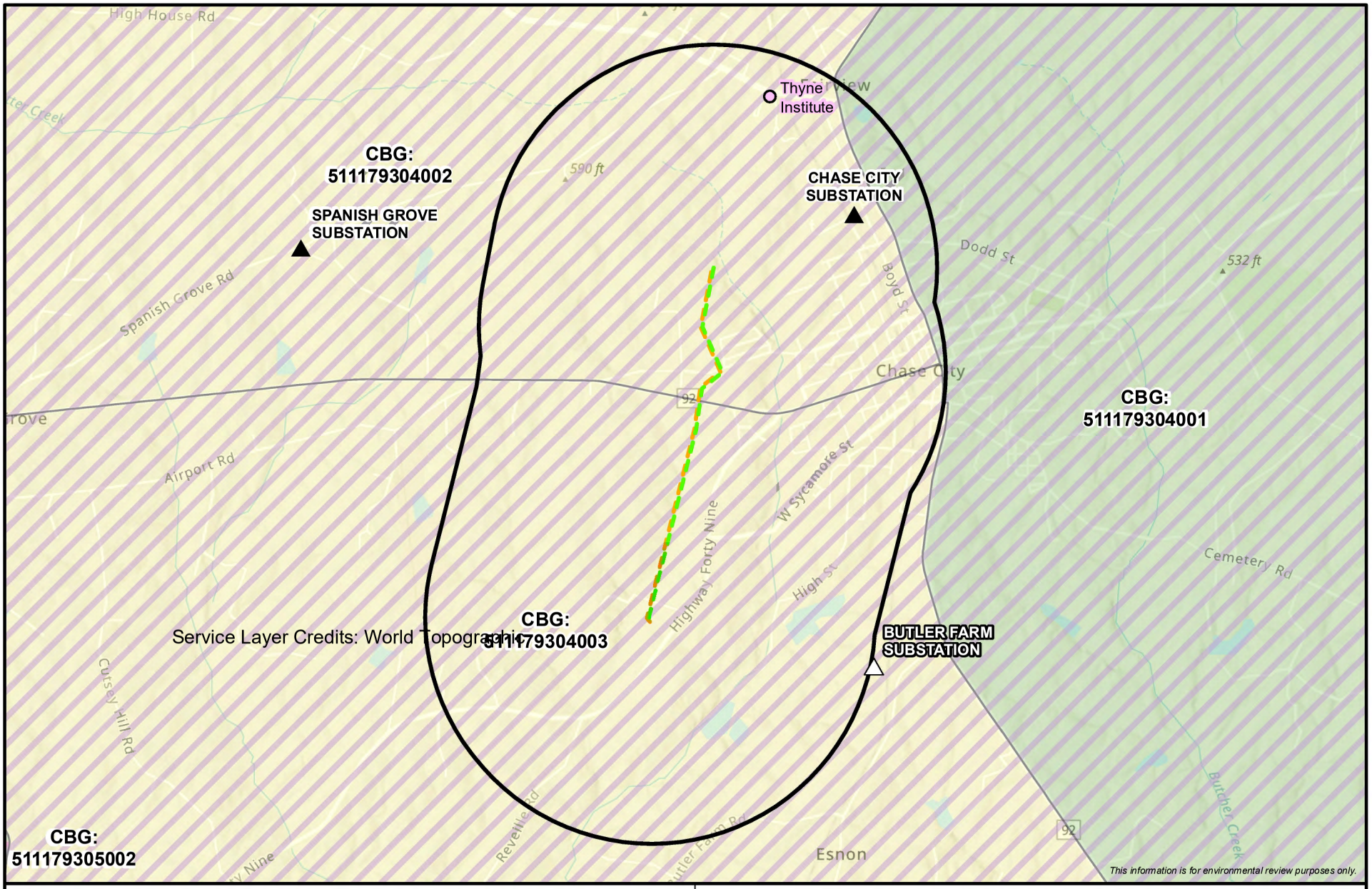


Figure 3.2-6
Butler Farm-Variation Demographic Indicators
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.2-x_EJ_Screening_By_Route | REVISED: 10/10/2022 | SCALE: 1:39,000 DRAWN BY: NAD

CLOVER STATION
FINNEYWOOD STATION
SPANISH GROVE SUBSTATION
CHASE CITY SUBSTATION
BUTLER FARM SUBSTATION
Formosa
Wylliesburg
Finneywood
Public Fork
Barnes Junction
Black Branch
Fairview
Scotts Crossroad
Spanish Grove
Chase City
Red Oak
Philbeck Crossroads
Esnon
Clover Rd
Kings Hwy
Jeb Stuart Hwy
Dryburg Rd
Bluestone Creek
Moody Creek
Otter Creek
Finneywood Creek
Horsepen Creek
Butcher Creek
Little Bluestone Creek
531 ft
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
Service Layer Credits: Light Gray Base: VGIN,
This information is for environmental review purposes only.

Washington
Richmond
Norfolk

Existing Substation
Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2

Index Page

0 0.5 1
Miles
1:76,000

Figure 3.3-1 Index
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_Index | REVISED: 10/10/2022 | SCALE: 1:76,000 when printed at 11x17 DRAWN BY: NAD

Mileposts
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Black Walnut Rd
Norfolk Southern Railroad
440 ft
CLOVER STATION
0 0 0
0.5 0.5 0.5
430 ft
1 1 1
1.5 1.5 1.5
360 ft
2 2 2
2.5 2.5 2.5
3 3 3
481 ft
Charlotte
Halifax
447 ft
Clover Rd
Colemans Ferry Rd
442 ft

Service Layer Credits: Light Gray Base:

- ▲ Existing Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: NAD

Mileposts
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Service Layer Credits: Light Gray Base:

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

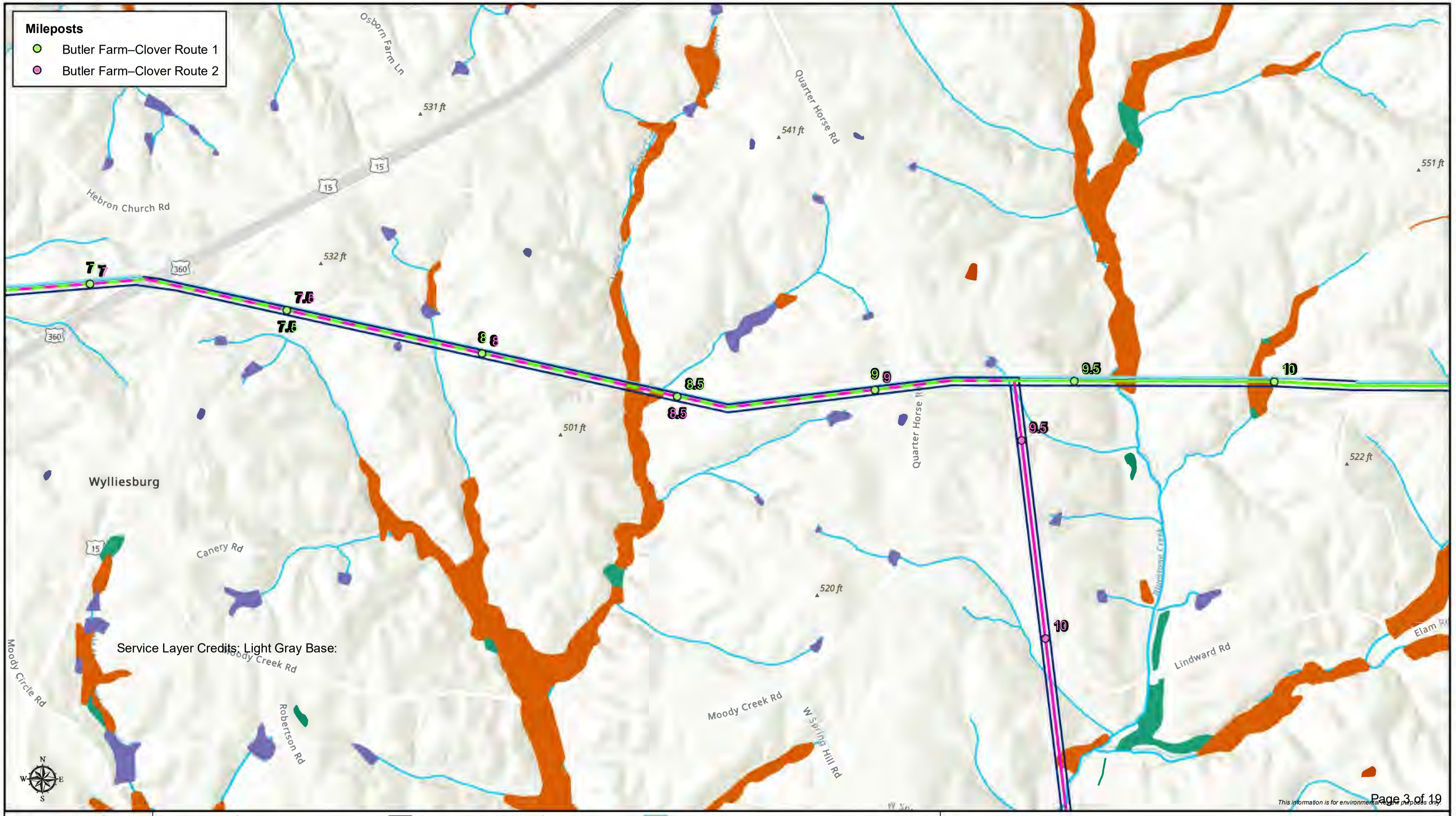
Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 | DRAWN BY: NAD



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Mileposts
Butler Farm–Clover Route 1

10.5
11
11.5
12
12.5
13

Finneywood
Greenhouse Rd
Elam Rd
Charlotte Mecklenburg
Norfolk Southern
Gilreath Rd
Pine Pl
47
522 ft
540 ft
570 ft
560 ft
532 ft
581 ft

Service Layer Credits: Light Gray Base:

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way
Wetland Type
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Riverine

0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 | DRAWN BY: NAD

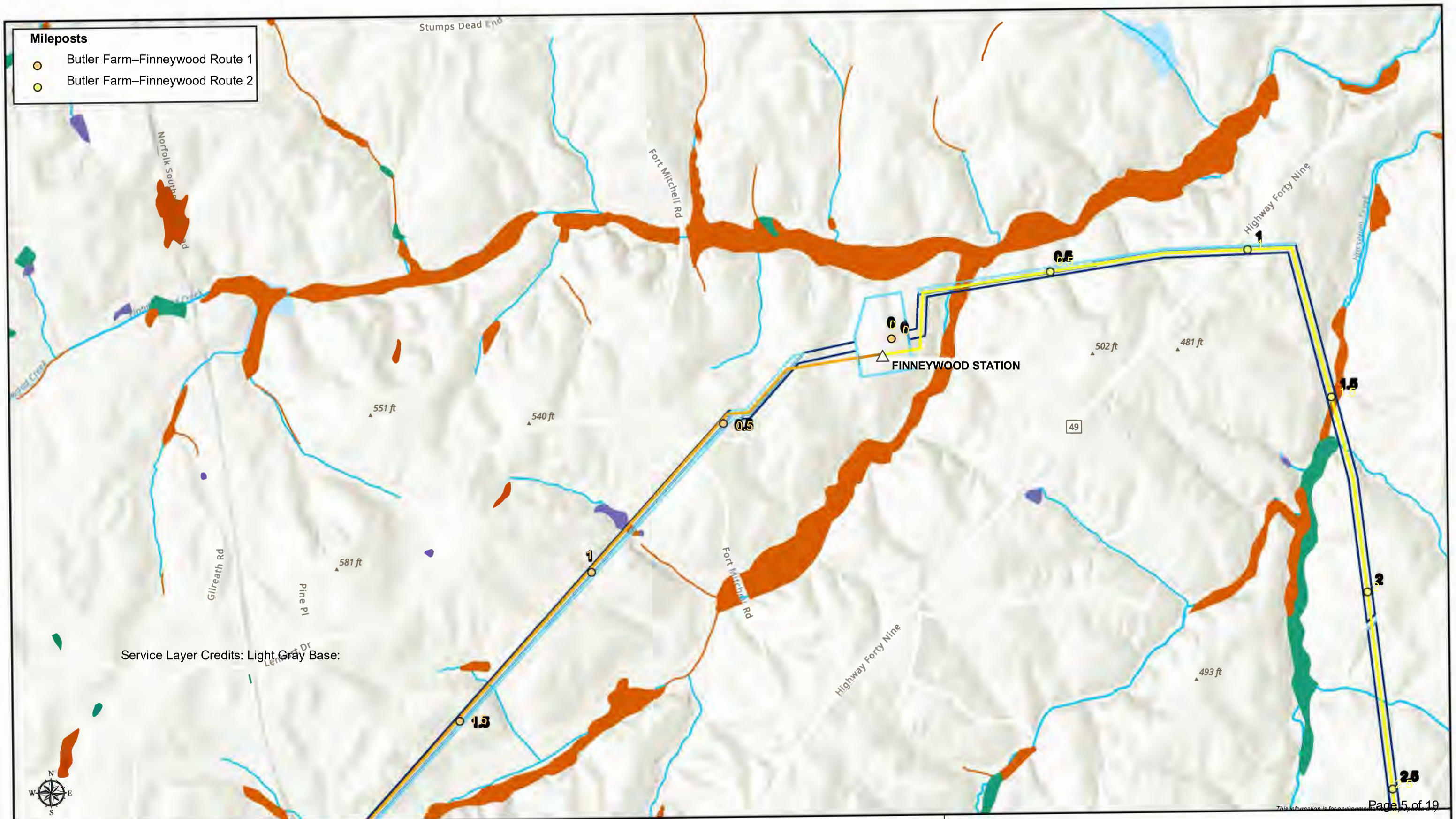


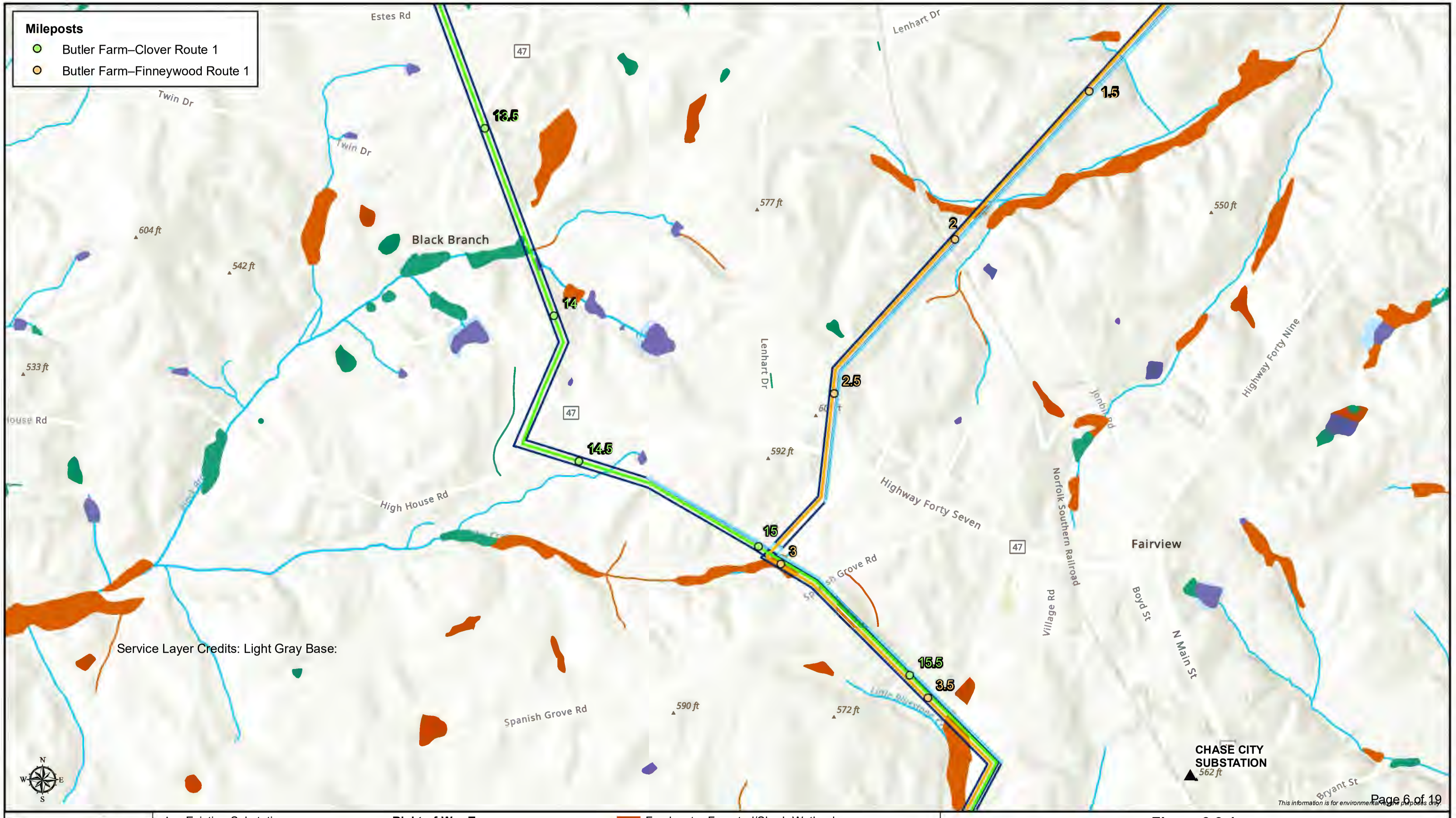
Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



▲ Existing Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Mileposts

- Butler Farm–Clover Route 1
- Butler Farm–Clover Route Variation
- Butler Farm–Finneywood Route 1
- Butler Farm–Finneywood Route Variation
- Butler Farm–Finneywood Route 2

SPANISH GROVE SUBSTATION

CHASE CITY SUBSTATION

Service Layer Credits: Light Gray Base:

Existing Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 500 1,000
Feet

1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: NAD

Mileposts
- Butler Farm–Clover Route 3

4 · 4.5 · 5 · 5.5 · 6

483 ft · 492 ft · 454 ft · 502 ft

Hare Rd · Colemans Ferry Rd · Rocky Branch Rd · Roanoke Station Rd · N Berles Creek Rd · Kings Cross Rd · Jackson Vaughan · 350 · Cards Ln · Firemans Ln · Coleman Ferry Rd · Branch Rd · Public Fork Rd · S Berles Creek Rd · 360 · Cora Ln · Dailey Ln · Royster Ln · Jeb Stuart Hwy · Ferry Rd · Toombs Ln · Morgan Rd

Service Layer Credits: Light Gray Base:

Butler Farm–Clover Line
- Butler Farm–Clover Route 3

Right-of-Way Type
- Proposed New Right-of-Way

Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 500 1,000
Feet

1:14,400

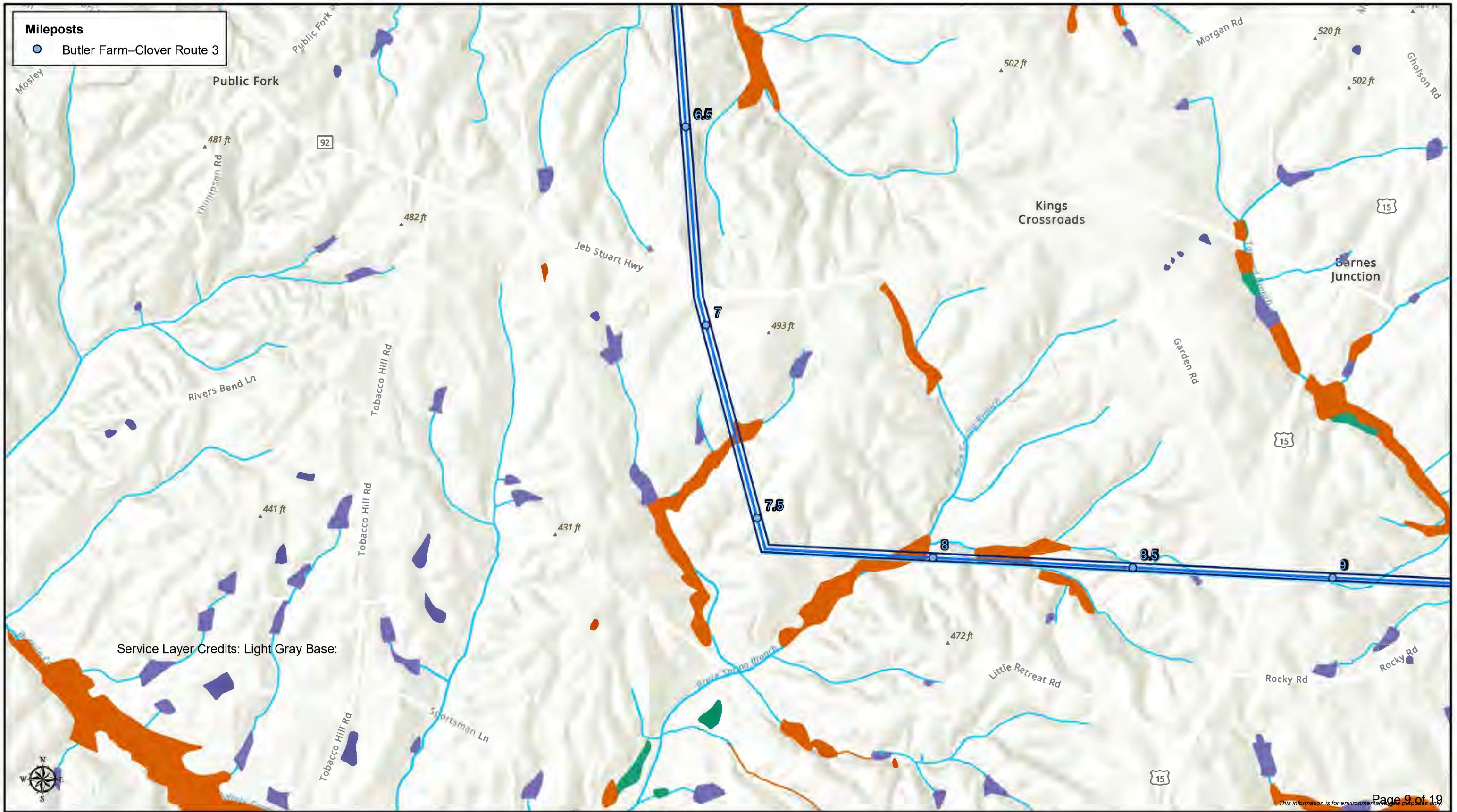
Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



Butler Farm–Clover Line
Butler Farm–Clover Route 3

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way

Wetland Type
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Riverine

0 500 1,000
Feet

1:14,400

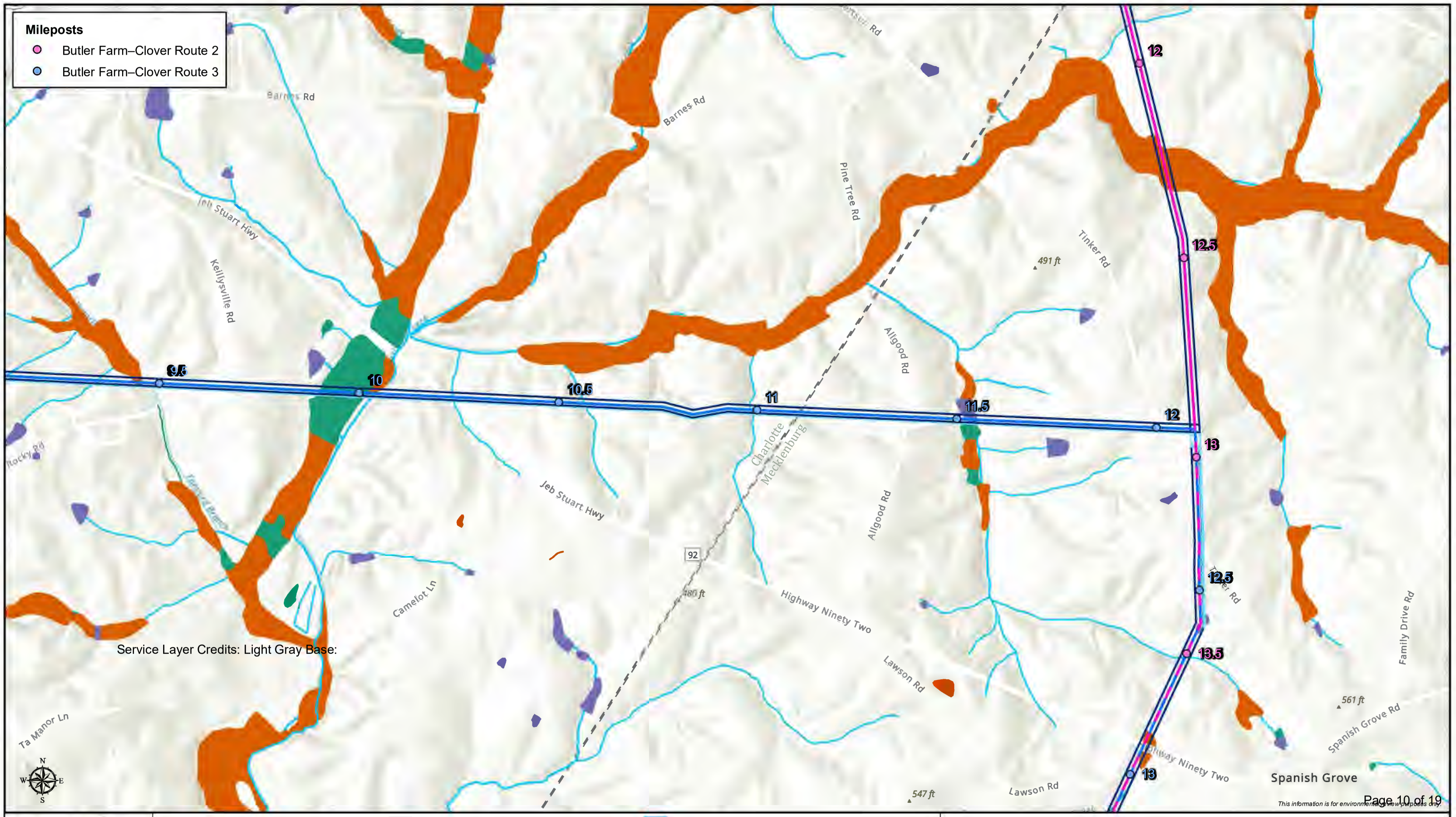
Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

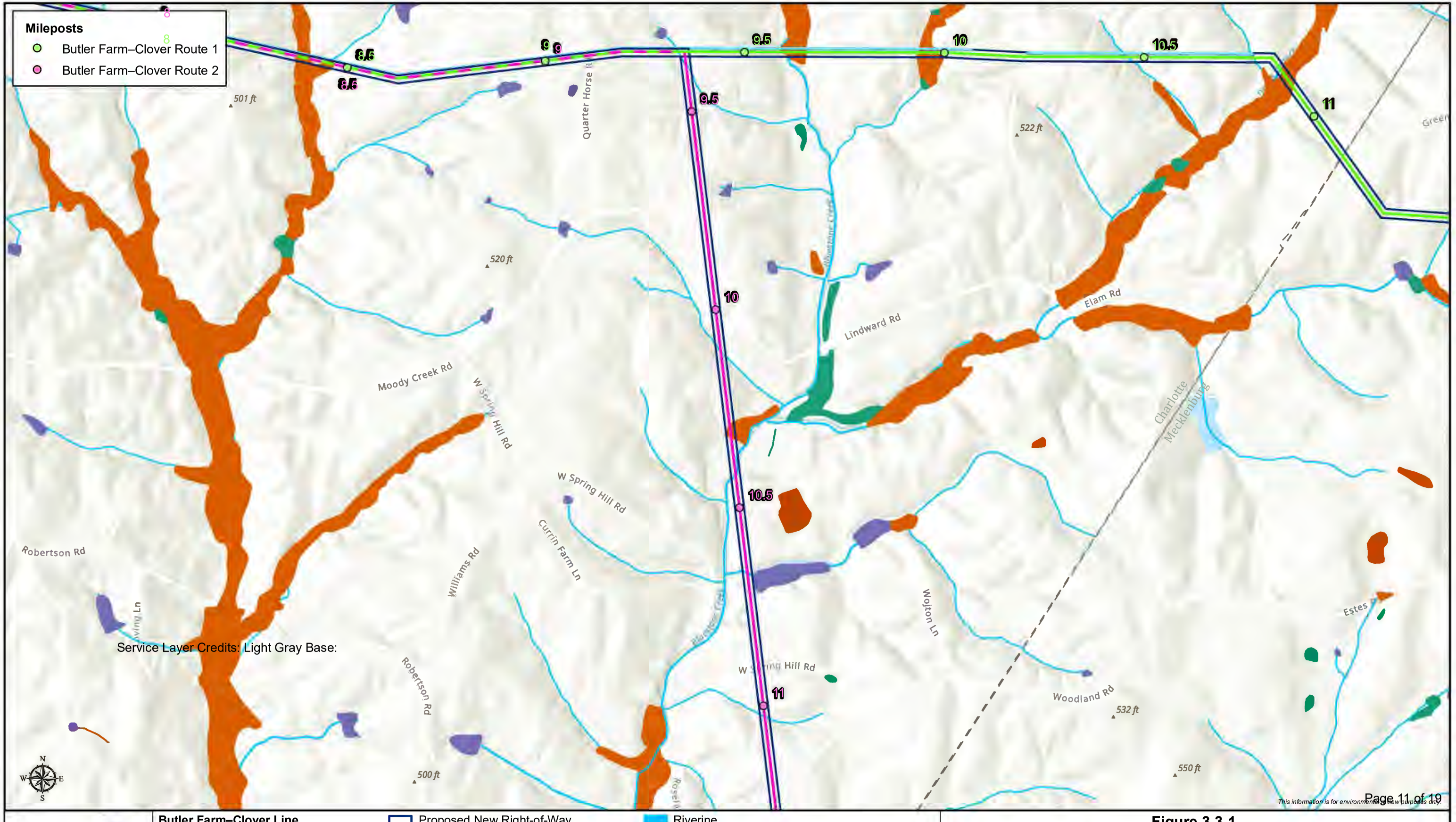
Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 | DRAWN BY: NAD



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

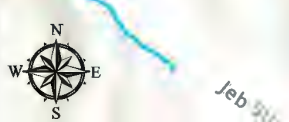
MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Mileposts
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

500 ft
550 ft
524 ft
604 ft
533 ft
491 ft
Roseland Rd
High House Rd
Robertson Rd
Barnes Rd
Pine Tree Rd
Allgood Rd
Tinker Rd
Twin
11.5
12
12.5
10.5
11
13

Service Layer Credits: Light Gray Base:



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

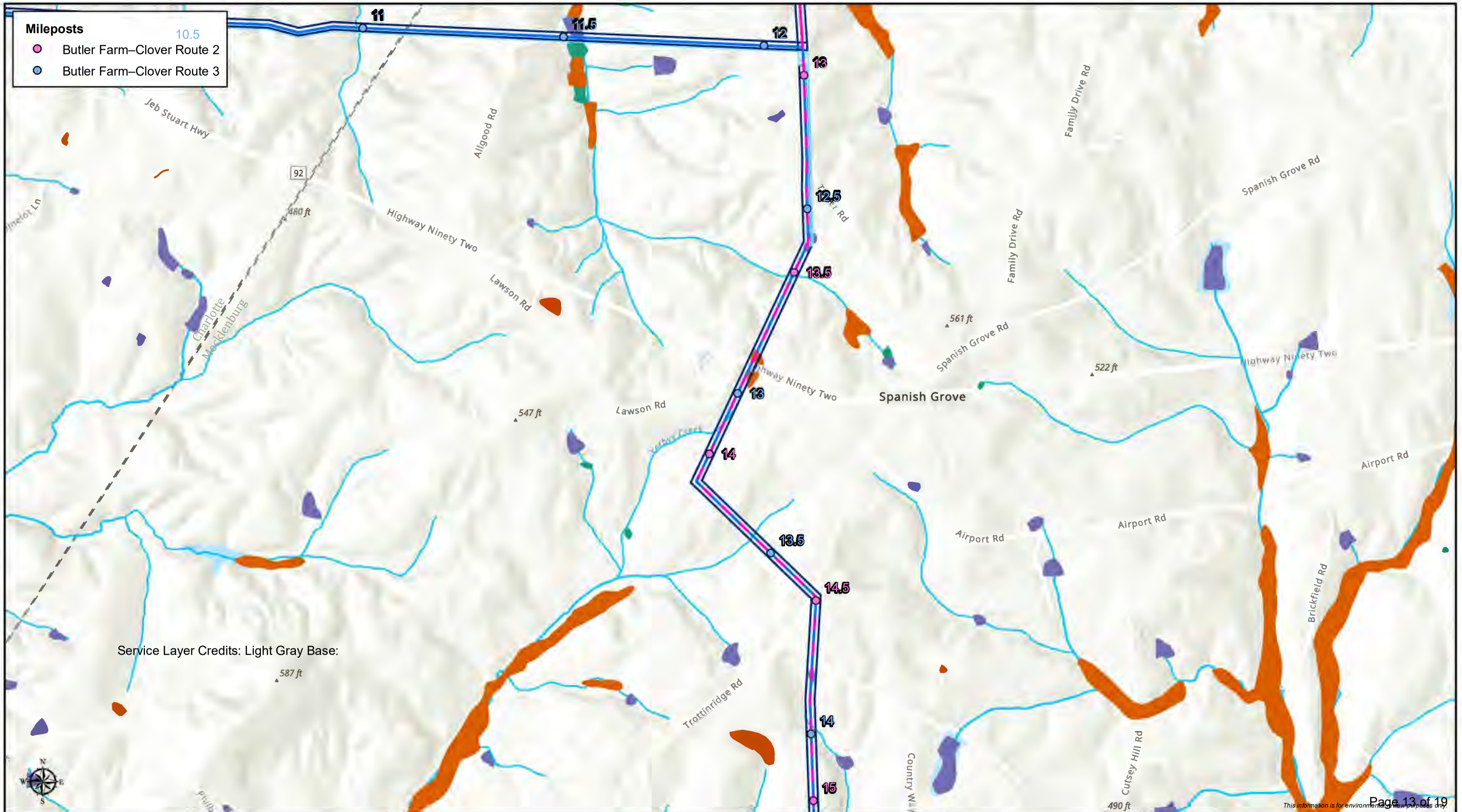
Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

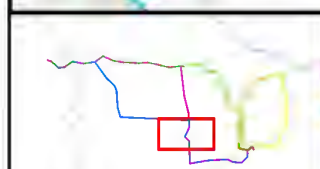
Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: NAD





Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way

Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

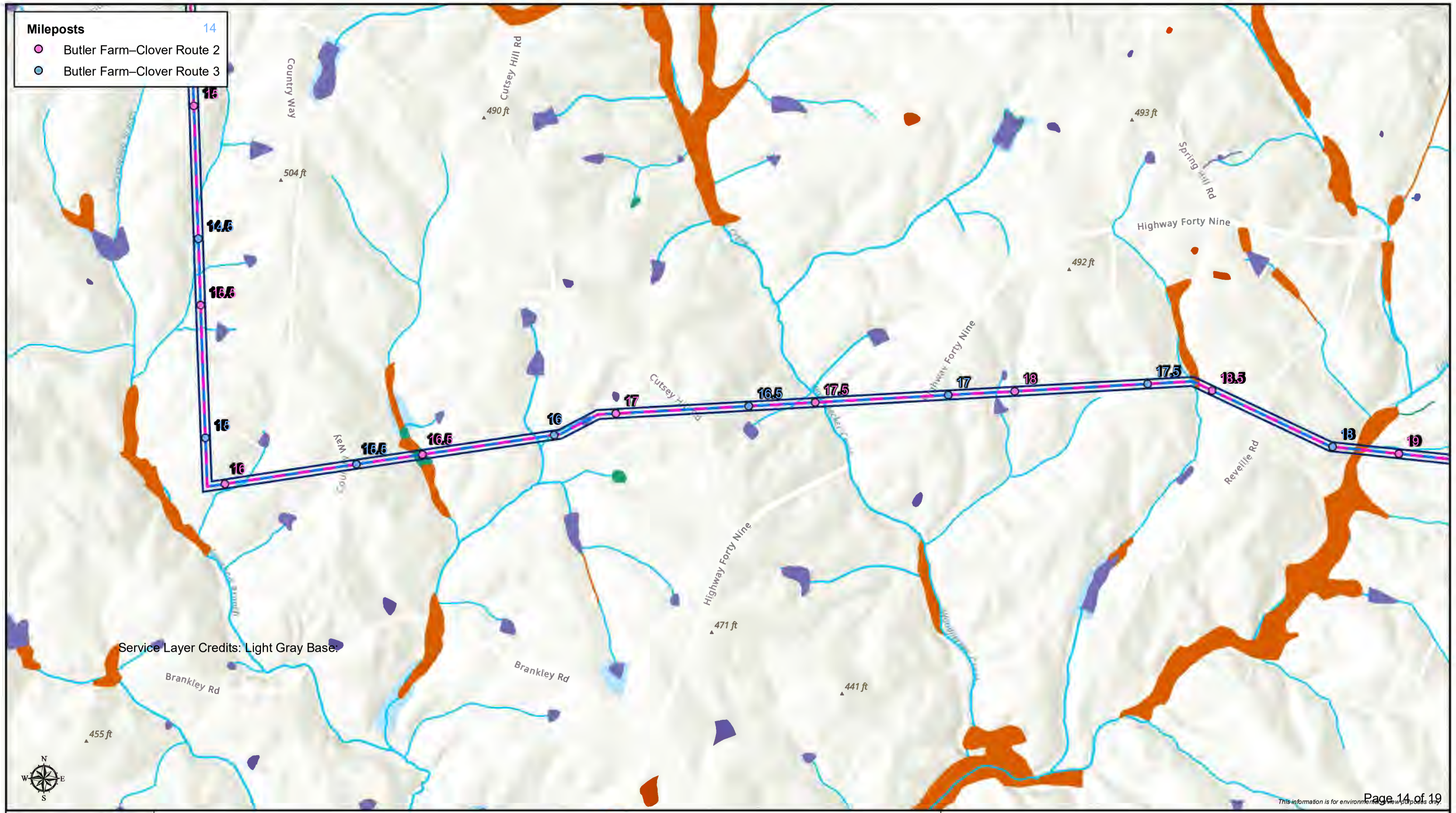
0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Right-of-Way Type
- Proposed New Right-of-Way

Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 500 1,000
Feet

1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD

Mileposts

- Butler Farm–Clover Route 1
- Butler Farm–Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Butler Farm–Finneywood Route 1
- Butler Farm–Finneywood Route Variation
- Butler Farm–Finneywood Route 2

Service Layer Credits: Light Gray Base:

519 ft
BUTLER FARM SUBSTATION
501 ft
486 ft
462 ft
Esnon

Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2

Right-of-Way Type
- Proposed New Right-of-Way

Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 | DRAWN BY: NAD

Mileposts
- Butler Farm–Finneywood Route 1
- Butler Farm–Finneywood Route 2

501 ft
Fort Mitchell Rd
Highway Forty Nine
Air Strip Rd
South Mecklenburg Road
Mecklenburg
Nottoway Creek
0
0.5
1
1.5
2
FINNEYWOOD STATION
502 ft
481 ft
462 ft
521 ft
49
Service Layer Credits: Light Gray Base:
N
W
E
S

Proposed Substation

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm–Finneywood Route 2

Right-of-Way Type
- Existing Overhead Right-of-Way
- Proposed New Right-of-Way
- Aboveground Facility - Finneywood Switching Station

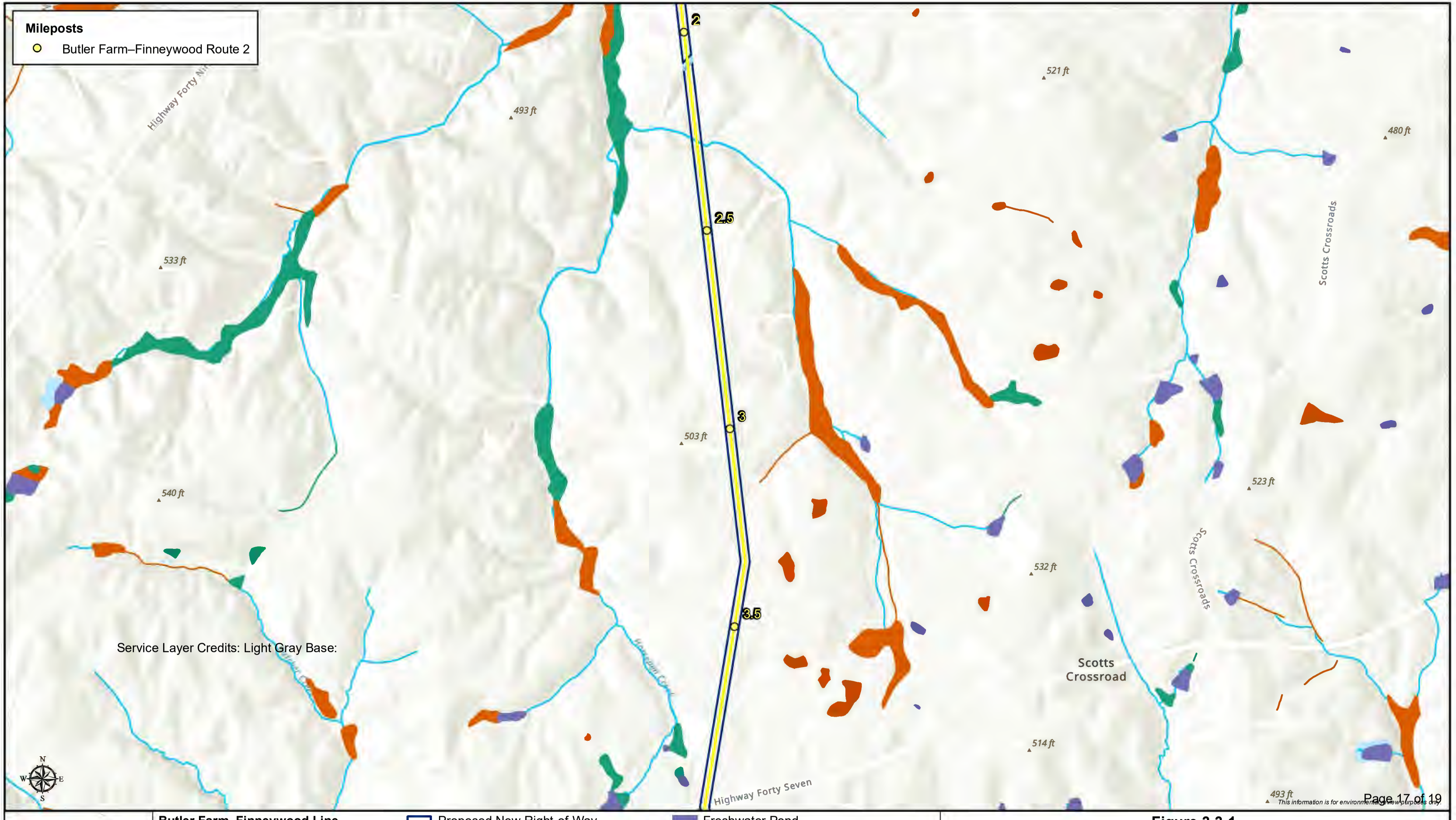
Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 | DRAWN BY: NAD



Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 2

Right-of-Way Type

Existing Overhead Right-of-Way

Proposed New Right-of-Way

Wetland Type

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Riverine

0 500 1,000

Feet

1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

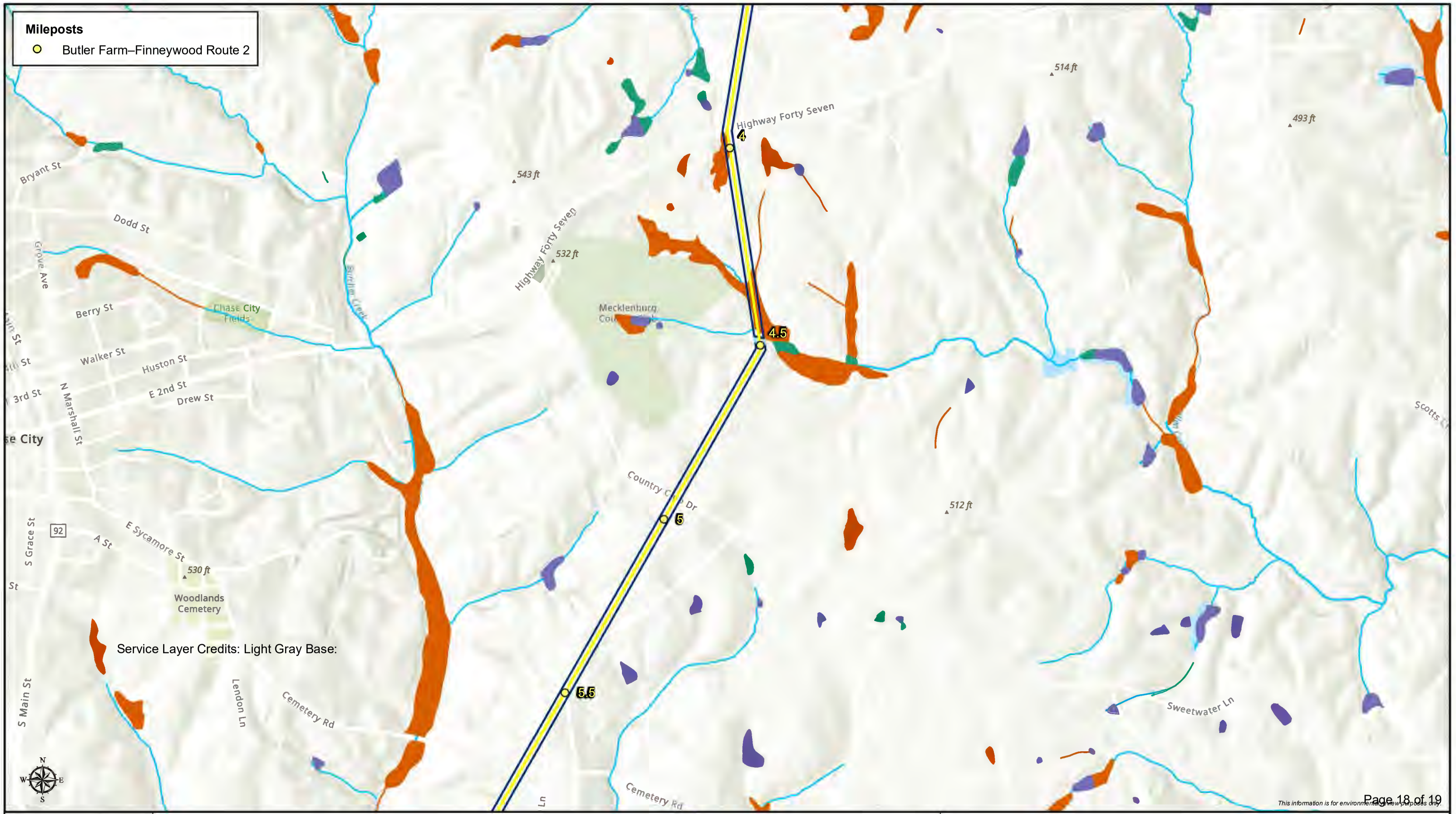
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17

