



**Dominion
Energy[®]**

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

**Before the State Corporation
Commission of Virginia**

**500 kV and 230 kV Golden-Mars
Lines, Lockridge 230 kV Loop,
Sojourner 230 kV Loop, and
Related Projects**

Application No. 350

Case No. PUR-2025-00056

Filed: March 28, 2025

Volume 2 of 5

*Application of Virginia Electric and Power Company
for approval and certification of electric transmission facilities:
500 kV and 230 kV Golden-Mars Lines, Lockridge 230 kV Loop, Sojourner 230 kV Loop,
and Related Projects*
Case No. PUR-2025-00056

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COMMONWEALTH OF VIRGINIA
BEFORE THE
STATE CORPORATION COMMISSION

APPLICATION OF
VIRGINIA ELECTRIC AND POWER COMPANY
FOR APPROVAL AND CERTIFICATION
OF ELECTRIC TRANSMISSION FACILITIES

500 kV and 230 kV Golden-Mars Lines,
Lockridge 230 kV Loop, Sojourner 230 kV Loop,
And Related Projects

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DEQ Supplement

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Based on consultations with the Department of Environmental Quality (“DEQ”), Virginia Electric and Power Company (“Dominion Energy Virginia” or the “Company”) has developed this DEQ Supplement to facilitate review and analysis of the proposed Project by the DEQ and other relevant agencies.

1. Project Description

In order to relieve violations of mandatory North American Electric Reliability Corporation (“NERC”) Reliability Standards beginning in the summer 2028 timeframe brought on by significant increases in electrical demand as well as expected demand growth projected for the future, to interconnect future load, and to maintain the structural integrity and reliability of its transmission system, Dominion Energy Virginia proposes in Loudoun County, Virginia, to:

- (1) **Golden-Mars Lines:** Construct a new overhead 500 kilovolt (“kV”) single circuit transmission line and a new overhead 230 kV single circuit transmission line originating at the 500 kV and 230 kV buses of the 500-230 kV Golden Substation and continuing approximately 8.3 miles to the 500-230 kV Mars Substation (the “Golden-Mars Lines”). In order to allow sufficient right-of-way for the Golden-Mars Lines to enter the Mars Substation, the Company proposes to remove Mars-Shellhorn Line #2095 and Mars-Sojourner Line #2292 from the existing transmission line corridor that spans between the Sojourner and Mars Substations, and to reconnect the Sojourner and Mars Substations along an alternate route that also will allow the Company to interconnect future load (see the proposed Sojourner 230 kV Loop, as defined herein). The proposed Golden-Mars Lines will be constructed on almost entirely new right-of-way primarily varying between 100 feet and 150 feet in width in order to accommodate a 5/2 configuration¹ on a combination of dulled galvanized steel double circuit monopole or two-pole structures (100-foot-wide right-of-way) or three-pole or H-frame structures (150-foot-wide right-of-way). The new 500 kV line will utilize three-phase triple-bundled 1351.5 Aluminum Conductor Steel Reinforced (“ACSR”) conductors with a summer transfer capability of 4,357 MVA. The new 230 kV line will utilize three-phase twin-bundled Aluminum Conductor Steel Supported/Trapezoidal Wire/High Strength (“ACSS/TW/HS”) type conductor with a summer transfer capability of 1,573 MVA.
- (2) **Lockridge 230 kV Loop:** Construct a new approximately 0.6-mile overhead double circuit 230 kV transmission line by cutting the proposed 230 kV Golden-Mars Line at Structure #2412/8 and looping it into and out of the existing 230-34.5 kV Lockridge Substation (the “Lockridge 230 kV Loop” or “Lockridge Loop”). The Lockridge Loop will be constructed on new 100-foot-wide right-of-way supported primarily by dulled galvanized steel double circuit monopoles and will utilize three-phase twin-bundled ACSS/TW/HS type

¹ A “5/2 configuration” means that the supporting structures will be aligned such that one position of the structure will have a 500 kV circuit and one position will have a 230 kV circuit. See, e.g., [Attachments II.B.3.vi](#) and [II.B.3.xi](#) of the Appendix.

conductor with a summer transfer capability of 1,573 MVA.