DRAWN BY: NAD



Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 2

Right-of-Way Type
Existing Overhead Right-of-Way
Proposed New Right-of-Way

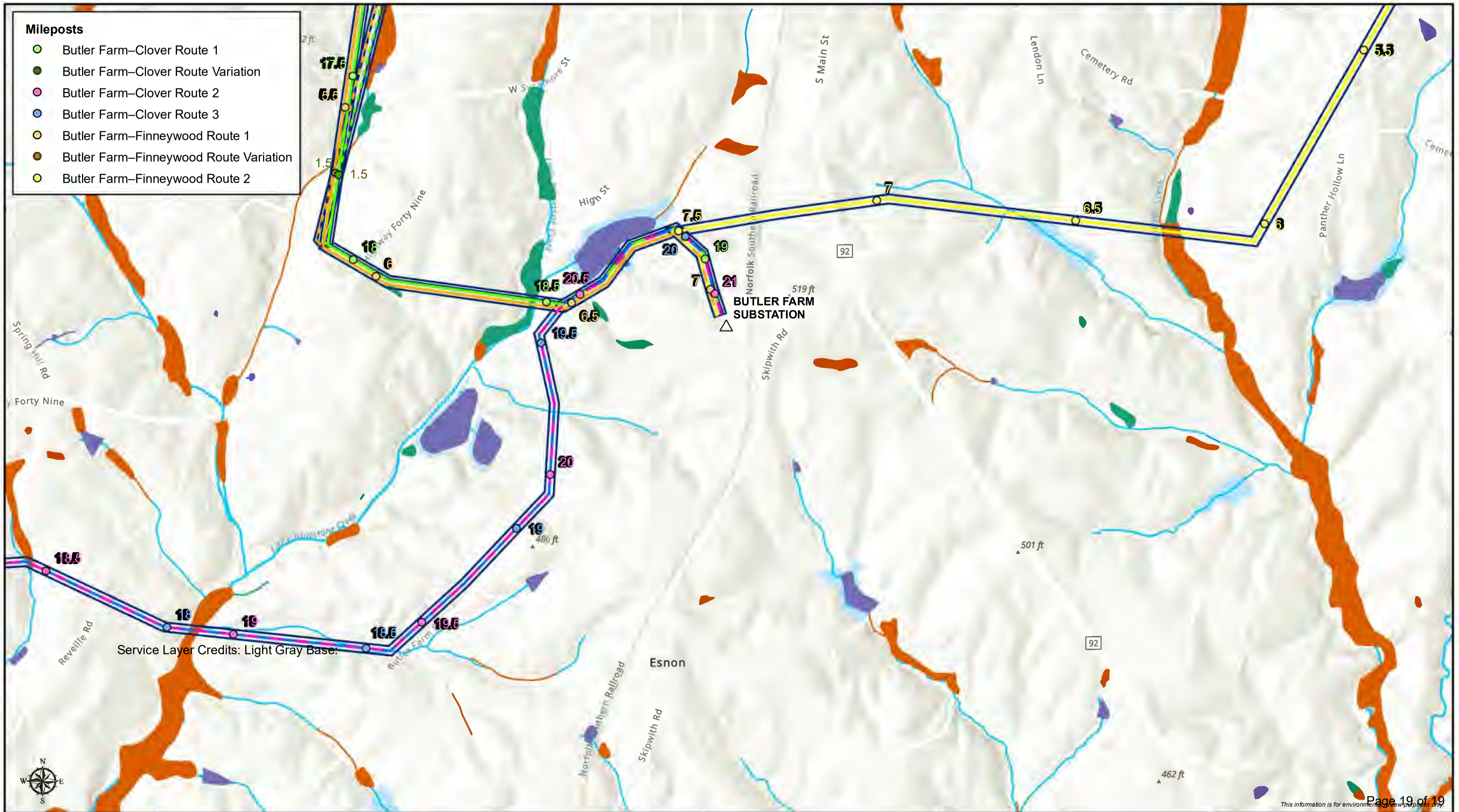
Wetland Type
Freshwater Emergent Wetland
Freshwater Forested/Shrub Wetland
Freshwater Pond
Riverine

0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: NAD



Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2

Right-of-Way Type
- Proposed New Right-of-Way

Wetland Type
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine

0 500 1,000
Feet
1:14,400

Figure 3.3-1
NWI Wetlands
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-1_NWI_Wetlands | REVISED: 10/10/2022 | SCALE: 1:14,400 when printed at 11x17 DRAWN BY: NAD

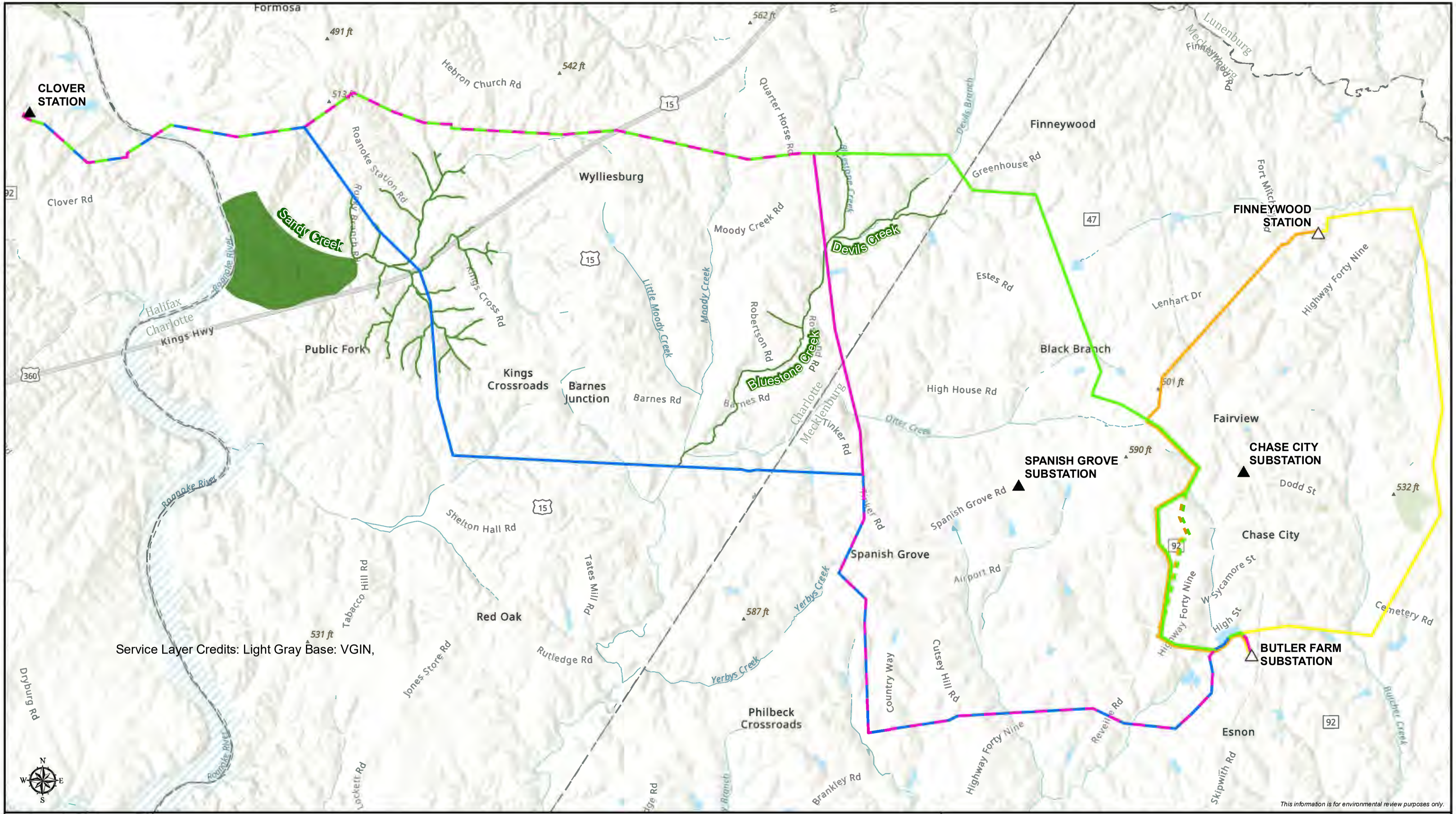
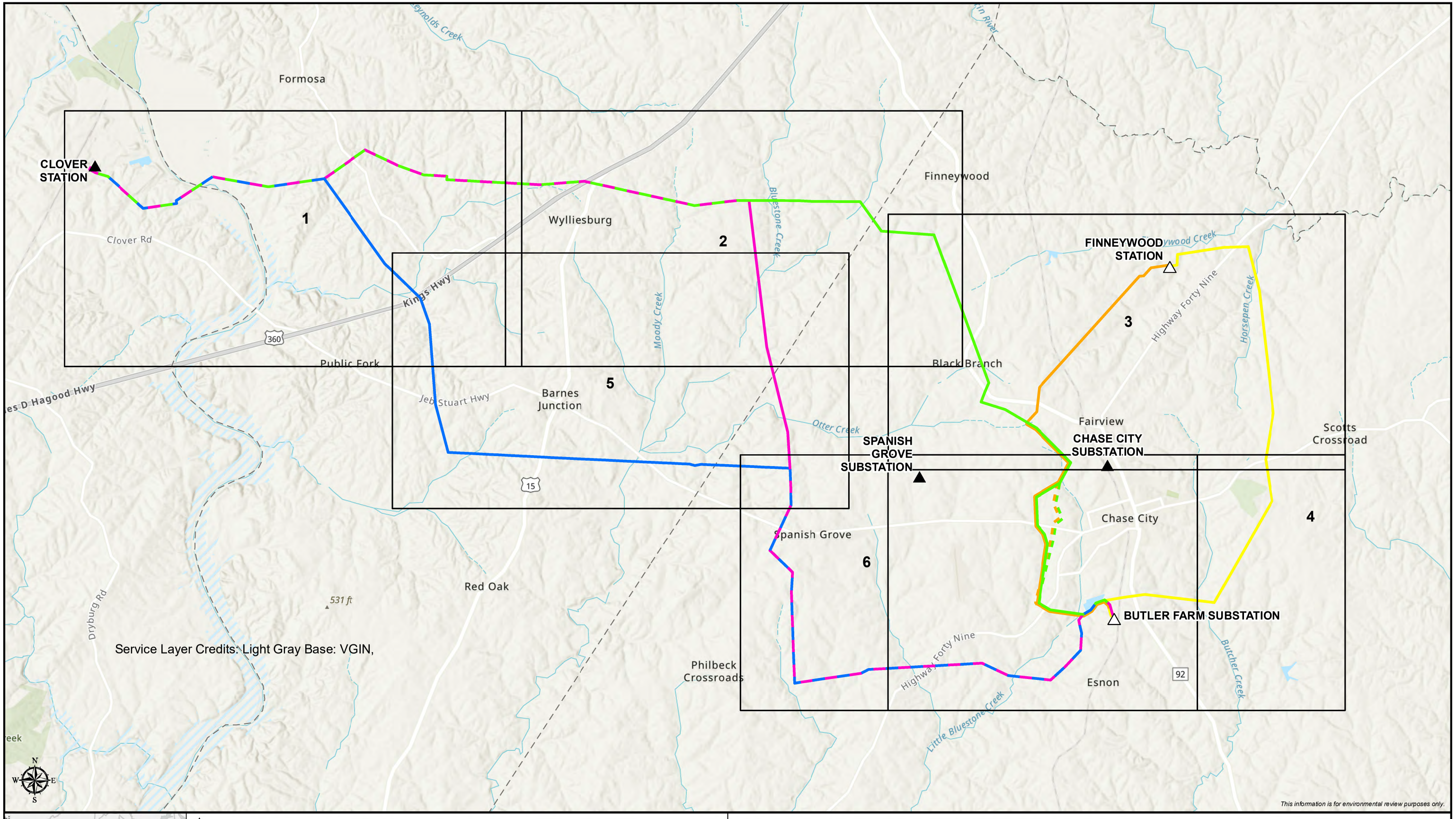


Figure 3.3-2
Stream Conservation Units
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-2_SCU | REVISED: 10/10/2022 | SCALE: 1:63,360 when printed at 11x17 | DRAWN BY: NAD



Existing Substation
Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm-Finneywood Route 2

Index Page

0 0.5 1
Miles

1:76,000

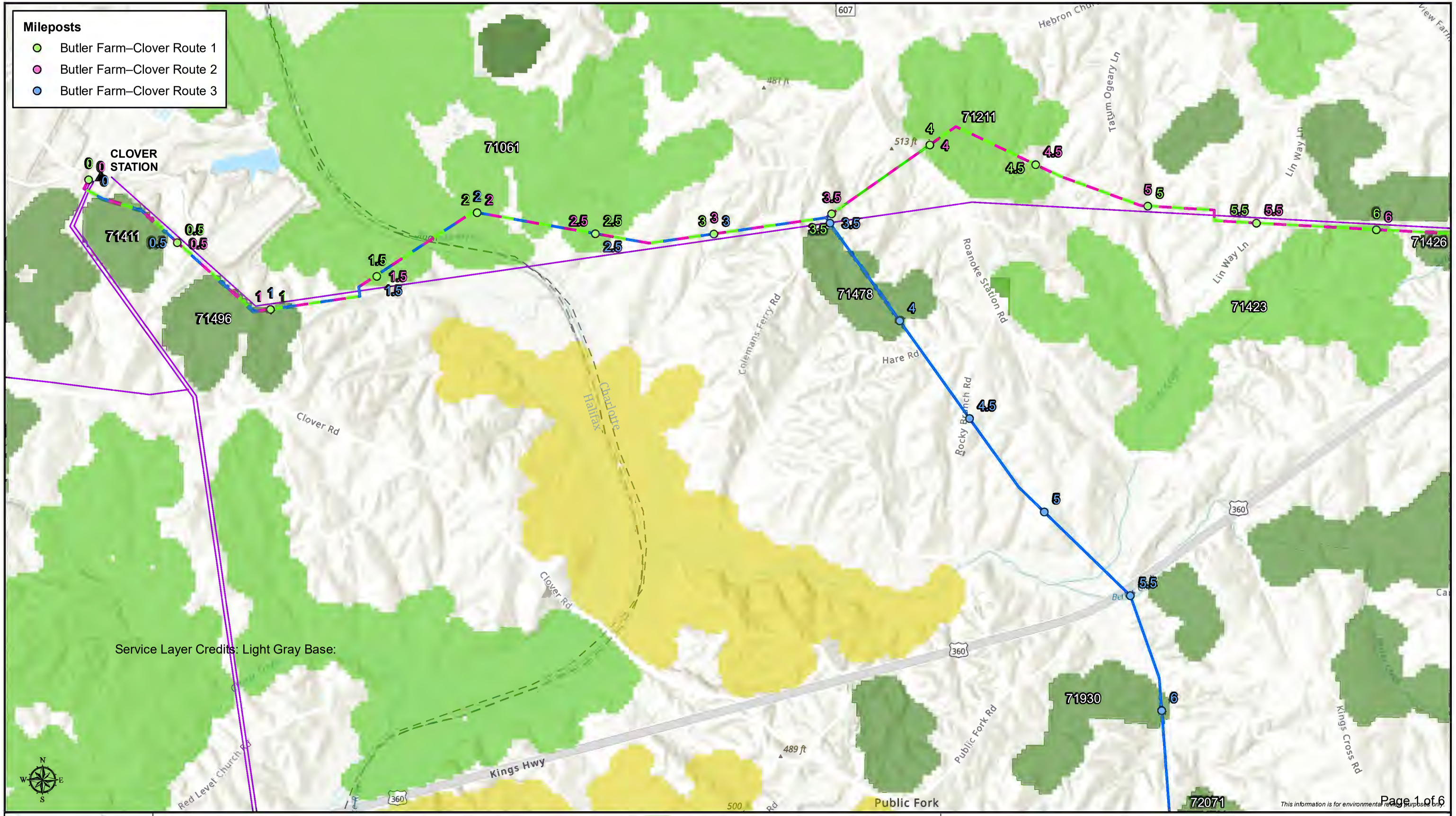
Figure 3.3-3 Index
Ecological Cores
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-3_Index | REVISED: 10/10/2022 | SCALE: 1:76,000 when printed at 11x17

DRAWN BY: NAD



▲ Existing Substation

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Butler Farm–Clover Route 2

Butler Farm–Clover Route 3

Existing Dominion Transmission Line

VaNLA Ecological Cores

C3: High

C4: Moderate

C5: General

0 500 1,000

Feet

1:24,000

Figure 3.3-3
Ecological Cores
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-3_EcoCores | REVISED: 10/10/2022 | SCALE: 1:24,000 when printed at 11x17

DRAWN BY: NAD

Mileposts
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2

Service Layer Credits: Light Gray Base:

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Existing Dominion Transmission Line

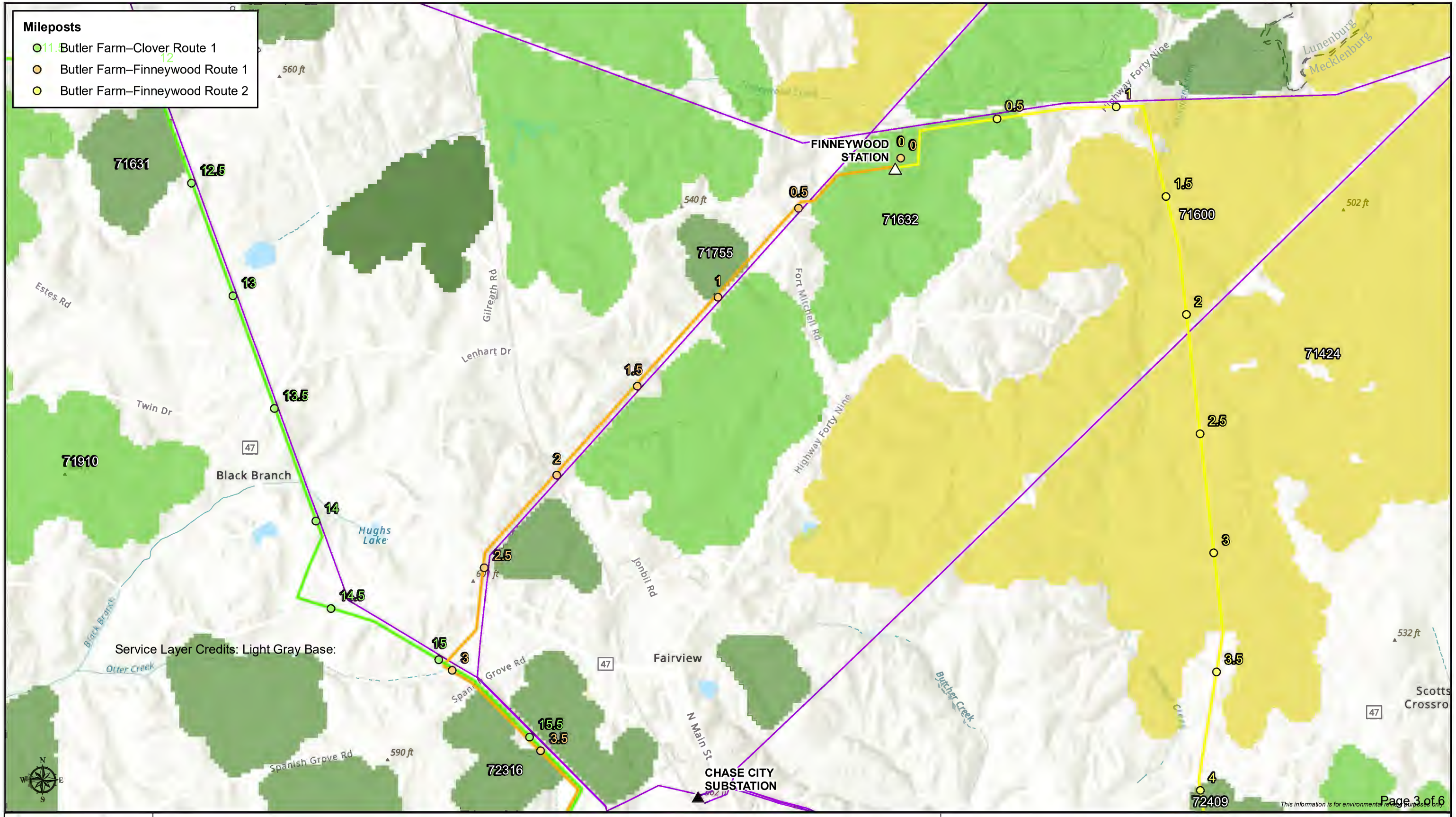
VaNLA Ecological Cores
- C2: Very High
- C3: High
- C4: Moderate
- C5: General

0 500 1,000
Feet
1:24,000

Figure 3.3-3
Ecological Cores
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-3_EcoCores | REVISED: 10/10/2022 | SCALE: 1:24,000 when printed at 11x17

DRAWN BY: NAD



Existing Substation
Proposed Substation

Butler Farm–Clover Line
Butler Farm–Clover Route 1

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm–Finneywood Route 2
Existing Dominion Transmission Line

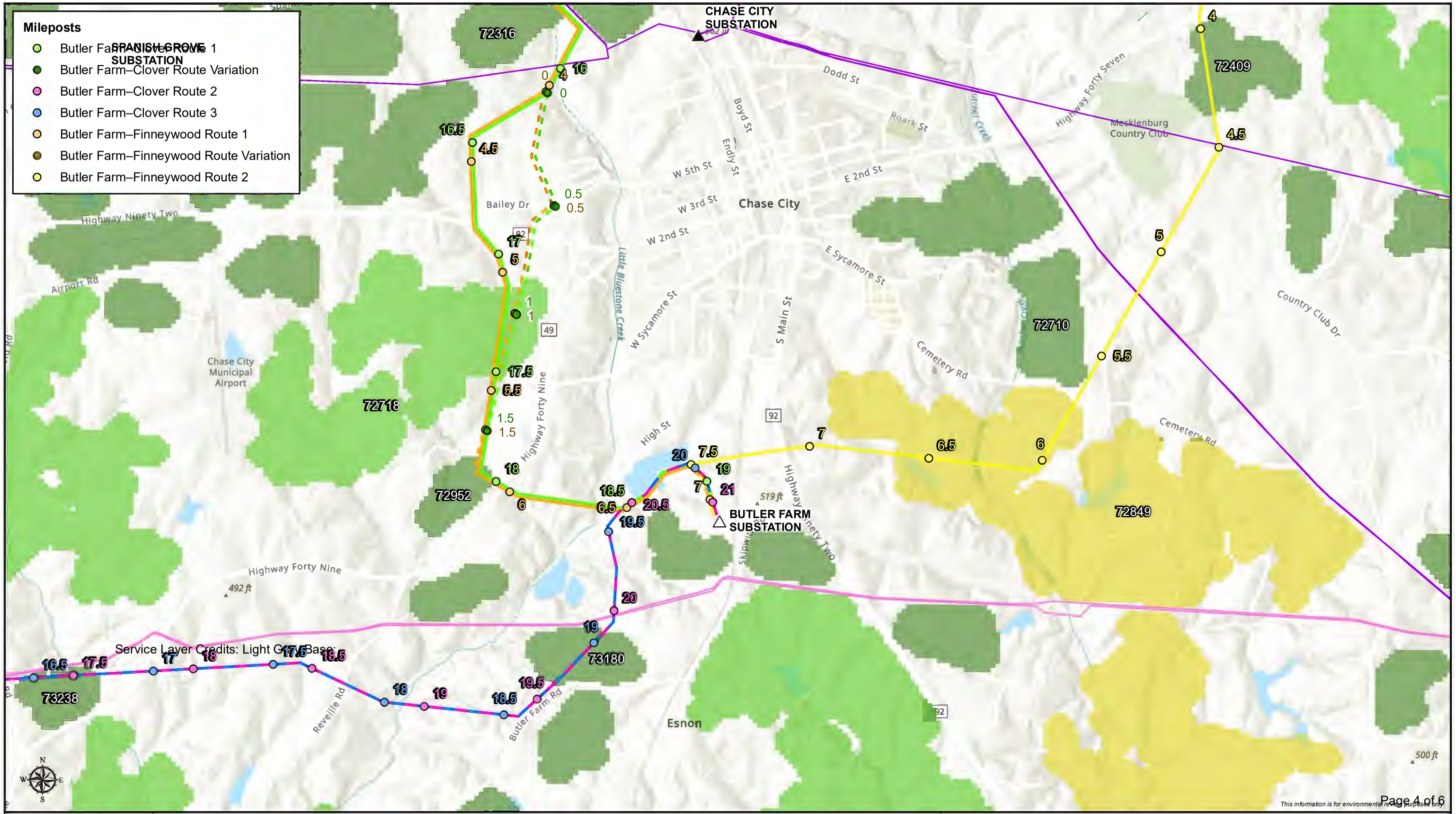
VaNLA Ecological Cores
C3: High
C4: Moderate
C5: General

0 500 1,000
Feet
1:24,000

Figure 3.3-3
Ecological Cores
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-3_EcoCores | REVISED: 10/10/2022 | SCALE: 1:24,000 when printed at 11x17 | DRAWN BY: NAD



Existing Substation
Proposed Substation

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2
Existing Dominion Transmission Line

Natural Gas Pipeline

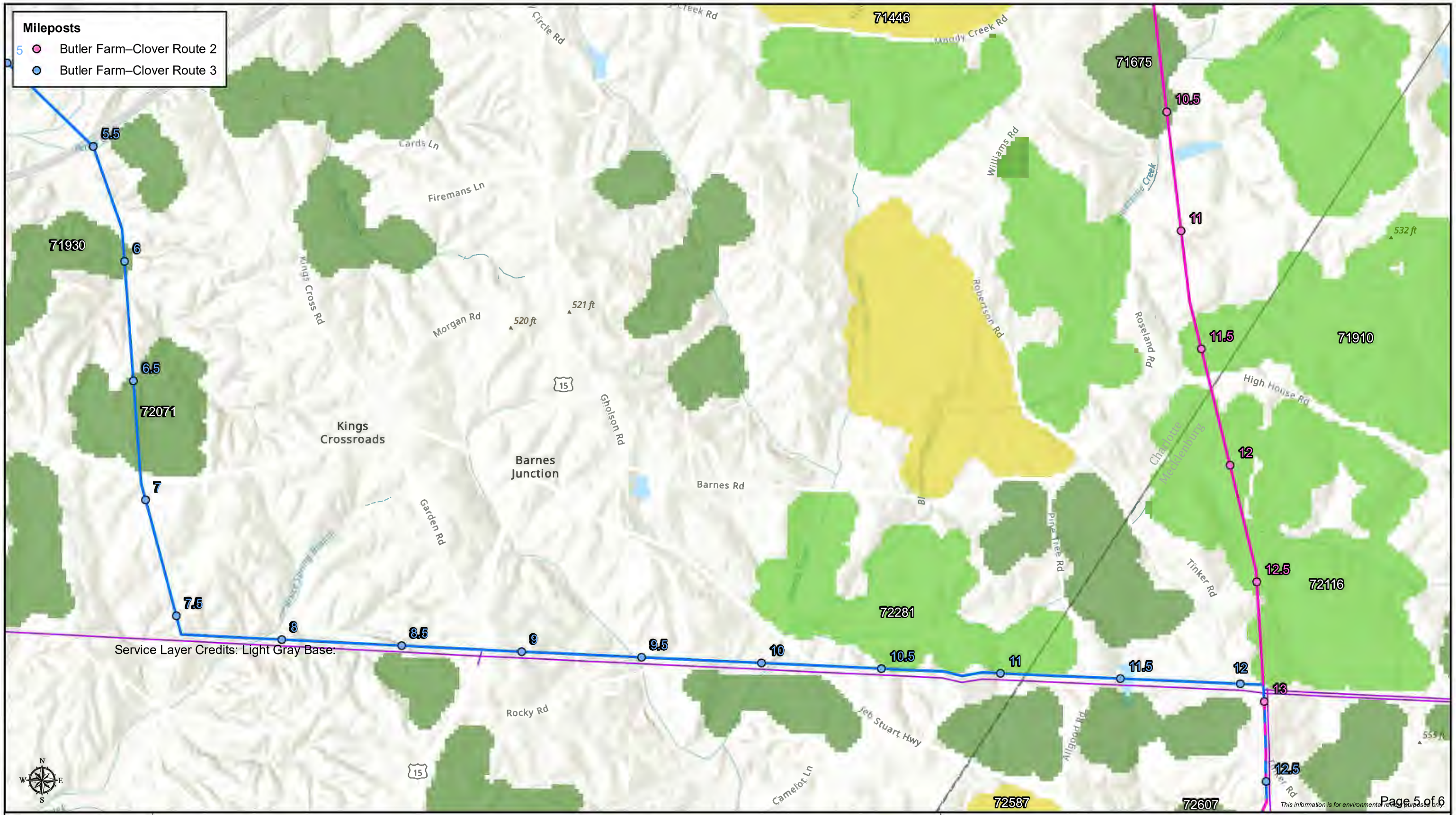
VaNLA Ecological Cores
C3: High
C4: Moderate
C5: General

0 500 1,000
Feet
1:24,000

Figure 3.3-3
Ecological Cores
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-3_EcoCores | REVISED: 10/10/2022 | SCALE: 1:24,000 when printed at 11x17 | DRAWN BY: NAD



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Existing Dominion Transmission Line

VaNLA Ecological Cores
- C3: High
- C4: Moderate
- C5: General

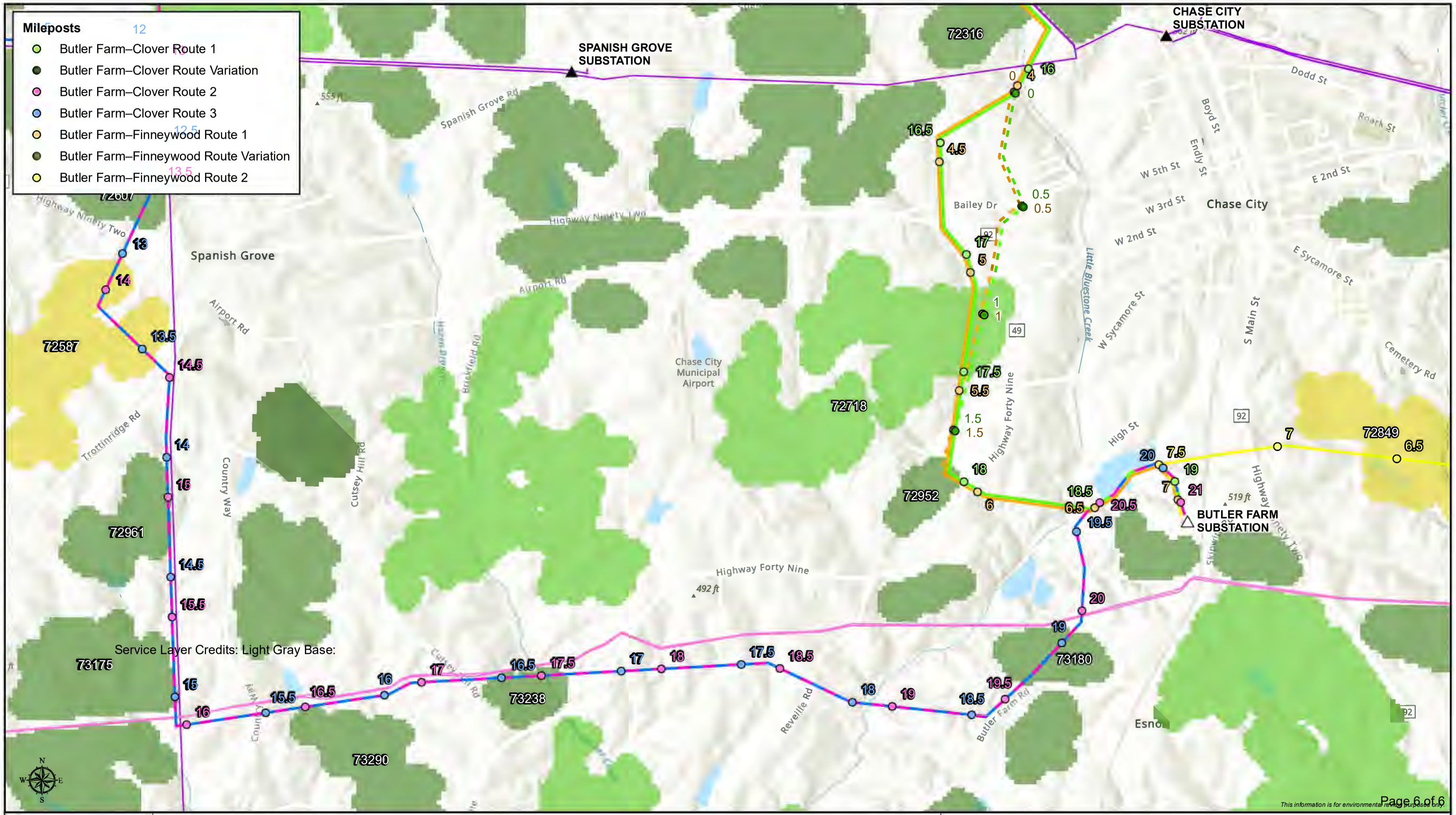
0 500 1,000
Feet
1:24,000

Figure 3.3-3
Ecological Cores
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-3_EcoCores | REVISED: 10/10/2022 | SCALE: 1:24,000 when printed at 11x17

DRAWN BY: NAD



Existing Substation
Proposed Substation

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm–Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2
Existing Dominion Transmission Line
Natural Gas Pipeline

VaNLA Ecological Cores
C3: High
C4: Moderate
C5: General

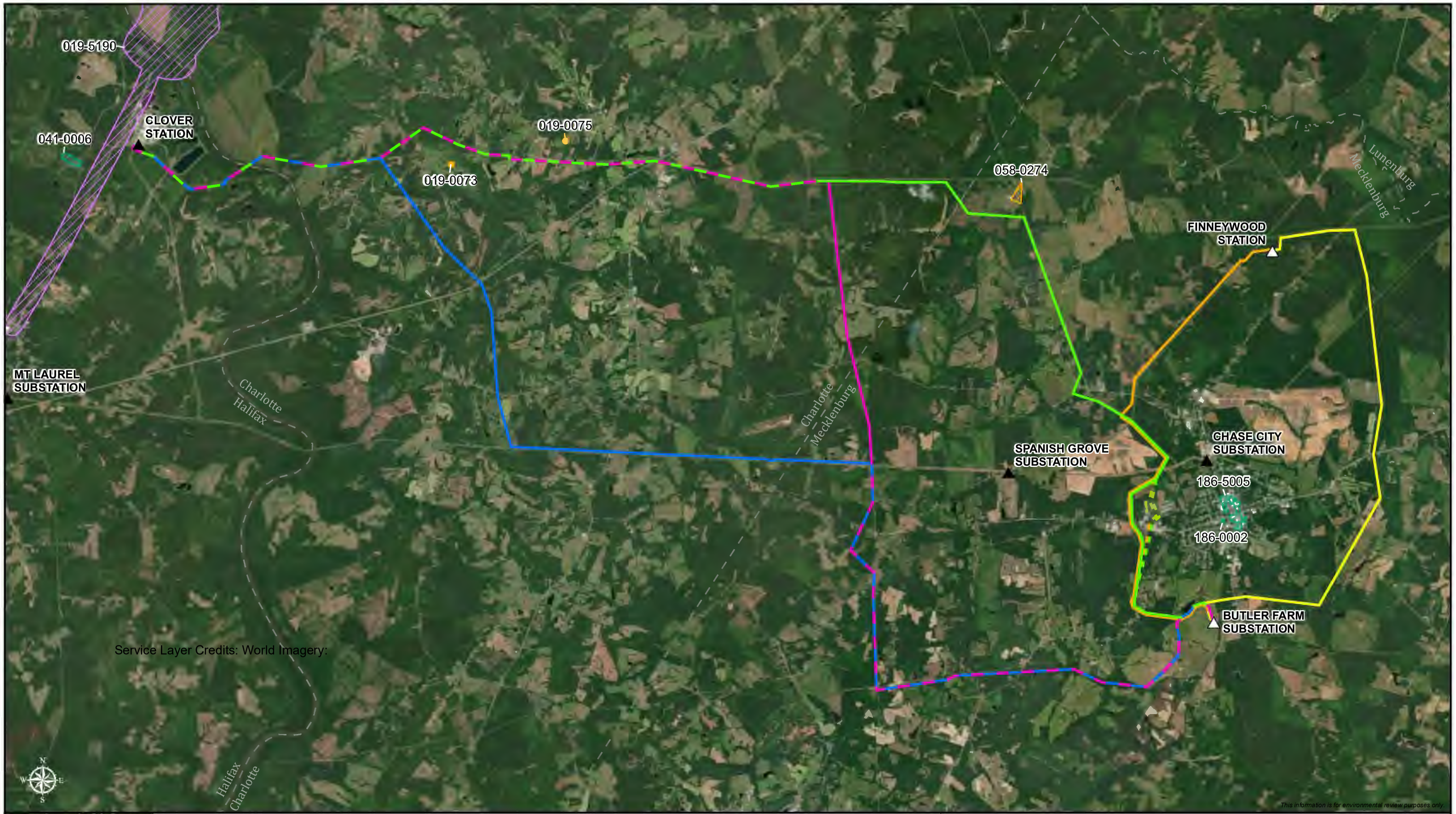
0 500 1,000
Feet
1:24,000

Figure 3.3-3
Ecological Cores
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.3-3_EcoCores | REVISED: 10/10/2022 | SCALE: 1:24,000 when printed at 11x17

DRAWN BY: NAD



▲ Existing Substation
△ Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2

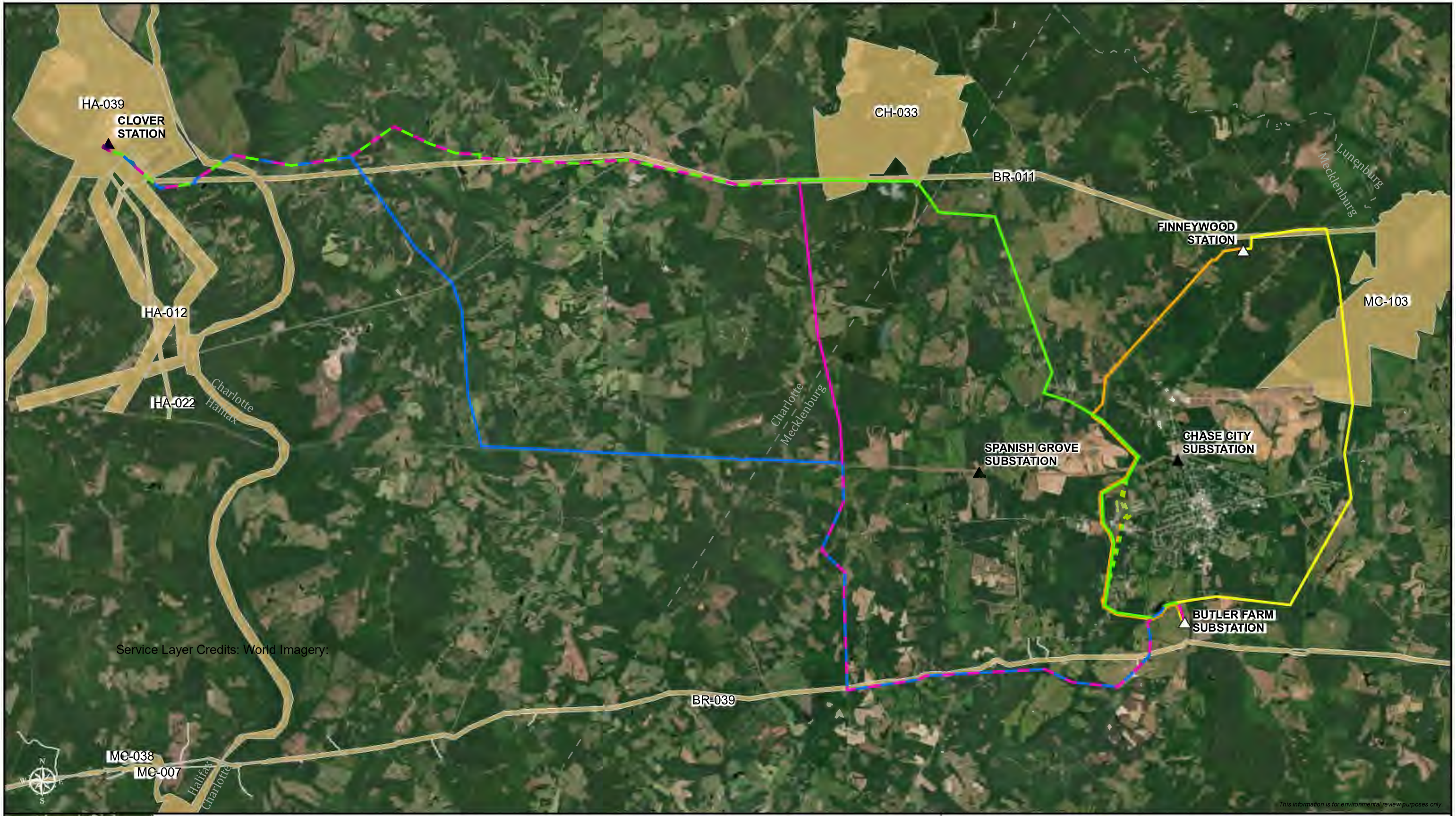
NRHP Eligibility Status
- Eligible; Eligible
- Potentially Eligible
- NRHP Listed

0 0.5 1
Miles
1:72,000

Figure 3.5-1
Considered Historic and Architectural Resources in Project Vicinity
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.5-1_Historic_Architectural | REVISED: 10/10/2022 | SCALE: 1:72,000 when printed at 11x17 | DRAWN BY: NAD



Existing Substation
Proposed Substation

Butler Farm–Clover Line

Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2
Cultural Resource Survey

0 0.5 1
Miles

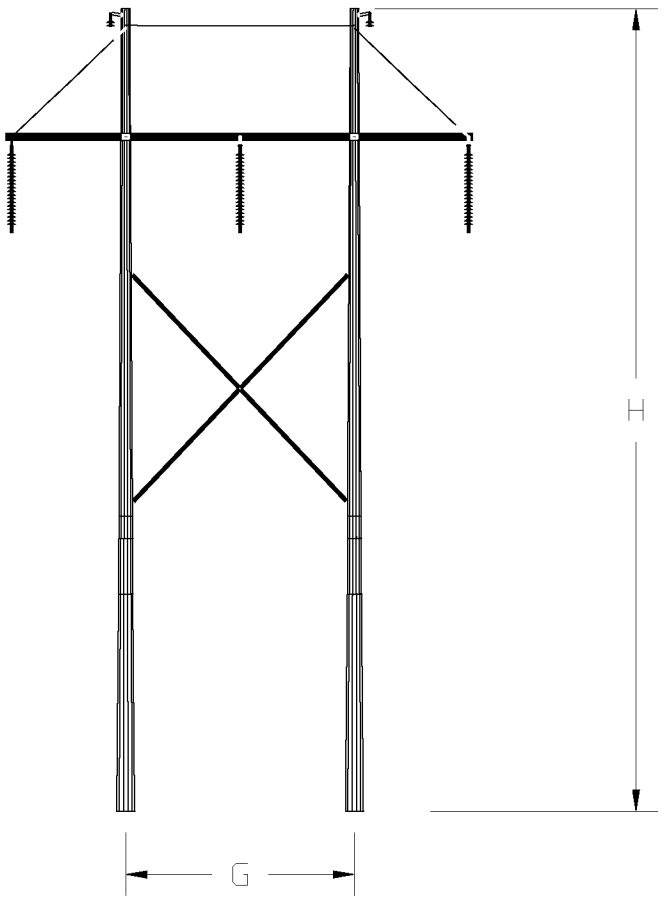
1:72,000

Figure 3.5-2
Cultural Resource Surveys Covering Portions of Alternative Routes
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx_DOM_CBF_Fig_3.5-2_Cultural_Resources | REVISED: 10/10/2022 | SCALE: 1:72,000 when printed at 11x17 | DRAWN BY: NAD

APPENDIX B STRUCTURAL DRAWINGS

BUTLER FARM - CLOVER, LINE #2281
STRUCTURES 2281/2 - 2281/137

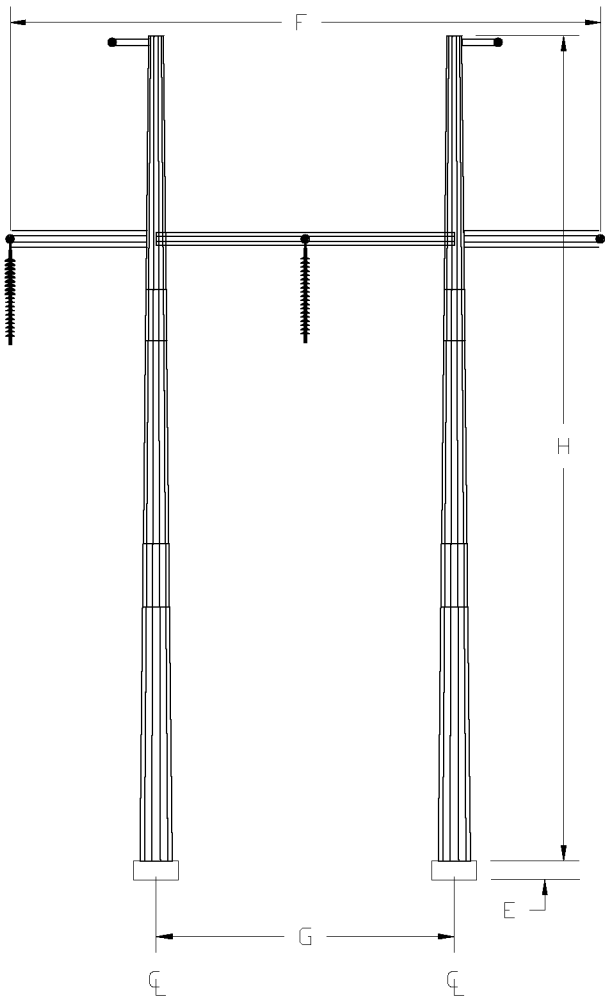


230kV SC H-FRAME DOM POLE SUSPENSION STRUCTURE

A. MAPPING OF THE ROUTE:	N/A
B. RATIONALE FOR STRUCTURE TYPE:	COST AND QUICKER INSTALLATION TO ACCOMMODATE SCHEDULE
C. LENGTH OF R/W (STRUCTURE QTY):	15.1 MILES (106 STRUCTURES)
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONALE FOR MATERIAL:	WEATHERING STEEL WAS SELECTED SINCE OUR STANDARD DOM POLES ARE WEATHERING STEEL
E. FOUNDATION MATERIAL:	N/A, DIRECT EMBED
AVERAGE FOUNDATION REVEAL:	N/A, DIRECT EMBED
F. AVERAGE WIDTH AT CROSS ARM:	42'
G. AVERAGE WIDTH AT BASE:	20.5' BETWEEN POLES, 36' DIAMETER FOUNDATION (SEE NOTE 3)
H. MINIMUM STRUCTURE HEIGHT:	70'
MAXIMUM STRUCTURE HEIGHT:	110'
AVERAGE STRUCTURE HEIGHT:	87'
I. AVERAGE SPAN LENGTH (RANGE):	590' (231'-936') (SEE NOTE 4)
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. A 36 INCH DIAMETER IS A MAXIMUM WIDTH AT EACH POLE BASE WHICH ACCOUNTS FOR A PIPE PILE.
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND INCLUDE EMBEDDED DEPTH.
4. THE SPAN ASSOCIATED WITH EACH STRUCTURE IS THE AHEAD SPAN.

BUTLER FARM - CLOVER, LINE #2281
STRUCTURES 2281/2 - 2281/137

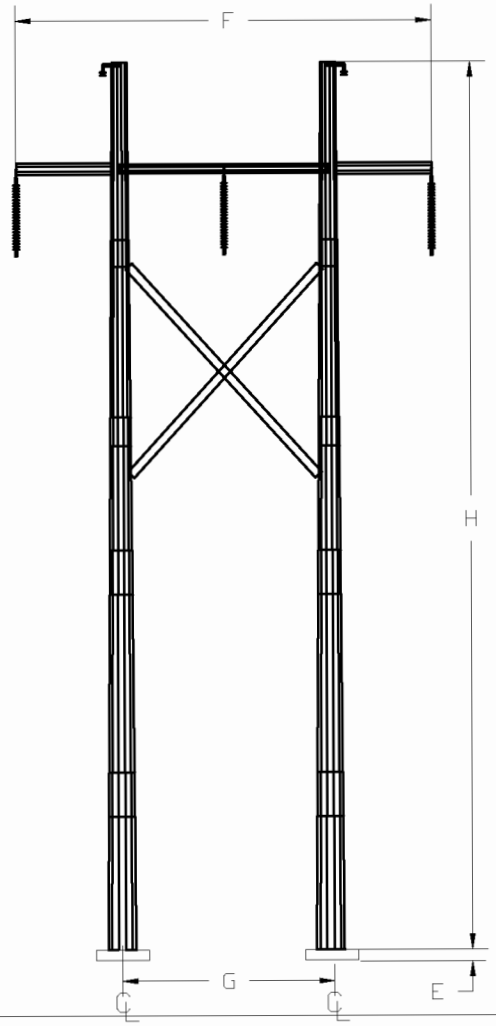


230kV SC H-FRAME ENGINEERED DDE STRUCTURE

A. MAPPING OF THE ROUTE:	N/A
B. RATIONALE FOR STRUCTURE TYPE:	COST AND QUICKER INSTALLATION TO ACCOMMODATE SCHEDULE
C. LENGTH OF R/W (STRUCTURE QTY):	15.1 MILES (28 STRUCTURES)
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONALE FOR MATERIAL:	WEATHERING STEEL WAS SELECTED SINCE OUR STANDARD DOM POLES ARE WEATHERING STEEL
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSS ARM:	48'
G. AVERAGE WIDTH AT BASE:	23.5' BETWEEN POLES (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT:	60'
MAXIMUM STRUCTURE HEIGHT:	130'
AVERAGE STRUCTURE HEIGHT:	81'
I. AVERAGE SPAN LENGTH (RANGE):	601' (421'-888') (SEE NOTE 4)
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. A MINIMUM FOUNDATION REVEAL SHALL BE 1.5 FEET. FOUNDATION DIAMETER SHALL BE BASED ON FINAL ENGINEERING.
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL.
4. THE SPAN ASSOCIATED WITH EACH STRUCTURE IS THE AHEAD SPAN.

BUTLER FARM - CLOVER, LINE #2281
STRUCTURES 2281/2 - 2281/168

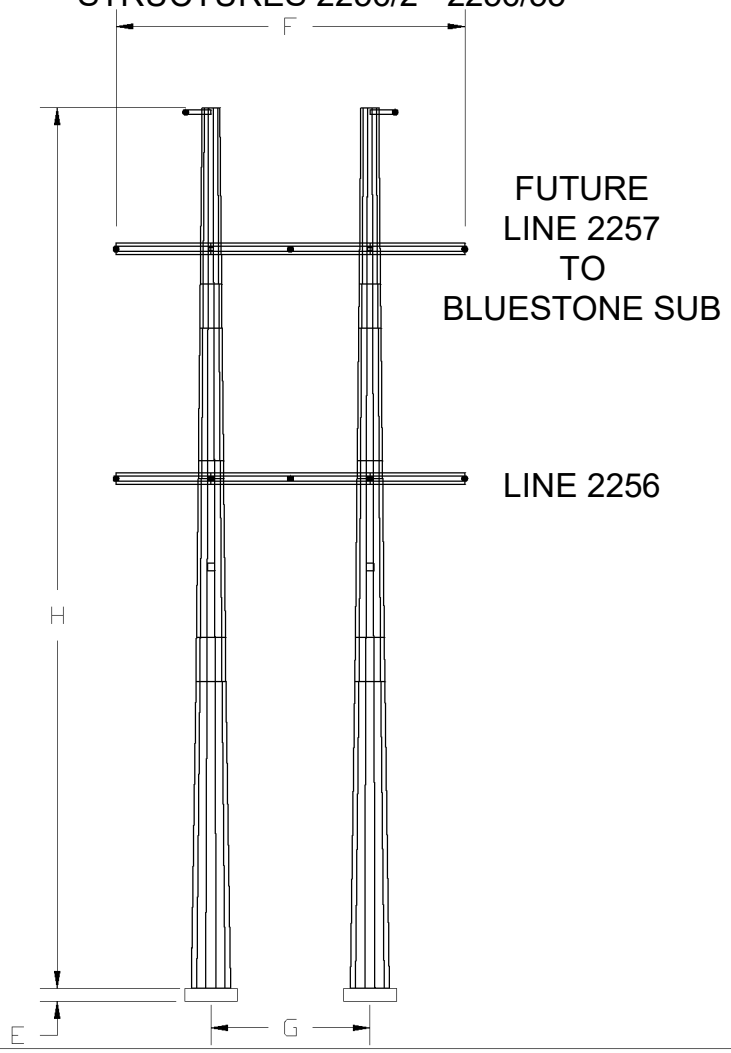


230kV SC H-FRAME ENGINEERED SUSPENSION STRUCTURE

A. MAPPING OF THE ROUTE:	N/A
B. RATIONALE FOR STRUCTURE TYPE:	COST AND QUICKER INSTALLATION TO ACCOMMODATE SCHEDULE
C. LENGTH OF R/W (STRUCTURE QTY):	18.86 MILES (4 STRUCTURES)
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONALE FOR MATERIAL:	WEATHERING STEEL WAS SELECTED SINCE OUR STANDARD DOM POLES ARE WEATHERING STEEL
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSS ARM:	47'
G. AVERAGE WIDTH AT BASE:	23.5' BETWEEN POLES (SEE NOTE 2)
H. MINIMUM STRUCTURE HEIGHT:	120'
MAXIMUM STRUCTURE HEIGHT:	135'
AVERAGE STRUCTURE HEIGHT:	124'
I. AVERAGE SPAN LENGTH (RANGE):	638' (446'-870') (SEE NOTE 4)
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES
1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. A MINIMUM FOUNDATION REVEAL SHALL BE 1.5 FEET. FOUNDATION DIAMETER SHALL BE BASED ON FINAL ENGINEERING.
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL.
4. THE SPAN ASSOCIATED WITH EACH STRUCTURE IS THE AHEAD SPAN.

BUTLER FARM - FINNEYWOOD, LINE #2256
STRUCTURES 2256/2 - 2256/55



230kV DC ENGINEERED H-FRAME DDE STRUCTURE

A. MAPPING OF THE ROUTE: N/A

B. RATIONALE FOR STRUCTURE TYPE: TO FACILITATE TRANSMISSION CROSSINGS AND ACCOMODATE FUTURE LINE TO BLUESTONE SUB

C. LENGTH OF R/W (STRUCTURE QTY): 6.65 MILES (5 STRUCTURES)

D. STRUCTURE MATERIAL: WEATHERING STEEL

RATIONALE FOR MATERIAL: WEATHERING STEEL WAS SELECTED TO MATCH THE FIRST SECTION OF LINE

E. FOUNDATION MATERIAL: CONCRETE

AVERAGE FOUNDATION REVEAL: SEE NOTE 2

F. AVERAGE WIDTH AT CROSS ARM: 50'

G. AVERAGE WIDTH AT BASE: SEE NOTE 2

H. MINIMUM STRUCTURE HEIGHT: 110'

MAXIMUM STRUCTURE HEIGHT: 150'

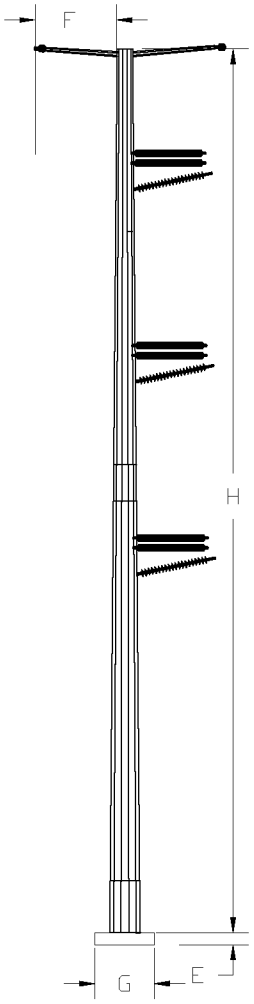
AVERAGE STRUCTURE HEIGHT: 120'

I. AVERAGE SPAN LENGTH (RANGE): 520' (213'-859') (SEE NOTE 4)

J. MINIMUM CONDUCTOR-TO-GROUND: 22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. A MINIMUM FOUNDATION REVEAL SHALL BE 1.5 FEET. FOUNDATION DIAMETER SHALL BE BASED ON FINAL ENGINEERING.
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL.
4. THE SPAN ASSOCIATED WITH EACH STRUCTURE IS THE AHEAD SPAN.

BUTLER FARM - CLOVER, LINE #2281
STRUCTURES 2281/138 - 2281/168

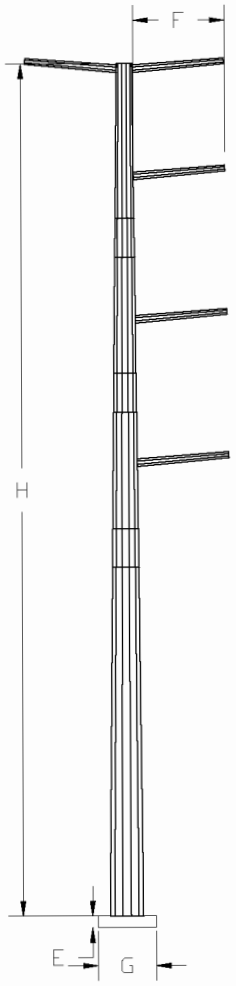


230kV SC ENGINEERED MONOPOLE DDE STRUCTURE

A. MAPPING OF THE ROUTE:	N/A
B. RATIONALE FOR STRUCTURE TYPE:	TO MINIMIZE RIGHT OF WAY WHEN CO-LOCATING WITH NEW LINE #2256
C. LENGTH OF R/W (STRUCTURE QTY):	3.55 MILES (10 STRUCTURES)
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONALE FOR MATERIAL:	WEATHERING STEEL WAS SELECTED TO MATCH THE FIRST SECTION OF LINE
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSS ARM:	8'
G. AVERAGE WIDTH AT BASE:	SEE NOTE 2
H. MINIMUM STRUCTURE HEIGHT:	100'
MAXIMUM STRUCTURE HEIGHT:	115'
AVERAGE STRUCTURE HEIGHT:	108'
I. AVERAGE SPAN LENGTH (RANGE):	607' (443'-721') (SEE NOTE 4)
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. A MINIMUM FOUNDATION REVEAL SHALL BE 1.5 FEET. FOUNDATION DIAMETER SHALL BE BASED ON FINAL ENGINEERING.
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL.
4. THE SPAN ASSOCIATED WITH EACH STRUCTURE IS THE AHEAD SPAN.

BUTLER FARM - CLOVER, LINE #2256
STRUCTURES 2256/2 - 2256/55

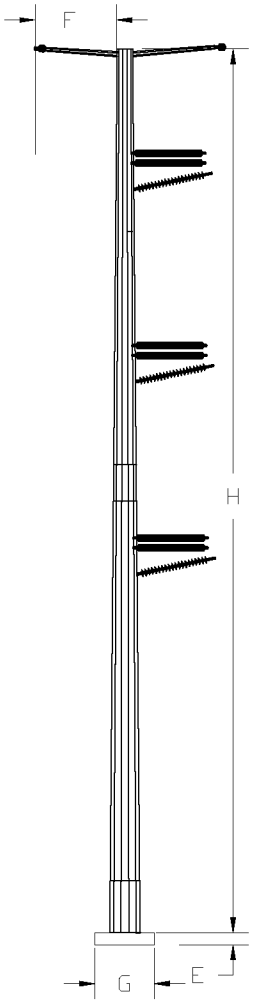


230kV SC ENGINEERED MONOPOLE SUSPENSION STRUCTURE

A. MAPPING OF THE ROUTE:	N/A
B. RATIONALE FOR STRUCTURE TYPE:	TO MINIMIZE RIGHT OF WAY TO ACCOMODATE FUTURE LINE TO BLUESTONE SUB
C. LENGTH OF R/W (STRUCTURE QTY):	6.65 MILES (33 STRUCTURES)
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONALE FOR MATERIAL:	WEATHERING STEEL WAS SELECTED TO MATCH THE 2281 LINE
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSS ARM:	12'
G. AVERAGE WIDTH AT BASE:	SEE NOTE 2
H. MINIMUM STRUCTURE HEIGHT:	100'
MAXIMUM STRUCTURE HEIGHT:	130'
AVERAGE STRUCTURE HEIGHT:	115'
I. AVERAGE SPAN LENGTH (RANGE):	679' (478'-897') (SEE NOTE 4)
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. A MINIMUM FOUNDATION REVEAL SHALL BE 1.5 FEET. FOUNDATION DIAMETER SHALL BE BASED ON FINAL ENGINEERING.
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL.
4. THE SPAN ASSOCIATED WITH EACH STRUCTURE IS THE AHEAD SPAN.

BUTLER FARM - FINNEYWOOD, LINE #2256
STRUCTURES 2256/2 - 2256/55

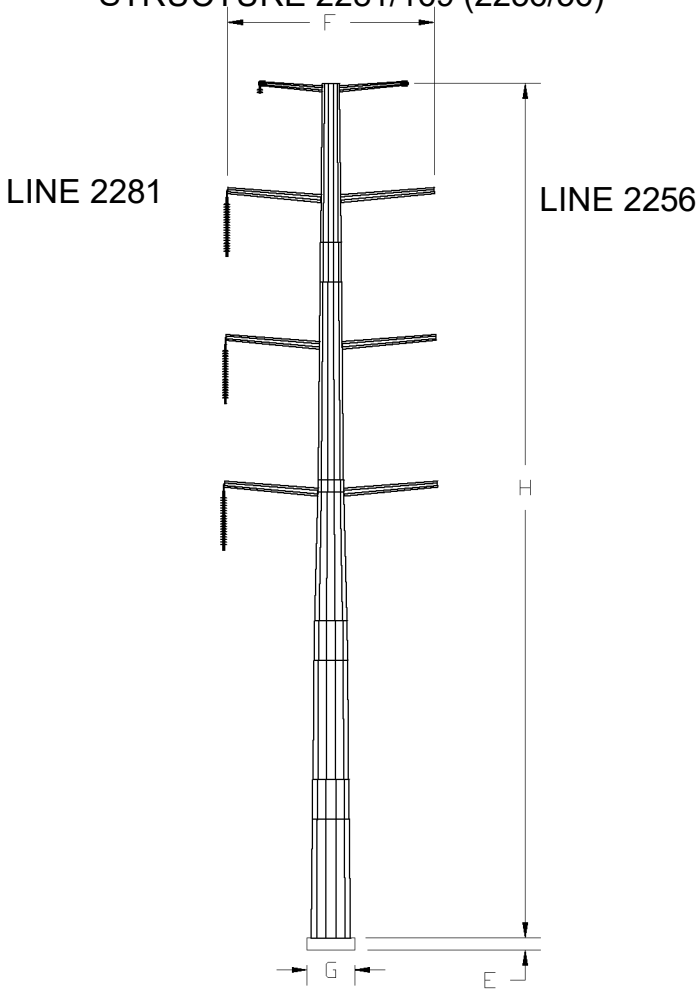


230kV SC ENGINEERED MONOPOLE DDE STRUCTURE

A. MAPPING OF THE ROUTE:	N/A
B. RATIONALE FOR STRUCTURE TYPE:	TO MINIMIZE RIGHT OF WAY TO ACCOMMODATE FUTURE LINE TO BLUESTONE SUB
C. LENGTH OF R/W (STRUCTURE QTY):	6.65 MILES (16 STRUCTURES)
D. STRUCTURE MATERIAL:	WEATHERING STEEL
RATIONALE FOR MATERIAL:	WEATHERING STEEL WAS SELECTED TO MATCH THE FIRST SECTION OF LINE
E. FOUNDATION MATERIAL:	CONCRETE
AVERAGE FOUNDATION REVEAL:	SEE NOTE 2
F. AVERAGE WIDTH AT CROSS ARM:	8'
G. AVERAGE WIDTH AT BASE:	SEE NOTE 2
H. MINIMUM STRUCTURE HEIGHT:	95'
MAXIMUM STRUCTURE HEIGHT:	120'
AVERAGE STRUCTURE HEIGHT:	107'
I. AVERAGE SPAN LENGTH (RANGE):	636' (474'-843') (SEE NOTE 4)
J. MINIMUM CONDUCTOR-TO-GROUND:	22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. A MINIMUM FOUNDATION REVEAL SHALL BE 1.5 FEET. FOUNDATION DIAMETER SHALL BE BASED ON FINAL ENGINEERING.
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL.
4. THE SPAN ASSOCIATED WITH EACH STRUCTURE IS THE AHEAD SPAN.

BUTLER FARM - FINNEYWOOD, LINE #2256
BUTLER FARM - CLOVER, LINE #2281
STRUCTURE 2281/169 (2256/56)



230kV DC ENGINEERED MONOPOLE DDE STRUCTURE

A. MAPPING OF THE ROUTE: N/A

B. RATIONALE FOR STRUCTURE TYPE: TO MINIMIZE FOOTPRINT TO AVOID WETLAND IMPACTS

C. LENGTH OF R/W (STRUCTURE QTY): 0.21 MILES (1 STRUCURE)

D. STRUCTURE MATERIAL: WEATHERING STEEL

RATIONALE FOR MATERIAL: WEATHERING STEEL WAS SELECTED TO MATCH LINES #2281 & #2256

E. FOUNDATION MATERIAL: CONCRETE

AVERAGE FOUNDATION REVEAL: SEE NOTE 2

F. AVERAGE WIDTH AT CROSS ARM: 26'

G. AVERAGE WIDTH AT BASE: SEE NOTE 2

H. MINIMUM STRUCTURE HEIGHT: 120'

MAXIMUM STRUCTURE HEIGHT: 120'

AVERAGE STRUCTURE HEIGHT: 120'

I. AVERAGE SPAN LENGTH (RANGE): 480 (480-480') (SEE NOTE 4)

J. MINIMUM CONDUCTOR-TO-GROUND: 22.5' (AT MAXIMUM OPERATING TEMPERATURE)

NOTES:
1. INFORMATION CONTAINED ON DRAWING IS PRELIMINARY IN NATURE AND SUBJECT TO CHANGE DURING FINAL DESIGN.
2. A MINIMUM FOUNDATION REVEAL SHALL BE 1.5 FEET. FOUNDATION DIAMETER SHALL BE BASED ON FINAL ENGINEERING.
3. STRUCTURE HEIGHTS ARE MEASURED FROM STRUCTURE CENTERLINE AND DO NOT INCLUDE FOUNDATION REVEAL.
4. THE SPAN ASSOCIATED WITH EACH STRUCTURE IS THE AHEAD SPAN.

APPENDIX C DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION 14 CODE OF FEDERAL REGULATIONS PART 77. JULY 21, 2010. FINAL RULE: SAFE EFFICIENT USE AND PRESERVATION OF THE NAVIGABLE AIRSPACE

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 77

[Docket No. FAA–2006–25002; Amendment No. 77–13]

RIN 2120–AH31

Safe, Efficient Use and Preservation of the Navigable Airspace

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This action amends the regulations governing objects that may affect the navigable airspace. These rules have not been revised in several decades, and the FAA has determined it is necessary to update the regulations, incorporate case law and legislative action, and simplify the rule language. These changes will improve safety and promote the efficient use of the National Airspace System.

DATES: This amendment becomes effective January 18, 2011.

FOR FURTHER INFORMATION CONTACT: For technical questions about this final rule contact Ellen Crum, Air Traffic Systems Operations, Airspace and Rules Group, AJR–33, Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591; telephone (202) 267–8783, facsimile (202) 267–9328. For legal questions about this final rule contact Lorelei Peter, Office of the Chief Counsel–Regulations Division, Federal Aviation Administration, 800 Independence Ave., SW., Washington, DC 20591; telephone (202) 267–3134, facsimile 202–267–7971.

SUPPLEMENTARY INFORMATION:

Authority for This Rulemaking

The Administrator has broad authority to regulate the safe and efficient use of the navigable airspace (49 U.S.C. 40103(a)). The Administrator is also authorized to issue air traffic rules and regulations to govern the flight, navigation, protection, and identification of aircraft for the protection of persons and property on the ground, and for the efficient use of the navigable airspace (49 U.S.C. 40103(b)). The Administrator may also conduct investigations and prescribe regulations, standards, and procedures in carrying out the authority under this part (49 U.S.C. 40113). The Administrator is authorized to protect civil aircraft in air commerce (49 U.S.C. 44070(a)(5)).

Under § 44701(a)(5), the Administrator promotes safe flight of civil aircraft in air commerce by prescribing regulations and minimum standards for other practices, methods, and procedures necessary for safety in air commerce and national security. Also, § 44718 provides that under regulations issued by the Administrator, notice to the agency is required for any construction, alteration, establishment, or expansion of a structure or sanitary landfill, when the notice will promote safety in air commerce, and the efficient use and preservation of the navigable airspace and airport traffic capacity at public use airports. This statutory provision also provides that, under regulations issued by the Administrator, the agency determines whether such construction or alteration is an obstruction of the navigable airspace, or an interference with air navigation facilities and equipment or the navigable airspace. If a determination is made that the construction or alteration creates an obstruction or otherwise interferes, the agency then conducts an aeronautical study to determine adverse impacts on the safe and efficient use of the airspace, facilities, or equipment.

I. Background

A. Summary of the Notice of Proposed Rulemaking (NPRM)

On June 13, 2006, the FAA published an NPRM that proposed to amend the regulations governing objects that may affect the navigable airspace (71 FR 34028). The FAA proposed to: Establish notification requirements and obstruction standards for transmitting on certain frequencies; revise obstruction standards for civil airport imaginary surfaces to more closely align these standards with FAA airport design and instrument approach procedure (IAP) criteria; revise current definitions and include new definitions; require proponents to file with the FAA a notice of proposed construction or alteration for structures near private use airports that have an FAA-approved IAP; and increase the number of days in which a notice must be filed with the FAA before beginning construction or alteration. The comment period closed on September 11, 2006.

B. Summary of the Final Rule

The following is a discussion of the major changes contained in the final rule. The provisions of the final rule that were modified based on comments the FAA received are discussed in the "Discussion of the Final Rule" section. Most of the amendments implemented by the rule are intended to simplify the existing regulations.

This rule adds § 77.29 to incorporate the specific factors listed in P.L. 100–223 for consideration during an aeronautical study. The specific factors are listed in Appendix A to this preamble. Including this language in part 77 does not add or remove any of the factors currently considered in an aeronautical study.

This rule provides for an FAA Determination of Hazard or Determination of No Hazard to become effective 40 days after the date of issuance, unless a petition for discretionary review is received by the FAA within 30 days of issuance. In addition, the rule stipulates that a Determination of No Hazard to air navigation will expire 18 months after the effective date of the determination, or on the date the proposed construction or alteration is abandoned. Also, the rule specifies that a Determination of Hazard to Air Navigation does not expire.

This final rule adds information about the processing of petitions for discretionary review. It also excludes determinations for temporary structures and recommendations for marking and lighting from the discretionary review process. Because of the nature of temporary structures, it is not possible to apply the lengthy discretionary review process to these structures. Also, since marking and lighting recommendations are simply recommendations, there is a separate process for a waiver of, or deviation from, the recommendations.

This rule expands the requirements for notice to be sent to the FAA for proposed construction or alteration of structures on or near private use airports that have an IAP. Accordingly, if a private use airport has an FAA-approved IAP, then a construction sponsor must notify the FAA of a proposed construction or alteration that exceeds the notice criteria in § 77.17. This action will give the FAA enough time to adjust the IAP, if needed, and to inform those who use the IAP.

Also, IAPs at private use airports or heliports are not currently listed in any aeronautical publication. Sponsors of construction or alteration at or near a private use airport or heliport should consult the FAA Web site to determine whether an FAA-approved IAP is listed for that airport.[1] If the airport is listed on the Web site, the sponsor must file notice with the FAA.

Lastly, this rule incorporates minor edits to the regulatory text to distinguish

[1] *https://oeaaa.faa.gov.*

FAA surveillance systems from communication facilities.

C. Summary of Comments

The FAA received approximately 115 comments from individuals, aviation associations, industry spectrum users, airlines, and other aviation businesses. Many commenters, including the Air Transport Association, generally supported the NPRM. Commenters supported specific proposals concerning evaluating the aeronautical impact of proposed construction on IAPs at private use airports; evaluating antenna installations that might affect air traffic or navigation; and the update and reformat of the regulations. Comments that did not support the proposed rule, and suggested changes, are discussed more fully in the "Discussion of the Final Rule" section.

The FAA received substantive comments on the following general areas of the proposal:

- Frequency notification requirements
- Time requirement to file notice with the FAA
- Civil Airport Imaginary Surfaces [2]
- One Engine Inoperative Procedures (OEI)
- Definitions
- Miscellaneous

II. Discussion of the Final Rule

A. Frequency Notification

The FAA's primary focus during the obstruction evaluation process is safety and efficiency of the navigable airspace. It is critical for the agency to be notified of pending construction of physical objects that may affect the safety of aeronautical operations. (*See* 49 U.S.C. 44718.) In today's National Airspace System (NAS), however, electromagnetic transmissions can adversely affect on-board flight avionics, navigation, communication, and surveillance facilities. The FAA has extensive authority to prescribe regulations and minimum standards necessary for safety in air commerce. (*See* 49 U.S.C. § 44701(a)(5).) In addition, the FAA has broad authority to develop policy and plans for the use of the navigable airspace. (*See* 49 U.S.C. 40103.) The FAA relied on these authorities in proposing the notice requirements for broadcast transmissions in the specified bands. As stated in the proposal, broadcast transmission on certain frequencies can pose serious safety threats to avionics and ground based facilities. At the same time, the FAA recognizes the authority of the National Telecommunications and Information Administration (NTIA) and the Federal Communications Commission (FCC) to manage use of the radio spectrum.

The FAA concludes that its proposal to require notice for the proposed frequency bands was too broad. The proposed frequencies from the NPRM are listed in Appendix B to this preamble. The proposed frequencies in the shared (Federal and Non-Federal) bands are managed by an existing process involving several Federal agencies with an interest in spectrum use, which NTIA oversees under the Department of Commerce. It is not the FAA's intent to add a duplicative review and coordination process to that already stated above. In addition, the FAA has determined that some of the proposed frequencies originally listed and not in shared bands do not present concern. Therefore, the agency withdraws the proposed notice and obstruction standards on the shared frequency bands and those frequency bands that, historically, have not posed electromagnetic concerns,[3] when operating under typical specifications.

FM broadcast service transmissions operating in the 88.0–107.9 MHz frequency band pose the greatest concern to FAA navigation signals. The FAA, FCC and NTIA are collaborating on the best way to address this issue. A resolution of this issue is expected soon. Therefore, the proposals on FM broadcast service transmissions in the 88.0–107.9 MHz frequency band remain pending. The FAA will address the comments filed in this docket about the proposed frequency notice requirements and proposed EMI obstruction standards when a formal and collaborative decision is announced.

This rule does include evaluating electromagnetic effect (§§ 77.29 and 77.31), and it codifies the agency's current practices of studying the effects on aircraft navigation and communication facilities. These amendments in no way should be construed to affect the authority of NTIA and the FCC.

B. Time Requirement To File Notice With the FAA

Automation improvements to the FAA's obstruction evaluation program allow the public to file notices of proposed construction electronically, which facilitates the aeronautical study process and has reduced the overall processing time for these cases. The FAA proposed to require that notices of proposed construction or alterations must be filed with the FAA at least 60 days before construction starts or the application filing date for a construction permit, whichever is earliest. The current rule requires 30 days, which the FAA found inadequate for cases to be processed, particularly if additional information, via public comment period, was necessary to complete the study. At the time the FAA published the NPRM, the automation system was in the early stages, and the full benefits of the automation were not yet known. Commenters were split on their support of this proposal, depending on their interests. Comments from the aviation industry largely supported the extended time period. Comments filed by the building industry, however, opposed the extended time period, saying it was too long and would cause undue delay.

The FAA has seen great success with the automation system and concludes that requiring notice to be filed 60 days before construction or the permit application is not necessary. There are cases where circulating the proposal for public comment may be necessary and, consequently, these cases may require up to 45 days for processing. Therefore, the FAA adopts the requirement that notice must be filed with the FAA for proposed construction or alteration at least 45 days before either the date that construction begins, or the date of the construction permit application, whichever is earliest.

Because applications are required within 45 days of construction, the FAA, Department of Defense, and Department of Homeland Security should work together to conduct timely reviews. To that end, the FAA will respond to inquiries from applicants regarding the status of applications, the reason(s) for any delay, and the projected date of completion. As appropriate, the FAA will engage with other Federal Agencies such as the Department of Defense, the Department of Homeland Security, the Department of Energy, and the Department of Interior to expedite any further regulatory modifications and improvements to 14 CFR Part 77 to ensure there is a predictable, consistent, transparent, and timely application process for the wind industry.

Several commenters recommended separate notice requirements for reviewing a temporary structure that might be necessary under emergency-type circumstances. An example

[2] Civil airport imaginary surfaces are established surfaces based on the runway that are used to identify objects that may impact airport plans or aircraft departure/arrival procedures or routes. Section 77.19 describes five types of imaginary surfaces: horizontal, conical, primary, approach and transitional.

[3] 54–88 MHz; 150–216 MHz; 406–430 MHz; 931–940 MHz; 952–960 MHz; 1390–1400 MHz; 2500–2700 MHz; 3700–4200 MHz; 5000–5650 MHz; 5925–6225 MHz; 7450–8550 MHz; 14.2–14.4 GHz.

submitted in the comments was a construction crane that was necessary to replace air conditioning units on the roof of factories. The commenters contend that it is neither logical nor feasible to shut down a factory for 30 days while the FAA studies this temporary structure.

Situations like the one presented by these commenters are not uncommon. Regardless of whether the structure is temporary, it remains critical for the FAA to have notice of tall structures that can affect aeronautical operations. In most cases, the proponent of the structure contacts the FAA Obstruction Evaluation (OE) specialist and identifies the need for a quick review, for which the agency readily responds. While the FAA regrets any past delay in taking quick action on a particular case, the agency declines to set-up special procedures to address such cases. On the FAA's OE Web site,[4] the agency lists the contact information for the FAA specialist. If a sponsor is concerned with the time frame for the FAA's review, the agency encourages the sponsor to contact the FAA specialist directly.

C. Civil Airport Imaginary Surfaces

The NPRM proposed, for a visual runway used by small aircraft or restricted to day-only instrument operations, that the width of the imaginary approach surface expand uniformly to 1,250 ft. If the runway is a visual runway, used by other than small aircraft or for instrument night circling, the surface width expands uniformly from 1,500 ft. to 3,500 ft. If the runway is a non-precision instrument or precision instrument runway, the surface width expands uniformly to 4,000 ft. and 16,000 ft., respectively. Other changes include removing approach surface widths of 1,500 ft. and 2,000 ft., and increasing the width for some non-precision runways from 2,000 ft. to 4,000 ft. The NPRM also proposed expanding the width of the primary approach surface of a non-precision instrument runway or precision instrument runway from 500 feet to 1,000 ft.

Many commenters opposed the proposed expansion of the primary surface. They argued that the proposed expansion would require airport operators to remove existing structures that would fall within the proposed expanded surface, which would result in a financial burden to airport owners and managers. Southwest Airlines, on the other hand, supported the proposal and stated the ability to study and review more proposed structures is positive for airport safety.

Several comments stated that the imaginary surfaces in part 77 do not comport clearly with the surfaces used for obstacle clearance under the United States Standard for Terminal Instrument Procedures (TERPS) and, therefore, makes the part 77 surfaces useless as a project planning tool for airport development.

Similarly, another commenter argued that the Required Navigation Performance (RNP) lateral protection area is greater than the width of the primary surface and the RNP procedures TERPS surface is outside the part 77 imaginary surface. The commenter contends that an obstacle can adversely impact an RNP procedure, but not be characterized as an obstruction. This commenter recommends that the imaginary surfaces be expanded to include RNP procedures.

Several commenters specifically questioned whether current obstructions that fall within the newly expanded primary surface could impact an instrument procedure and result in the airport losing the instrument procedure. One airport authority was concerned about marking and lighting recommendations for existing structures that will now fall under the expanded primary surface.

The FAA proposed these changes to more closely align regulatory provisions in part 77 with TERPS criteria and airport design standards. The inconsistency between IAP criteria, airport design standards, and part 77 surfaces has been a source of confusion for both airport managers and the FAA. These specific proposals would not have altered the notice criteria. Instead, the proposals were meant to identify more proposed structures as obstructions that the FAA could study to determine if they would adversely affect the NAS.

However, since publication of the NPRM, the FAA has begun a coordinated effort to consolidate all agency requirements for the treatment of obstacles in the airport environment. Once completed, the new requirements will form the basis for revised civil airport imaginary surfaces. Thus, it would not be prudent to codify the proposals. Further, amending or expanding any of the civil airport imaginary surfaces at this time would not be in the best interest of the public. The FAA, therefore, withdraws all proposed modifications to the civil airport imaginary surfaces, including the chart format. The FAA will keep the civil airport imaginary surfaces rule as it is currently described in 14 CFR 77.25.

D. One Engine Inoperative Procedures

The NPRM specifically states that OEI procedures were not a part of the rulemaking. The NPRM further notes that the FAA has tasked the Airport Obstruction Standards Committee (AOSC) with examining this issue. Comments from the Air Transport Association, individual airlines, local airport authorities, and aviation organizations, asked the FAA to address OEI procedures. These comments have been forwarded to the AOSC for consideration. As appropriate, the FAA will advise the aviation industry and other interested persons, through the AOSC, of any policy changes.

E. Definitions

The NPRM proposed replacing the term "utility runway" with the phrase "runway used by small aircraft". In addition, the NPRM proposed amending the definitions for precision, non-precision, and visual runways, as these definitions were no longer up-to-date with industry practices. The term "utility runway" is not widely used in industry so the NPRM proposed replacing the term. In addition, the NPRM proposed amending the definitions for precision and non-precision runways to address approaches that use other than ground based navigational aids, such as flight management systems (FMS) and global navigation satellite systems (GNSS). Because of technological advances, the former definitions for precision and non-precision runways are no longer accurate.

By removing the term "utility runway", commenters stated the portions of the rule that include the term became confusing. They note that the runway classifications and corresponding widths for the primary and approach surfaces in the tables in § 77.19(d)(e) are difficult to understand.

Several commenters confused the proposed definitions for precision and non-precision instrument runways with the definitions for precision and non-precision instrument approach procedures.[5] One commenter suggested the non-precision runway definition should exclude a runway that has a developed instrument approach procedure with visibility minimums of

[4] *https://oeaaa.faa.gov.*

[5] The FAA proposed definitions for the terms "precision instrument runway" and "non-precision instrument runway" to be based on the use of visibility minimums, rather than approach procedure classification, given that visibility is the critical factor during the visual portion of the approach.

one statute mile. This commenter contends that many small, general aviation airports have published procedures with one mile visibility under the current obstruction criteria of a utility runway. The commenter also notes that if the FAA adopts the proposal to limit non-precision runways to procedures with visibility minimums of one statute mile, then these small airports would need to have the more demanding primary surfaces and approach criteria. The commenter further says this could result in financial hardship for these airports and the airports may need to double the designated airspace around the runway. Another commenter stated that the new definition for a non-precision runway conflicts with FAA Advisory Circular 150/5300–13, Airport Design.

Commenters also indicated that the new definition and associated surfaces would take runways that currently qualify as utility into the non-precision category. They say these modifications could result in unfunded economic burdens on outlying airports with IAPs to utility runways that experience lower traffic densities. Additionally, commenters noted that many of these airports are configured with minimal infrastructure and could face significant airport expansion to obtain IAP services if the runway is categorized as non-precison.

Several commenters also stated that the proposed definitions of precision and non-precision runways try to redefine the current precision and non-precision instrument procedures because satellite technology could, in the future, enable non-precision approaches to become precision approaches.

Although the FAA proposed to revise these definitions, on further review, the agency has determined it should not revise them at this time. The definitions were proposed to support implementing satellite-based navigation. However, as the satellite-based navigation program has evolved during development of this rulemaking, the agency has learned of unintended consequences of the proposed definitions. For example, changing the runway definition creates infrastructure requirements that may be needed as the technology evolves. The FAA believes a more measured approach is needed before making any changes to the definitions. Thus, the agency will not adopt the proposed revisions to the definitions in this final rule.

F. Extension to a Determination of No Hazard

The NPRM proposed a provision for which an extension to the expiration date for a Determination of No Hazard may be granted. Specifically, it proposed that for structures not subject to FCC review, a Determination of No Hazard can be extended for a maximum of 18 months, if necessary. If more than 18 months is necessary, then a new aeronautical study would be initiated. For structures that require an FCC construction permit, the NPRM proposed that a Determination of No Hazard can be extended for up to 12 months, provided the sponsor submits evidence that an application for a construction permit was filed within 6 months of the date of issuance. The NPRM also proposed that if the FCC extends the original FCC construction completion date, the sponsor must request an extension of the FAA's Determination of No Hazard.

Many commenters found that the two time periods (18 and 12 months) were confusing. The FAA's review of this matter concluded that it is not necessary to continue the distinction between structures subject to FCC review from structures that do not need this review, simply to extend the expiration date. Therefore, for simplification and standardization, the FAA amends the time period for extensions to determinations of structures to 18 months, regardless of whether an FCC construction permit is necessary.

In addition, the FAA unintentionally omitted a section of the current rule from the NPRM. That section states that if the FCC denies a construction permit, the final determination expires on the date of the denial. The FAA has reinserted that section in this final rule.

G. Effective Date

The effective date of this final rule is 180 days from the date the rule is published in the **Federal Register**. The FAA needs this time to amend the automation system it uses to evaluate obstructions, amend relevant FAA orders, train employees, and educate the public.

H. Miscellaneous

One commenter said the requirement to file notice should extend to structures that would penetrate an imaginary surface relative to a planned or proposed airport. Specifically, this commenter seeks to incorporate the imaginary surfaces for evaluating obstructions under § 77.19(a) in the notice requirements for structures that are on or around a planned airport.

Section 77.9 requires notice for construction on an existing airport or an airport under construction. This section specifies an imaginary surface extending from the runway (in increments of 20,000 feet, 10,000 ft., or 5,000 ft., depending on the length of the airport's runway or heliport) at a specific slope for which notice is required if it would penetrate one of the surfaces for either an existing airport or an airport under construction. The above referenced surfaces, for which the longest surface would extend approximately 3.78 miles from the end of the runway, do not apply to a planned airport for which construction has yet to begin.

The effect of this commenter's request would be to require notice for up to approximately 3.5 miles (for the longest runway) for any construction that penetrates the 100 to 1 surface for a planned or proposed airport.

This comment is outside the scope of the NPRM. The essence of this comment would be a new notice requirement for planned or proposed airports. To accommodate this comment without providing the public an opportunity to comment on its impact would violate the Administrative Procedure Act.

Notwithstanding the above scope issue, to apply the imaginary surface from the notice requirements to planned or proposed airports would be difficult to implement. A planned or proposed airport can be at varying stages of development, with runway(s) location and configuration undetermined, navigational aids not sited, and instrument approach and departure procedures yet to be developed. It would be impossible for the FAA to study (and apply the obstruction standards) with any degree of certainty, to a proposed structure when the above listed airport issues are not defined. In addition, airport development can be subject to environmental laws and lengthy processes with alternative plans that must be analyzed. The FAA cannot "reserve" airspace on such speculative plans. The agency does study the impact of structures that are identified as obstructions on planned or proposed airports that are on file with the FAA. As the details of a planned airport become part of the "plan on file" with the FAA or the Airport Layout Plan, on which the FAA can rely, the FAA includes those details during the study.

Several commenters questioned the proposed removal of the regulatory provisions addressing antenna farms and whether any antenna farms currently exist. The FAA has not established any antenna farm area. Moreover, the regulations governing structures addresses the FAA needs

here. Thus, this rule removes the provisions governing antenna farms.

One commenter questioned why an object that is shielded by another structure is not subject to the notice requirements. This commenter contends that if the structure that shields an unreported structure is dismantled, there is no record of the first structure, nor is there any requirement to notify the FAA of this structure if the shielding structure is dismantled.

Section 77.15(a) provides that notice is not required for a structure if the shielding structure is of a substantial and permanent nature and is located in a congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation. This exception does not apply in areas where there are only one or two other structures. The FAA has not experienced a situation like the one described by the commenter that can be attributed to this exception. This rule does expand the current supplemental notice requirements in § 77.11, and specifies that if a construction or alteration is abandoned, dismantled, or destroyed, notice must be provided to the FAA within 5 days after the construction is abandoned, dismantled, or destroyed. In the rare case where a shielding structure is abandoned, dismantled, or destroyed, the proponent must notify the FAA so that appropriate actions concerning adjacent structures can be initiated.

Prior to this rule, part 77 provided that a proposed or existing structure was an obstruction to air navigation if it was higher than 500 ft. above ground level (AGL). The minimum altitude to operate an aircraft over non-congested areas is 500 feet above the surface.[6] Consequently, an aircraft could be operating at 500 ft. AGL and encounter a structure that was 500 ft. AGL that might not have been studied by the FAA during the obstacle evaluation process. The FAA adopts the proposal that lowers the height of a structure identified as an obstruction from above 500 ft. to above 499 ft. Accordingly, all structures that are above 499 ft. tall will be obstructions, and the FAA will study them to determine their effect on the navigable airspace. This will ensure that all usable airspace at and above 500 ft. AGL is addressed during the aeronautical study and that this airspace is protected from obstructions that may create a hazard to air navigation.

[6] 14 CFR Section 91.119(c) provides that "Except when necessary for takeoff and landing, no person may operate an aircraft below the following altitudes: (b) Over other than congested areas. An altitude of 500 feet above the surface except over open water or sparely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure."

III. Paperwork Reduction Act

The Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)) requires that the FAA consider the impact of paperwork and other information collection burdens imposed on the public. According to the 1995 amendments to the Paperwork Reduction Act (5 CFR 1320.8(b)(2)(vi)), an agency may not collect or sponsor the collection of information, nor may it impose an information collection requirement unless it displays a currently valid Office of Management and Budget (OMB) control number. As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the FAA submitted a copy of the new information collection requirements(s) discussed below to OMB for its review. Notice of OMB approval for this information collection will be published in a future **Federal Register** document.

Title 49 U.S.C. 44718 states, "By regulation or by order when necessary, the Secretary of Transportation shall require a person to give adequate public notice, in the form and way the Secretary prescribes, of the construction, alteration, establishment, or expansion, of a structure or sanitary landfill when public notice will promote:

(1) safety in air commerce; and

(2) the efficient use and preservation of the navigable airspace and of airport traffic capacity at public use airports."

This final rule implements the requirement for notification by requiring that notice be submitted to the FAA for proposed construction or alteration of structures on or near private use airports that have an IAP. Accordingly, if a private use airport has an FAA-approved IAP, then a construction sponsor is required to notify the FAA of a proposed construction or alteration that exceeds the notice criteria in § 77.17. This action will give the FAA adequate time to adjust the IAP, if needed, and to inform those who use the IAP. While IAPs at private use airports or heliports are not currently listed in any aeronautical publication, sponsors of construction or alteration at or near a private use airport or heliport can consult the FAA Web site[7] to determine whether an FAA-approved IAP is listed for that airport. If the airport is listed on the Web site, the sponsor must file notice with the FAA. The intent of these changes is to improve safety and promote the efficient use of the National Airspace System.

The FAA estimates that on average, 3,325 Form 7460–1s would be filed annually. It is estimated to take 19 minutes, or 0.32 hours, to fill out each form. Hence, the estimated hour burden is: 0.32 hours × 3,325 = 1,064 hours.

The average cost for a firm to prepare the form itself is approximately $40 per form. It is estimated that 20 percent of the forms filed would be filed this way. Thus, the estimated average annual reporting burden for companies to process this form in-house would be: (FAA Form 7460–1) $40 × 665 = $26,600.

The average cost for a company to outsource this function to a contractor is approximately $480 per report. It is estimated that 80 percent of the forms filed would be filed this way. Thus, the estimated average annual reporting burden for companies to outsource this function is: (FAA Form 7460–1) $480 × 2,660 = $1,276,800.

It is estimated that roughly 30 percent of firms filing FAA Form 7460–1 will need to perform a site survey to complete the form. The cost of a site survey is $790. Thus, the estimated annual reporting burden for companies who require a site survey would be: (FAA Form 7460–1) $790 × 998 = $788,420.

Hence, the total annual cost to firms that fill out FAA Form 7460–1 is $2,091,820.

In the proposed rule, the FAA asked for comments on the information collection burden. You may view the FAA's specific request in the proposed rule.[8] The FAA received comments from multiple commenters. The following is a summary of the comments with the FAA's response:

Several commenters stated that the FAA underestimated the costs, in terms of time and paperwork, associated with preparing a Form 7460–1, as well as the costs of filing an OE notice, so the FAA should revise its estimates. One commenter surveyed its members and the survey indicated that the cost of processing a Form 7460–1 in-house was $406 and took about 1.6 hours per form. Further, the average hourly labor cost was found to be $36 per hour. The commenter also stated that in addition to maps, a site survey is needed to complete Form 7460–1, which ensures the accuracy of the location and costs an average of $768. Another commenter supported the notion of including the cost of a site survey in the cost estimation for filing a Form 7460–1. Another commenter suggested that the

[7] *https://oeaaa.faa.gov.*

[8] 71 FR 34028; June 13, 2006.

FAA increase its estimate for processing a Form 7460–1 in-house to $40.

The FAA omitted the cost of a site survey in the preliminary analysis because a site survey is not required to complete a Form 7460–1. However, a site survey must be completed if it is requested by the FAA's Flight Procedure Office. The agency has revised the cost analysis to reflect the wider range of costs as supplied by the commenters. The FAA also revised its cost and paperwork analyses to include the cost of filing a form in-house, as well as the costs of a site survey.

A few commenters claimed that the FAA underestimated the time and paperwork costs associated with filing additional notices. Another commenter believed that the FAA underestimated the paperwork burden that will be placed on radio spectrum users.

The FAA completed a paperwork reduction package for the proposed rule, which did show the estimated paperwork costs. The paperwork costs were also shown in the initial regulatory evaluation and were available for review in the docket. However, the FAA has elected not to adopt the radio frequency notice requirements in this final rule. As a result, there will be no additional paperwork burden placed on radio spectrum users at this time.