- (3) **Sojourner 230 kV Loop:** Construct a new approximately 1.9-mile overhead double circuit 230 kV transmission line from Mars Substation to Sojourner Substation (the “Sojourner 230 kV Loop” or “Sojourner Loop”). The proposed Sojourner Loop will be constructed on entirely new 100-foot-wide right-of-way supported primarily by dilled galvanized steel double circuit monopoles and will utilize three-phase twin-bundled ACSS/TW/HS type conductor with a summer transfer capability of 1,573 MVA.
- (4) **Substation-Related Work:** Perform work at the Company’s Golden, Mars, Lockridge, Sojourner, and Shellhorn Substations to accommodate the proposed Project.

The Golden-Mars Lines, the Lockridge 230 kV Loop, the Sojourner 230 kV Loop, and the substation-related work are collectively referred to as the “Golden-Mars 500-230 kV Electric Transmission Project” or the “Project.”

The Project is necessary to relieve identified violations of NERC Reliability Standards in order to maintain and improve reliable electric service to customers in the load area, which, for purposes of this Application, extends generally from the Fairfax/Loudoun County line to the east, Potomac River to the north, the Company’s existing 500 kV Brambleton-Goose Creek Line #558 to the west, and State Route 50 to the south, including Data Center Alley (or “DCA”) and Washington Dulles International Airport (“Dulles Airport”) in Loudoun County, Virginia (the “Eastern Loudoun Load Area”). Additionally, the Project is needed to resolve a 300 MW N-1-1 load drop violation identified by PJM Interconnection, L.L.C. by looping the Golden-Mars Lines into and out of the Lockridge Substation (*i.e.*, the Lockridge Loop), and to address spatial and FAA constraints along the Carters School Road Segment of the Golden-Mars Lines by removing existing Lines #2095/#2292 from an existing transmission corridor and reconnecting the Mars and Sojourner Substations along a route that will allow the Company to interconnect future load (*i.e.*, the Sojourner Loop Proposed Route, as described herein). Importantly, the proposed Project, along with the Mars-Wishing Star Project and the Aspen-Golden Project, will complete the 500 kV transmission loop in the Northern Virginia area surrounding DCA, bringing needed capacity to the Eastern Loudoun Load Area, while also mitigating identified NERC reliability violations and maintaining reliable service for overall load growth in the Project area and the Commonwealth.

Golden-Mars Lines Route: For the Golden-Mars Lines, the Company identified five route alternatives: an approximately 9.4-mile overhead alternative route (“Golden-Mars Alternative Route 1” or “Golden-Mars Route 1”), an approximately 9.3-mile overhead alternative route (“Golden-Mars Alternative Route 2” or “Golden-Mars Route 2”), an approximately 8.3-mile overhead alternative route (“Golden-Mars Alternative Route 3” or “Golden-Mars Route 3”), an approximately 8.3-mile overhead alternative route (“Golden-Mars Alternative Route 4” or “Golden-Mars Route 4”), and an approximately 9.8-mile

overhead alternative route (“Golden-Mars Alternative Route 5” or “Golden-Mars Route 5”). As discussed further below, the Company is proposing Golden-Mars Route 3 as the “Golden-Mars Proposed Route” dependent upon timely receipt of all necessary approvals.

Importantly, Golden-Mars Routes 1, 2, 3, 4 cannot be constructed without Loudoun County Board of Supervisors (“County” or “BOS”) and/or Loudoun County School Board (“LCSB”) approval. While Golden-Mars Route 5 is the most impactful of all of the noticed Golden-Mars routes, it is the only currently viable Golden-Mars route because it does not cross public lands and easements except for a <0.1-acre portion of BOS-owned property that the County indicated verbally was acceptable to cross. Golden-Mars Route 4 is the least impactful route and is the County’s preferred route; however, Golden-Mars Route 3 is the second least impactful route and is the County’s secondary route preference. While LCSB voted against all overhead routes (8-1) that impact LCSB property on March 25, 2025, Golden-Mars Route 3 remains the second least impactful route overall, the County’s secondary route preference, and the route that the Company believes to be least impactful to LCSB property. Accordingly, the Company supports Route 3 as the Golden-Mars Proposed Route and remains committed to continuing to work with the LCSB to obtain timely consent for Route 3. No less than two weeks prior to the deadline for Respondent testimony established by the Commission in the Order for Notice and Hearing entered in this proceeding, the Company will file a notification in the docket indicating whether the Company has received LCSB consent for the Golden-Mars Route 3’s crossings of LCSB property; if not, the Company’s notification will change the Golden-Mars Proposed Route to Route 5 as the only viable route.²

Lockridge Loop Route: For the Lockridge Loop, the Company identified an approximately 0.6-mile overhead proposed route (“Lockridge Loop Proposed Route”).

Sojourner Loop Route: For the Sojourner Loop, the Company identified an approximately 1.9-mile overhead proposed route (“Sojourner Loop Proposed Route”).

The Company is proposing all of these Proposed and Alternative Routes for Commission consideration and notice. Discussion of these Proposed and Alternative Routes, as well as other overhead, and overhead/underground hybrid routes that the Company studied but ultimately rejected, is provided in Section II of the Appendix and more detail is provided in the Environmental Routing Study (or “Routing Study”) included with the Application.

The proposed Project will require work at the Golden and Mars Substations to accommodate the Golden-Mars Lines, work at the Company’s existing Lockridge and

² For additional information regarding the Golden-Mars route alternatives, *see* Section II.A.9 and the Golden-Mars Lines Key Features Table presented therein. *See* Attachment II.A.9.b of the Appendix regarding the County’s routing preferences. Note that LCSB property only is impacted by overhead Golden-Mars Routes 2, 3, and 4; accordingly, LCSB consent is not needed for Golden-Mars Routes 1 or 5. Information related to the March 25, 2025 LCSB meeting and a video recording of the meeting is available at <https://go.boarddocs.com/vsba/loudoun/Board.nsf/Public>.

Sojourner Substations to accommodate the Lockridge 230 kV Loop and the Sojourner 230 kV Line Loop, and relay resets of the protective relaying equipment at the Company's existing Shellhorn Substation.

For this Project, the Company retained the services of Environmental Resources Management ("ERM") to help collect information within the study area, identify potential routes, perform a routing analysis comparing the route alternatives, and document the routing efforts in an Environmental Routing Study.

A description of the Project's route alternatives is as follows.

Golden-Mars Lines

Golden-Mars Alternative Route 1

Alternative Route 1 of the Golden-Mars Lines is approximately 9.4 miles in length. The route originates at Golden Substation located between Pacific Boulevard and Sully Road north of the W&OD Trail. The route exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. The route turns northwest and follows the south side of the Dulles Greenway before turning west to parallel the south side of Loudoun County Parkway. The route briefly crosses to the north side of Loudoun County Parkway, then back south, and parallels the west side of Loudoun County Parkway from Gleedsville Manor Drive south to Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carters School Road before terminating at Mars Substation near Carters School Road.

Golden-Mars Alternative Route 2

Alternative Route 2 of the Golden-Mars Lines is approximately 9.3 miles in length. The route originates at Golden Substation located between Pacific Boulevard and Sully Road north of the W&OD Trail. The route exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. The route continues southwest where it parallels existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns west, crosses Broad Run three times before reaching

Loudoun County Parkway. The route continues south and parallels the west side of Loudoun County Parkway past Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carters School Road before terminating at Mars Substation near Carters School Road.

Golden-Mars Proposed Route (Route 3)

The Proposed Route (Route 3) of the Golden-Mars Lines is approximately 8.3 miles in length. The route originates at Golden Substation located between Pacific Boulevard and Sully Road north of the Washington and Old Dominion (“W&OD”) Trail. The route exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. The route continues southwest where it parallels existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns west, crosses Broad Run three times before turning south and crossing Loudoun Reserve Drive. The route continues south through Broad Run Stream Valley Park and across Overland Road. The route turns east and parallels the north side of Old Ox Road then turns south along Carters School Road before terminating at Mars Substation near Carters School Road.

Golden-Mars Alternative Route 4

Alternative Route 4 of the Golden-Mars Lines is approximately 8.3 miles in length. The route originates at Golden Substation located between Pacific Boulevard and Sully Road north of the W&OD Trail. The route exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. The route continues southwest where it parallels existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns south and continues to parallel existing transmission lines before turning west along Loudoun Reserve Drive. The route then turns south through Broad Run Stream Valley Park and across Overland Road. The route turns east and parallels the north side of Old Ox Road then turns south along Carters School Road before terminating at Mars Substation near Carters School Road.