A commenter stated that requiring applicants to provide notice to the FAA 60 days in advance could also increase the number of filings because of the rule change. Another commenter stated that extending the notice period for all proposed projects will cause undue delay in securing FAA approval and will delay the ability of utilities to develop new sites.

The FAA has reduced the filing time period from 60 days to 45 days. This should mitigate the delay expected by the commenters and allow them to continue their operations without much change. Thus, the FAA does not expect any delays in construction or operational deficiencies resulting from the final rule.

International Compatibility

In keeping with U.S. obligations under the Convention on International Civil Aviation, it is FAA policy to comply with International Civil Aviation Organization (ICAO) Standards and Recommended Practices to the maximum extent practicable. The FAA has reviewed the corresponding ICAO Standards and Recommended Practices and has identified no new differences with these proposed regulations.

IV. Regulatory Evaluation, Regulatory Flexibility Determination, International Trade Impact Assessment, and Unfunded Mandates Assessment

Changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 (Pub. L. 96–354) requires agencies to analyze the economic impact of regulatory changes on small entities. Third, the Trade Agreements Act (Pub. L. 96–39) prohibits agencies from setting standards that create unnecessary obstacles to the foreign commerce of the United States. In developing U.S. standards, this Trade Act requires agencies to consider international standards and, where appropriate, that they be the basis of U.S. standards. Fourth, the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by state, local, or tribal governments, in the aggregate, or by the private sector, of $100 million or more annually (adjusted for inflation with base year of 1995). This portion of the preamble summarizes the FAA's analysis of the economic impacts of this final rule. Readers seeking greater detail should read the full regulatory evaluation, a copy of which is in the docket for this rulemaking.

In conducting these analyses, the FAA has determined that this final rule has benefits that justify its costs and is not economically significant under Executive Order 12866; however, it is otherwise "significant" because of concerns raised by the National Telecommunications and Information Administration (NTIA) and the Federal Communications Commission (FCC) regarding the FAA's evaluation of potential electromagnetic effect during aeronautical studies. The final rule, if adopted, will not have a significant economic impact on a substantial number of small entities, will not create unnecessary obstacles to international trade, and will not impose an unfunded mandate on state, local, tribal governments, or on the private sector.

This final rule amends 14 CFR part 77. These amendments refer to the rules for obstruction evaluation standards, aeronautical studies, and notice provisions about objects that could create hazards to air navigation.

The FAA estimates the cost of this final rule to private industry will be approximately $20.9 million ($14.1 million, present value) over the next 10 years. The estimated cost of the final rule to the FAA will be approximately $18.7 million ($12.6 million, present value) over the next 10 years. Therefore, the total cost associated with the final rule will be approximately $39.6 million ($26.8 million, present value) over the next 10 years.

The final rule will enhance protection of aircraft approaches from unknown obstructions and unknown alteration projects on or near private use airports with FAA-approved instrument approach procedures (IAPs). The FAA contends that these qualitative benefits justify the costs of the final rule.

Final Regulatory Flexibility Analysis

The Regulatory Flexibility Act of 1980 establishes "as a principle of regulatory issuance that agencies shall endeavor, consistent with the objective of the rule and of applicable statutes, to fit regulatory and informational requirements to the scale of the business, organizations, and governmental jurisdictions subject to regulation." To achieve that principle, the Act requires agencies to solicit and consider flexible regulatory proposals and to explain the rationale for their actions. The Act covers a wide range of small entities, including small businesses, not-for-profit organizations and small governmental jurisdictions.

Agencies must perform a review to determine whether a proposed or final rule will have a significant economic impact on a substantial number of small entities. If the determination is that it will, the agency must prepare a regulatory flexibility analysis (RFA) as described in the Act.

However, if an agency determines that a proposed or final rule is not expected to have a significant economic impact on a substantial number of small entities, section 605(b) of the 1980 Act provides that the head of the agency may so certify and an RFA is not required. The certification must include a statement providing the factual basis for this determination, and the reasoning should be clear.

While the FAA does not maintain data on the size of businesses that file notices, the FAA estimates that approximately 40 percent of the OE notices will be filed by small businesses (comprised of business owners and private use airport owners) as defined by the Small Business Administration. Thus, in 2010 when the rule is expected to take effect, the FAA expects approximately 2,400 more OE notices

will be filed by affected parties. Of those applications filed, approximately 960 notices are estimated to be filed by small businesses (using 40 percent assumption).

For those small businesses that are inexperienced in submitting the necessary paperwork, the FAA believes they would either hire a consultant or spend as much as the consultant fee ($480) in staff time to understand, research, complete, and submit the form(s). For the purpose of this regulatory flexibility assessment, the FAA assumes that it will cost all small entities approximately $480 per case to meet the requirements of part 77.

It is unlikely that any individual small entity will file more than three OE notices in a calendar year. As a result, the FAA estimates that in virtually all cases, the cost of this rule to small businesses will not exceed $1500 per small entity, a cost the FAA does not consider significant. Therefore, as the FAA Administrator, I certify that this rule will not have a significant economic impact on a substantial number of small entities.

International Trade Impact Assessment

The Trade Agreements Act of 1979 (Pub. L. 96–39), as amended by the Uruguay Round Agreements Act (Pub. L. 103–465), prohibits Federal agencies from establishing standards or engaging in related activities that create unnecessary obstacles to the foreign commerce of the United States. Pursuant to these Acts, the establishment of standards is not considered an unnecessary obstacle to the foreign commerce of the United States, so long as the standard has a legitimate domestic objective, such as the protection of safety, and does not operate in a manner that excludes imports that meet this objective. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards. The FAA has assessed the potential effect of this final rule and determined that it will have only a domestic impact and, therefore, will not create unnecessary obstacles to the foreign commerce of the United States.

Unfunded Mandates Assessment

Title II of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) requires each Federal agency to prepare a written statement assessing the effects of any Federal mandate in a proposed or final agency rule that may result in an expenditure of $100 million or more (in 1995 dollars) in any one year by state, local, and tribal governments, in the aggregate, or by the private sector; such a mandate is deemed to be a "significant regulatory action." The FAA currently uses an inflation-adjusted value of $136.1 million in lieu of $100 million. This final rule does not contain such a mandate; therefore, the requirements of Title II of the Act do not apply.

Executive Order 13132, Federalism

The FAA has analyzed this final rule under the principles and criteria of Executive Order 13132, Federalism. The FAA determined that this action will not have a substantial direct effect on the States, or the relationship between the Federal Government and the States, or on the distribution of power and responsibilities among the various levels of government, and, therefore, does not have federalism implications.

Environmental Analysis

FAA Order 1050.1E identifies FAA actions that are categorically excluded from preparation of an environmental assessment or environmental impact statement under the National Environmental Policy Act in the absence of extraordinary circumstances. The FAA has determined this rulemaking action qualifies for the categorical exclusion identified in paragraph 312f and involves no extraordinary circumstances.

Regulations That Significantly Affect Energy Supply, Distribution, or Use

The FAA has analyzed this final rule under Executive Order 13211, Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use (May 18, 2001). We have determined that it is not a "significant energy action" under the executive order because it is not a "significant regulatory action" under Executive Order 12866, and it is not likely to have a significant adverse effect on the supply, distribution, or use of energy.

Availability of Rulemaking Documents

You can get an electronic copy of rulemaking documents using the Internet by—

1. Searching the Federal eRulemaking Portal (*http://www.regulations.gov*);

2. Visiting the FAA's Regulations and Policies Web page at *http://www.faa.gov/regulations_policies/;* or

3. Accessing the Government Printing Office's Web page at *http://www.gpoaccess.gov/fr/index.html.*

You can also get a copy by sending a request to the Federal Aviation Administration, Office of Rulemaking, ARM–1, 800 Independence Avenue, SW., Washington, DC 20591, or by calling (202) 267–9680. Make sure to identify the amendment number or docket number of this rulemaking.

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act statement in the **Federal Register** published on April 11, 2000 (Volume 65, Number 70; Pages 19477–78) or you may visit *http://DocketsInfo.dot.gov*.

Small Business Regulatory Enforcement Fairness Act

The Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 requires FAA to comply with small entity requests for information or advice about compliance with statutes and regulations within its jurisdiction. If you are a small entity and you have a question regarding this document, you may contact your local FAA official, or the person listed under the **FOR FURTHER INFORMATION CONTACT** heading at the beginning of the preamble. You can find out more about SBREFA on the Internet at *http://www.faa.gov/regulations_policies/rulemaking/sbre_act/*.

Appendix A to the Preamble

Under regulations (49 U.S.C. 44718) prescribed by the Secretary, if the Secretary decides that constructing or altering a structure may result in an obstruction of the navigable airspace or an interference with air navigation facilities and equipment or the navigable airspace, the Secretary shall conduct an aeronautical study to decide the extent of any adverse impact on the safe and efficient use of the airspace, facilities, or equipment. In conducting the study, the Secretary shall consider factors relevant to the efficient and effective use of the navigable airspace, including—

(A) The impact on arrival, departure, and en route procedures for aircraft operating under visual flight rules;

(B) The impact on arrival, departure, and en route procedures for aircraft operating under instrument flight rules;

(C) The impact on existing public use airports and aeronautical facilities;

(D) The impact on planned public use airports and aeronautical facilities; and

(E) The cumulative impact resulting from the proposed construction or alteration of a structure when combined with the impact of other existing or proposed structures.

Appendix B to the Preamble

The NPRM proposed that notice must be filed with the FAA for any construction of a new, or modification of an existing facility, *i.e.*—building, antenna structure, or any other man-made structure, which supports a radiating element(s) for the purpose of radio frequency transmissions operating on the following frequencies:

(i) 54–108 MHz
(ii) 150–216 MHz
(iii) 406–430 MHz
(iv) 931–940 MHz
(v) 952–960 MHz
(vi) 1390–1400 MHz
(vii) 2500–2700 MHz
(viii) 3700–4200 MHz
(ix) 5000–5650 MHz
(x) 5925–6525 MHz
(xi) 7450–8550 MHz
(xii) 14.2–14.4 GHz
(xiii) 21.2–23.6 GHz

In addition, the NPRM proposed that any changes or modification to a system operating on one of the previously mentioned frequencies when specified in the original FAA determination, including:

(i) Change in the authorized frequency;

(ii) Addition of new frequencies;

(iii) Increase in effective radiated power (ERP) equal or greater than 3 decibels;

(iv) modification of radiating elements, including: (A) Antenna mounting locations(s) if increased 100 feet or more irrespective of whether the overall height is increased; (B) changes in antenna specification (including gain, beam-width, polarization, pattern); and (C) change in antenna azimuth/bearing (*e.g.* point-to-point microwave systems).

List of Subjects in 14 CFR Part 77

Administrative practice and procedure, Airports, Airspace, Aviation safety, Navigation (air), Reporting and recordkeeping requirements.

V. The Amendment

■ In consideration of the foregoing, the Federal Aviation Administration amends Chapter I of title 14, Code of Federal Regulations by revising part 77 to read as follows:

PART 77—SAFE, EFFICIENT USE, AND PRESERVATION OF THE NAVIGABLE AIRSPACE

Subpart A—General

Sec.
77.1 Purpose.
77.3 Definitions.

Subpart B—Notice Requirements

77.5 Applicability.
77.7 Form and time of notice.
77.9 Construction or alteration requiring notice.
77.11 Supplemental notice requirements.

Subpart C—Standards for Determining Obstructions to Air Navigation or Navigational Aids or Facilities

77.13 Applicability.
77.15 Scope.
77.17 Obstruction standards.
77.19 Civil airport imaginary surfaces.
77.21 Department of Defense (DOD) airport imaginary surfaces.
77.23 Heliport imaginary surfaces.

Subpart D—Aeronautical Studies and Determinations

77.25 Applicability.
77.27 Initiation of studies.
77.29 Evaluating aeronautical effect.
77.31 Determinations.
77.33 Effective period of determinations.
77.35 Extensions, terminations, revisions and corrections.

Subpart E—Petitions for Discretionary Review

77.37 General.
77.39 Contents of a petition.
77.41 Discretionary review results.

Authority: 49 U.S.C. 106 (g), 40103, 40113–40114, 44502, 44701, 44718, 46101–46102, 46104.

Subpart A—General

§ 77.1 Purpose.

This part establishes:

(a) The requirements to provide notice to the FAA of certain proposed construction, or the alteration of existing structures;

(b) The standards used to determine obstructions to air navigation, and navigational and communication facilities;

(c) The process for aeronautical studies of obstructions to air navigation or navigational facilities to determine the effect on the safe and efficient use of navigable airspace, air navigation facilities or equipment; and

(d) The process to petition the FAA for discretionary review of determinations, revisions, and extensions of determinations.

§ 77.3 Definitions.

For the purpose of this part:

Non-precision instrument runway means a runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in non-precision instrument approach procedure has been approved, or planned, and for which no precision approach facilities are planned, or indicated on an FAA planning document or military service military airport planning document.

Planned or proposed airport is an airport that is the subject of at least one of the following documents received by the FAA:

(1) Airport proposals submitted under 14 CFR part 157.

(2) Airport Improvement Program requests for aid.

(3) Notices of existing airports where prior notice of the airport construction or alteration was not provided as required by 14 CFR part 157.

(4) Airport layout plans.

(5) DOD proposals for airports used only by the U.S. Armed Forces.

(6) DOD proposals on joint-use (civil-military) airports.

(7) Completed airport site selection feasibility study.

Precision instrument runway means a runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS), or a Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated by an FAA-approved airport layout plan; a military service approved military airport layout plan; any other FAA planning document, or military service military airport planning document.

Public use airport is an airport available for use by the general public without a requirement for prior approval of the airport owner or operator.

Seaplane base is considered to be an airport only if its sea lanes are outlined by visual markers.

Utility runway means a runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

Visual runway means a runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA-approved airport layout plan, a military service approved military airport layout plan, or by any planning document submitted to the FAA by competent authority.

Subpart B—Notice Requirements

§ 77.5 Applicability.

(a) If you propose any construction or alteration described in § 77.9, you must provide adequate notice to the FAA of that construction or alteration.

(b) If requested by the FAA, you must also file supplemental notice before the start date and upon completion of certain construction or alterations that are described in § 77.9.

(c) Notice received by the FAA under this subpart is used to:

(1) Evaluate the effect of the proposed construction or alteration on safety in air commerce and the efficient use and preservation of the navigable airspace and of airport traffic capacity at public use airports;

(2) Determine whether the effect of proposed construction or alteration is a hazard to air navigation;

(3) Determine appropriate marking and lighting recommendations, using FAA Advisory Circular 70/7460–1, Obstruction Marking and Lighting;

(4) Determine other appropriate measures to be applied for continued safety of air navigation; and

(5) Notify the aviation community of the construction or alteration of objects that affect the navigable airspace, including the revision of charts, when necessary.

§ 77.7 Form and time of notice.

(a) If you are required to file notice under § 77.9, you must submit to the FAA a completed FAA Form 7460–1, Notice of Proposed Construction or Alteration. FAA Form 7460–1 is available at FAA regional offices and on the Internet.

(b) You must submit this form at least 45 days before the start date of the proposed construction or alteration or the date an application for a construction permit is filed, whichever is earliest.

(c) If you propose construction or alteration that is also subject to the licensing requirements of the Federal Communications Commission (FCC), you must submit notice to the FAA on or before the date that the application is filed with the FCC.

(d) If you propose construction or alteration to an existing structure that exceeds 2,000 ft. in height above ground level (AGL), the FAA presumes it to be a hazard to air navigation that results in an inefficient use of airspace. You must include details explaining both why the proposal would not constitute a hazard to air navigation and why it would not cause an inefficient use of airspace.

(e) The 45-day advance notice requirement is waived if immediate construction or alteration is required because of an emergency involving essential public services, public health, or public safety. You may provide notice to the FAA by any available, expeditious means. You must file a completed FAA Form 7460–1 within 5 days of the initial notice to the FAA. Outside normal business hours, the nearest flight service station will accept emergency notices.

§ 77.9 Construction or alteration requiring notice.

If requested by the FAA, or if you propose any of the following types of construction or alteration, you must file notice with the FAA of:

(a) Any construction or alteration that is more than 200 ft. AGL at its site.

(b) Any construction or alteration that exceeds an imaginary surface extending outward and upward at any of the following slopes:

(1) 100 to 1 for a horizontal distance of 20,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (d) of this section with its longest runway more than 3,200 ft. in actual length, excluding heliports.

(2) 50 to 1 for a horizontal distance of 10,000 ft. from the nearest point of the nearest runway of each airport described in paragraph (d) of this section with its longest runway no more than 3,200 ft. in actual length, excluding heliports.

(3) 25 to 1 for a horizontal distance of 5,000 ft. from the nearest point of the nearest landing and takeoff area of each heliport described in paragraph (d) of this section.

(c) Any highway, railroad, or other traverse way for mobile objects, of a height which, if adjusted upward 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance, 15 feet for any other public roadway, 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road, 23 feet for a railroad, and for a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of paragraph (a) or (b) of this section.

(d) Any construction or alteration on any of the following airports and heliports:

(1) A public use airport listed in the Airport/Facility Directory, Alaska Supplement, or Pacific Chart Supplement of the U.S. Government Flight Information Publications;

(2) A military airport under construction, or an airport under construction that will be available for public use;

(3) An airport operated by a Federal agency or the DOD.

(4) An airport or heliport with at least one FAA-approved instrument approach procedure.

(e) You do not need to file notice for construction or alteration of:

(1) Any object that will be shielded by existing structures of a permanent and substantial nature or by natural terrain or topographic features of equal or greater height, and will be located in the congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation;

(2) Any air navigation facility, airport visual approach or landing aid, aircraft arresting device, or meteorological device meeting FAA-approved siting criteria or an appropriate military service siting criteria on military airports, the location and height of which are fixed by its functional purpose;

(3) Any construction or alteration for which notice is required by any other FAA regulation.

(4) Any antenna structure of 20 feet or less in height, except one that would increase the height of another antenna structure.

§ 77.11 Supplemental notice requirements.

(a) You must file supplemental notice with the FAA when:

(1) The construction or alteration is more than 200 feet in height AGL at its site; or

(2) Requested by the FAA.

(b) You must file supplemental notice on a prescribed FAA form to be received within the time limits specified in the FAA determination. If no time limit has been specified, you must submit supplemental notice of construction to the FAA within 5 days after the structure reaches its greatest height.

(c) If you abandon a construction or alteration proposal that requires supplemental notice, you must submit notice to the FAA within 5 days after the project is abandoned.

(d) If the construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

Subpart C—Standards for Determining Obstructions to Air Navigation or Navigational Aids or Facilities

§ 77.13 Applicability.

This subpart describes the standards used for determining obstructions to air navigation, navigational aids, or navigational facilities. These standards apply to the following:

(a) Any object of natural growth, terrain, or permanent or temporary construction or alteration, including equipment or materials used and any permanent or temporary apparatus.

(b) The alteration of any permanent or temporary existing structure by a change in its height, including appurtenances, or lateral dimensions, including equipment or material used therein.

§ 77.15 Scope.

(a) This subpart describes standards used to determine obstructions to air navigation that may affect the safe and efficient use of navigable airspace and the operation of planned or existing air navigation and communication facilities. Such facilities include air navigation aids, communication equipment, airports, Federal airways, instrument approach or departure procedures, and approved off-airway routes.

(b) Objects that are considered obstructions under the standards

described in this subpart are presumed hazards to air navigation unless further aeronautical study concludes that the object is not a hazard. Once further aeronautical study has been initiated, the FAA will use the standards in this subpart, along with FAA policy and guidance material, to determine if the object is a hazard to air navigation.

(c) The FAA will apply these standards with reference to an existing airport facility, and airport proposals received by the FAA, or the appropriate military service, before it issues a final determination.

(d) For airports having defined runways with specially prepared hard surfaces, the primary surface for each runway extends 200 feet beyond each end of the runway. For airports having defined strips or pathways used regularly for aircraft takeoffs and landings, and designated runways, without specially prepared hard surfaces, each end of the primary surface for each such runway shall coincide with the corresponding end of the runway. At airports, excluding seaplane bases, having a defined landing and takeoff area with no defined pathways for aircraft takeoffs and landings, a determination must be made as to which portions of the landing and takeoff area are regularly used as landing and takeoff pathways. Those determined pathways must be considered runways, and an appropriate primary surface as defined in § 77.19 will be considered as longitudinally centered on each such runway. Each end of that primary surface must coincide with the corresponding end of that runway.

(e) The standards in this subpart apply to construction or alteration proposals on an airport (including heliports and seaplane bases with marked lanes) if that airport is one of the following before the issuance of the final determination:

(1) Available for public use and is listed in the Airport/Facility Directory, Supplement Alaska, or Supplement Pacific of the U.S. Government Flight Information Publications; or

(2) A planned or proposed airport or an airport under construction of which the FAA has received actual notice, except DOD airports, where there is a clear indication the airport will be available for public use; or,

(3) An airport operated by a Federal agency or the DOD; or,

(4) An airport that has at least one FAA-approved instrument approach.

§ 77.17 Obstruction standards.

(a) 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:

(1) A height of 499 feet AGL at the site of the object.

(2) A height that is 200 feet AGL, or above the established airport elevation, whichever is higher, within 3 nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile from the airport up to a maximum of 499 feet.

(3) 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.

(4) A height within an en route obstacle clearance area, including turn and termination areas, of a Federal Airway or approved off-airway route, that would increase the minimum obstacle clearance altitude.

(5) The surface of a takeoff and landing area of an airport or any imaginary surface established under § 77.19, 77.21, or 77.23. However, no part of the takeoff or landing area itself will be considered an obstruction.

(b) Except for traverse ways on or near an airport with an operative ground traffic control service furnished by an airport traffic control tower or by the airport management and coordinated with the air traffic control service, the standards of paragraph (a) of this section apply to traverse ways used or to be used for the passage of mobile objects only after the heights of these traverse ways are increased by:

(1) 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance.

(2) 15 feet for any other public roadway.

(3) 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.

(4) 23 feet for a railroad.

(5) For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

§ 77.19 Civil airport imaginary surfaces.

The following civil airport imaginary surfaces are established with relation to the airport and to each runway. The size of each such imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway. The slope and dimensions of the approach surface applied to each end of a runway are determined by the most precise approach procedure existing or planned for that runway end.

(a) *Horizontal surface.* A horizontal plane 150 feet above the established airport elevation, the perimeter of which is constructed by SW.inging arcs of a specified radii from the center of each end of the primary surface of each runway of each airport and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is:

(1) 5,000 feet for all runways designated as utility or visual;

(2) 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. When a 5,000-foot arc is encompassed by tangents connecting two adjacent 10,000-foot arcs, the 5,000-foot arc shall be disregarded on the construction of the perimeter of the horizontal surface.

(b) *Conical surface.* A surface extending 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.

(c) *Primary surface.* A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; but when the runway has no specially prepared hard surface, the primary surface ends at each end of that runway. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline. The width of the primary surface is:

(1) 250 feet for utility runways having only visual approaches.

(2) 500 feet for utility runways having non-precision instrument approaches.

(3) For other than utility runways, the width is:

(i) 500 feet for visual runways having only visual approaches.

(ii) 500 feet for non-precision instrument runways having visibility minimums greater than three-fourths statue mile.

(iii) 1,000 feet for a non-precision instrument runway having a non-precision instrument approach with visibility minimums as low as three-fourths of a statute mile, and for precision instrument runways.

(iv) The width of the primary surface of a runway will be that width prescribed in this section for the most precise approach existing or planned for either end of that runway.

(d) *Approach surface.* A surface longitudinally centered on the extended runway centerline and extending 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.

(1) The inner edge of the approach surface is the same width as the primary surface and it expands uniformly to a width of:

(i) 1,250 feet for that end of a utility runway with only visual approaches;

(ii) 1,500 feet for that end of a runway other than a utility runway with only visual approaches;

(iii) 2,000 feet for that end of a utility runway with a non-precision instrument approach;

(iv) 3,500 feet for that end of a non-precision instrument runway other than utility, having visibility minimums greater that three-fourths of a statute mile;

(v) 4,000 feet for that end of a non-precision instrument runway, other than utility, having a non-precision instrument approach with visibility minimums as low as three-fourths statute mile; and

(vi) 16,000 feet for precision instrument runways.

(2) The approach surface extends for a horizontal distance of:

(i) 5,000 feet at a slope of 20 to 1 for all utility and visual runways;

(ii) 10,000 feet at a slope of 34 to 1 for all non-precision instrument runways other than utility; and

(iii) 10,000 feet at a slope of 50 to 1 with an additional 40,000 feet at a slope of 40 to 1 for all precision instrument runways.

(3) The outer width of an approach surface to an end of a runway will be that width prescribed in this subsection for the most precise approach existing or planned for that runway end.

(e) *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 which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at right angles to the runway centerline.

§ 77.21 Department of Defense (DOD) airport imaginary surfaces.

(a) *Related to airport reference points.* These surfaces apply to all military airports. For the purposes of this section, a military airport is any airport operated by the DOD.

(1) *Inner horizontal surface.* A plane that is oval in shape at a height of 150 feet above the established airfield elevation. The plane is constructed by scribing an arc with a radius of 7,500 feet about the centerline at the end of each runway and interconnecting these arcs with tangents.

(2) *Conical surface.* A surface extending from the periphery of the inner horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation.

(3) *Outer horizontal surface.* A plane, located 500 feet above the established airfield elevation, extending outward from the outer periphery of the conical surface for a horizontal distance of 30,000 feet.

(b) *Related to runways.* These surfaces apply to all military airports.

(1) *Primary surface.* A surface located on the ground or water longitudinally centered on each runway with the same length as the runway. The width of the primary surface for runways is 2,000 feet. However, at established bases where substantial construction has taken place in accordance with a previous lateral clearance criteria, the 2,000-foot width may be reduced to the former criteria.

(2) *Clear zone surface.* A surface located on the ground or water at each end of the primary surface, with a length of 1,000 feet and the same width as the primary surface.

(3) *Approach clearance surface.* An inclined plane, symmetrical about the runway centerline extended, beginning 200 feet beyond each end of the primary surface at the centerline elevation of the runway end and extending for 50,000 feet. The slope of the approach clearance surface is 50 to 1 along the runway centerline extended until it reaches an elevation of 500 feet above the established airport elevation. It then continues horizontally at this elevation to a point 50,000 feet from the point of beginning. The width of this surface at the runway end is the same as the primary surface, it flares uniformly, and the width at 50,000 is 16,000 feet.

(4) *Transitional surfaces.* These surfaces connect the primary surfaces, the first 200 feet of the clear zone surfaces, and the approach clearance surfaces to the inner horizontal surface, conical surface, outer horizontal surface or other transitional surfaces. The slope of the transitional surface is 7 to 1 outward and upward at right angles to the runway centerline.

§ 77.23 Heliport imaginary surfaces.

(a) *Primary surface.* The area of the primary surface coincides in size and shape with the designated take-off and landing area. This surface is a horizontal plane at the elevation of the established heliport elevation.

(b) *Approach surface.* The approach surface begins at each end of the heliport primary surface with the same width as the primary surface, and extends outward and upward for a horizontal distance of 4,000 feet where its width is 500 feet. The slope of the approach surface is 8 to 1 for civil heliports and 10 to 1 for military heliports.

(c) *Transitional surfaces.* These surfaces extend outward and upward from the lateral boundaries of the primary surface and from the approach surfaces at a slope of 2 to 1 for a distance of 250 feet measured horizontally from the centerline of the primary and approach surfaces.

Subpart D—Aeronautical Studies and Determinations

§ 77.25 Applicability.

(a) This subpart applies to any aeronautical study of a proposed construction or alteration for which notice to the FAA is required under § 77.9.

(b) The purpose of an aeronautical study is to determine whether the aeronautical effects of the specific proposal and, where appropriate, the cumulative impact resulting from the proposed construction or alteration when combined with the effects of other existing or proposed structures, would constitute a hazard to air navigation.

(c) The obstruction standards in subpart C of this part are supplemented by other manuals and directives used in determining the effect on the navigable airspace of a proposed construction or alteration. When the FAA needs additional information, it may circulate a study to interested parties for comment.

§ 77.27 Initiation of studies.

The FAA will conduct an aeronautical study when:

(a) Requested by the sponsor of any proposed construction or alteration for which a notice is submitted; or

(b) The FAA determines a study is necessary.

§ 77.29 Evaluating aeronautical effect.

(a) The FAA conducts an aeronautical study to determine the impact of a proposed structure, an existing structure that has not yet been studied by the FAA, or an alteration of an existing structure on aeronautical operations, procedures, and the safety of flight. These studies include evaluating:

(1) The impact on arrival, departure, and en route procedures for aircraft operating under visual flight rules;

(2) The impact on arrival, departure, and en route procedures for aircraft operating under instrument flight rules;

(3) The impact on existing and planned public use airports;

(4) Airport traffic capacity of existing public use airports and public use airport development plans received before the issuance of the final determination;

(5) Minimum obstacle clearance altitudes, minimum instrument flight rules altitudes, approved or planned instrument approach procedures, and departure procedures;

(6) The potential effect on ATC radar, direction finders, ATC tower line-of-sight visibility, and physical or electromagnetic effects on air navigation, communication facilities, and other surveillance systems;

(7) The aeronautical effects resulting from the cumulative impact of a proposed construction or alteration of a structure when combined with the effects of other existing or proposed structures.

(b) If you withdraw the proposed construction or alteration or revise it so that it is no longer identified as an obstruction, or if no further aeronautical study is necessary, the FAA may terminate the study.

§ 77.31 Determinations.

(a) The FAA will issue a determination stating whether the proposed construction or alteration would be a hazard to air navigation, and will advise all known interested persons.

(b) The FAA will make determinations based on the aeronautical study findings and will identify the following:

(1) The effects on VFR/IFR aeronautical departure/arrival operations, air traffic procedures, minimum flight altitudes, and existing, planned, or proposed airports listed in § 77.15(e) of which the FAA has received actual notice prior to issuance of a final determination.

(2) The extent of the physical and/or electromagnetic effect on the operation of existing or proposed air navigation facilities, communication aids, or surveillance systems.

(c) The FAA will issue a Determination of Hazard to Air Navigation when the aeronautical study concludes that the proposed construction or alteration will exceed an obstruction standard and would have a substantial aeronautical impact.

(d) A Determination of No Hazard to Air Navigation will be issued when the aeronautical study concludes that the proposed construction or alteration will exceed an obstruction standard but would not have a substantial aeronautical impact to air navigation. A Determination of No Hazard to Air Navigation may include the following:

(1) Conditional provisions of a determination.

(2) Limitations necessary to minimize potential problems, such as the use of temporary construction equipment.

(3) Supplemental notice requirements, when required.

(4) Marking and lighting recommendations, as appropriate.

(e) The FAA will issue a Determination of No Hazard to Air Navigation when a proposed structure does not exceed any of the obstruction standards and would not be a hazard to air navigation.

§ 77.33 Effective period of determinations.

(a) A determination issued under this subpart is effective 40 days after the date of issuance, unless a petition for discretionary review is received by the FAA within 30 days after issuance. The determination will not become final pending disposition of a petition for discretionary review.

(b) Unless extended, revised, or terminated, each Determination of No Hazard to Air Navigation issued under this subpart expires 18 months after the effective date of the determination, or on the date the proposed construction or alteration is abandoned, whichever is earlier.

(c) A Determination of Hazard to Air Navigation has no expiration date.

§ 77.35 Extensions, terminations, revisions and corrections.

(a) You may petition the FAA official that issued the Determination of No Hazard to Air Navigation to revise or reconsider the determination based on new facts or to extend the effective period of the determination, provided that:

(1) Actual structural work of the proposed construction or alteration, such as the laying of a foundation, but not including excavation, has not been started; and

(2) The petition is submitted at least 15 days before the expiration date of the Determination of No Hazard to Air Navigation.

(b) A Determination of No Hazard to Air Navigation issued for those construction or alteration proposals not requiring an FCC construction permit may be extended by the FAA one time for a period not to exceed 18 months.

(c) A Determination of No Hazard to Air Navigation issued for a proposal requiring an FCC construction permit may be granted extensions for up to 18 months, provided that:

(1) You submit evidence that an application for a construction permit/license was filed with the FCC for the associated site within 6 months of issuance of the determination; and

(2) You submit evidence that additional time is warranted because of FCC requirements; and

(3) Where the FCC issues a construction permit, a final Determination of No Hazard to Air Navigation is effective until the date prescribed by the FCC for completion of the construction. If an extension of the original FCC completion date is needed, an extension of the FAA determination must be requested from the Obstruction Evaluation Service (OES).

(4) If the Commission refuses to issue a construction permit, the final determination expires on the date of its refusal.

Subpart E—Petitions for Discretionary Review

§ 77.37 General.

(a) If you are the sponsor, provided a substantive aeronautical comment on a proposal in an aeronautical study, or have a substantive aeronautical comment on the proposal but were not given an opportunity to state it, you may petition the FAA for a discretionary review of a determination, revision, or extension of a determination issued by the FAA.

(b) You may not file a petition for discretionary review for a Determination of No Hazard that is issued for a temporary structure, marking and lighting recommendation, or when a proposed structure or alteration does not exceed obstruction standards contained in subpart C of this part.

§ 77.39 Contents of a petition.

(a) You must file a petition for discretionary review in writing and it must be received by the FAA within 30 days after the issuance of a determination under § 77.31, or a revision or extension of the determination under § 77.35.

(b) The petition must contain a full statement of the aeronautical basis on

which the petition is made, and must include new information or facts not previously considered or presented during the aeronautical study, including valid aeronautical reasons why the determination, revisions, or extension made by the FAA should be reviewed.

(c) In the event that the last day of the 30-day filing period falls on a weekend or a day the Federal government is closed, the last day of the filing period is the next day that the government is open.

(d) The FAA will inform the petitioner or sponsor (if other than the petitioner) and the FCC (whenever an FCC-related proposal is involved) of the filing of the petition and that the determination is not final pending disposition of the petition.

§ 77.41 Discretionary review results.

(a) If discretionary review is granted, the FAA will inform the petitioner and the sponsor (if other than the petitioner) of the issues to be studied and reviewed. The review may include a request for comments and a review of all records from the initial aeronautical study.

(b) If discretionary review is denied, the FAA will notify the petitioner and the sponsor (if other than the petitioner), and the FCC, whenever a FCC-related proposal is involved, of the basis for the denial along with a statement that the determination is final.

(c) After concluding the discretionary review process, the FAA will revise, affirm, or reverse the determination.

Issued in Washington, DC, on July 13, 2010.

J. Randolph Babbitt,

Administrator.

[FR Doc. 2010–17767 Filed 7–20–10; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 97

[Docket No. 30734; Amdt. No. 3382]

Standard Instrument Approach Procedures, and Takeoff Minimums and Obstacle Departure Procedures; Miscellaneous Amendments

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This establishes, amends, suspends, or revokes Standard Instrument Approach Procedures (SIAPs) and associated Takeoff Minimums and Obstacle Departure Procedures for operations at certain airports. These regulatory actions are needed because of the adoption of new or revised criteria, or because of changes occurring in the National Airspace System, such as the commissioning of new navigational facilities, adding new obstacles, or changing air traffic requirements. These changes are designed to provide safe and efficient use of the navigable airspace and to promote safe flight operations under instrument flight rules at the affected airports.

DATES: This rule is effective July 21, 2010. The compliance date for each SIAP, associated Takeoff Minimums, and ODP is specified in the amendatory provisions.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of July 21, 2010.

ADDRESSES: Availability of matters incorporated by reference in the amendment is as follows:

For Examination—

1. FAA Rules Docket, FAA Headquarters Building, 800 Independence Avenue, SW., Washington, DC 20591;

2. The FAA Regional Office of the region in which the affected airport is located;

3. The National Flight Procedures Office, 6500 South MacArthur Blvd., Oklahoma City, OK 73169; or

4. The National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.*

Availability—All SIAPs and Takeoff Minimums and ODPs are available online free of charge. Visit *http://www.nfdc.faa.gov* to register. Additionally, individual SIAP and Takeoff Minimums and ODP copies may be obtained from:

1. FAA Public Inquiry Center (APA–200), FAA Headquarters Building, 800 Independence Avenue, SW., Washington, DC 20591; or

2. The FAA Regional Office of the region in which the affected airport is located.

FOR FURTHER INFORMATION CONTACT: Harry J. Hodges, Flight Procedure Standards Branch (AFS–420), Flight Technologies and Programs Divisions, Flight Standards Service, Federal Aviation Administration, Mike Monroney Aeronautical Center, 6500 South MacArthur Blvd., Oklahoma City, OK 73169 (Mail Address: P.O. Box 25082, Oklahoma City, OK 73125) Telephone: (405) 954–4164.

SUPPLEMENTARY INFORMATION: This rule amends Title 14 of the Code of Federal Regulations, Part 97 (14 CFR part 97), by establishing, amending, suspending, or revoking SIAPS, Takeoff Minimums and/or ODPS. The complete regulators description of each SIAP and its associated Takeoff Minimums or ODP for an identified airport is listed on FAA form documents which are incorporated by reference in this amendment under 5 U.S.C. 552(a), 1 CFR part 51, and 14 CFR part 97.20. The applicable FAA Forms are FAA Forms 8260–3, 8260–4, 8260–5, 8260–15A, and 8260–15B when required by an entry on 8260–15A.

The large number of SIAPs, Takeoff Minimums and ODPs, in addition to their complex nature and the need for a special format make publication in the **Federal Register** expensive and impractical. Furthermore, airmen do not use the regulatory text of the SIAPs, Takeoff Minimums or ODPs, but instead refer to their depiction on charts printed by publishers of aeronautical materials. The advantages of incorporation by reference are realized and publication of the complete description of each SIAP, Takeoff Minimums and ODP listed on FAA forms is unnecessary. This amendment provides the affected CFR sections and specifies the types of SIAPs and the effective dates of the associated Takeoff Minimums and ODPs. This amendment also identifies the airport and its location, the procedure, and the amendment number.

The Rule

This amendment to 14 CFR part 97 is effective upon publication of each separate SIAP, Takeoff Minimums and ODP as contained in the transmittal. Some SIAP and Takeoff Minimums and textual ODP amendments may have been issued previously by the FAA in a Flight Data Center (FDC) Notice to Airmen (NOTAM) as an emergency action of immediate flight safety relating directly to published aeronautical charts. The circumstances which created the need for some SIAP and Takeoff Minimums and ODP amendments may require making them effective in less than 30 days. For the remaining SIAPS and Takeoff Minimums and ODPS, an effective date at least 30 days after publication is provided.

Further, the SIAPs and Takeoff Minimums and ODPS contained in this amendment are based on the criteria contained in the U.S. Standard for Terminal Instrument Procedures

APPENDIX D WETLAND AND WATERBODY DESKTOP SUMMARY

ERM

919 East Main Street
Suite 1701
Richmond, Virginia
23219

Telephone: (804) 253-1090
Fax: (804) 253-1091

www.erm.com

October 10, 2022

Ms. Bettina Rayfield, Manager
Virginia Department of Environmental Quality
Office of Environmental Impact Review
P.O. Box 1105
Richmond, Virginia 23218

Subject: Wetland and Waterbody Desktop Summary
Butler Farm–Clover and Butler Farm–Finneywood 230 kV Transmission Line Project
New SCC Filing

Dear Ms. Rayfield:

Environmental Resources Management (ERM), on behalf of Virginia Electric and Power Company ("Dominion Energy Virginia," "Dominion" or the "Company"), conducted a desktop wetland and waterbody review of publicly available information for the proposed Butler Farm–Clover and Butler Farm–Finneywood 230 kV Transmission Line Project (Project) located within Halifax, Charlotte, and Mecklenburg Counties, Virginia. Field delineations were not performed as part of this analysis and would be required to verify the accuracy and extent of aquatic resource boundaries. Attachment 1 depicts the general location of the proposed Project. Attachment 2 illustrates the wetland boundaries that were identified as part of the desktop review. Dominion Energy Virginia is filing an application with the State Corporation Commission (SCC) for the following:

- Construct a new approximately 19.1-mile 230 kV single circuit transmission line (the "Butler Farm—Clover Line" or "Line #2281") primarily on new right-of-way. The proposed Butler Farm—Clover Line will extend from the Company's proposed new 230 kV Butler Farm Substation to the Company's existing 500/230 kV Clover Switching Station. The proposed Butler Farm—Clover Line will be constructed primarily with single circuit H-frame weathering steel structures, utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1573 MVA. The remainder of the line will be constructed with single circuit weathering steel monopole structures. The Butler Farm—Clover Line will utilize a total of 120 feet of right-of-way, which includes new, existing, and collocated right-of-way. The amount of new right-of-way for this line will vary from 47 feet to 120 feet.

- Construct a new approximately 7.0-mile 230 kV single circuit transmission line (the "Butler Farm—Finneywood Line" or "Line #2256") primarily on new right-of-way. The Butler Farm—Finneywood Line will extend from the Company's proposed new 230 kV Butler Farm Substation to the Company's proposed new 500/230 kV Finneywood Switching Station. The proposed Butler Farm—Finneywood Line will be constructed primarily with single circuit weathering steel monopole structures, utilizing three-phase twin-bundled 768.2 ACSS/TW type conductor with a summer transfer capability of 1573 MVA. The Butler Farm—Finneywood Line will utilize a total of 120 feet of right-of-way, which includes new, existing, and collocated right-of-way. The amount of new right-of-way for this line will vary from 50 to 107 feet.

- Construct a new 230 kV substation in Mecklenburg County, Virginia (the "Butler Farm Substation").

- Construct a new 500/230 kV switching station in Mecklenburg County, Virginia (the "Finneywood Switching Station").
- Perform minor switching station-related work at the Clover Switching Station.

The Project is necessary to assure that Dominion Energy Virginia can provide service requested by a data center customer ("Customer") in Mecklenburg County, Virginia, maintain reliable service for the overall growth in the Project area, and comply with mandatory NERC[1] Reliability Standards. The Company considered the facilities required to construct and operate the Project, the length of new rights-of-way that will be required, the amount of existing development in each area, the potential for environmental impacts on communities, and the relative cost of the Project.

The purpose of this desktop analysis was to identify and evaluate potential impacts of the Project on wetlands and waterbodies (streams, creeks, runs, and open water features). In accordance with Virginia Department of Environmental Quality (DEQ) and the SCC's Memorandum of Agreement, the evaluation was conducted using various data sets that may indicate wetland location and type. The information summarized in this report will be submitted to the DEQ as part of the DEQ Wetland Impacts Consultation.

This assessment did not include the field investigations required for wetland delineations in accordance with the U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the U.S. Army Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0).

Project Study Area and Potential Routes

The Project study area is rectangular in shape and lies within the rural setting of southern Virginia in Halifax, Charlotte, Mecklenburg, and Lunenburg Counties. The study area includes the town of Chase City to the east as well as several unincorporated communities including Public Fork, Wylliesburg, Finneywood, Barnes Junction, Black Branch, Fairview, Scotts Crossroad, Red Oak, Spanish Grove, and Philbeck Crossroads. The Project study area's western boundary begins approximately 0.7 mile west of the existing Clover Switching Station, extending south for 8.0 miles. The southern boundary, which is approximately 0.7 mile south of the unincorporated area of Philbeck Crossroads, extends about 17.3 miles east from the western boundary to the eastern boundary. The Project study area's eastern boundary is located just east of the unincorporated area of Scotts Crossroad, extending north, from the southern boundary, about 8.0 miles to the northern boundary. The study area is shown in Attachment 1.

As referenced and discussed above, two separate transmission lines are required to provide the service requested by the customer, maintain reliable service for overall growth in the area, and comply with mandatory NERC Reliability Standards. These two transmission lines are referred to as the Butler Farm–Clover Line and the Butler Farm–Finneywood Line.

The Butler Farm–Clover Line would require a single-circuit 230 kV transmission line from the existing Clover Switching Station in Halifax County extending east to the proposed Butler Farm Substation southwest of Chase City in Mecklenburg County. Multiple potential routes were identified for the Butler Farm–Clover Line, of which three and a route variation were deemed feasible for construction.

[1] North American Electric Reliability Corporation

The Butler Farm–Finneywood Line would require a single-circuit 230 kV transmission line from the proposed Finneywood Switching Station located north of Chase City in Mecklenburg County extending south to the proposed Butler Farm Substation southwest of Chase City. Multiple potential routes were identified for the Butler Farm–Finneywood Line with two routes and a route variation deemed feasible for construction.

Route Alternatives

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Starting at the Clover Switching Station, Butler Farm–Clover Route 1 heads east for about 1.4 miles, paralleling the south side of Dominion's existing Line #556 right-of-way across mostly forested lands. The route then turns to the northeast, away from Line #556, for about 0.6 mile, crossing over the Staunton River at approximate milepost (MP) 1.7. The route then turns to the southeast for 0.7 mile until it rejoins Line #556 and parallels the north side of the existing right-of-way to the east for 0.8 mile. The route then heads to the northeast, away from Line #556, for 0.7 mile before turning back to the southeast for 0.8 mile, rejoining Line #556 at about MP 5.0. At this point, the route continues east along the north side of the existing right-of-way for Line #556 for 0.3 mile. It then crosses to the south side of Line #556 and continues east along the existing right-of-way for 5.5 miles. In this segment, the route passes north of Wylliesburg near MP 7.2 and crosses Quarter Horse Road at MP 9.1.

At a point near the unincorporated town of Finneywood, the route turns southeast and then east along a greenfield alignment for about 1.2 miles before intersecting Dominion's existing right-of-way for Line #1012. The route then continues south paralleling the west side of the existing right-of-way for another 2.1 miles, crossing agricultural and forested tracts and intersecting Highway 47 at about MP 13.5. The route next heads south and east for about 0.6 mile, leaving the existing right-of-way to avoid homes in close proximity to Line #1012 along Highway 47.

At about MP 14.6, the route rejoins and follows the west side of the Line #1012 right-of-way for another 1.1 miles to the southeast, crossing a series of forested and agricultural parcels, and intersecting Spanish Grove Road at MP 15.2. This segment of the route passes about 0.9 mile to the west of Chase City. The route then deviates from Line #1012, heading mainly south for about 2.1 miles along a greenfield alignment across forested and agricultural lands, crossing Highway 92 at MP 16.8 and Highway 49 at MP 18.0. The route next turns and extends to the east/southeast for about 1.1 mile, continuing along a greenfield alignment across forested or open parcels. At its terminus, the route enters a proposed data center campus and the proposed Butler Farm Substation in the area approximately between High Street and the Norfolk Southern Railroad on the south side of Chase City.

Butler Farm–Clover Route 1 measures approximately 19.1 miles in length.

Butler Farm–Clover Route 2

Butler Farm–Clover Route 2 follows the same alignment as Butler Farm–Clover Route 1 for the first 9.4 miles from the Clover Switching Station to a point just east of Quarter Horse Road. At that point, the route turns south and continues across forested land or pasture along a greenfield alignment for about 3.6 miles to a crossing of Dominion's existing right-of-way for Line #235. This segment of the route crosses High House Road at about MP 11.6, approximately along the Charlotte/Mecklenburg County line.