Golden-Mars Alternative Route 5

Alternative Route 5 of the Golden-Mars Lines is approximately 9.8 miles in length. The route originates at Golden Substation located between Pacific Boulevard and Sully Road north of the W&OD Trail. The route exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. The route turns northwest and follows the south side of the Dulles Greenway before turning west to parallel the south side of Loudoun County Parkway. The route briefly crosses to the north side of Loudoun County Parkway, then back south, and parallels the west side of Loudoun County Parkway past Gleedsville Manor Drive then turns west to parallel the north side of Ryan Road. Near Claiborne Parkway, the route turns south to rejoin Loudoun County Parkway and continues south to Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carters School Road before terminating at Mars Substation near Carters School Road.

Lockridge 230 kV Loop

Lockridge Loop Proposed Route

The Lockridge Loop Proposed Route is approximately 0.6 mile in length. The route originates approximately 0.3 mile north of the Dulles Greenway and 0.2 mile east of Shellhorn Road where it ties into the proposed 230 kV Golden-Mars Line at Structure #2412/8. The route travels east from the proposed 500-230 kV Golden-Mars Lines corridor and crosses Broad Run and Lockridge Road before looping in and out of the Lockridge Substation, located east of Lockridge Road approximately 0.2 mile south of Prentice Drive.

Sojourner 230 kV Loop

Sojourner Loop Proposed Route

The Sojourner Loop Proposed Route is approximately 1.9 miles in length. The route originates at Sojourner Substation between Beaver Meadow Road and Digital Dulles Drive. The route travels east before turning south to parallel the western perimeter of Washington Dulles International Airport. The route then turns west, terminating at Golden Substation near Carters School Road.

2. Environmental Analysis

The Company has conducted an environmental analysis on the proposed Project. Please see the following subsections of this DEQ Supplement for pertinent details about the proposed Project.

A. Air Quality

For the Project, the Company will control fugitive dust during construction in accordance with DEQ regulations. During construction, if the weather is dry for an extended period, there will be airborne particles from the use of vehicles and equipment within the right-of-way. However, minimal earth disturbance will take place and vehicle speed, which is often a factor in airborne particulate, will be kept to a minimum. Erosion and sedimentation control is addressed in Section 2.H of this Supplement. Equipment and vehicles that are powered by gasoline or diesel motors will be used during the construction of the line so there will be exhaust from those motors. Exhaust from those motors will result in minimal air pollution.

Tree clearing within the new rights-of-way will be required as part of this Project. The Company does not expect to burn cleared material, but, if necessary, the Company will coordinate with the responsible locality to obtain the appropriate permits and will comply with any conditions set forth by the locality or take actions in accordance with the Company's property rights. The Company's tree clearing methods are described in Section 2.L.

B. Water Source

No water source is required for transmission lines. This discussion focuses on waterbodies that will be crossed by the proposed transmission lines.

On behalf of the Company, ERM identified and mapped waterbodies in the vicinity of the routes using publicly available geographic information system ("GIS") databases, U.S. Geological Survey ("USGS") National Hydrography Dataset Plus High Resolution ("NHD"), ESRI World Elevation Terrain 2-foot contours, the United States Fish and Wildlife Service ("USFWS") National Wetland Inventory ("NWI"), recent (2023 and 2024) and historic digital aerial photography (National Agricultural Imagery Program, Loudon County Aerial Archive, and Google Earth aerial imagery).

All route alternatives use an overhead configuration that would span waterbodies. The distance between transmission line structures proposed by Dominion Energy Virginia will be adequate to span the waterbodies identified along the route alternatives. Tree clearing would be required within forested riparian areas at waterbody crossing locations. The removal of forested riparian areas adjacent to waterbodies will reduce riparian buffer functions such as stream bank stabilization and erosion control, nutrient and sediment filtration, floodwater storage and peak flow reduction, and water temperature changes due to loss of shading at these locations. Impacts to surface waters and riparian habitat will be

limited by minimizing rights-of-way at crossings to the extent possible, leaving roots and stumps in place, and implementing erosion control best management practices during construction.

Sections of the Golden-Mars Lines have been collocated with or share right-of-way with existing or permitted transmission lines (that would be constructed prior to the Project) along Broad Run between Dulles Greenway and Hemmingford Circle. Waterbodies crossed in shared rights-of-way are within the existing maintained corridor, with vegetation/riparian buffer only along the proposed expanded right-of-way segments of the features, thereby minimizing riparian buffer loss at these crossings.

According to U.S. Army Corps of Engineers (“Corps”) documentation, no waters considered navigable under Section 10 of the Rivers and Harbors Act are crossed by any of the Project’s Proposed or Alternative Routes. Waterbodies in the vicinity of the Project are shown on Attachments 2 and 3 of the Wetland and Waterbody Desktop Summary for the Project, which is included in Attachment 2.D.1. For waterbody (riverine and open water features) acreages crossed, as identified in the Wetland and Waterbody Desktop Summary, see Table D-2 below.

Golden-Mars Lines

Golden-Mars Alternative Route 1

Golden-Mars Alternative Route 1 crosses 33 waterbodies, of which 20 are NHD-mapped, including eight perennial waterbodies (four crossings of Broad Run, two perennial tributaries to Broad Run, and two open waterbodies) and 12 unnamed, intermittent streams. Additionally, ERM identified seven unnamed, unclassified streams and six unnamed, unclassified open water features within the right-of-way using recent (2024) aerial imagery.

Golden-Mars Alternative Route 2

Golden-Mars Alternative Route 2 crosses 40 waterbodies, of which 23 are NHD-mapped, including 14 perennial waterbodies (ten crossings of Broad Run, three tributaries to Broad Run, and one open waterbody) and nine unnamed, intermittent streams. Additionally, ERM identified 12 unnamed, unclassified streams and five unnamed, unclassified open water features within the right-of-way using recent (2024) aerial imagery.

Golden-Mars Alternative Route 3

Golden-Mars Alternative Route 3 crosses 34 waterbodies, of which 17 are NHD-mapped, including 12 perennial waterbodies (11 crossings of Broad Run and one open waterbody) and five unnamed, intermittent streams. Additionally, ERM

identified 14 unnamed, unclassified streams and three unnamed, unclassified open water features within the right-of-way using recent (2024) aerial imagery.

Golden-Mars Alternative Route 4

Golden-Mars Alternative Route 4 crosses 31 waterbodies, of which 14 are NHD-mapped, including eight perennial waterbodies (seven crossings of Broad Run and one open waterbody) and five unnamed, intermittent streams. Additionally, ERM identified 14 unnamed, unclassified streams and three unnamed, unclassified open water features within the right-of-way using recent (2024) aerial imagery.

Golden-Mars Alternative Route 5

Alternative Route 5 crosses 37 waterbodies, of which 21 are NHD-mapped, including eight perennial waterbodies (four crossings of perennial Broad Run, two associated perennial tributaries to Broad Run, and two open waterbodies) and 13 unnamed, intermittent streams. Additionally, ERM identified eight unnamed, unclassified streams and eight unnamed, unclassified open water features within the right-of-way using recent (2024) aerial imagery.

Lockridge 230 kV Loop

Lockridge Loop Proposed Route

The Lockridge Loop Proposed Route crosses two waterbodies, of which one is NHD-mapped perennial Broad Run. Additionally, ERM identified one unnamed, unclassified stream within the right-of-way using recent (2024) aerial imagery.

Sojourner 230 kV Loop

Sojourner Loop Proposed Route

The Sojourner Loop Proposed Route crosses five waterbodies, of which two are NHD-mapped, including intermittent Stallion Branch and one unnamed, intermittent stream. Additionally, ERM identified two unnamed, unclassified streams and one unclassified open water feature within the right-of-way using recent (2024) aerial imagery.

During construction, proper drainage of waterbodies will be maintained using culverts and/or other crossing devices, as needed, according to the Company's standard policies. Where clearing of trees and/or woody shrubs is required, clearing within 100 feet of a stream will be conducted in a way to limit land disturbance. Vegetation will be cut at or slightly above ground level, and stumps will not be grubbed. To protect waterways from soil erosion and sedimentation during construction, the Company will use sediment barriers along waterways and steep slopes. If a section of line cannot be accessed from existing roads, the Company may need to install a culvert or temporary bridge to cross small

streams. In such cases, temporary fill material may be required that would be placed on erosion control fabric and removed when work is completed, returning the surface to original contours.