After the route crosses over Line #235, it parallels the west side of Dominion's existing right-of-way for Line #36 for approximately 0.5 mile to MP 13.0. To avoid homes close to Line #36, the route next follows a greenfield alignment for about 0.7 mile to the southwest, then 0.4 mile to the southeast, rejoining the existing right-of-way at the crossing of Trottinridge Road near MP 14.5. At this point, the route turns south and parallels the west side of Line #36 for about 1.5 miles to an intersection with an existing Transcontinental Gas Pipeline Company (Transco) natural gas pipeline corridor. The route then turns east to parallel the south side of the pipeline right-of-way for another 1.5 miles to about MP 17.4, mostly crossing forested or agricultural tracts. The route then deviates from the natural gas pipeline corridor continuing east then northeast for 3.6 miles across forested and agricultural parcels, crossing Highway 49 at MP 17.8, and then entering a proposed data center campus. Once on the site, the route crosses through the center of the property into the proposed Butler Farm Substation.

Butler Farm–Clover Route 2 measures approximately 21.1 miles in length.

Butler Farm–Clover Route 3

Butler Farm–Clover Route 3 follows the same alignment as Butler Farm–Clover Route 1 for the first 3.5 miles from the Clover Switching Station to a point just east of Colemans Ferry Road. At that point, the route turns and continues southeast for about 4.1 miles along a greenfield alignment across mostly forested and agricultural parcels, crossing Kings Highway at MP 5.5 and Highway 92 at MP 6.9. The route intersects Dominion's existing right-of-way for Line #235 at about MP 7.6, then follows the north side of this corridor for about 4.6 miles east to an intersection with Dominion's existing right-of-way for Line #36 at MP 12.1. From this point, the route follows the same alignment as Butler Farm–Clover Route 2 for the remaining 8.0 miles to the proposed Butler Farm Substation.

Butler Farm–Clover Route 3 measures approximately 20.2 miles in length.

Butler Farm–Clover Route Variation

Butler Farm-Clover Route Variation provides an alternative alignment to the Butler Farm-Clover Route 1 where the route crosses through the proposed Chase City Apartment Complex development. Beginning at MP 16.1 on Butler Farm-Clover Route 1, the route variation extends south for 0.3 mile before turning to the southeast for 0.2 mile and crossing over Bailey Drive. The route then heads southwest for 0.1 mile before turning south for 1.1 miles, crossing over Highway 92 at MP 0.7, and terminating at MP 17.9 along Butler Farm-Clover Route 1.

Butler Farm-Clover Route Variation measures approximately 1.7 miles.

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Starting at the Finneywood Switching Station, this route initially extends west from the station for 0.2 mile until it intersects the Company's existing right-of-way for Line #235. The route then turns and continues southeast for about 2.5 miles following the Company's existing right-of-way for Line #235, with the route on the east side of the corridor from MPs 0.2 to 0.4 and the west side of the corridor from MPs 0.4 to 2.7. This segment of the route mostly crosses forested land and isolated parcels of open land or pasture with a crossing of the Norfolk Southern Railroad at MP 2.0 and Highway 47 at MP 2.6. The route leaves the Line #235 right-of-way at about MP 2.7, heading south along a greenfield alignment for 0.2 mile to an intersection with the Company's existing right-of-way for Line #1012. The route then follows the same

alignment as Butler Farm–Clover Route 1 for 4.1 miles to its terminus at the proposed Butler Farm Substation. If both Butler Farm–Clover Route 1 and Butler Farm–Finneywood Route 1 are selected for the Project, the centerlines of the two routes would be offset by 40 feet where the routes are collocated, with Butler Farm–Finneywood Route 1 to the west of Butler Farm–Clover Route 1.

Butler Farm–Finneywood Route 1 measures approximately 7.0 miles in length.

Butler Farm–Finneywood Route 2

This route initially heads east out of the proposed Finneywood Switching Station for 0.1 mile, then turns to the north for 0.1 mile before intersecting the Company's existing right-of-way for Line #556. The route then turns to the east for 0.9 mile paralleling the south side of the existing right-of-way for Line #556. This segment crosses mostly forested land, intersecting Highway 49 at about MP 1.0. The route then turns and continues south along a greenfield alignment through forested or agricultural lands for about 4.9 miles, passing east of Chase City. This route segment crosses the Company's existing right-of-way for Line #98 at MP 2.1, Highway 47 at MP 4.0, and the Company's existing rights-of-way for Lines #40 and #38 at MPs 4.6 and 5.3, respectively. The route next turns west and continues for 1.4 miles along a greenfield alignment across forested or agricultural parcels, crossing Highway 92 and the Norfolk Southern Railroad at MPs 7.2 and 7.4, respectively. The route then follows the same alignment as Butler Farm–Finneywood Route 1 about 0.3 mile south to the proposed Butler Farm Substation.

Butler Farm–Finneywood Route 2 measures approximately 7.8 miles in length.

Butler Farm–Finneywood Route Variation

Butler Farm-Finneywood Route Variation provides an alternative alignment to the Butler Farm-Finneywood Route 1 where the route crosses through the proposed Chase City Apartment Complex development. The route follows the same alignment as Butler Farm-Clover Route Variation for the entirety of the route. If both Butler Farm–Clover Route Variation and Butler Farm–Finneywood Route Variation are selected for the Project, the centerlines of the two routes would be offset by 40 feet, with Butler Farm–Finneywood Route Variation to the west of Butler Farm–Clover Route Variation.

Butler Farm-Finneywood Route Variation measures approximately 1.7 miles.

Desktop Evaluation Methodology

The area of effect considered for this study consists of the proposed rights-of-way identified above within which the electric transmission lines would be constructed and operated. Data sources used for this review include the following, each of which is described briefly below:

- USA National Agricultural Imagery Program (NAIP) Natural Color Images, Virginia, 1-meter pixel resolution (NAIP 2022a)
- USA NAIP Imagery: Color Infrared NAIP Infrared Images, Virginia, 1-meter pixel resolution (NAIP 2022b)
- U.S. Geological Survey (USGS) 7.5-minute current (USGS 2022a)
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) mapping (2021) (USFWS 2022)

- U.S. Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) Soil Survey Geographic (SSURGO) database (NRCS Undated)
- USGS National Hydrography Dataset (NHD; USGS 2022b)

Natural Color and Infrared Aerial Photography

Recent (2018-2020) natural color aerial photography was used to provide a visual overview of the Project area and to assist in evaluating current conditions. Recent (2020) infrared aerial photography was used to identify the potential presence of wetlands based on signatures associated with the levels of reflectance. For example, areas that are inundated with water appear very dark (almost black) due to the low level of reflectance in the infrared spectrum. The presence of these dark colors can be used as a potential indicator of hydric or inundated soils that are likely associated with wetlands (NAIP 2022a and NAIP 2022b).

USGS Topographic Maps

The recent (2014) USGS topographic maps show the topography of the area. The USGS topographic maps also depict other important landscape features such as forest cover, development, buildings, agricultural areas, streams, lakes, and wetlands (USGS 2022a).

USFWS National Wetland Inventory Mapping

NWI maps provide the boundaries and classifications of potential wetland areas as mapped by the USFWS (USFWS 2022). However, NWI data is based primarily on aerial photo interpretations with limited ground-truthing and may represent incorrect boundaries or wetland cover types. NWI data can be unreliable in some areas, especially in forested landscapes, when aerial photography is used as the major data source. The classifications of the majority of the NWI polygons in the study area appear to be accurate based on a review of the cover types observed in the aerial photography. However, in areas where there was an obvious discrepancy between the NWI classification and the aerial photography, ERM modified the classification to more accurately reflect current conditions. For the purposes of this review, wetlands mapped as unconsolidated bottom or riverine were considered open water. In order to acknowledge ERM's adjustment of NWI classifications where appropriate, all of the wetland types referenced in this assessment are referred to as "assigned wetland cover types" regardless of whether the cover type was actually modified from the NWI classification.

USDA-NRCS Soils Data

Soils in the study area were identified and assessed using the SSURGO database, which is a digital version of the original county soil surveys (NRCS Undated). The attribute data within the SSURGO database provides the proportionate extent of the component soils and their properties (e.g., hydric rating) for each soil map unit. The soils in the study area were grouped into three categories based on the hydric rating of the component soils within each map unit: hydric, partially hydric, and non-hydric. Hydric soils were defined as those where the major component soils, and minor components in some cases, are designated as hydric. Hydric components in these map units account for more than 80 percent of the map unit. Partially hydric soils include map units that only contain minor component soils that are designated as hydric. The partially hydric map units in the Project area contain 10 percent or less hydric soils. The remaining map units do not contain any component soils that are designated as hydric. Areas mapped as hydric or partially hydric have a higher probability of containing wetlands than areas with no hydric soils.

USGS National Hydrography Dataset

The NHD contains features such as lakes, ponds, streams, rivers, and canals (USGS 2022b). The waterbodies mapped by the NHD appeared generally consistent with those visible on the USGS maps and aerial photography.

Probability Analysis

ERM used a stepwise process to identify probable wetland areas along the Butler Farm–Clover routes and Butler Farm–Finneywood routes, as follows:

1. Infrared and natural color aerial photography was used in conjunction with USGS topographic maps and soils maps to identify potential wetland areas. Boundaries were assigned to the areas that appeared to exhibit wetland signatures based on this review and a cover type was determined based on aerial photo interpretation. For the purpose of the study, these areas are referred to as interpreted wetlands.

2. To further determine the probability of a wetland occurring within a given location, the interpreted wetland polygon shape files were digitally layered with the NWI mapping and soils information from the SSURGO database.

3. The probability of a wetland occurring was assigned based on the number of overlapping data layers (i.e., indicators of potential wetland presence) that occurred in a particular area.

The criteria assigned to each probability are outlined in Table 1.

Table 1: Criteria Used to Rank the Probability of Wetland Occurrence

Probability	Criteria
High	Areas where layers of hydric soils, interpreted wetlands, and NWI data overlap
Medium/High	NWI data overlaps hydric soils; or NWI data overlaps interpreted wetlands with or without partially hydric soils; or Hydric soils overlap interpreted wetlands
Medium	Interpreted wetlands with or without overlap by partially hydric soils
Medium/Low	Hydric soils only; or NWI data with or without overlap by partially hydric soils
Low	Partially hydric soils only
Very Low	Non-hydric soils only

NWI = National Hydrography dataset

Wetland and Waterbody Crossing Results

The desktop analysis provides a probability of wetlands and waterbody occurrence within each route. As stated above, field delineations were not performed and would be required to verify the accuracy and extent of aquatic resource boundaries. A range of wetland occurrence probabilities are reported by this study from very low to high. The probability of wetland occurrence increases as multiple indicators begin to overlap towards the “high” end of the spectrum. The medium, medium-high, and high probability categories are the most reliable representation of in-situ conditions, due to overlapping data sets, and

these categories are reported in the summary below as a percentage of the total acreage of each route. Attachment 2 depicts the interpreted wetlands displayed on color base map images.

Results of the probability analysis are presented in Tables 2 and 3. Summaries of impacts by route are provided in the sections following the table. Impacts associated with the proposed Finneywood Switching Station are included in the impacts for Butler Farm–Finneywood routes.

Butler Farm–Clover Line

Table 2: Summary of the Probabilities of Wetland and Waterbody Occurrence along Butler Farm–Clover Routes [a, b]

Probability	Total Acres within Right-of-Way[c]	Wetland and Waterbody Type (acres)					
		PEM Emergent	PFO Forested	PSS Scrub-shrub	PUB Freshwater Pond	Riverine Stream	Lacustrine Lake
Butler Farm–Clover Route 1							
High	1.0	0.0	0.7	0.0	0.1	0.1	NA
Medium/High	17.8	1.8	10.6	1.4	1.8	2.1	NA
Medium	16.1	3.2	9.8	0.9	1.2	1.1	NA
Medium/Low	7.8	0.1	1.1	0.7	0.3	0.8	0.3
Low	59.3	NA	NA	NA	NA	NA	NA
Very Low	176.4	NA	NA	NA	NA	NA	NA
Butler Farm–Clover Route 2							
High	2.9	0.0	2.0	NA	0.6	0.4	NA
Medium/High	16.0	0.5	9.5	0.0	2.2	3.7	NA
Medium	24.2	1.3	19.0	0.0	1.7	2.1	NA
Medium/Low	10.7	0.0	1.4	NA	0.9	0.9	0.3
Low	97.9	NA	NA	NA	NA	NA	NA
Very Low	154.5	NA	NA	NA	NA	NA	NA
Butler Farm–Clover Route 3							
High	3.5	1.2	1.4	NA	0.7	0.2	NA
Medium/High	14.9	0.8	8.2	0.0	1.8	4.2	NA
Medium	20.7	1.7	15.5	0.0	1.5	2.0	NA
Medium/Low	7.8	0.0	1.6	NA	1.0	0.7	0.3
Low	82.2	NA	NA	NA	NA	NA	NA
Very Low	165.1	NA	NA	NA	NA	NA	NA
Butler Farm–Clover Route Variation							
High	1.3	0.0	1.1	0.0	NA	0.2	NA
Medium/High	1.8	0.2	1.2	0.3	NA	0.1	NA

Probability	Total Acres within Right-of-Way[c]	Wetland and Waterbody Type (acres)					
		PEM Emergent	PFO Forested	PSS Scrub-shrub	PUB Freshwater Pond	Riverine Stream	Lacustrine Lake
Medium	0.3	NA	0.2	0.1	NA	0.1	NA
Medium/Low	1.2	NA	0.1	NA	NA	NA	NA
Low	5.2	NA	NA	NA	NA	NA	NA
Very Low	14.7	NA	NA	NA	NA	NA	NA

NA = Not applicable due to absence of wetland or waterbody type within the alternative route.

PEM = palustrine emergent; PFO = palustrine forested; PSS = palustrine scrub-shrub; PUB = palustrine unconsolidated bottom

[a] The numbers in this table have been rounded for presentation purposes; as a result, the totals may not reflect the sum of the addends.

[b] Substation or switching station wetlands and waterbodies are included within each route rather than individually.

[c] Total acres may not total the sum of wetland and waterbody types. This is due to the fact that some of the lower probability rankings do not overlap with NWI or interpreted wetlands, and therefore do not have a wetland/waterbody type associated with them.

Butler Farm–Finneywood Line

Table 3: Summary of the Probabilities of Wetland and Waterbody Occurrence along Butler Farm–Finneywood Routes [a, b]

Probability	Total Acres within Right-of-Way [c]	Wetland and Waterbody Type (acres)					
		PEM Emergent	PFO Forested	PSS Scrub-shrub	PUB Freshwater Pond	Riverine Stream	Lacustrine Lake
Butler Farm–Finneywood Route 1							
High	0.7	0.1	0.6	0.0	NA	0.0	NA
Medium/High	7.2	0.5	3.6	2.3	0.5	0.3	NA
Medium	5.4	0.6	3.9	0.6	0.1	0.2	NA
Medium/Low	2.2	0.0	0.6	1.3	0.0	0.0	NA
Low	17.8	NA	NA	NA	NA	NA	NA
Very Low	83.4	NA	NA	NA	NA	NA	NA
Butler Farm–Finneywood Route 2							
High	0.7	NA	0.6	NA	NA	0.1	NA
Medium/High	3.7	1.1	2.4	0.0	NA	0.2	NA
Medium	5.6	0.9	4.3	NA	NA	0.3	NA
Medium/Low	0.7	NA	0.4	0.0	NA	0.0	NA
Low	24.8	NA	NA	NA	NA	NA	NA
Very Low	92.6	NA	NA	NA	NA	NA	NA
Butler Farm–Finneywood Route Variation							

Probability	Total Acres within Right-of-Way [c]	Wetland and Waterbody Type (acres)					
		PEM Emergent	PFO Forested	PSS Scrub-shrub	PUB Freshwater Pond	Riverine Stream	Lacustrine Lake
High	0.8	0.0	0.6	0.0	NA	0.1	NA
Medium/High	1.3	0.2	0.7	0.3	NA	0.1	NA
Medium	0.4	NA	0.1	0.2	NA	0.1	NA
Medium/Low	1.6	NA	0.2	NA	NA	NA	NA
Low	6.0	NA	NA	NA	NA	NA	NA
Very Low	14.5	NA	NA	NA	NA	NA	NA

NA = Not applicable due to absence of wetland or waterbody type within the alternative route.

PEM = palustrine emergent; PFO = palustrine forested; PSS = palustrine scrub-shrub; PUB = palustrine unconsolidated bottom

[a] The numbers in this table have been rounded for presentation purposes; as a result, the totals may not reflect the sum of the addends.

[b] Substation or switching station wetlands and waterbodies are included within each route rather than individually.

[c] Total acres may not total the sum of wetland and waterbody types. This is due to the fact that some of the lower probability rankings do not overlap with NWI or interpreted wetlands, and therefore do not have a wetland/waterbody type associated with them.

Wetland Crossings

Butler Farm–Clover Line

Butler Farm–Clover Route 1

The length of the corridor for the Butler Farm–Clover Route 1 is approximately 19.1 miles and encompasses a total of approximately 278.4 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 34.9 acres (12.5 percent) of land with a medium or higher probability of containing wetlands and waterbodies.

Butler Farm–Clover Route 2

The length of the corridor for the Butler Farm–Clover Route 2 is approximately 21.1 miles and encompasses a total of approximately 306.3 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 43.1 acres (14.1 percent) of land with a medium or higher probability of containing wetlands and waterbodies.

Butler Farm–Clover Route 3

The length of the corridor for the Butler Farm–Clover Route 3 is approximately 20.2 miles and encompasses a total of approximately 294.2 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 39.1 acres (13.3 percent) of land with a medium or higher probability of containing wetlands and waterbodies.

Butler Farm–Clover Route Variation

The length of the corridor for the Butler Farm–Clover Route Variation is approximately 1.7 miles and encompasses a total of approximately 24.5 acres. Based on the methodology discussed above, the right-

of-way footprint will encompass approximately 3.5 acres (14.3 percent) of land with a medium or higher probability of containing wetlands and waterbodies.

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

The length of the corridor for the Butler Farm–Finneywood Route 1 is approximately 7.0 miles and encompasses a total of approximately 116.8 acres of right-of-way (including 15.4 acres for the proposed Finneywood Switching Station). Based on the methodology discussed above, the right-of-way and switching station footprint will encompass approximately 13.3 acres (11.3 percent) of land with a medium or higher probability of containing wetlands and waterbodies.

Butler Farm–Finneywood Route 2

The length of the corridor for the Butler Farm–Finneywood Route 2 is approximately 7.8 miles and encompasses a total of approximately 128.0 acres of right-of-way (including 15.4 acres for the proposed Finneywood Switching Station). Based on the methodology discussed above, the right-of-way and switching station footprint will encompass approximately 10.0 acres (7.8 percent) of land with a medium or higher probability of containing wetlands and waterbodies.

Butler Farm–Finneywood Route Variation

The length of the corridor for the Butler Farm–Finneywood Route Variation is approximately 1.7 miles and encompasses a total of approximately 24.6 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 2.5 acres (10.2 percent) of land with a medium or higher probability of containing wetlands and waterbodies

Waterbody Crossings

ERM identified and mapped waterbodies in the study area using similar publicly available GIS databases as those used to identify and map wetlands. Waterbodies in the study area are primarily palustrine unconsolidated bottom (PUB) open waters and riverine (RVR) features such as intermittent and perennial streams. All the proposed routes would cross perennial and intermittent waterbodies (rivers, streams, tributaries).

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Based on the NHD and the wetland desktop delineation methodology described above, there are a total of 51 waterbody crossings, including 12 perennial, 31 intermittent, 2 canal/ditch, and 6 lake/pond crossings, within the Butler Farm–Clover Route 1 right-of-way. Named waterbodies crossed by the right-of-way include the Staunton River, Sandy Creek, Moody Creek, Bluestone Creek, Devil's Branch, Black Branch, Otter Creek, and Little Bluestone Creek.

Butler Farm–Clover Route 2

Based on the NHD and the wetland desktop delineation methodology described above, there are a total of 61 waterbody crossings, including 10 perennial, 42 intermittent, 2 canal/ditch, and 7 lake/pond crossings, within the Butler Farm–Clover Route 2 right-of-way. Named waterbodies crossed by the right-

of-way include the Staunton River, Sandy Creek, Moody Creek, Bluestone Creek, Otter Creek, Yerbys Creek, Woodpecker Creek, and Little Bluestone Creek.

Butler Farm–Clover Route 3

Based on the NHD and the wetland desktop delineation methodology described above, there are a total of 64 waterbody crossings, including 13 perennial, 41 intermittent, 2 canal/ditch, and 8 lake/pond crossings, within the Butler Farm–Clover Route 3 right-of-way. Named waterbodies crossed by the right-of-way include the Staunton River, Sandy Creek, Berles Creek, Bruce Spring Branch, Tanyard Branch, Bluestone Creek, Yerbys Creek, Woodpecker Creek, and Little Bluestone Creek.

Butler Farm–Clover Route Variation

Based on the NHD and the wetland desktop delineation methodology described above, there are a total of 4 crossings of one unnamed perennial tributary to Little Bluestone Creek within the Butler Farm–Clover Route Variation right-of-way.

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Based on the NHD and the wetland desktop delineation methodology described above, there are a total of 12 waterbody crossings, including 5 perennial, 6 intermittent and 1 lake/pond crossings, within the Butler Farm–Finneywood Route 1 right-of-way. Named waterbodies crossed by the right-of-way include Otter Creek and Little Bluestone Creek.

Butler Farm–Finneywood Route 2

Based on the NHD and the wetland desktop delineation methodology described above, there are a total of 11 waterbody crossings, including 3 perennial, 7 intermittent crossings, and 1 perennial lake/pond within the Butler Farm–Finneywood Route 2 right-of-way. Named waterbodies crossed by the right-of-way include Horsepen Creek and Butcher Creek.

Butler Farm–Finneywood Route Variation

Based on the NHD and the wetland desktop delineation methodology described above, there are a total of 3 crossings of one unnamed perennial tributary to Little Bluestone Creek within the Butler Farm–Finneywood Route Variation right-of-way.

Project Impacts

Avoiding or minimizing new impacts on wetlands and streams was among the criteria Dominion Energy Virginia used in developing routes for the Project. To minimize impacts on wetland areas and streams, the transmission lines have been designed to span or avoid wetlands where possible. Most of the wetlands in the area are associated with streams and rivers, and it is anticipated that these features can be spanned, keeping structure locations outside wetlands to the extent practicable.

Where the removal of trees or shrubby vegetation occurs within wetlands, Dominion Energy Virginia 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. There would be no change in contours or redirection of water flow, and the amount of spoil from foundation

installation and structure placement would be minimal. Excess soil in wetlands generated through foundation construction would be removed from the wetland.

Mats would be used for construction equipment to travel over wetlands, as appropriate. Due to the absence of an existing right-of-way in some areas along the routes, new temporary access roads may be necessary. Additionally, if a route section 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, where present. In such cases, some temporary fill material in wetlands adjacent to the crossings may be required. This fill would be placed on erosion control fabric and removed when work is completed, returning ground elevations to original contours. Potential direct impacts on wetlands would be temporary in nature, but a reduction in wetland functions and values would occur where tree clearing within wetlands is necessary.

Summary

This Wetland and Waterbody Summary report was prepared in accordance with the Memorandum of Agreement between the DEQ and the SCC for purposes of initiating a Wetlands Impact Consultation. Please note that a formal on-site wetland delineation was not conducted as part of this review.

In addition, we have a Project website where the SCC application will be available after filing, as well as maps and discussions about the Project. It can be accessed by going to https://www.dominionenergy.com/projects-and-facilities/electric-projects/power-line-projects/butler-farm. If you have any questions regarding this wetland assessment please contact me at 612-347-7178 or by email at mariah.weitzenkamp@erm.com.

Sincerely,

Mariah Weitzenkamp
Environmental Resources Management

cc: Charles Weil, Dominion Energy Virginia
James Young, Dominion Energy Virginia

Enclosures: Attachments 1 and 2

References

Environmental Laboratory. 1987. Technical Report Y-87-1: Corps of Engineers Wetlands Delineation Manual U.S. Army Corps of Engineers, Waterways Experiment Station. January 1987.

Environmental Laboratory. 2012. Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region. Prepared for U.S. Army Corps of Engineers Wetlands Regulatory Assistance Program. ERDC/EL TR-12-9. October 2012.

NRCS (Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture). Undated. Web Soil Survey. Accessed: June 2022. Retrieved from: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

NAIP (USA National Agricultural Imagery Program). 2022a. USA NAIP Imagery: Natural Color. Retrieved from: https://naip-usdaonline.hub.arcgis.com/. Accessed June 2022.

NAIP (USA National Agricultural Imagery Program). 2022b. USA NAIP Imagery: Color Infrared. Retrieved from: https://naip-usdaonline.hub.arcgis.com/. Accessed June 2022.

USFWS (U.S. Fish and Wildlife). 2022. National Wetlands Inventory. Retrieved from: http://www.fws.gov/wetlands/. Accessed June 2022.

USGS (U.S. Geological Survey). 2022a. The National Map: U.S. Geological Survey database. Accessed: April 22, 2021. Retrieved from: https://apps.nationalmap.gov/viewer/

USGS (U.S. Geological Survey). 2022b. The National Hydrography Dataset. Accessed: May 2021. Retrieved from: https://www.usgs.gov/core-science-systems/ngp/national-hydrography

Acronyms and Abbreviations

DEQ	Department of Environmental Quality
ERM	Environmental Resources Management
GIS	Geographic Information System
kV	kilovolt
MP	milepost
MVA	megavolt-ampere
NA	not applicable
NAIP	National Agricultural Imagery Program
NERC	North American Electric Reliability Corporation
NHD	National Hydrography Dataset
NRCS	National Resource Conservation Service
NWI	National Wetland Inventory
PEM	palustrine emergent
PFO	palustrine forested
PSS	palustrine scrub-shrub
PUB	palustrine unconsolidated bottom
RVR	riverine
SCC	State Corporation Commission
SSURGO	Soil Survey Geographic Database

USDA	United States Department of Agriculture
USA	United States of America
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

ATTACHMENT 1

CLOVER STATION

FINNEYWOOD STATION

SPANISH GROVE SUBSTATION

CHASE CITY SUBSTATION

BUTLER FARM SUBSTATION

Formosa

Wylliesburg

Public Fork

Barnes Junction

Red Oak

Philbeck Crossroads

Finneywood

Black Branch

Fairview

Chase City

Spanish Grove

Esnon

Scotts Crossroad

Service Layer Credits: Light Gray Base: VGIN,

This information is for environmental review purposes only.

Existing Substation
Proposed Substation
Existing Dominion Transmission Line

Butler Farm–Clover Line

Butler Farm–Clover Route 1
Butler Farm-Clover Route Variation
Butler Farm–Clover Route 2
Butler Farm–Clover Route 3

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1
Butler Farm-Finneywood Route Variation
Butler Farm–Finneywood Route 2
Study Area

0 0.5 1
Miles

1:72,000

Attachment 1
Project Overview Map
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

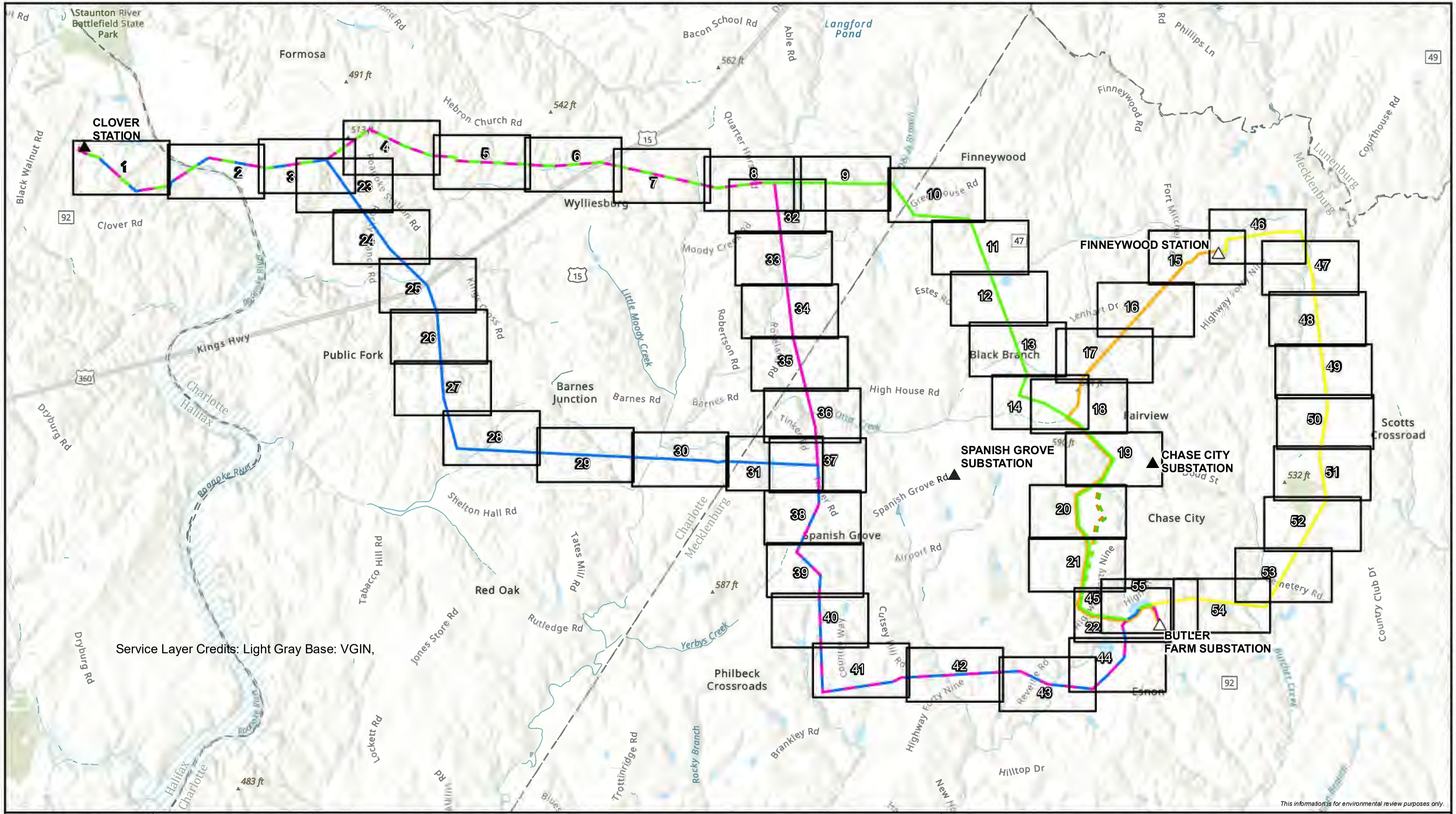
Halifax, Charlotte, and Mecklenburg Counties, VA

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment1_Overview | REVISED: 10/10/2022 | SCALE: 1:72,000 when printed at 11x17

DRAWN BY: NAD

ATTACHMENT 2



Service Layer Credits: Light Gray Base: VGIN,

This information is for environmental review purposes only.

Washington
Richmond
Norfolk

- ▲ Existing Substation
- △ Proposed Substation

Butler Farm–Clover Line

- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line

- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2
- Index Page

0 0.5 1
Miles

1:72,000

Attachment 2
Wetland and Waterbody Index
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

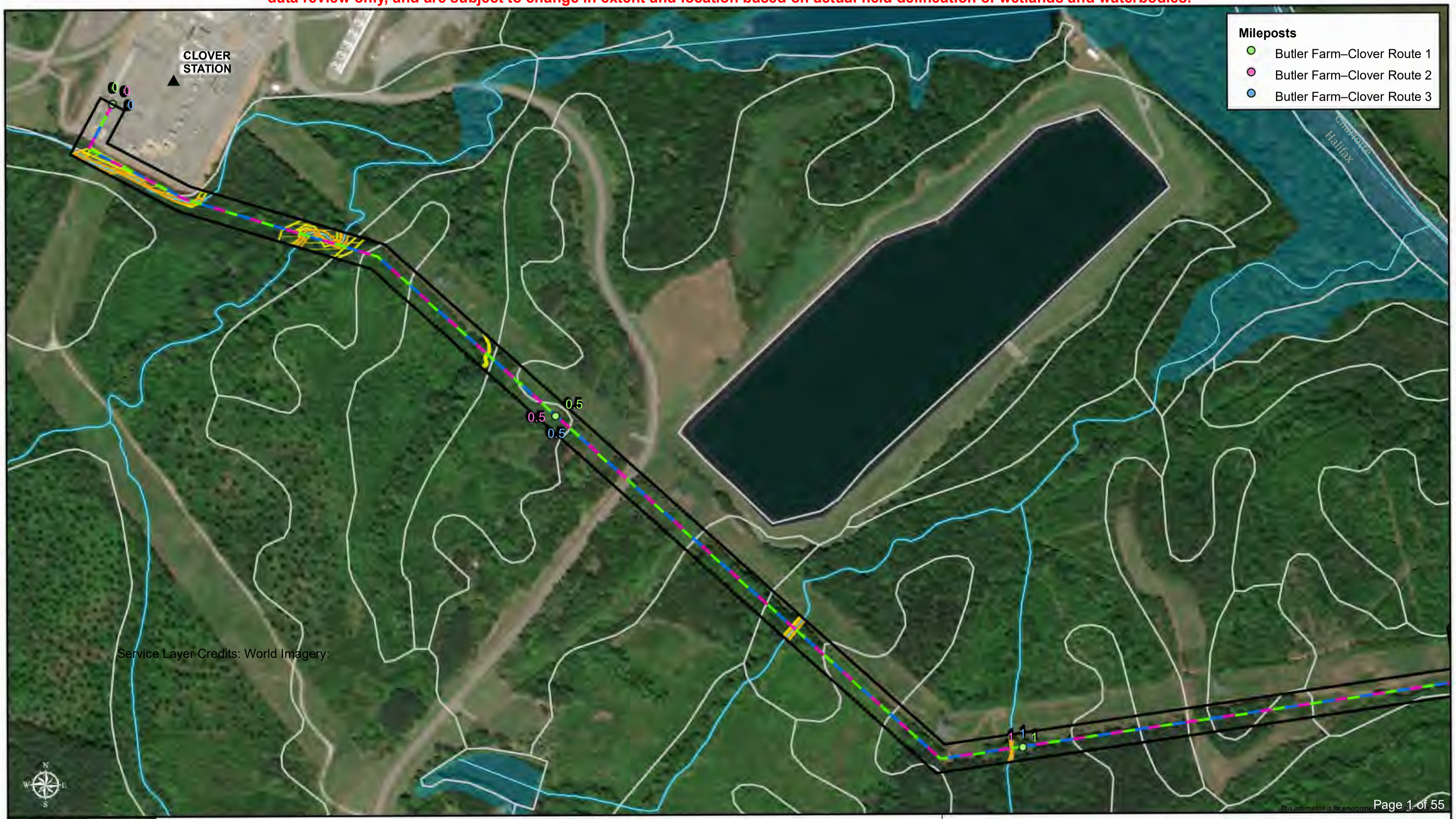
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Index | REVISED: 10/10/2022 | SCALE: 1:72,000 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



▲ Existing Substation

Butler Farm–Clover Line

Butler Farm–Clover Route 1

Butler Farm–Clover Route 2

Butler Farm–Clover Route 3

Project Limits

Wetland Probability

Medium

Medium/High

NHD Waterbody

NWI Wetland

Not Hydric Soil

0 250 500

Feet

1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody
- NWI Wetland

- Not Hydric Soil
- Partially Hydric Soil
- Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

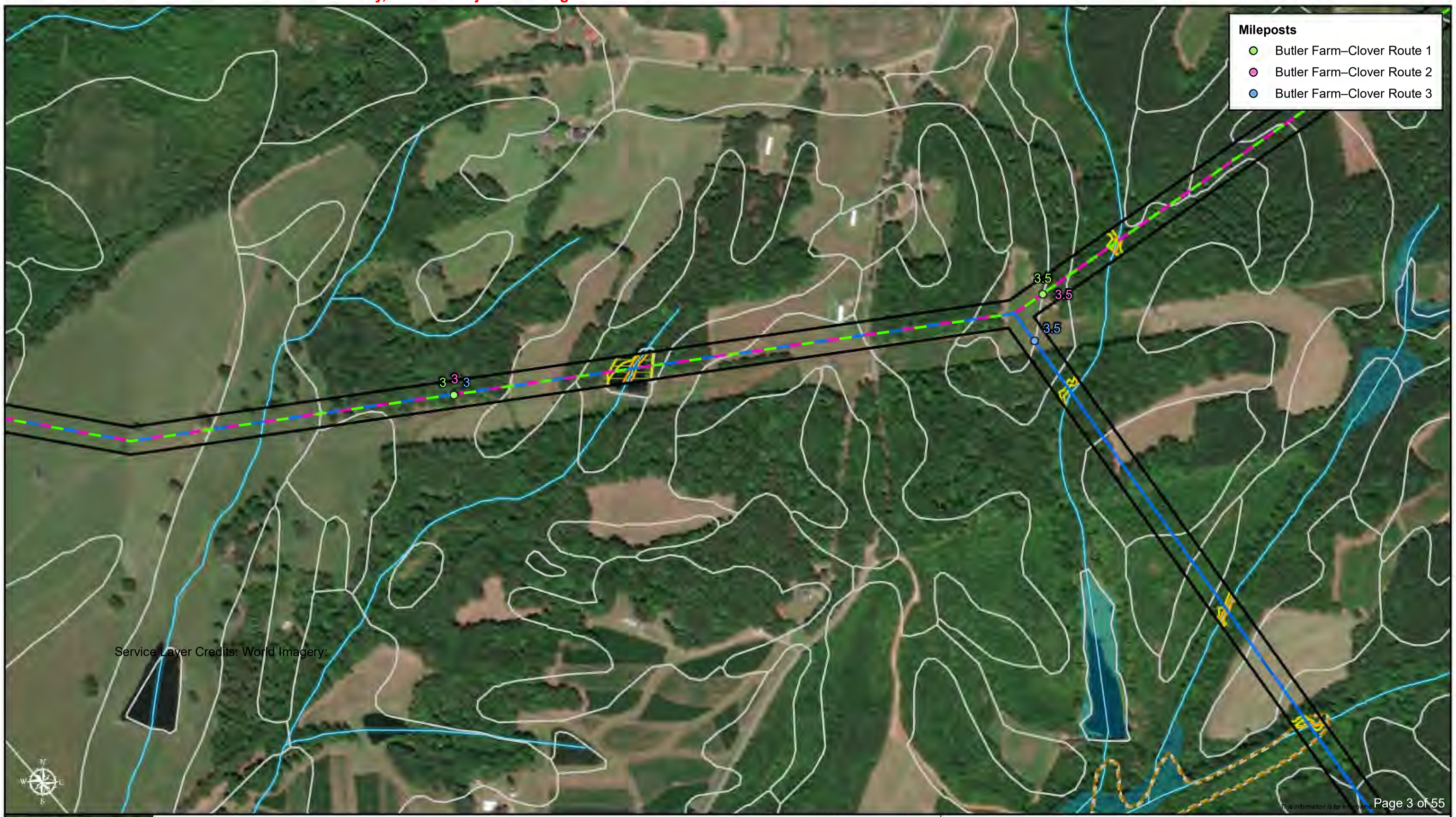
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

- Project Limits

Wetland Probability
- Medium
- Medium/High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

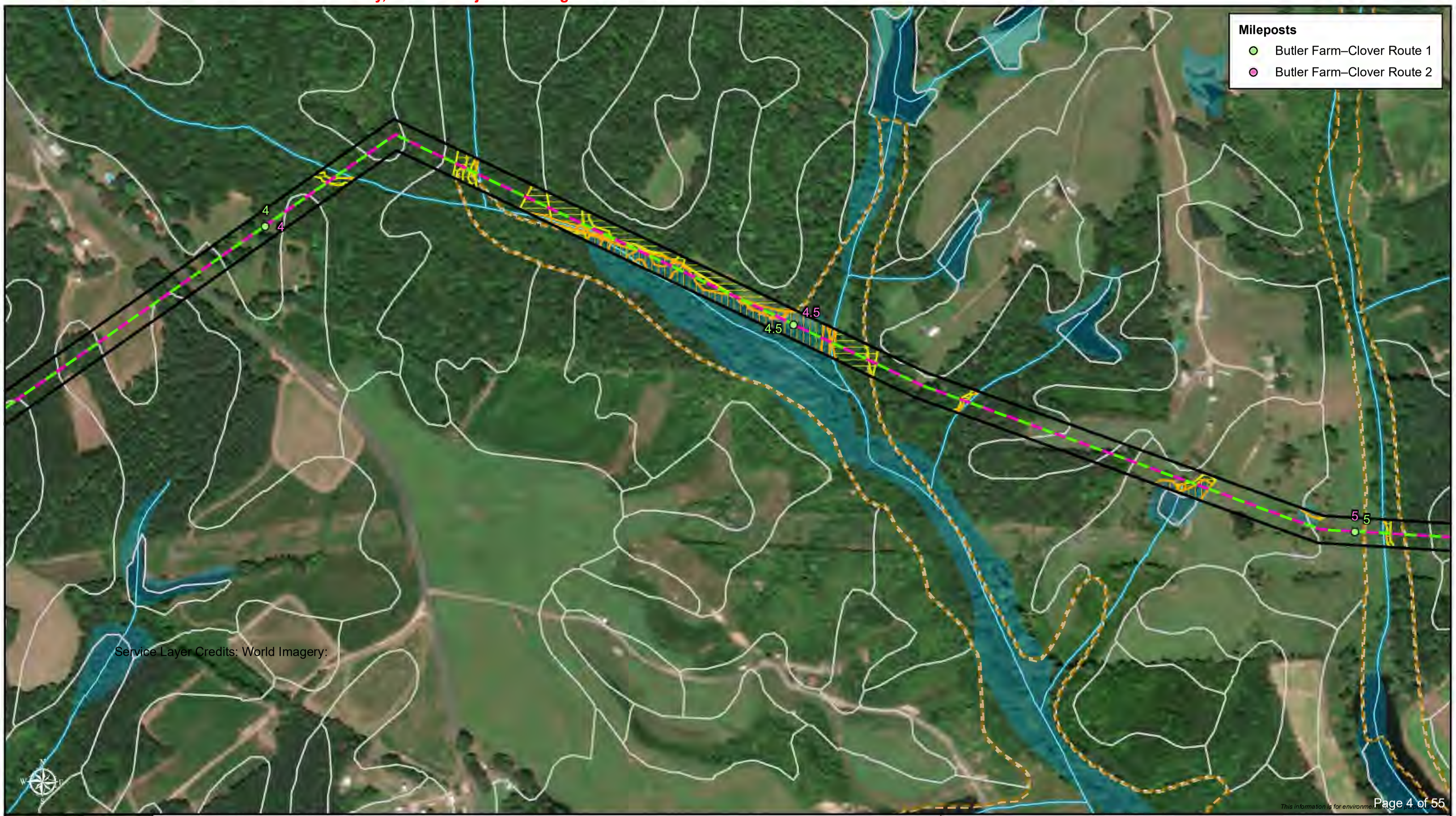
0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

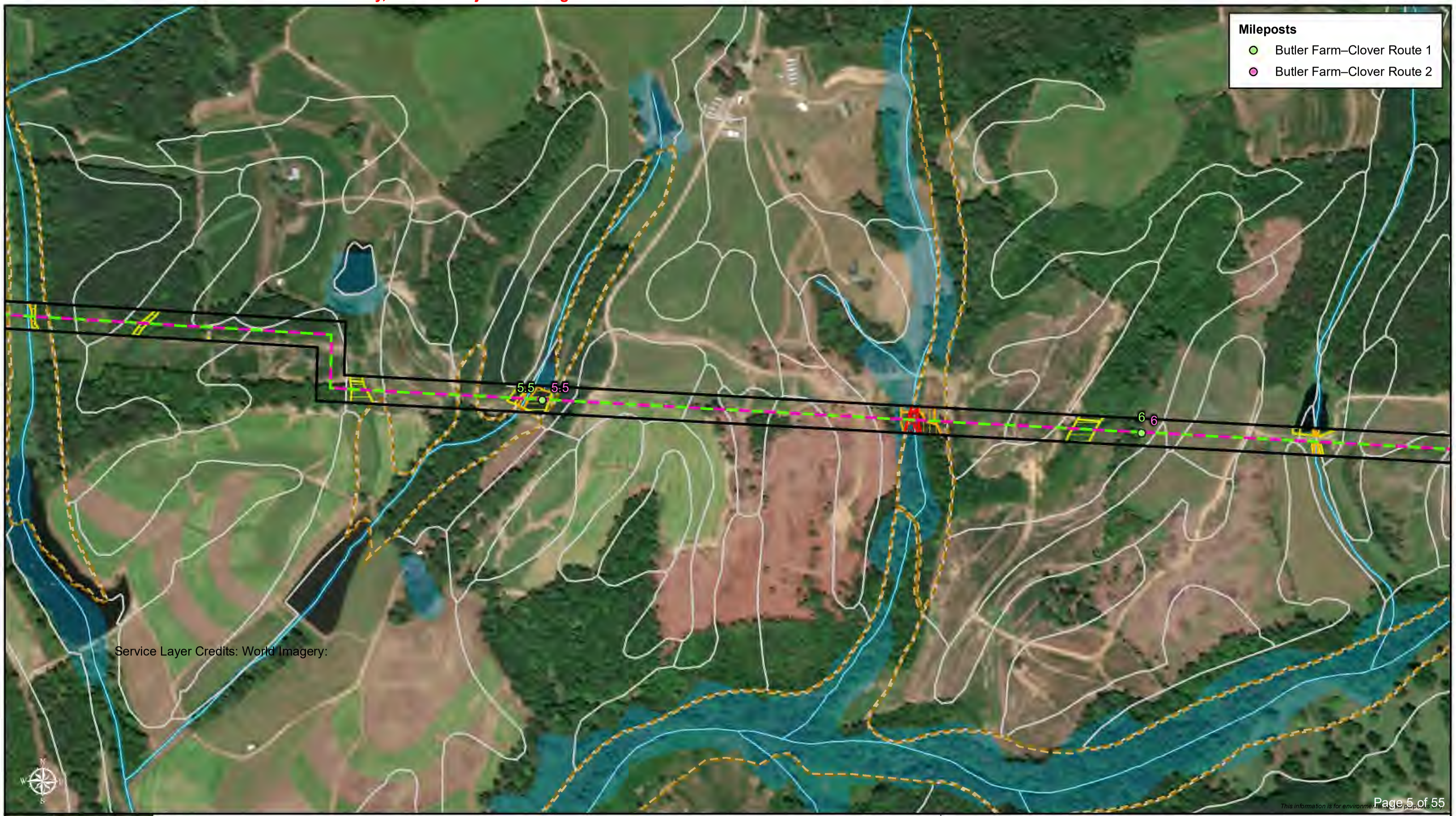
0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

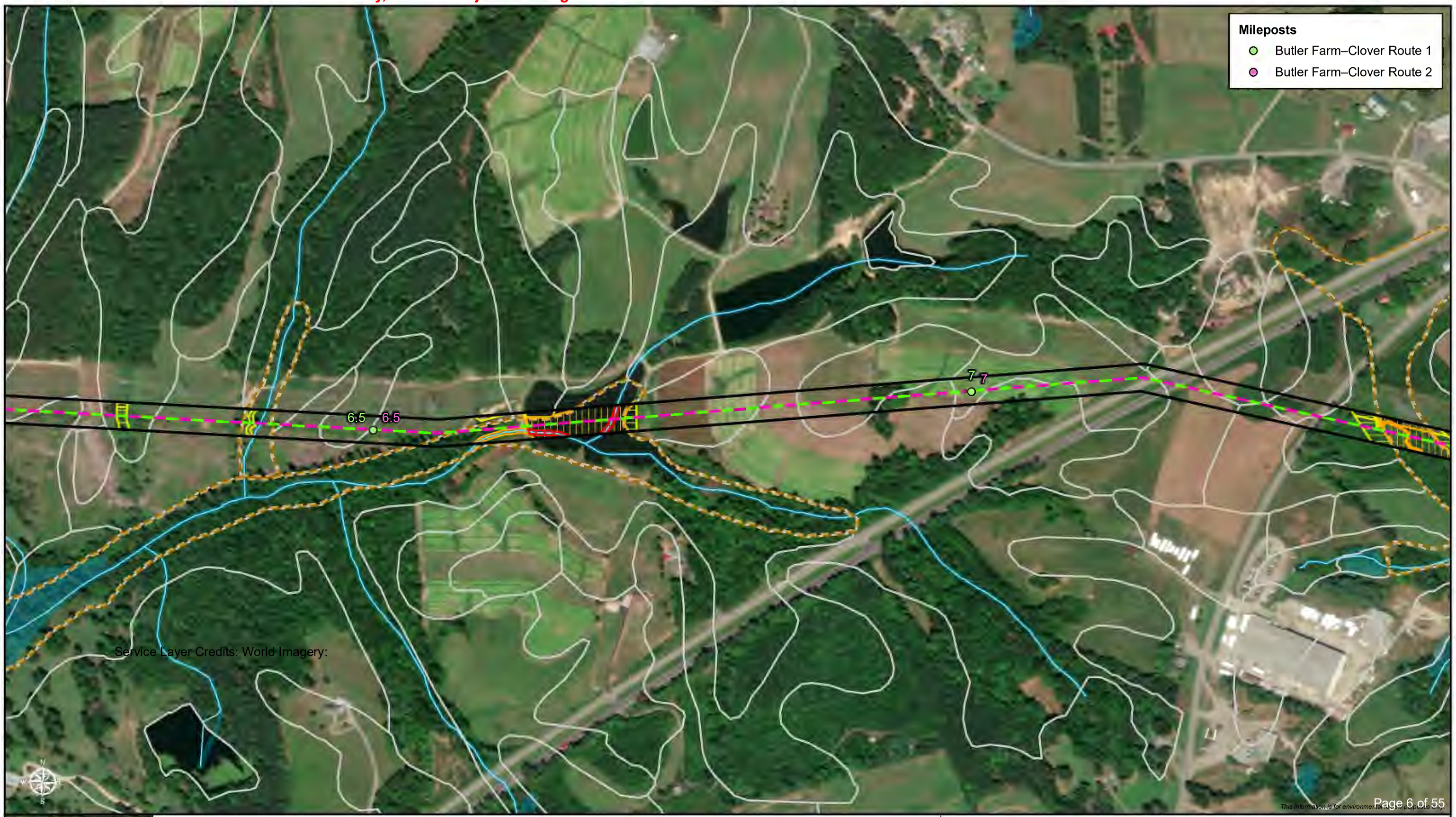
0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

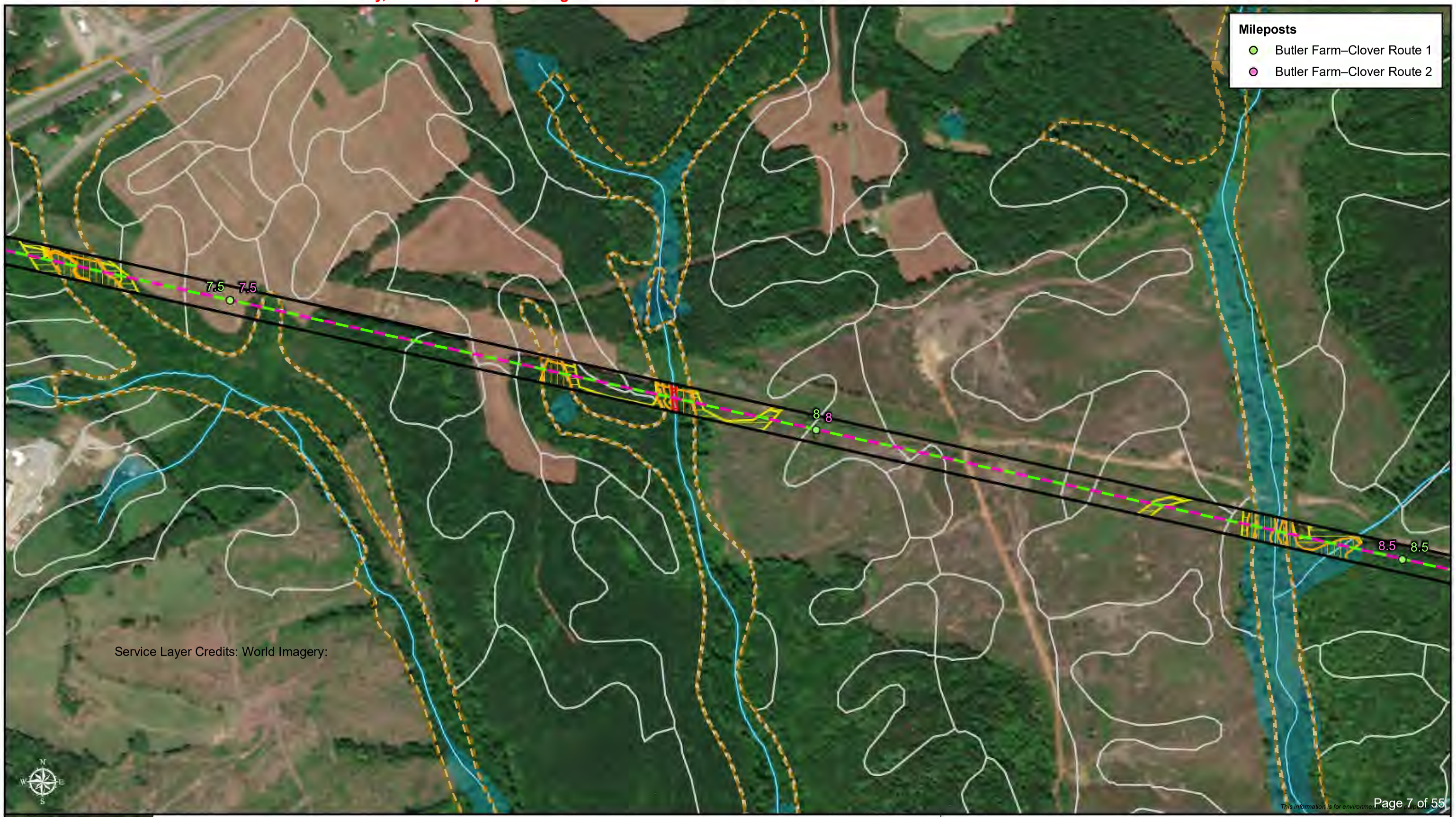
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

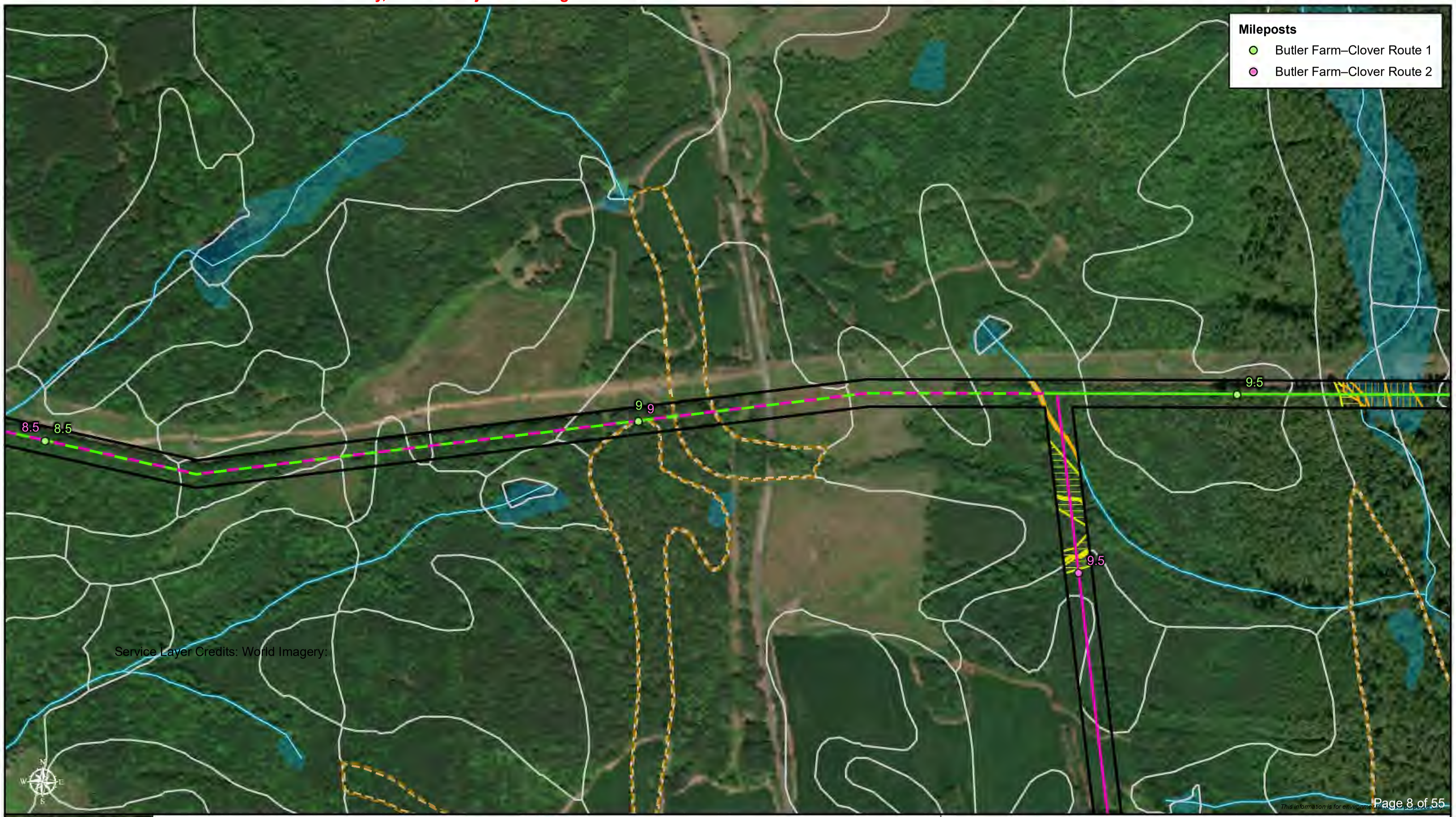
Dominion Energy®

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

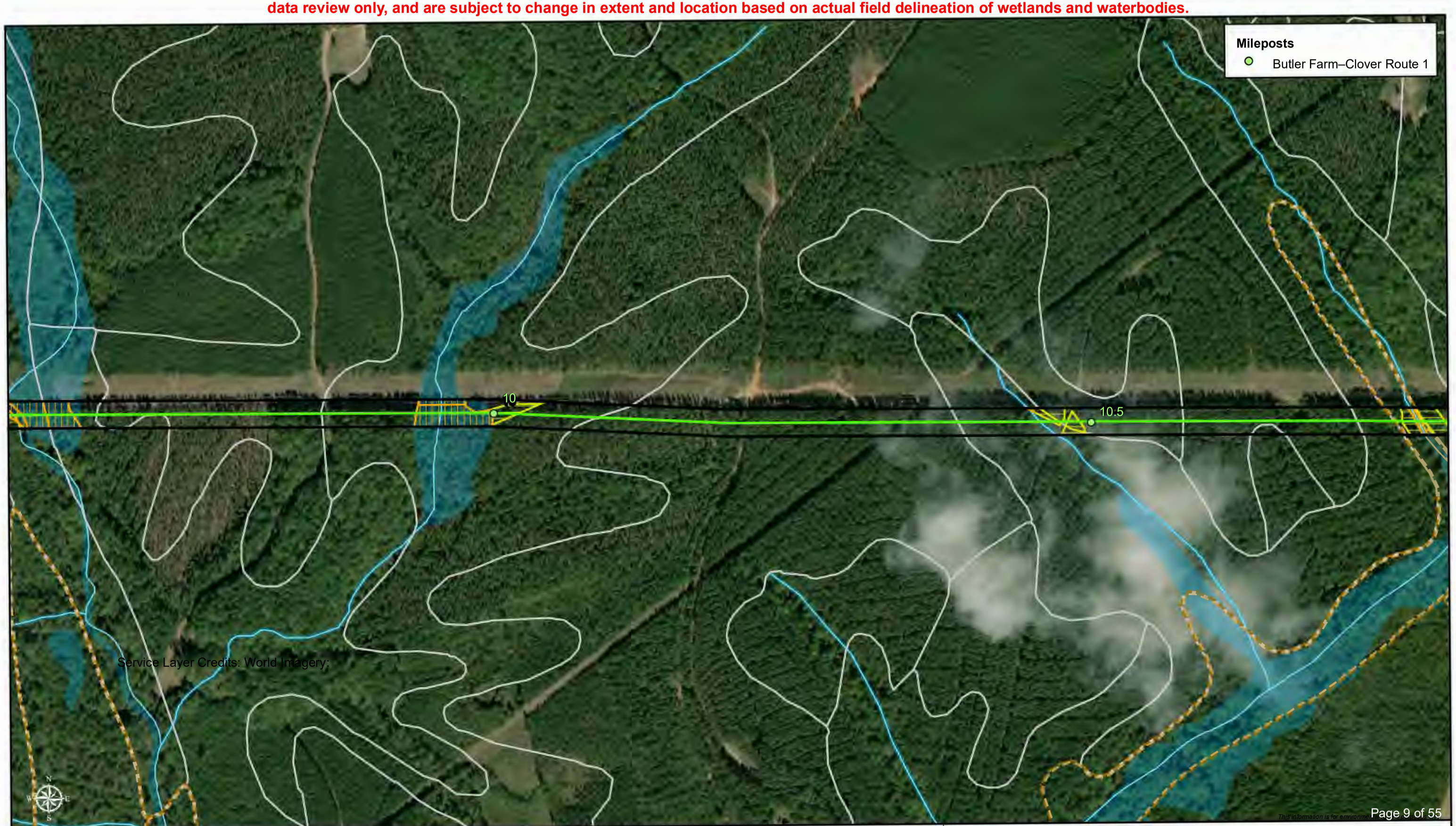
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

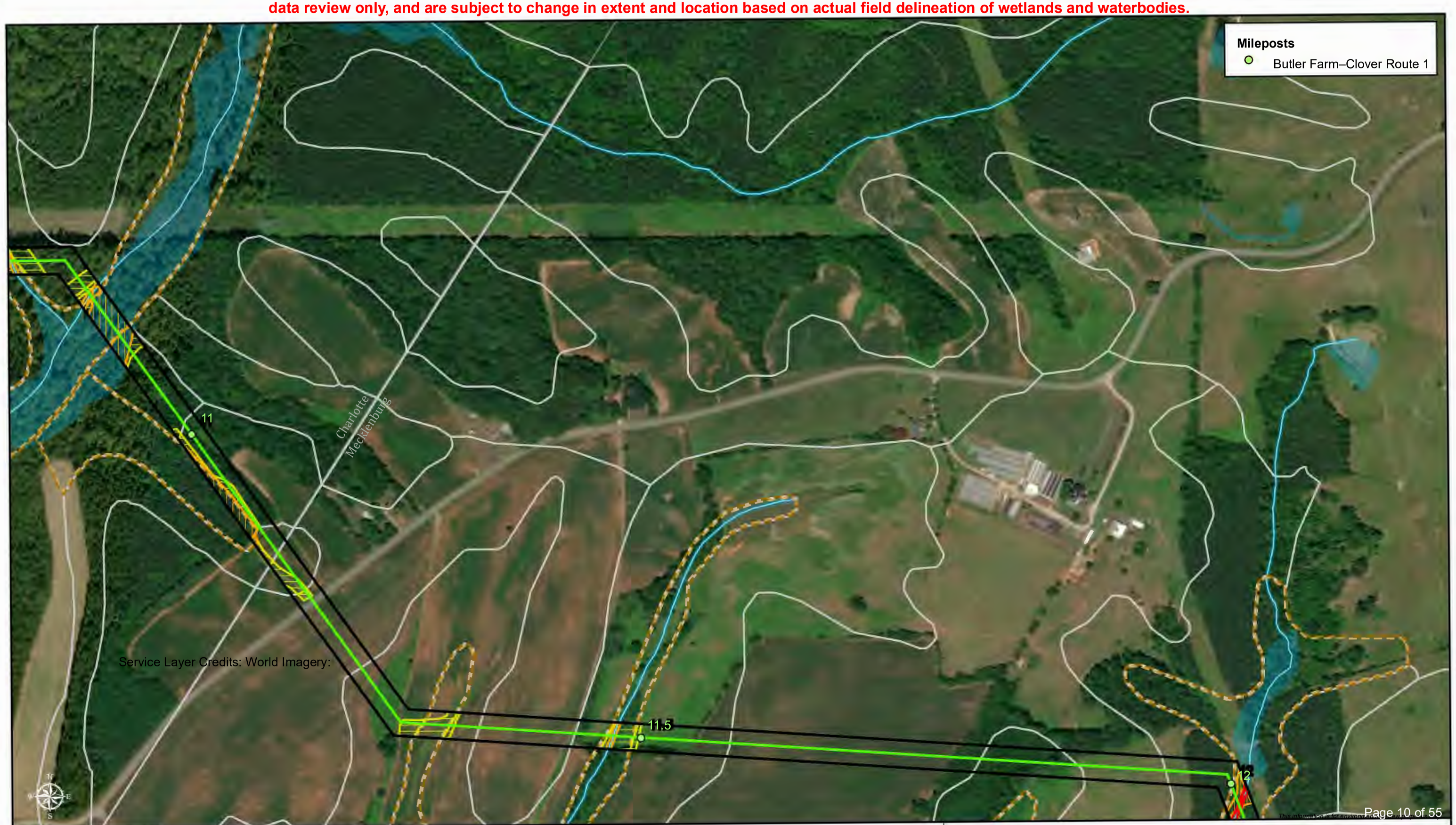
Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

W:\ES M:\Clients\D-F\DOM\Clover\Butler Finney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

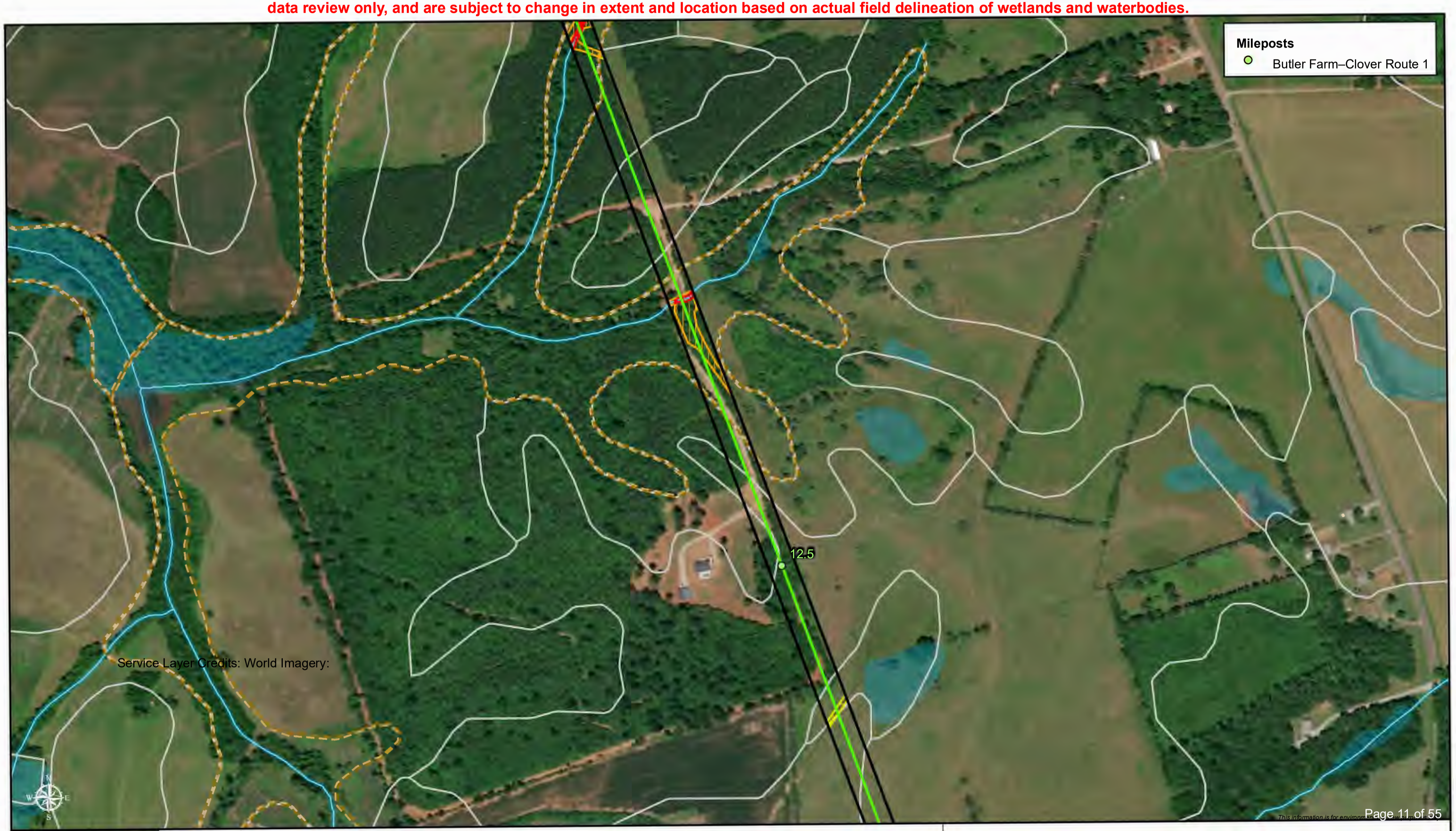
Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

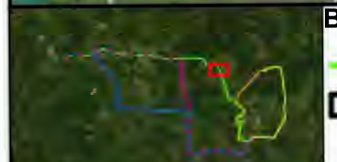
Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.





Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

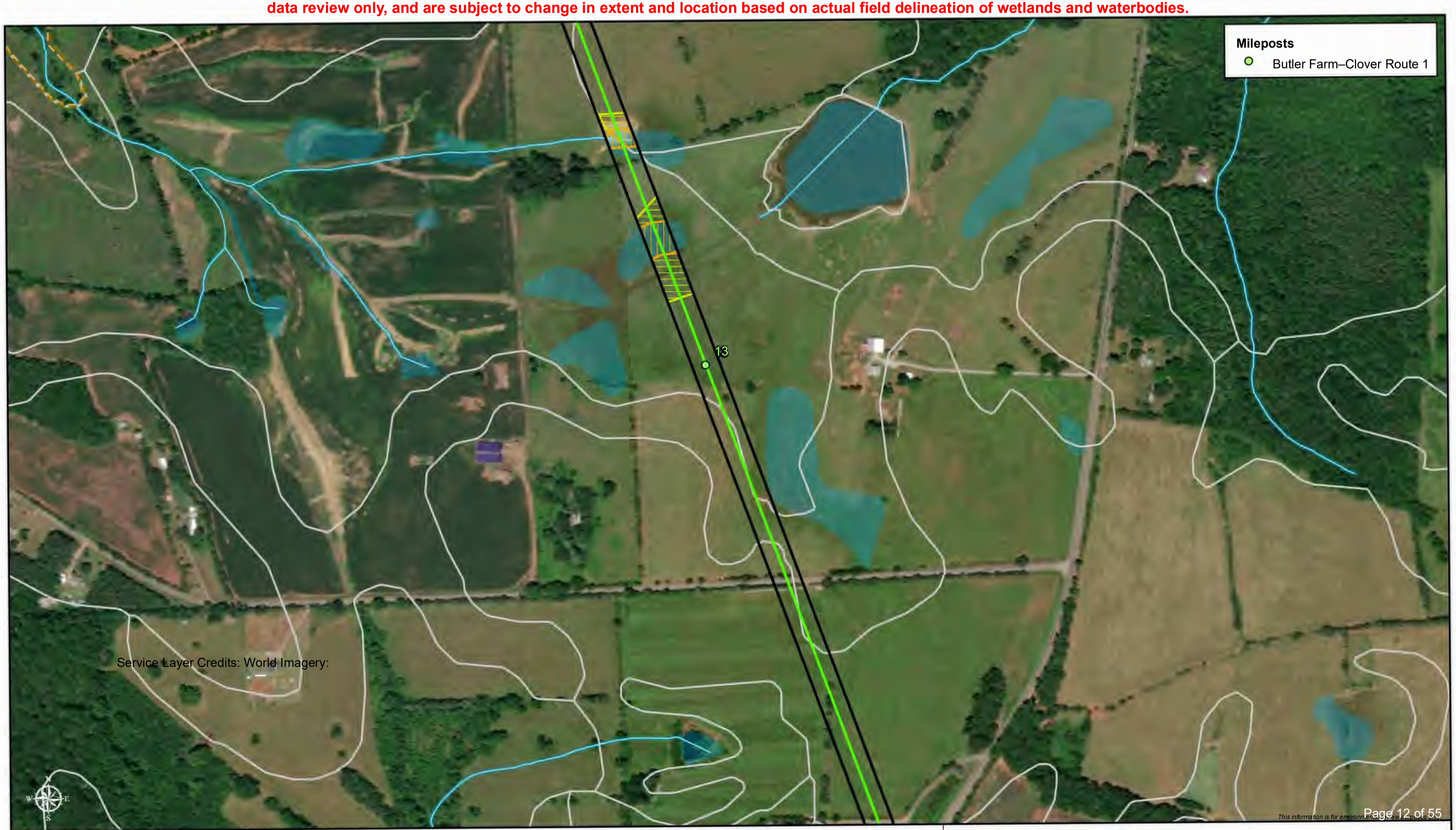
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy®

ERM

MPLS M:\Clients\D-F\DOM\Clover\Butler\Finney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Project Limits

Wetland Probability
- Medium
- Medium/High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Clover Line
Butler Farm–Clover Route 1
Butler Farm–Finneywood Line
Butler Farm–Finneywood Route 1

Project Limits
Wetland Probability
Medium
Medium/High

NHD Waterbody
NWI Wetland
Not Hydric Soil
Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

△ Proposed Substation

Butler Farm–Finneywood Line

Butler Farm–Finneywood Route 1

Butler Farm–Finneywood Route 2

Project Limits

Wetland Probability

Medium

Medium/High

High

NHD Waterbody

NWI Wetland

Not Hydric Soil

Partially Hydric Soil

0 250 500

Feet

1:4,800

Attachment 2

Wetland and Waterbody Map Set

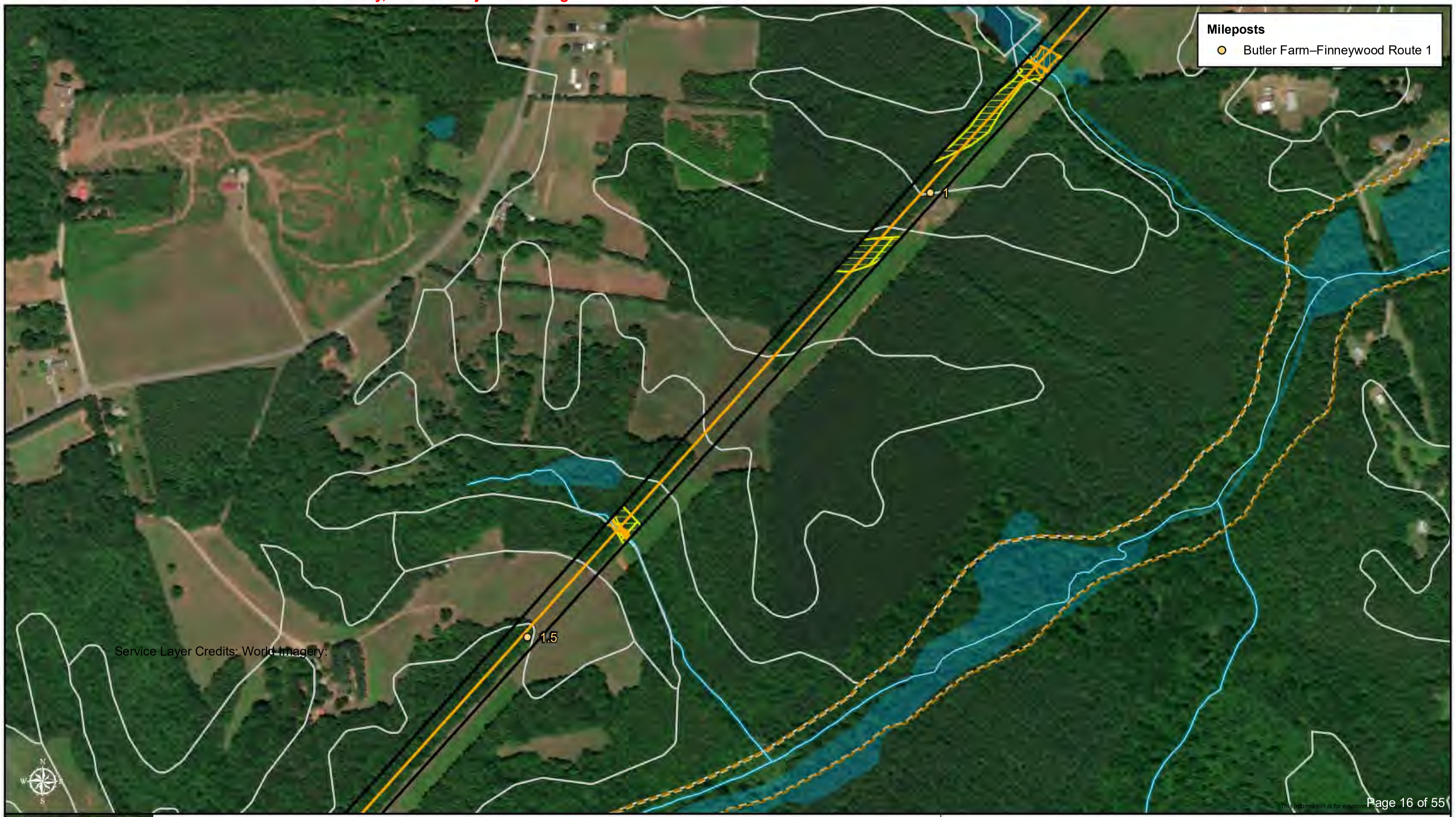
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

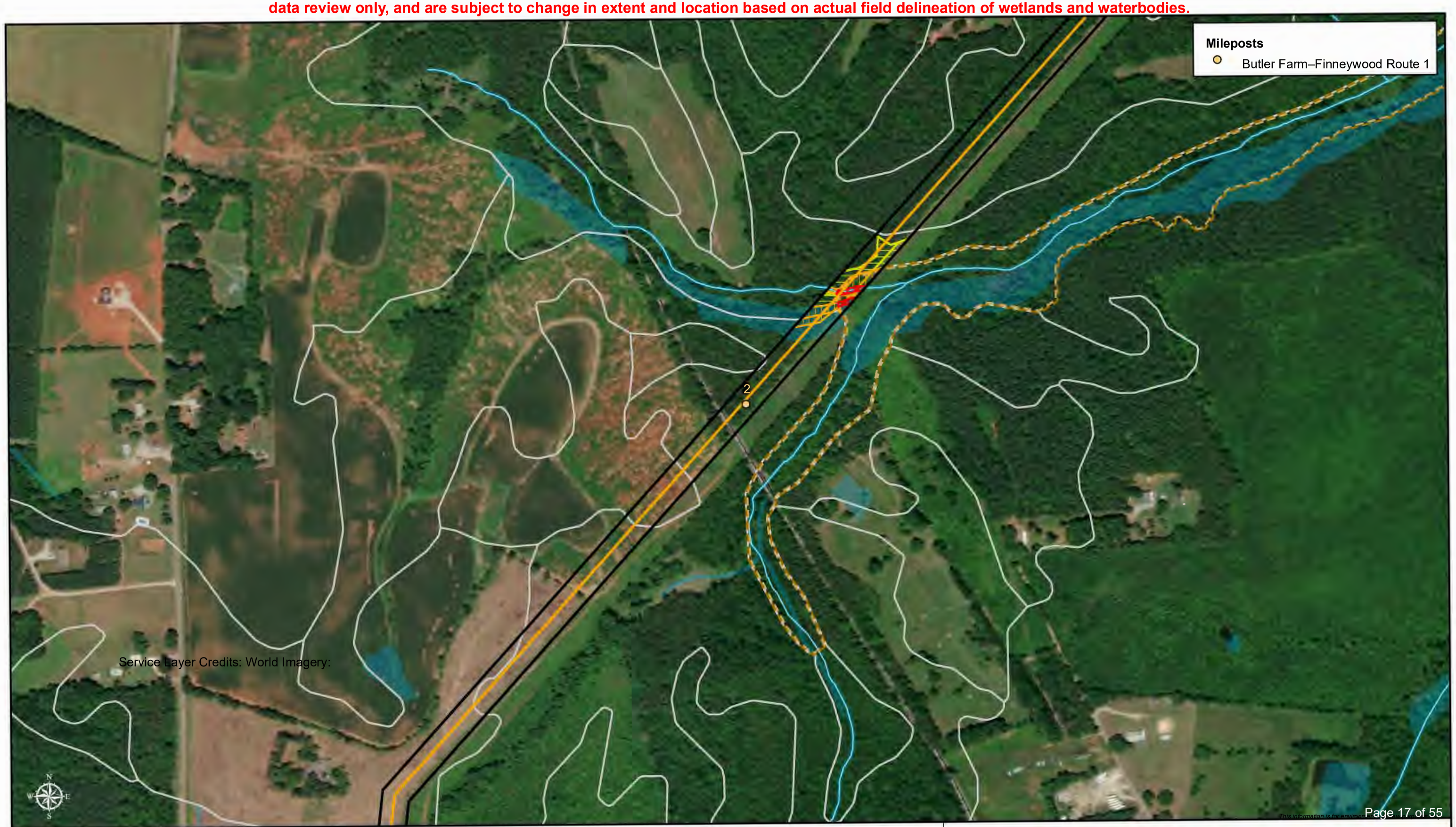
Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

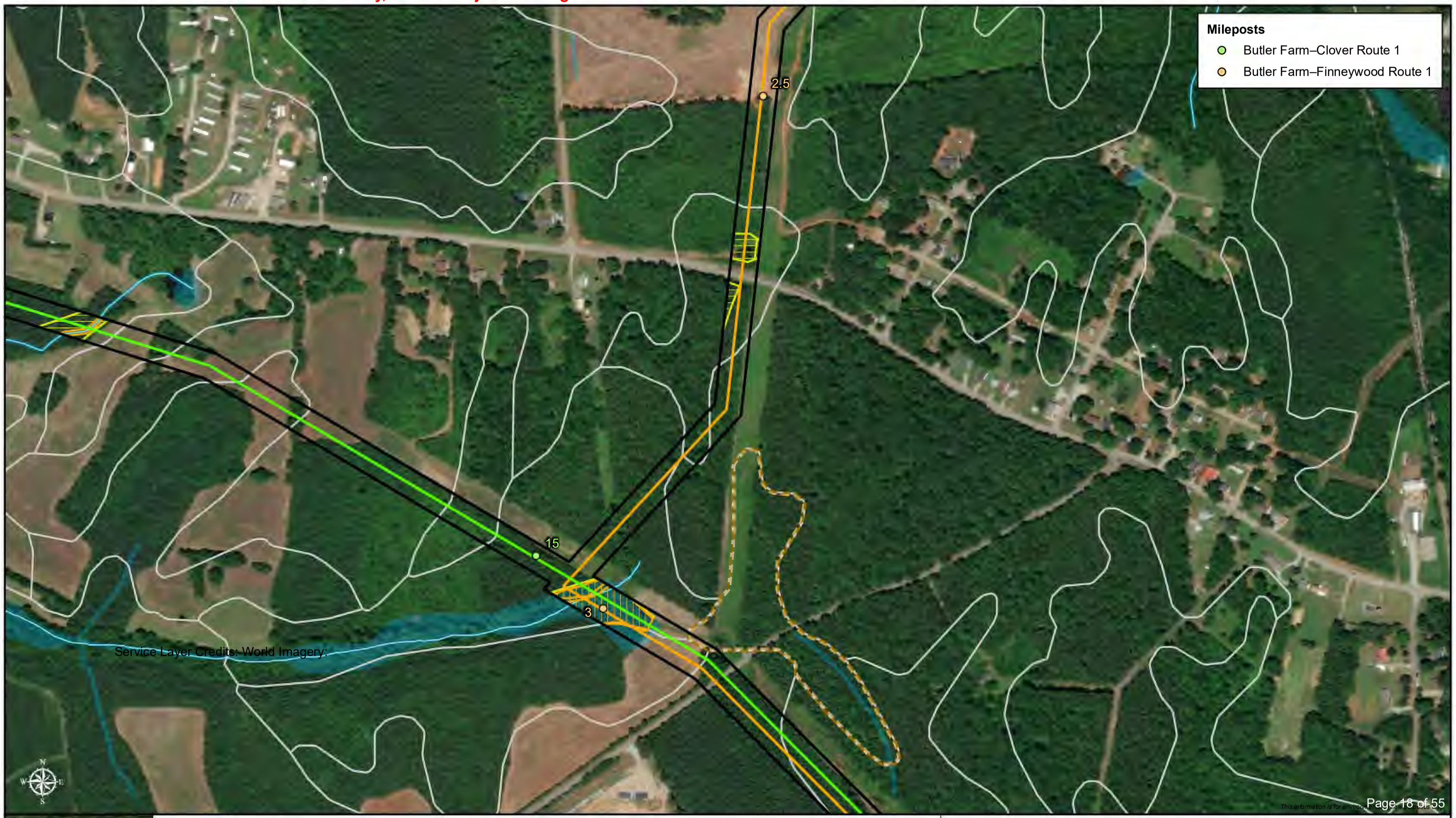
Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1

- Project Limits

Wetland Probability
- Medium
- Medium/High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy®

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Existing Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation

Project Limits

Wetland Probability
- Medium
- Medium/High

NHD Waterbody

NWI Wetland

Not Hydric Soil

0 250 500
Feet

1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

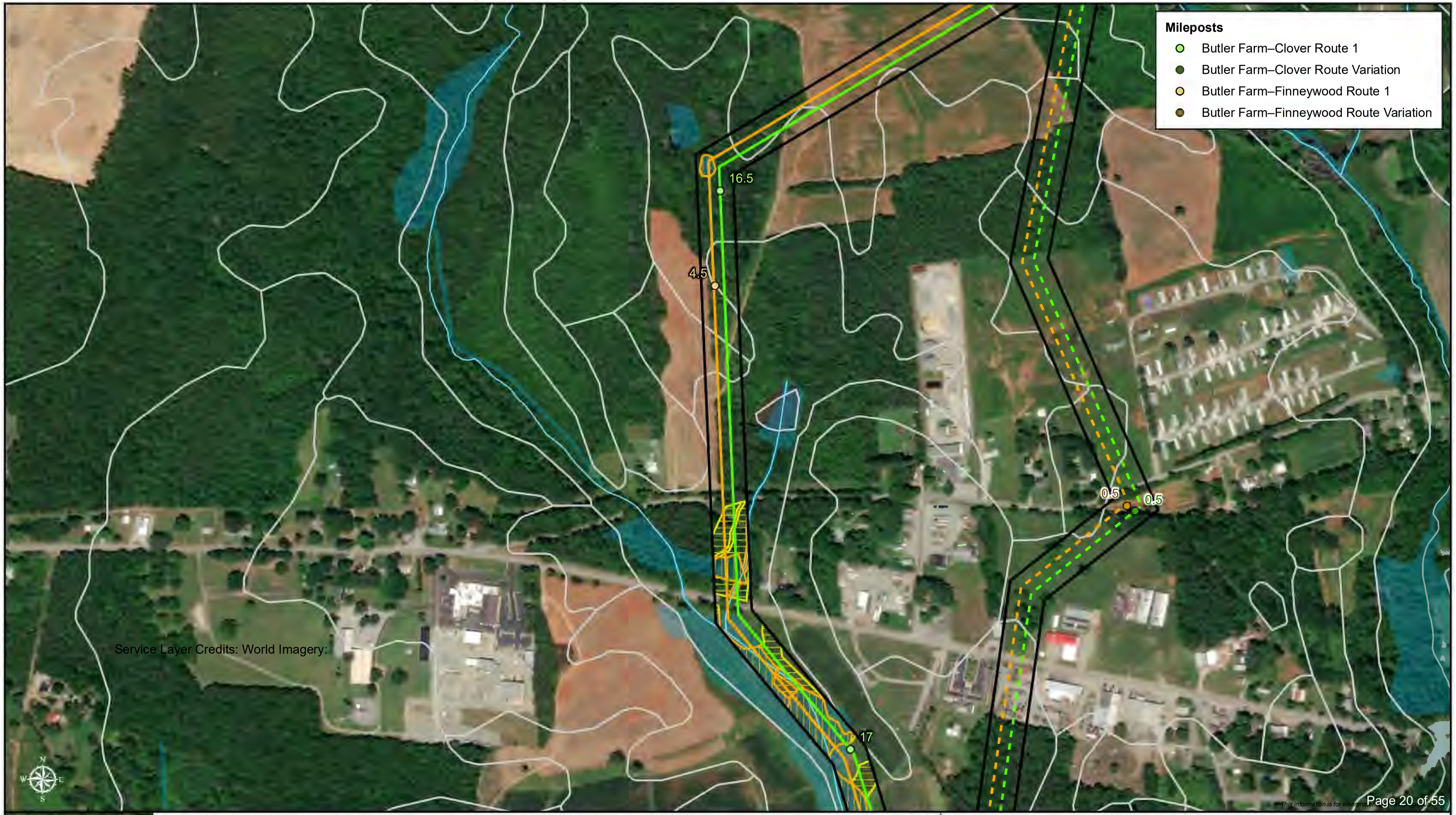
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Project Limits

Wetland Probability
- Medium
- Medium/High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil

0 250 500
Feet
1:4,800

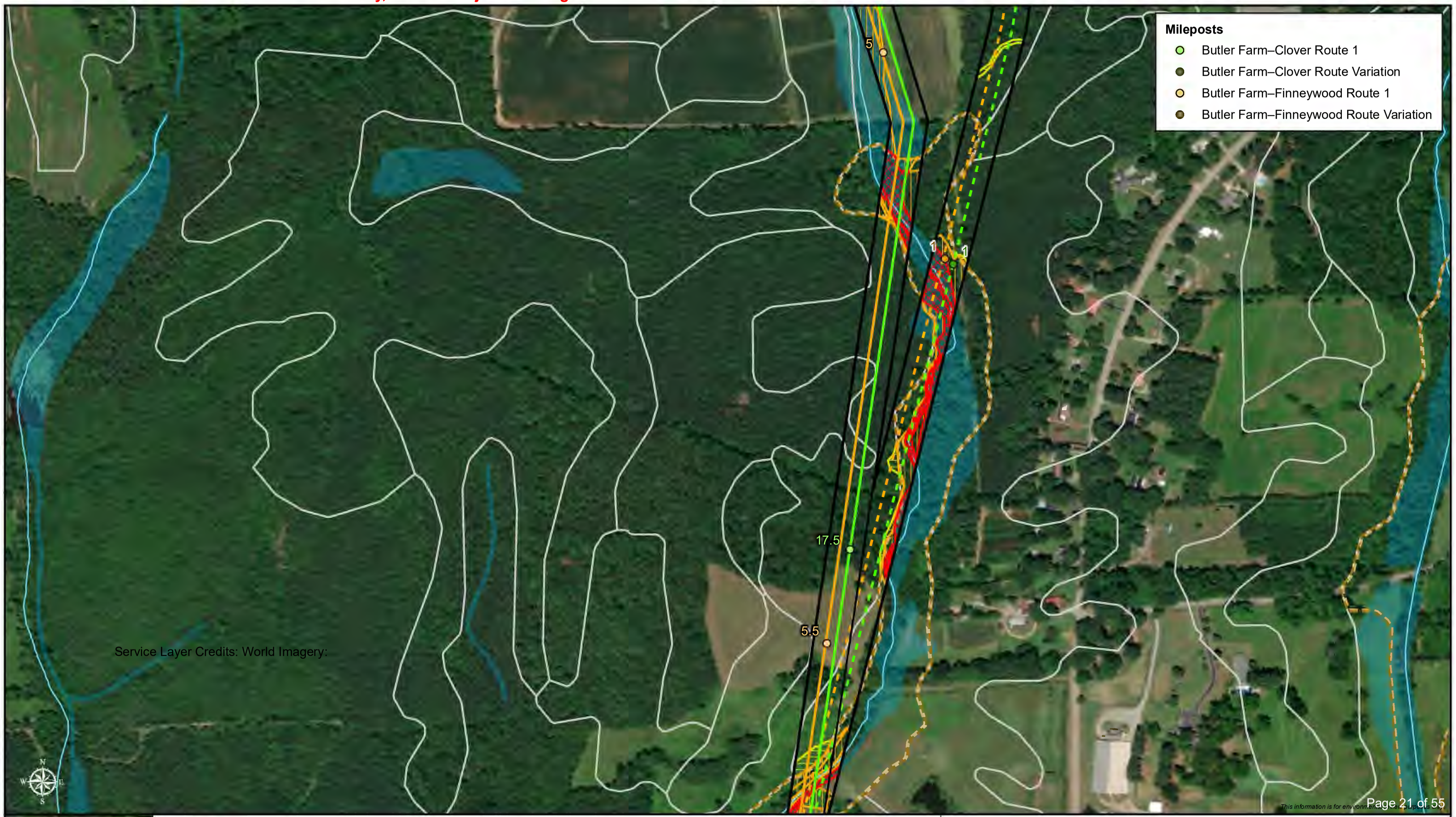
Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High
- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

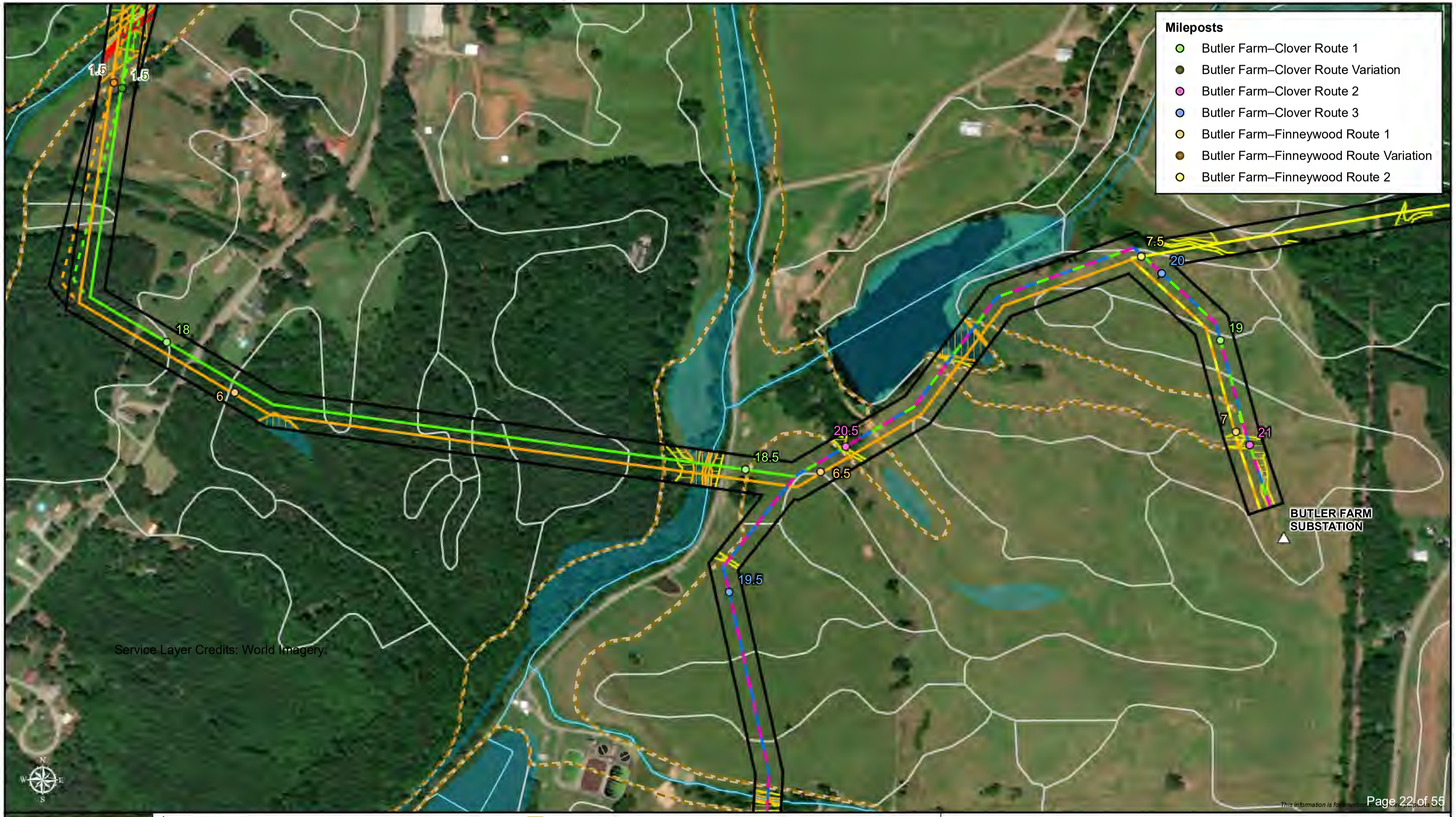
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2

Project Limits

Wetland Probability
- Medium
- Medium/High
- High

NHD Waterbody
NWI Wetland
Not Hydric Soil
Partially Hydric Soil

0 250 500
Feet
1:4,800

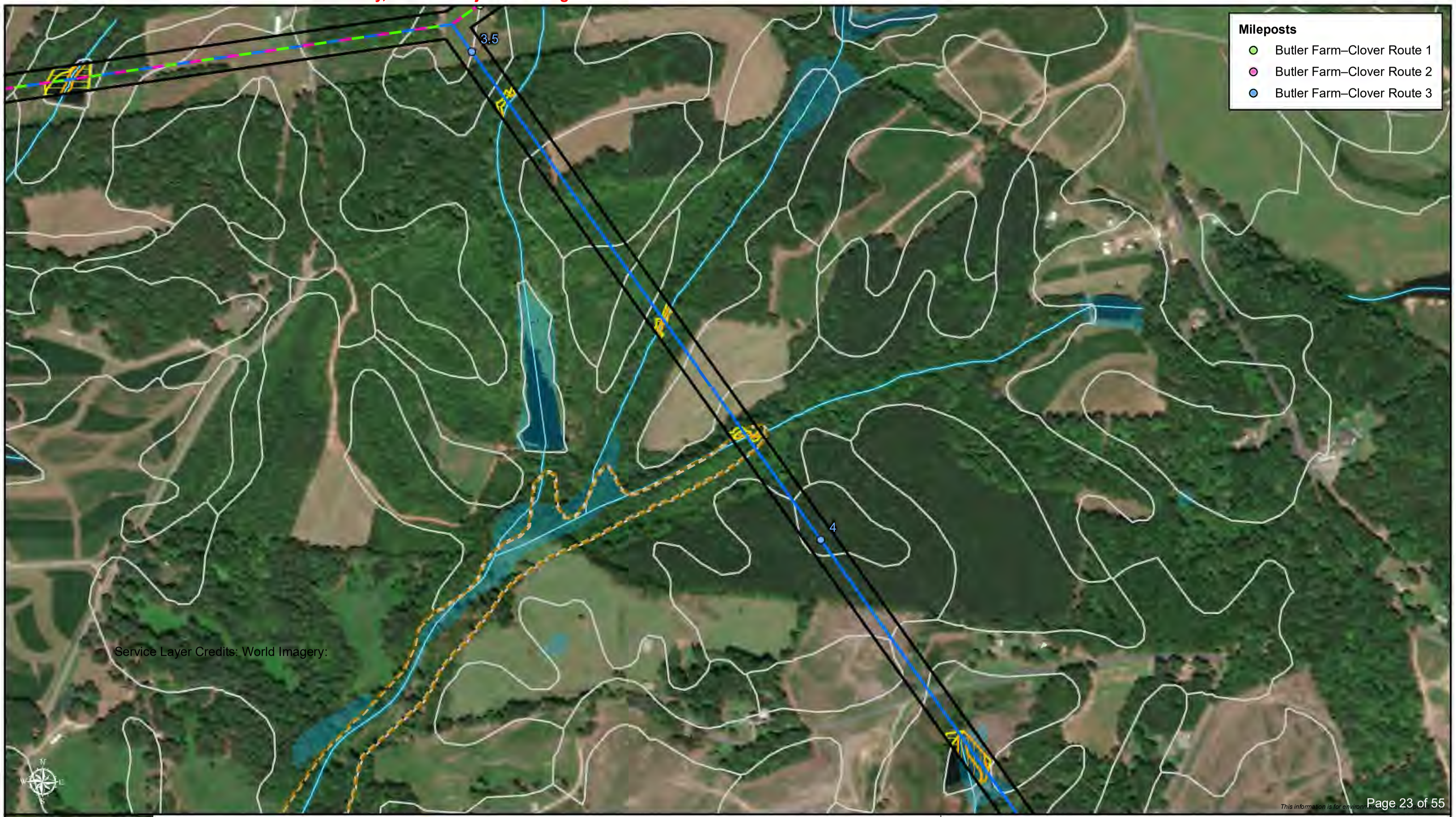
Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

- Project Limits

Wetland Probability
- Medium
- Medium/High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Clover Line
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil
- Hydric Soil

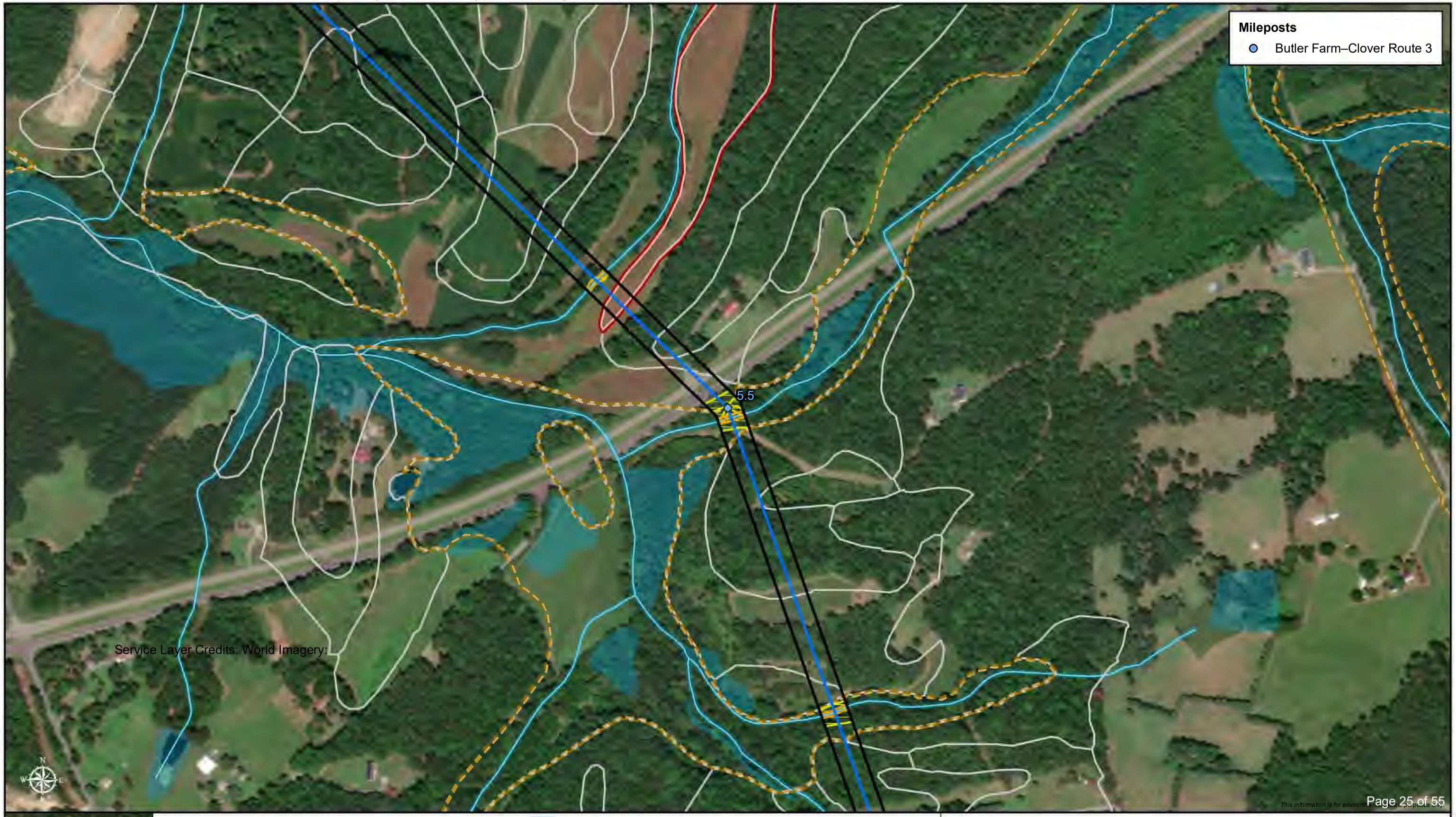
0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil
- Hydric Soil

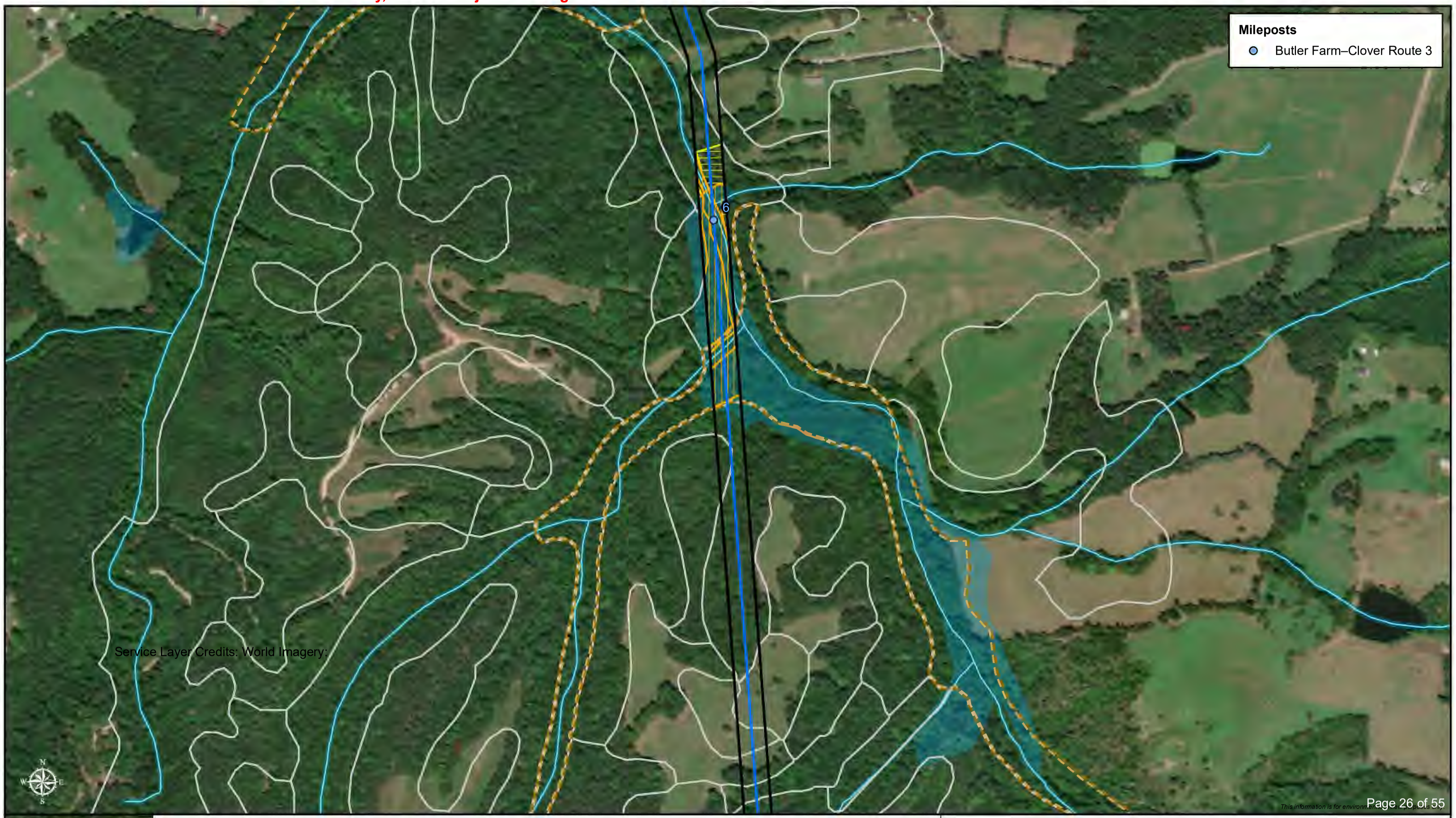
0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Clover Line
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Mileposts
- Butler Farm–Clover Route 3

7.5

8

8.5

Service Layer Credits: World Imagery

Butler Farm–Clover Line
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

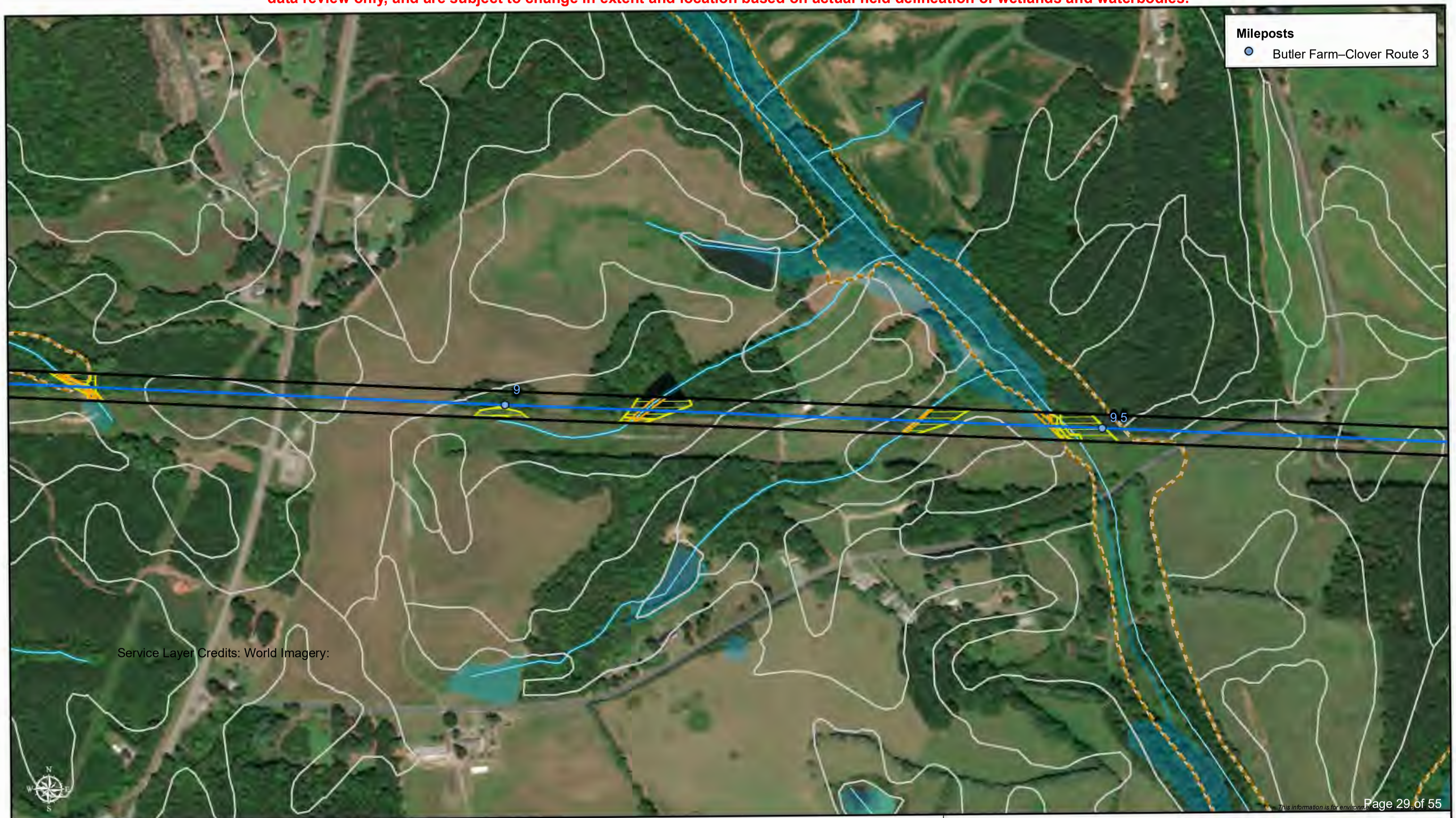
Dominion Energy

ERM

MXD PATH: M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

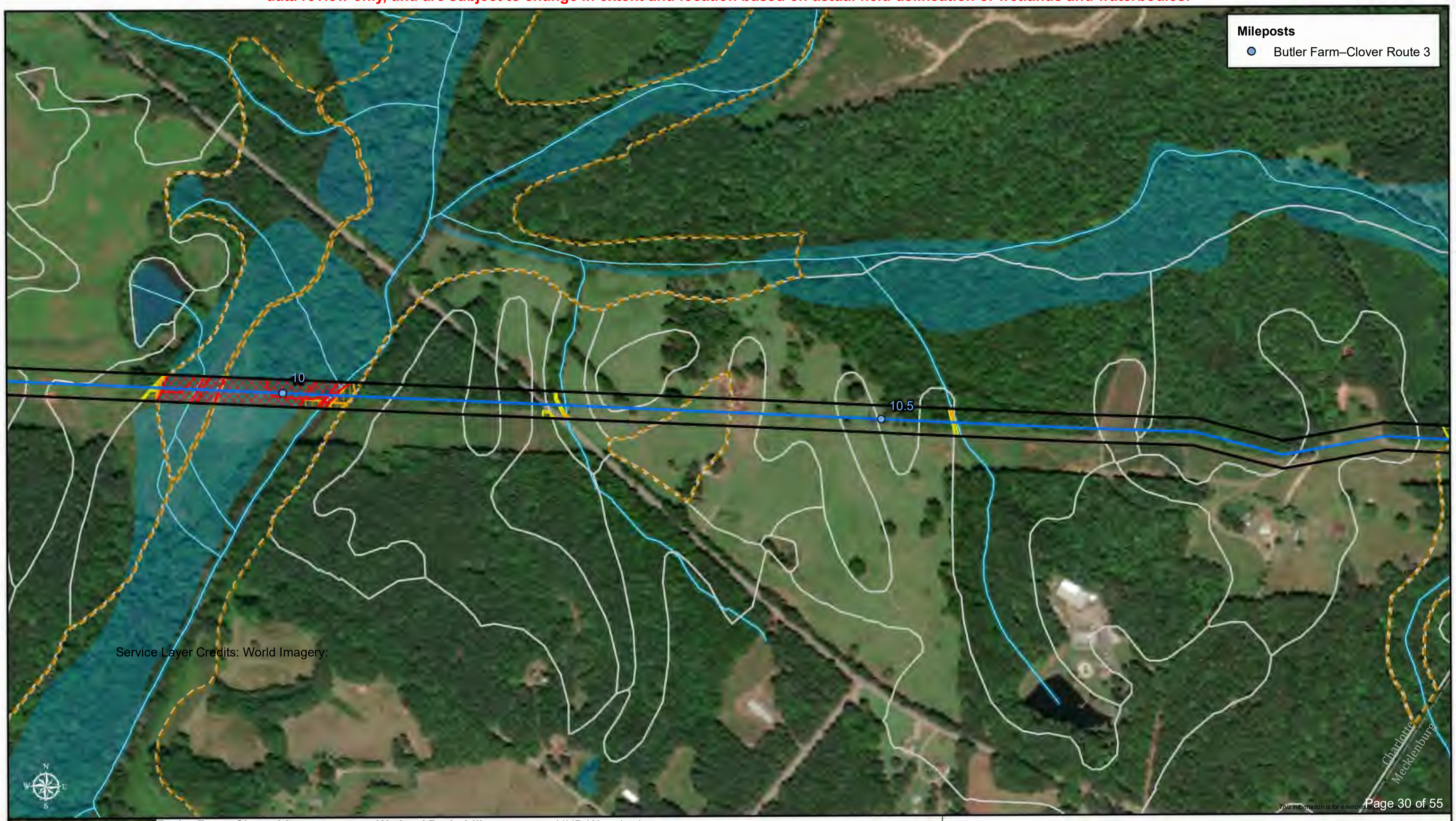
Dominion Energy®

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

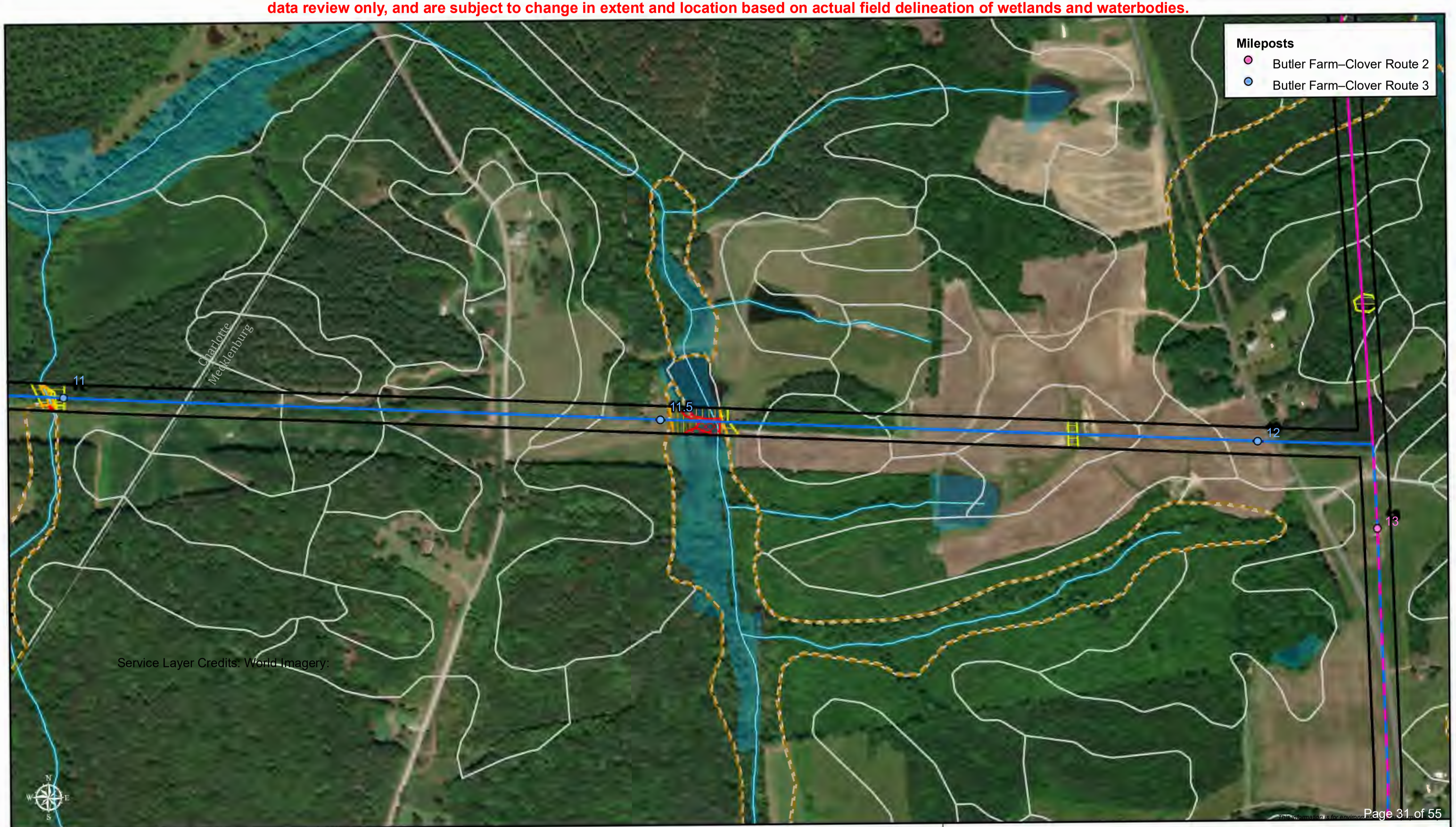
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

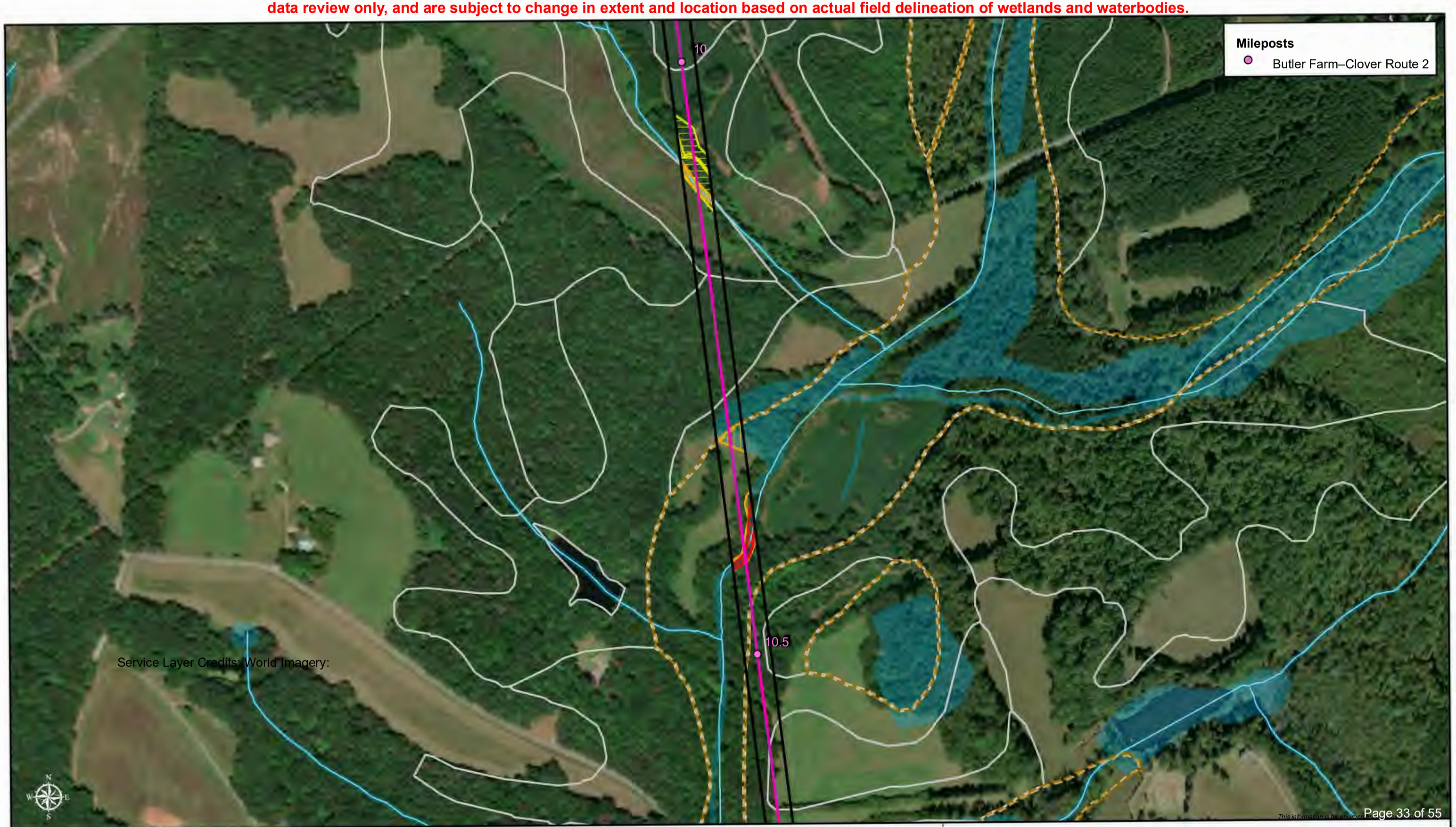
0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

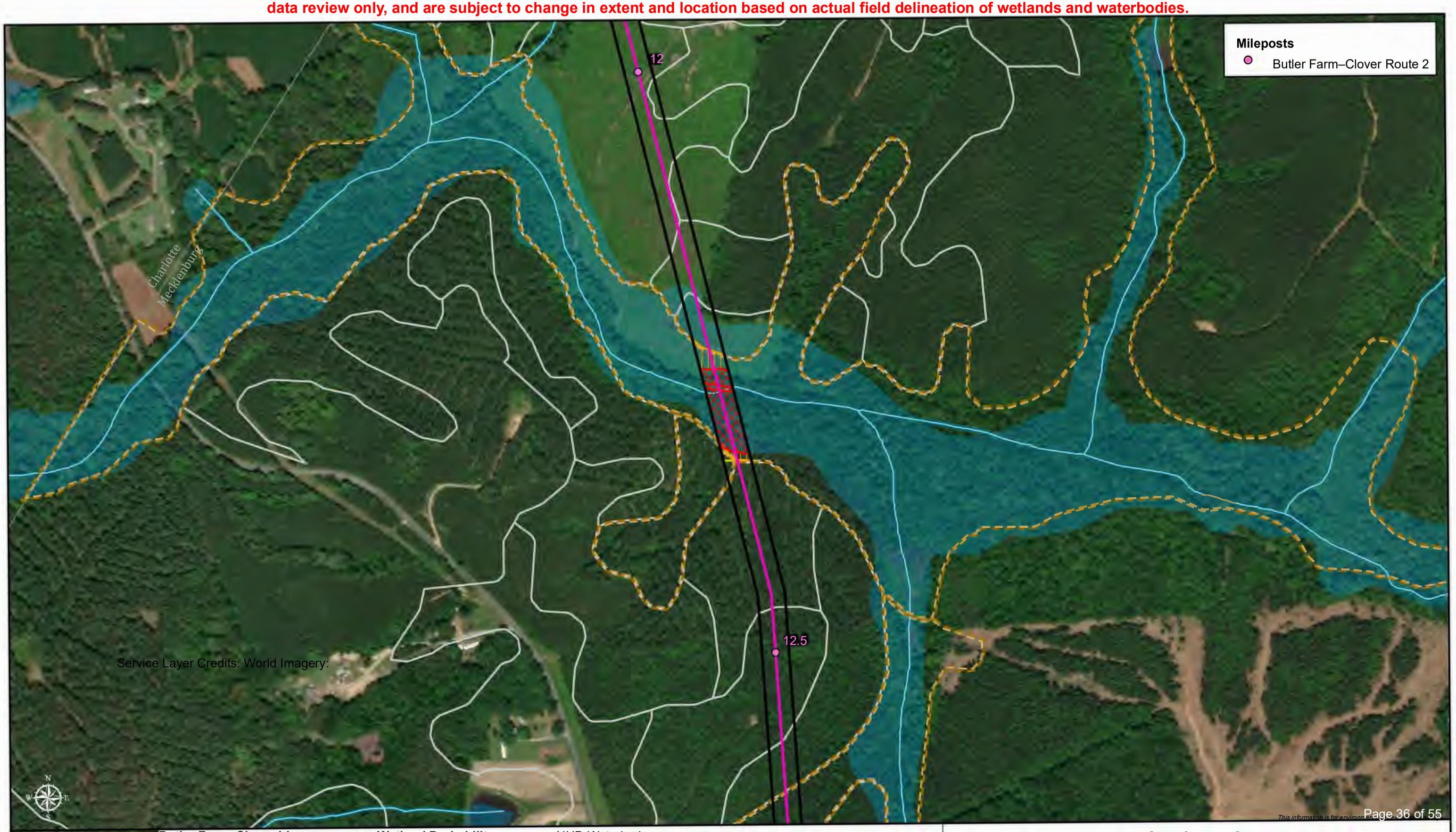
0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

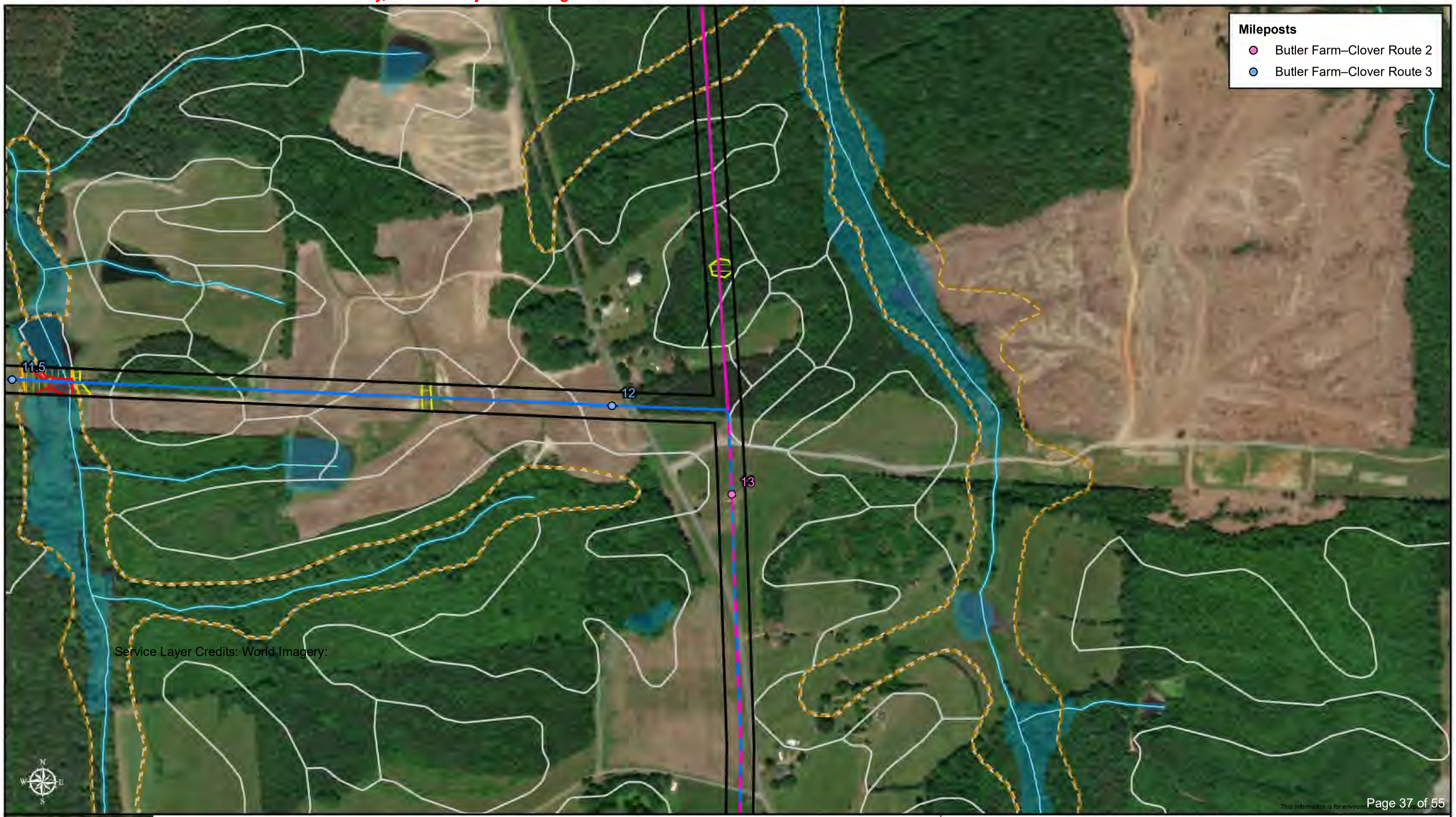
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet

1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

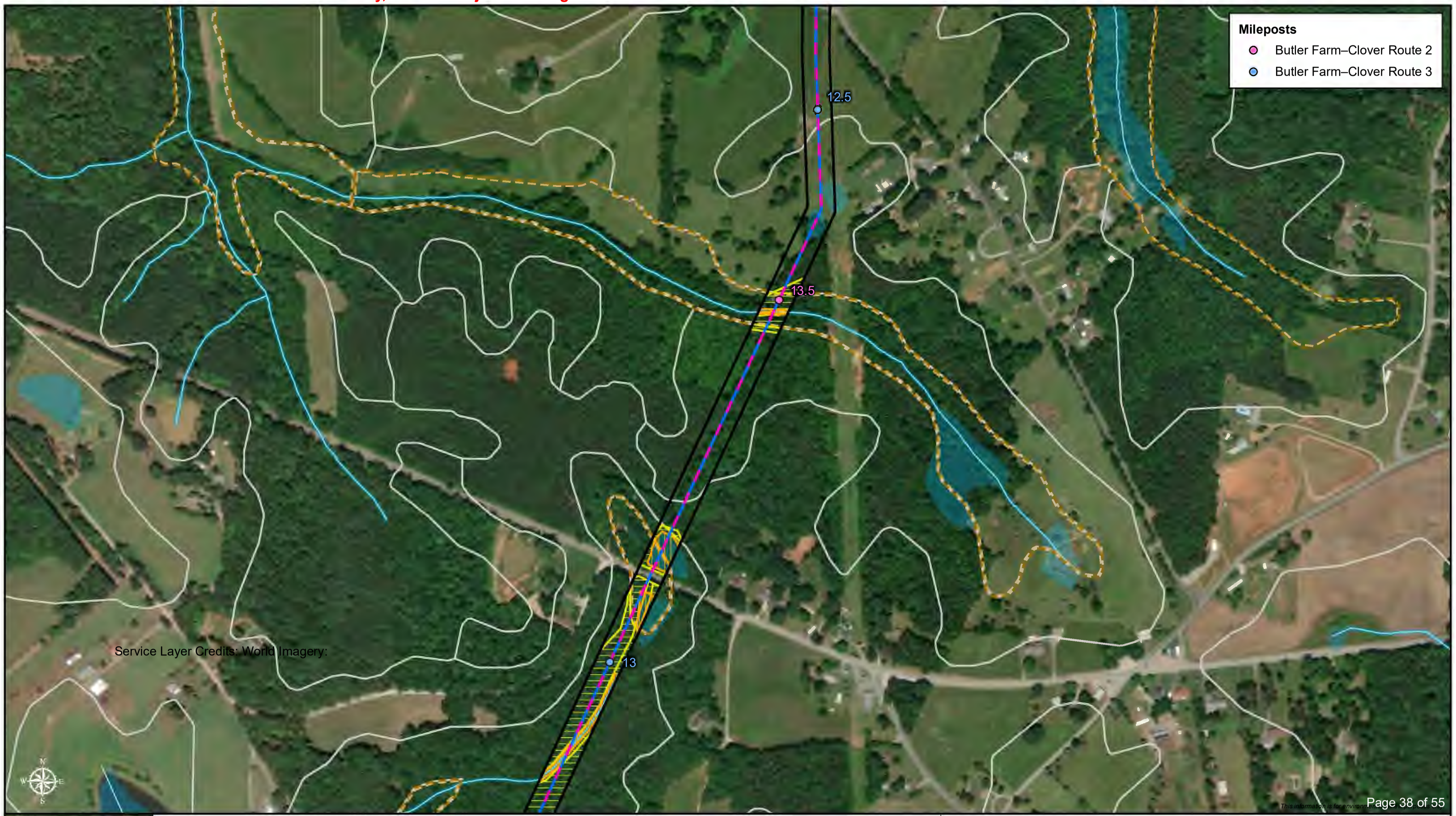
Dominion Energy®

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

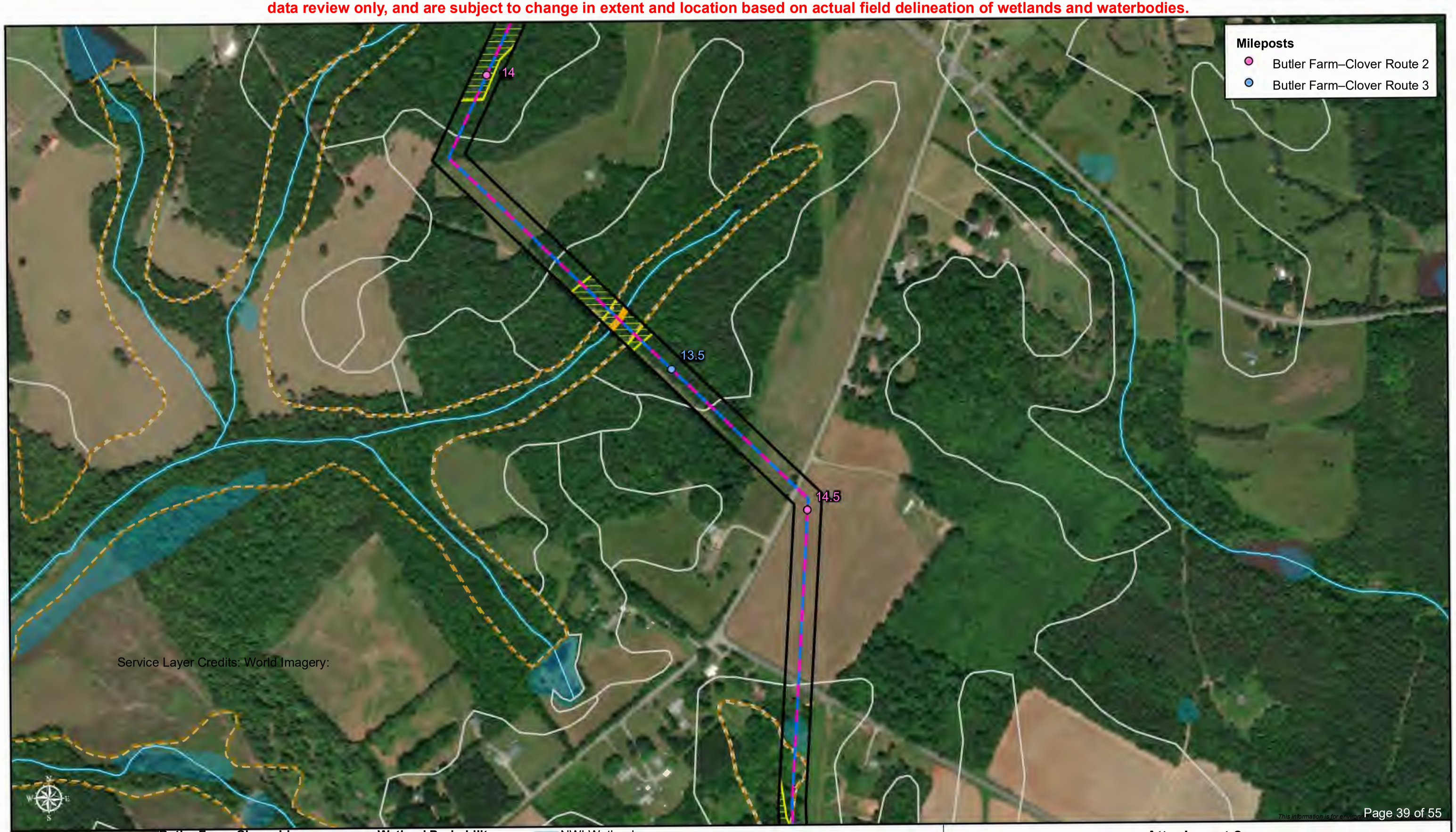
0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

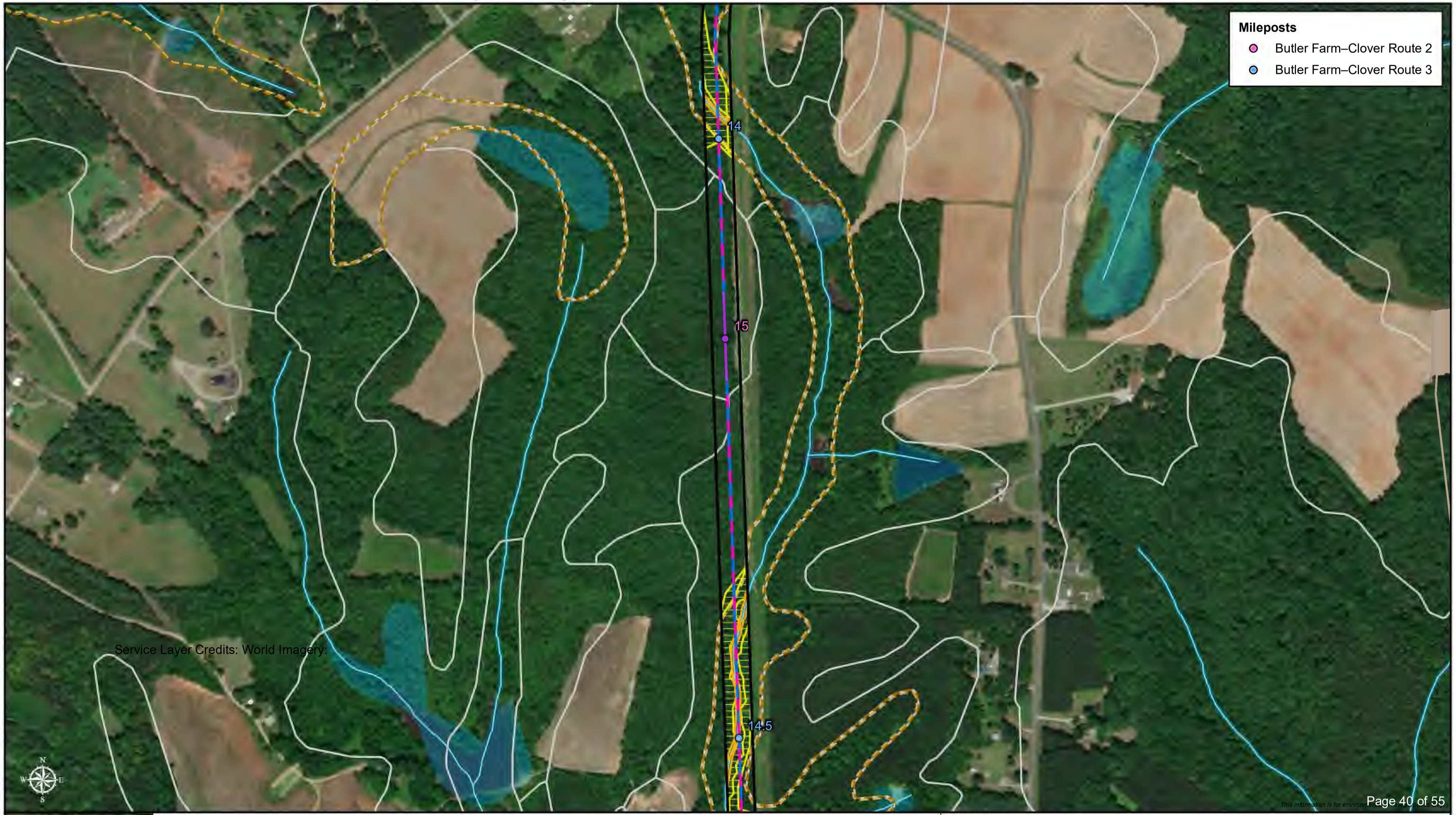
0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

\\PLESM:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

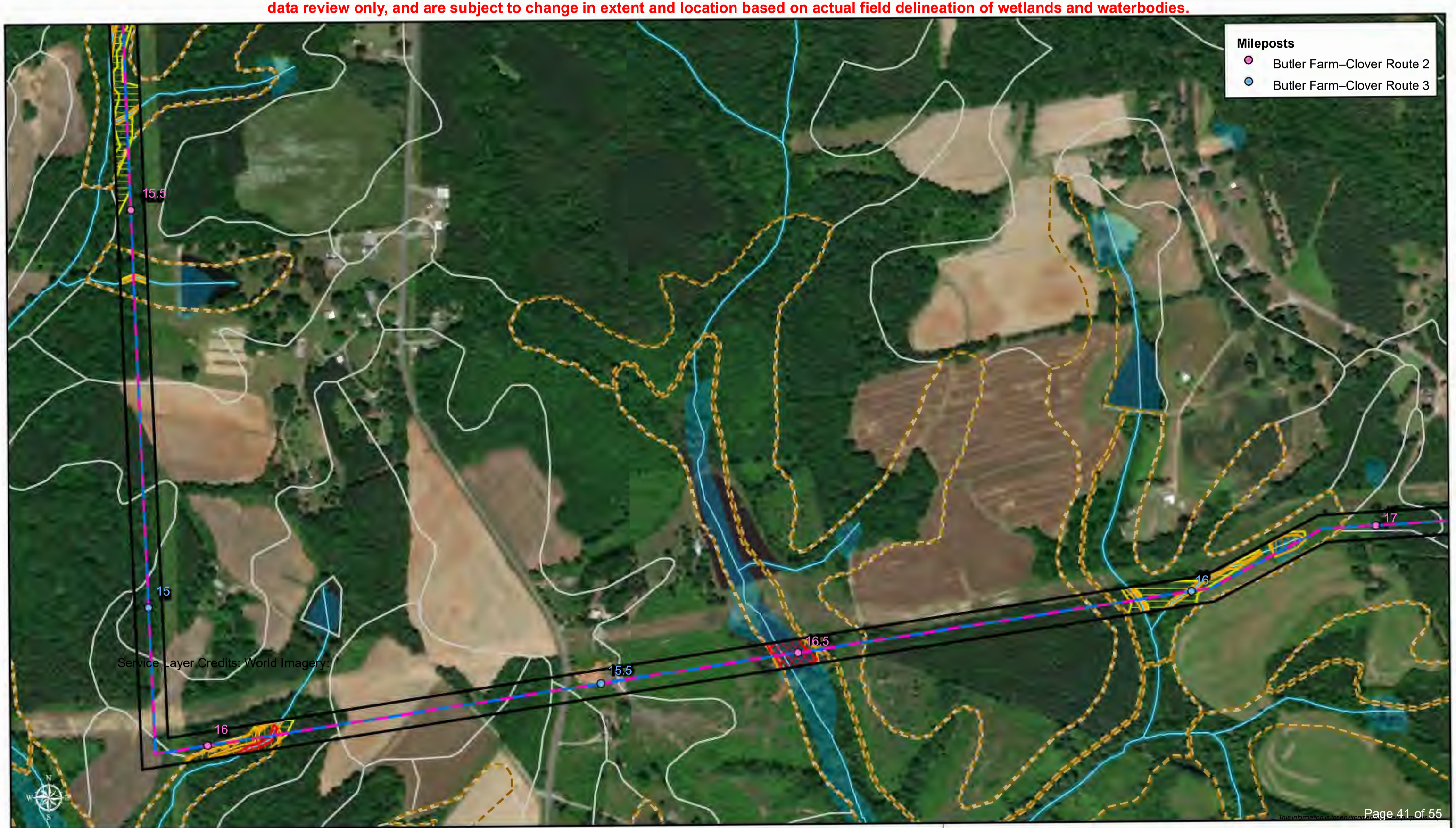
Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

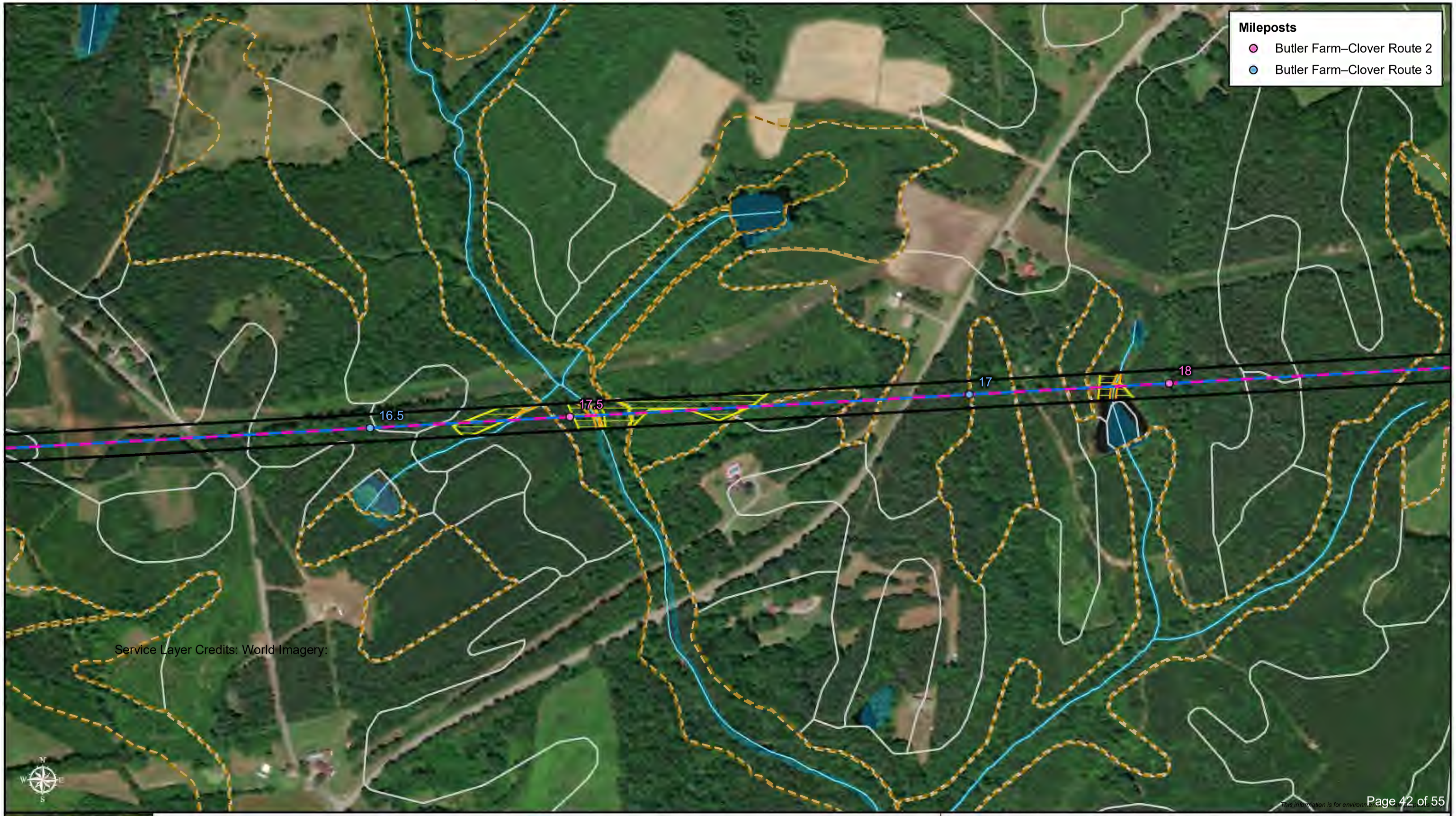
Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

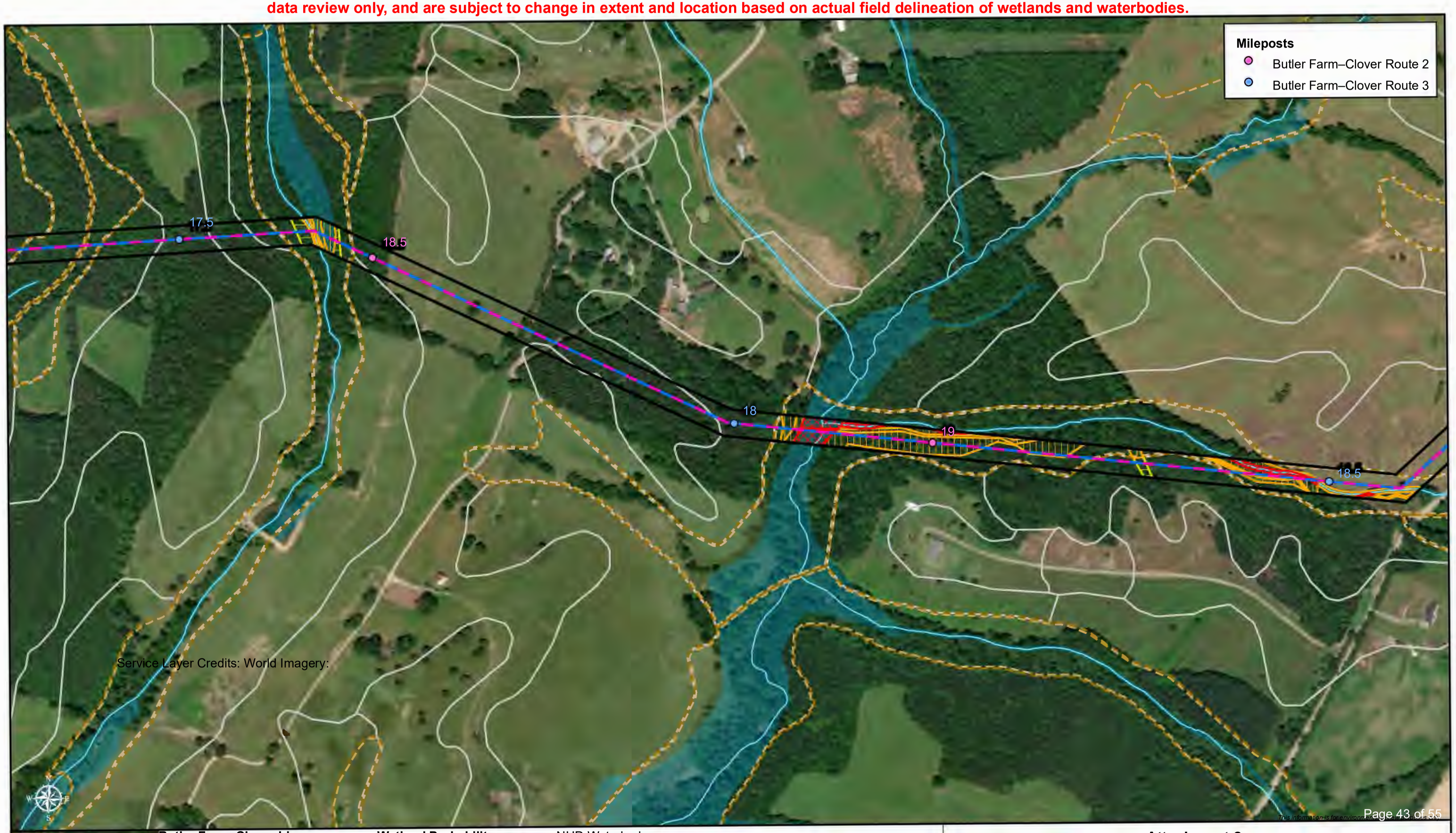
0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

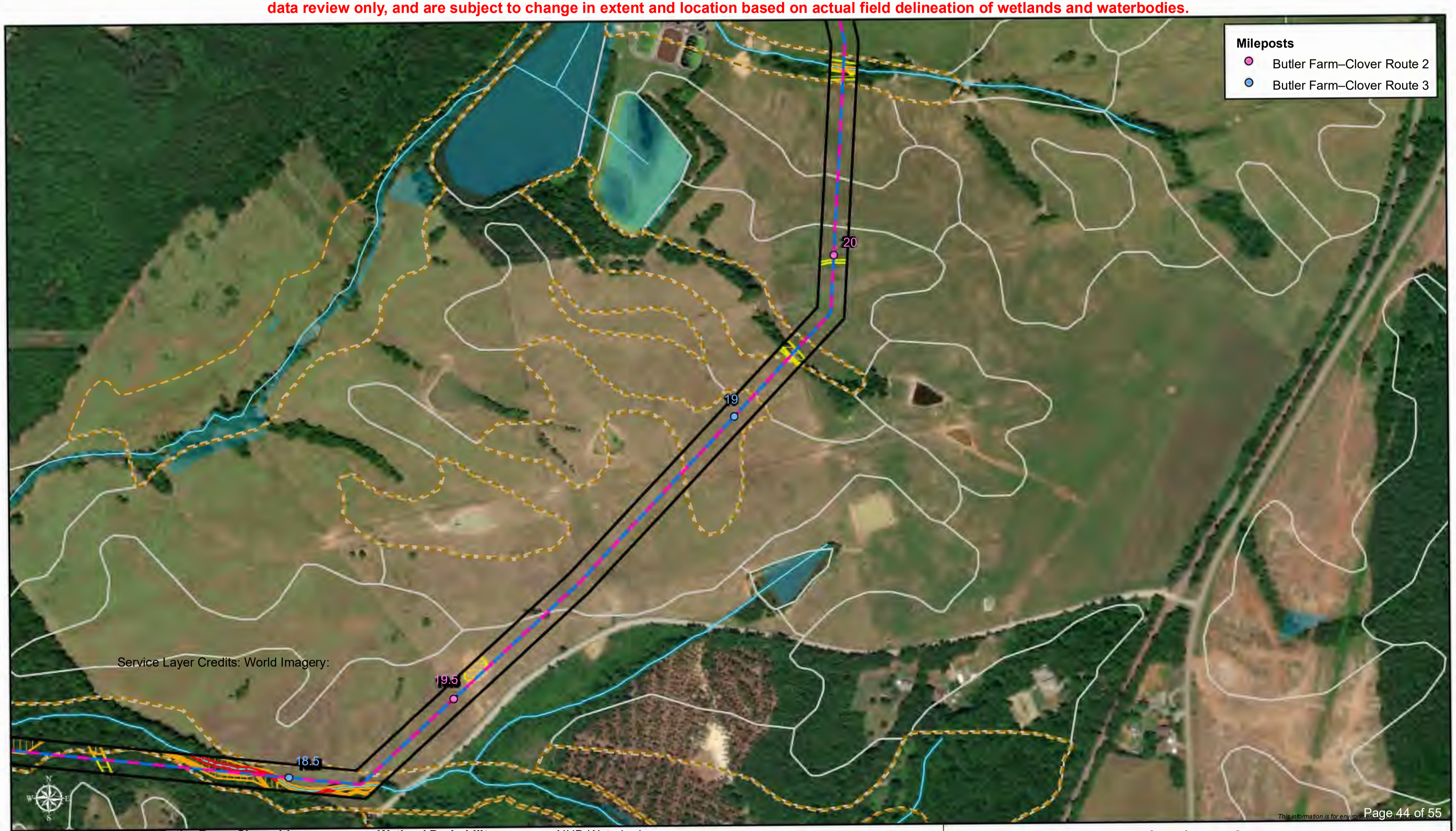
Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Clover Line
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

M:\PLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm-Clover Route Variation
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm-Finneywood Route Variation
- Butler Farm–Finneywood Route 2

Project Limits

Wetland Probability
- Medium
- Medium/High
- High

NHD Waterbody
NWI Wetland
Not Hydric Soil
Partially Hydric Soil

0 250 500
Feet
1:4,800

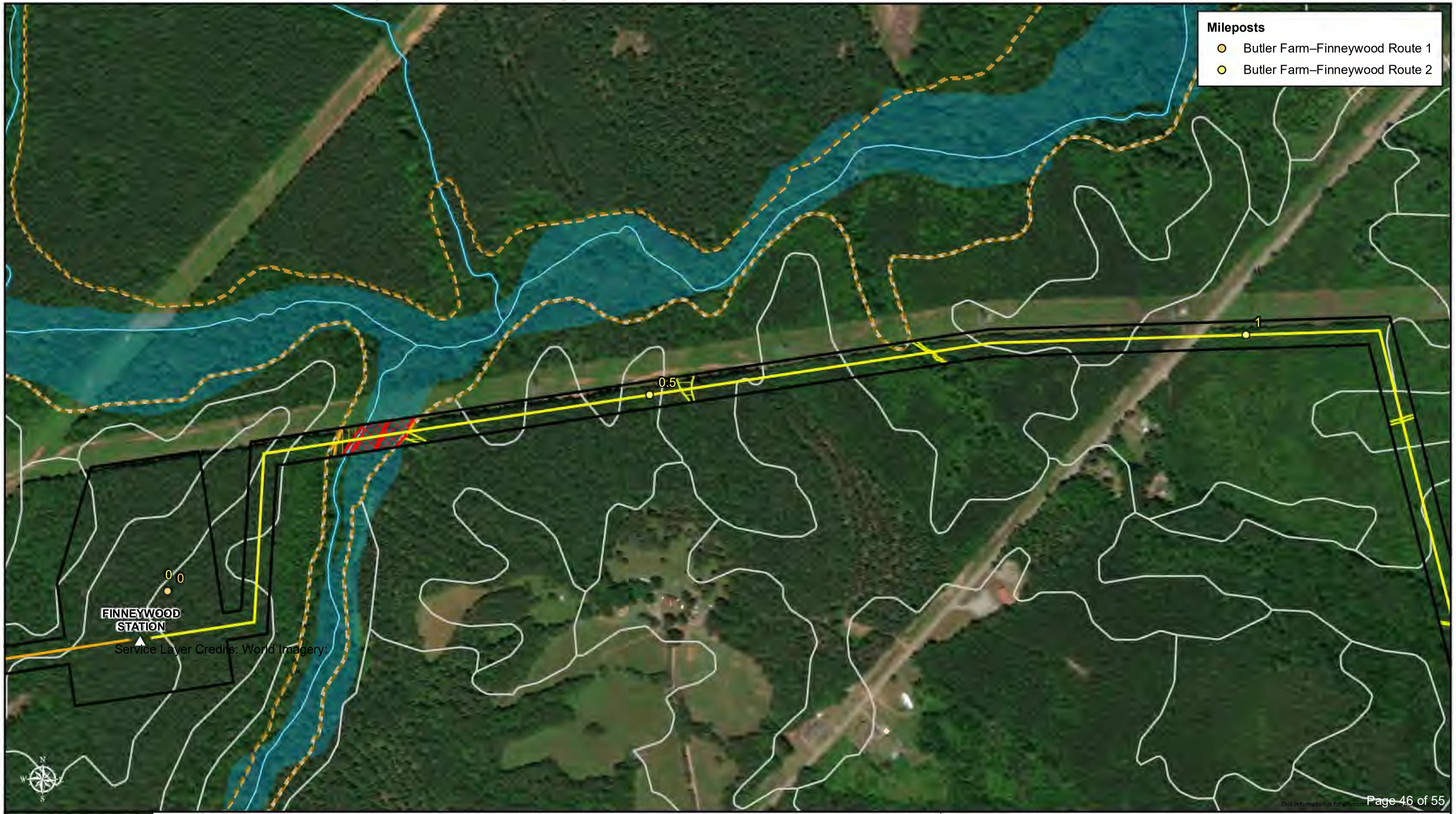
Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Proposed Substation

Butler Farm–Finneywood Line

- Butler Farm–Finneywood Route 1
- Butler Farm–Finneywood Route 2
- Project Limits

Wetland Probability

- Medium
- Medium/High
- High
- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500

Feet

1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project

Dominion Energy Virginia

Halifax, Charlotte, and Mecklenburg Counties, VA

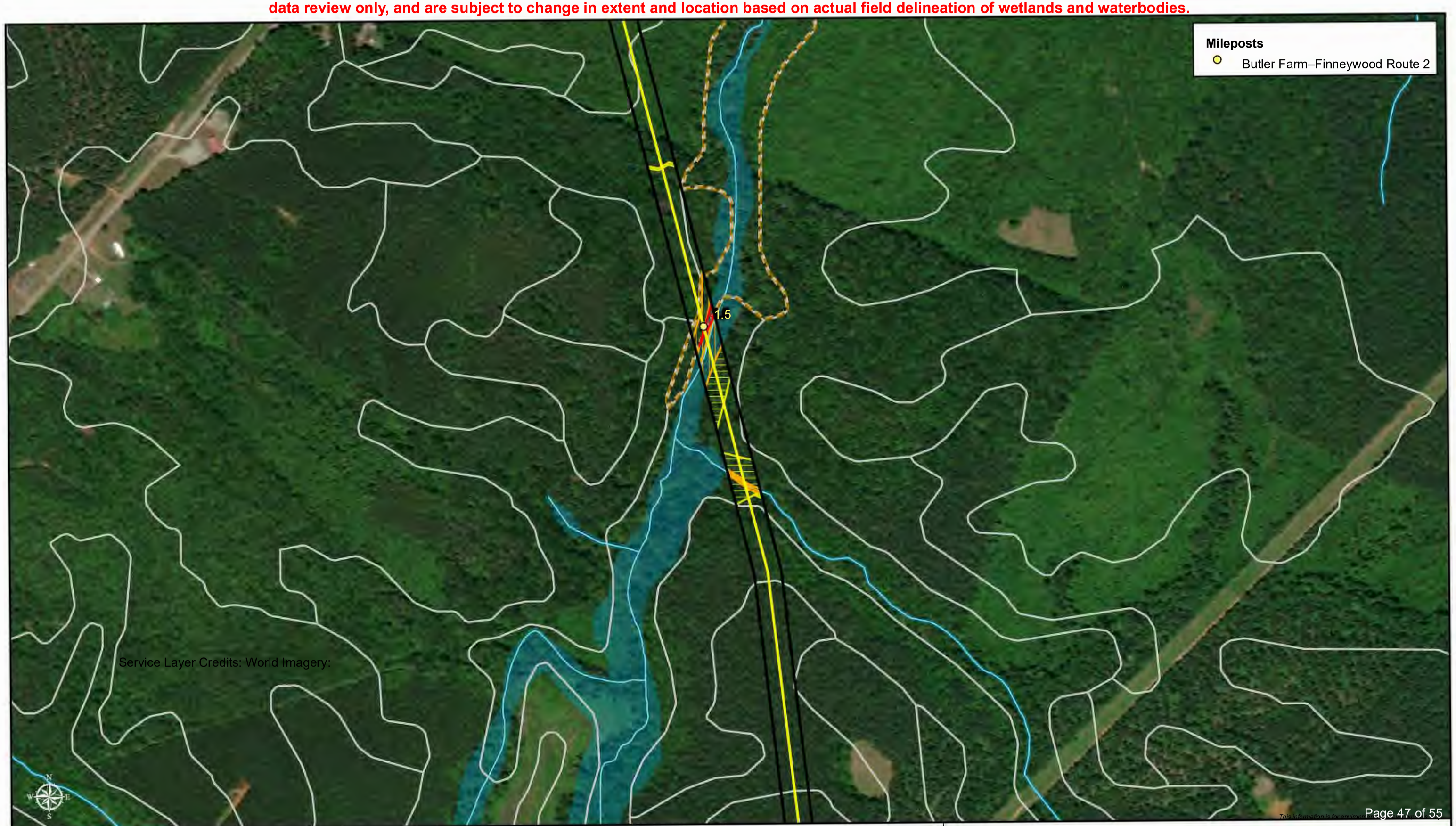
Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 2
- Project Limits
- NHD Waterbody
- NWI Wetland
- Not Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 2
- Project Limits

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody
- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 2
- Project Limits

Wetland Probability
- Medium
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

\\PLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 2
- Project Limits

- NHD Waterbody
- NWI Wetland
- Not Hydric Soil

0 250 500
Feet
1:4,800

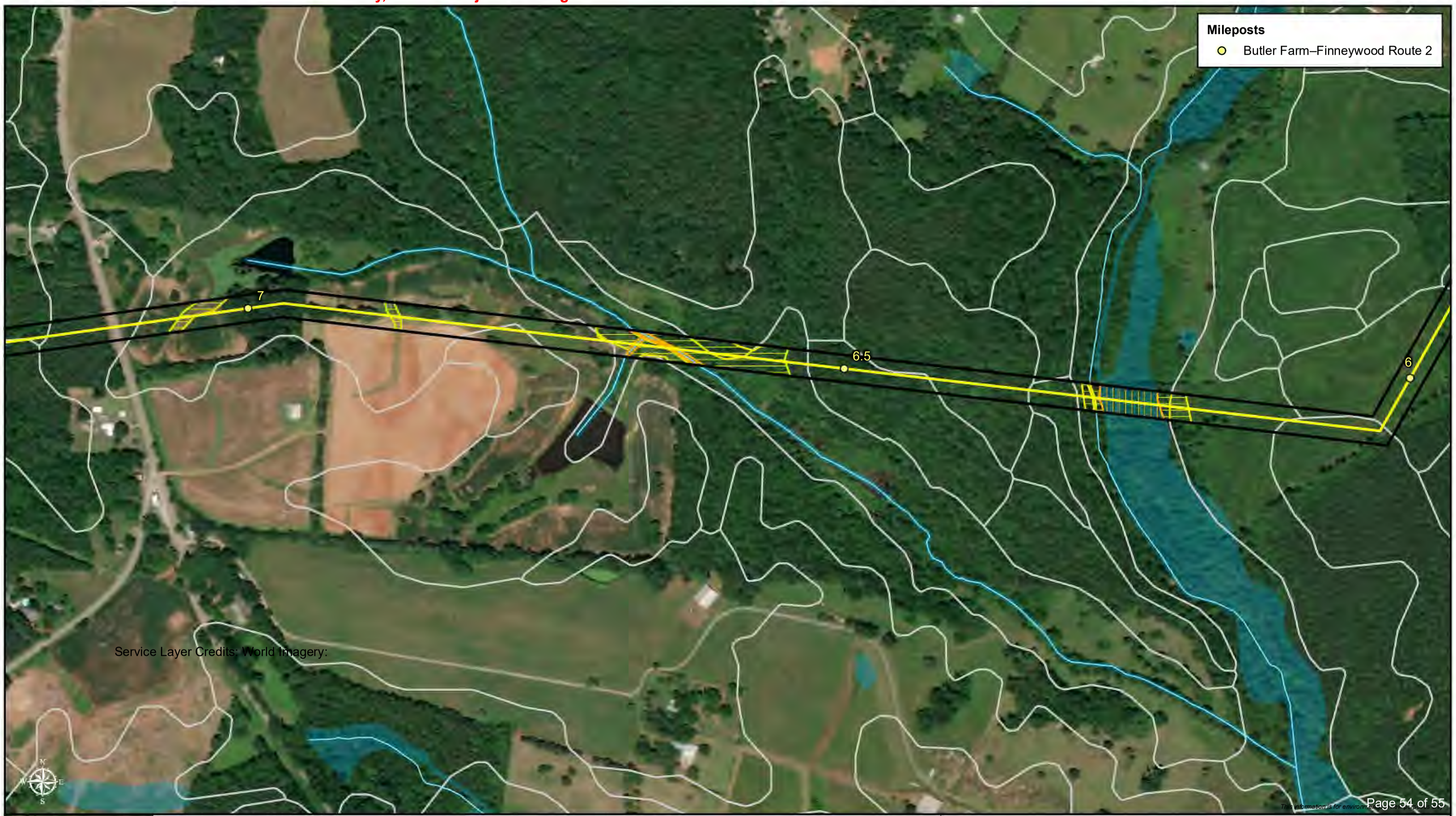
Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.



Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 2
- Project Limits

Wetland Probability
- Medium
- Medium/High
- NHD Waterbody

- NWI Wetland
- Not Hydric Soil
- Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy
ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17

DRAWN BY: NAD

The wetlands and waterbodies depicted on this map are an estimate of possible wetland and waterbody extent based on desktop data review only, and are subject to change in extent and location based on actual field delineation of wetlands and waterbodies.

Proposed Substation

Butler Farm–Clover Line
- Butler Farm–Clover Route 1
- Butler Farm–Clover Route 2
- Butler Farm–Clover Route 3

Butler Farm–Finneywood Line
- Butler Farm–Finneywood Route 1
- Butler Farm–Finneywood Route 2

Project Limits

Wetland Probability
- Medium
- Medium/High

NHD Waterbody

NWI Wetland

Not Hydric Soil

Partially Hydric Soil

0 250 500
Feet
1:4,800

Attachment 2
Wetland and Waterbody Map Set
Butler Farm-Clover 230 kV Line and Butler Farm-Finneywood 230 kV Line Project
Dominion Energy Virginia
Halifax, Charlotte, and Mecklenburg Counties, VA

Dominion Energy

ERM

MPLS M:\Clients\D-F\DOM\CloverButlerFinney_ArcGIS\Routing_Study_DOM_CBF_RoutingStudy.aprx\Attachment2_Wetland_Waterbody | REVISED: 10/10/2022 | SCALE: 1:4,800 when printed at 11x17 DRAWN BY: NAD

APPENDIX E VISUAL SIMULATIONS

Butler Farm - Clover and Butler Farm - Finneywood

230 kV Transmission Line Project

Butler Farm - Clover Route 1

Existing Substations

Proposed Substations

Butler Farm - Clover Line

- Butler Farm - Clover Route 1
- Butler Farm - Clover Route 1
- Butler Farm - Clover Route 1

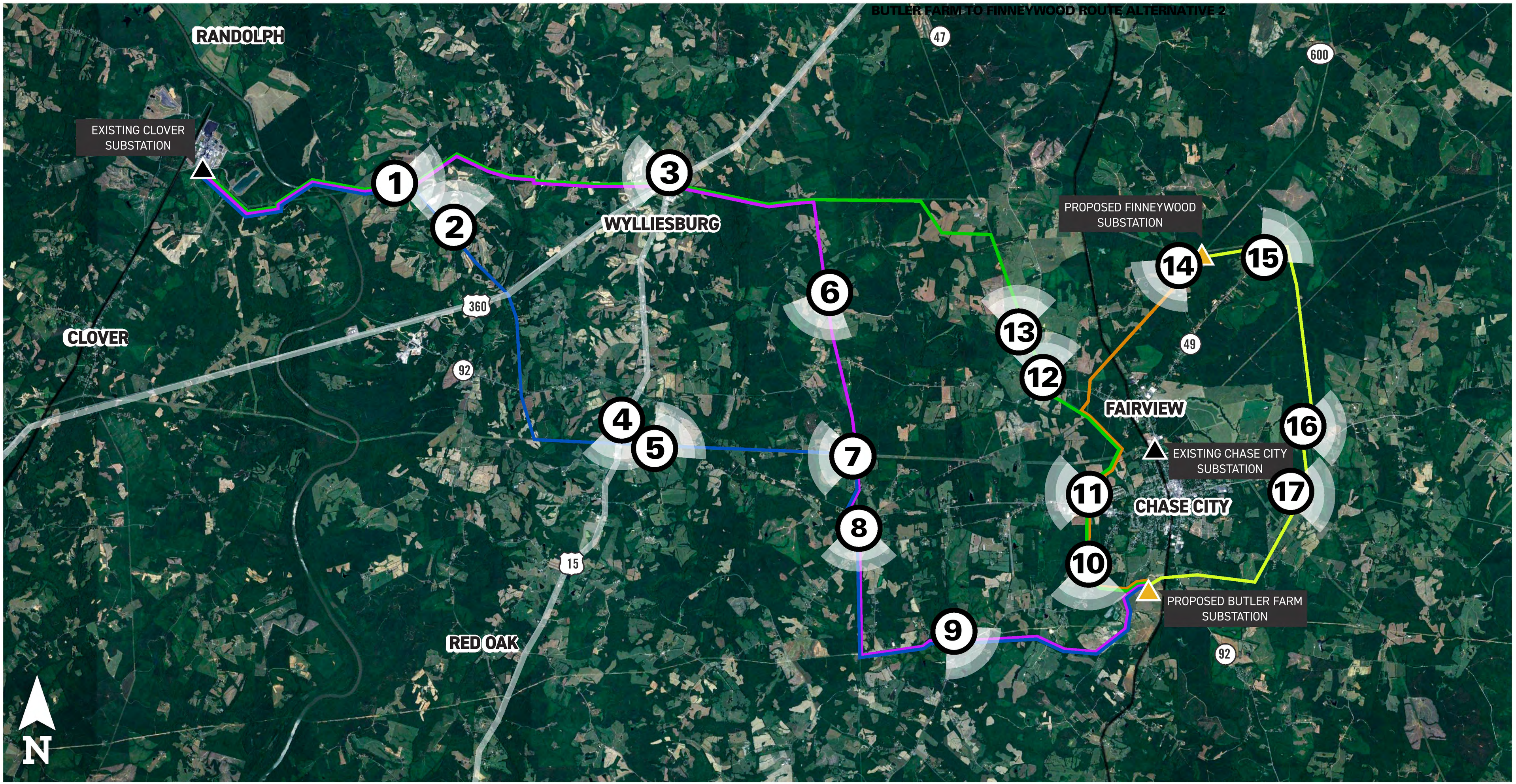
Butler Farm - Finneywood Line

- Butler Farm - Finneywood Route 1
- Butler Farm - Finneywood Route 1

Dominion Energy®

BUTLER FARM TO FINNEYWOOD ROUTE ALTERNATIVE 1

BUTLER FARM TO FINNEYWOOD ROUTE ALTERNATIVE 2



Butler Farm - Clover and
Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 1

Date: 4/29/22

Time: 9:48am

Viewing Direction: West

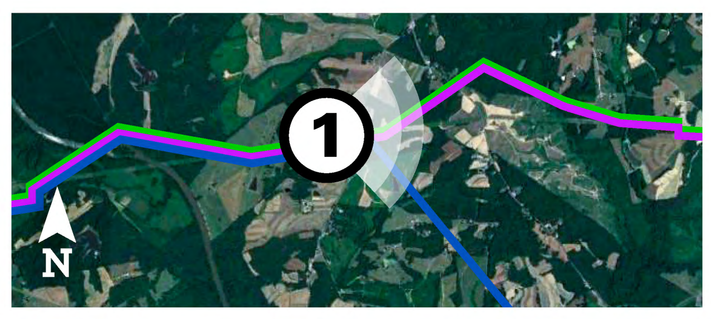


Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

Butler Farm - Clover and
Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 1

Date: 4/29/22

Time: 9:48am

Viewing Direction: West

Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

EXISTING Conditions

PROPOSED Conditions

Butler Farm - Clover Route 3

Butler Farm - Clover and Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 2

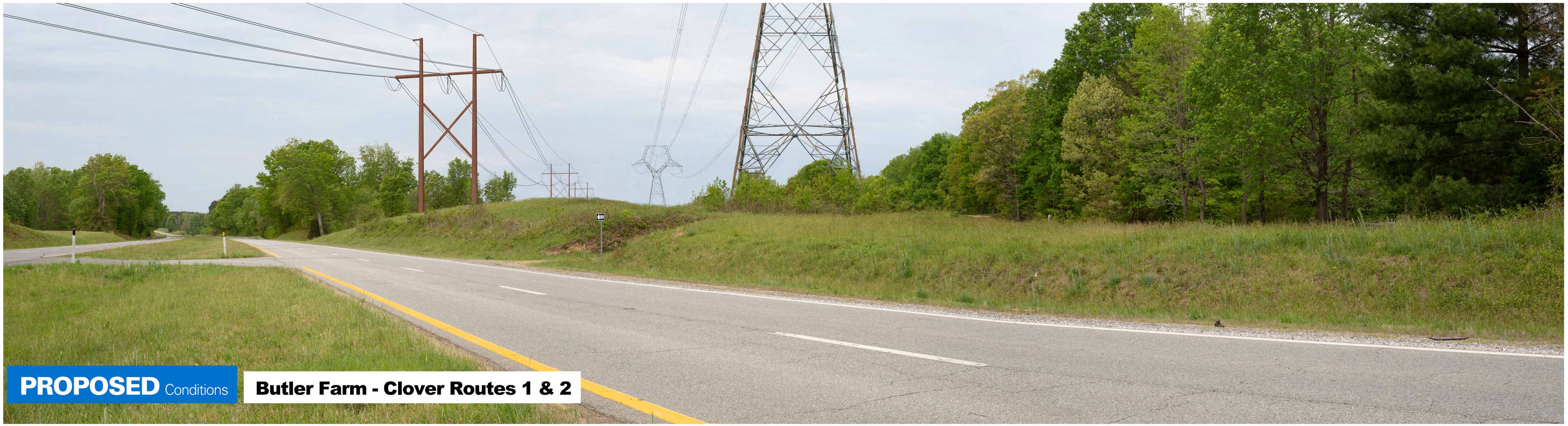
Date: 4/29/22

Time: 10:07am

Viewing Direction: North

Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®



Butler Farm - Clover and
Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 3

Date: 4/29/22

Time: 8:41am

Viewing Direction: Northwest

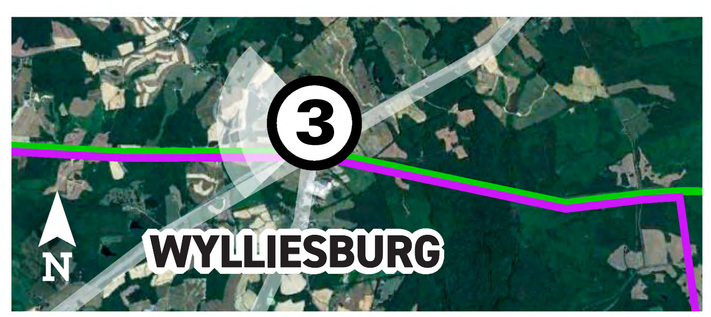


Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

Butler Farm - Clover and
Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 4

Date: 4/28/22

Time: 12:38PM

Viewing Direction: South

Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

EXISTING Conditions

PROPOSED Conditions

Butler Farm - Clover Route 3

Butler Farm - Clover and Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 5

Date: 4/28/22

Time: 12:20pm

Viewing Direction: Northeast

Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

Butler Farm - Clover and
Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 6

Date: 4/28/22

Time: 10:36am

Viewing Direction: Southwest

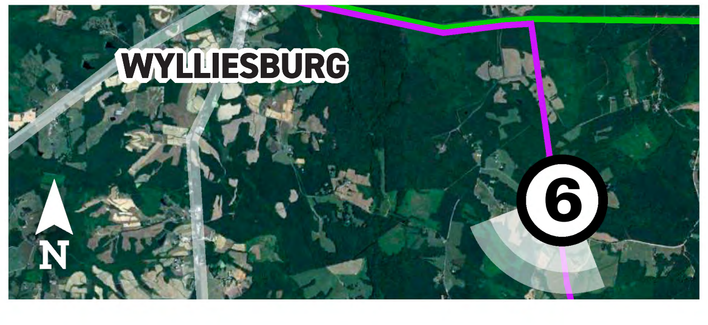


Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

Butler Farm - Clover and
Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 7

Date: 4/28/22

Time: 11:14am

Viewing Direction: West

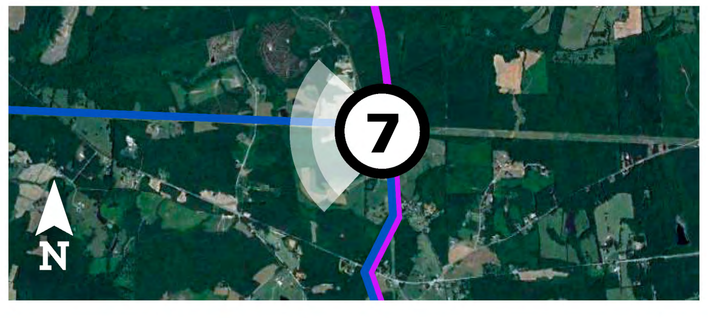


Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

Butler Farm - Clover and Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 8

Date: 4/28/22

Time: 11:51am

Viewing Direction: South

Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

Butler Farm - Clover and
Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 9

Date: 4/29/22

Time: 10:07am

Viewing Direction: Southeast

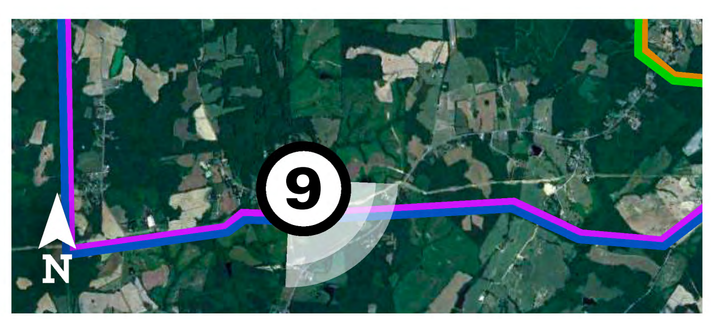


Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

Butler Farm - Clover and Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 10

Date: 4/28/22

Time: 8:49pm

Viewing Direction: South

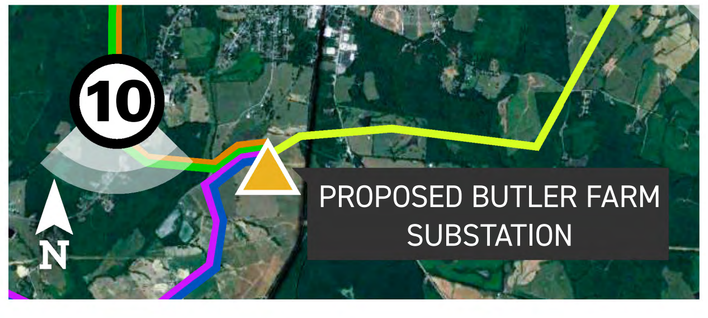


Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

EXISTING Conditions

PROPOSED Conditions

Butler Farm - Clover Route 1 and Butler Farm - Finneywood Route 1

Butler Farm - Clover and Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 11

Date: 4/28/22

Time: 9:21am

Viewing Direction: West

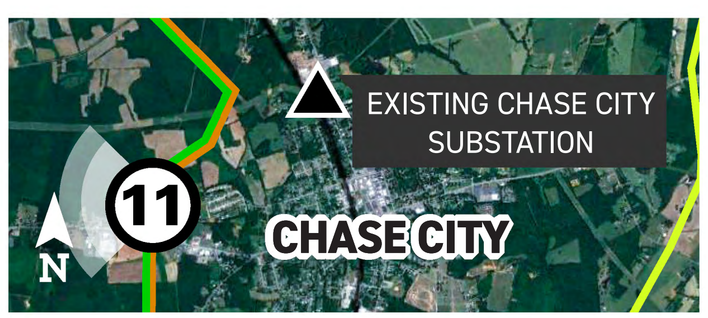


Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

Butler Farm - Clover and
Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 12

Date: 4/28/22

Time: 7:37am

Viewing Direction: North

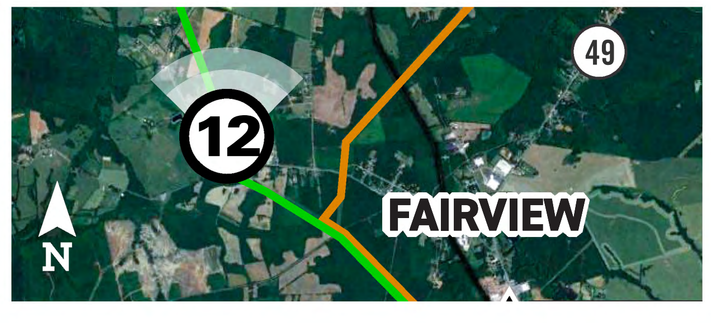
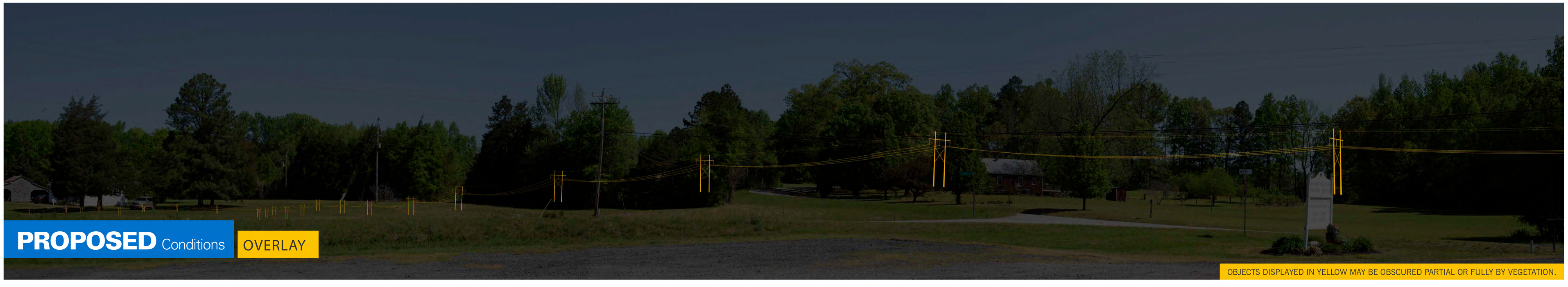


Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®



Butler Farm - Clover and
Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 13

Date: 4/28/22

Time: 9:53am

Viewing Direction: North

Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®

Butler Farm - Clover and
Butler Farm - Finneywood

230 kV Transmission Line Project

KOP 14

Date: 4/28/22

Time: 8:20am

Viewing Direction: Southwest

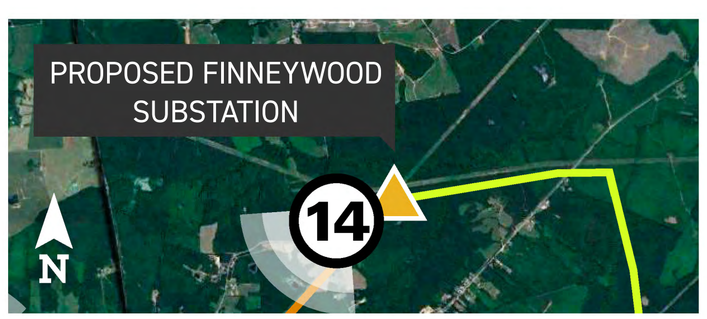


Photo simulations are for discussion purposes only. Final design is subject to change pending public, engineering, and regulatory review.

Dominion Energy®