If necessary, a Joint Permit Application (“JPA”) will be submitted for review by the Virginia Marine Resources Commission (“VMRC”), DEQ, and the Corps to authorize jurisdictional crossings and for any impacts to jurisdictional features.

C. Discharge of Cooling Waters

No discharge of cooling waters is associated with the Project.

D. Tidal and Non-tidal Wetlands

No tidal wetlands were identified within the Project study area. Non-tidal wetlands are summarized below.

ERM used GIS and remote sensing data to conduct an offsite desktop wetlands delineation for the Project. A copy of ERM’s Wetland and Waterbody Desktop Summary for the Project is included in Attachment 2.D.1. Sources for the desktop summary include the USFWS NWI, the USGS NHD, the Natural Resources Conservation Service Web Soil Survey, ESRI World Elevation Terrain 2-foot contours, National Agricultural Imagery Program Digital Ortho-Rectified Infrared Images dating from 2024, recent (2023 and 2024) and historic digital aerial photography (National Agricultural Imagery Program, Loudoun County Aerial Imagery, and Google Earth).

ERM did not field delineate wetlands along the Project routes. A field wetland delineation will be completed for the approved route alignments selected by the Commission upon the Company receiving a final order on the Project.

ERM used a stepwise process to identify probable wetland and waterbody areas along the Project routes as follows:

1. Infrared and natural color aerial photography was used in conjunction with USGS topographic maps, soils maps, and other data sources to identify potential wetland areas. Boundaries were assigned to the areas that appeared to exhibit wetland signatures based on this review (referred to here as “Interpreted Wetlands”), and a cover type was determined based on aerial photo interpretation.
2. To further determine the probability of a wetland occurring within a given location, polygon shapefiles for Interpreted Wetlands were digitally layered with NWI and NHD mapping and hydric soils information from the Natural Resources Conservation Service (“NRCS”) soil survey database.

3. ERM assigned a probability of wetland occurrence based on the number of overlapping data layers (*i.e.*, indicators of potential wetland presence) in any given area (Table D-1).

Table D-1 Golden-Mars 500-230 kV Electric Transmission Project Wetland Probability Criteria	
Probability Class	Criteria
High	Areas where layers of hydric soils, Interpreted Wetlands, and NWI data overlap
Medium/High	Areas where 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

Using the above criteria, wetland and waterbody occurrence probabilities ranging from very low to high were identified for each Project route, with acres of affected wetland calculated by probability class and cover type. The probability of wetland and waterbody occurrence increases as multiple indicators overlap toward the “high” end of the probability spectrum as shown in Table D-1. The medium to high probability categories were selected as the most reliable representation of in-situ conditions due to overlapping data sets. Results for the wetland probability analysis are summarized below.

Wetlands within the study area are predominantly forested and associated with Broad Run and its tributaries, including Horsepen Run, Stallion Branch, and other associated perennial and intermittent tributaries. Large areas of palustrine forested (“PFO”) wetlands are concentrated in the northern and central portions of the study area around Broad Run, Stallion Branch, and Beaverdam Run.

For ease of reference, wetlands and waterbodies of medium or higher probability crossed by the Proposed and Alternative Routes for the Project are summarized in Table D-2. Sections of the Golden-Mars Lines are collocated with or share right-of-way with existing transmission lines or transmission line rights-of-way that have been permitted and are under construction, discussed in detail in Section 5.2.1.2 of the Environmental Routing Study. The table provides the acres of wetlands identified within new and existing or permitted rights-of-way along each route.

Table D-2 Golden-Mars 500-230 kV Electric Transmission Project Desktop-Delineated Wetlands Crossed by the Golden-Mars Lines, the Lockridge Loop, and the Sojourner Loop (acres) ^a							
Route	Right-of-way ^a	Total ^b	PFO	PSS	PEM	PUB	Riverine
Golden-Mars Alternative Route 1	New	20.6	9.4	0.8	6.2	2.2	2.0
	Existing	6.6	6.3	NA	0.2	NA	0.1
	Total	27.2	15.8	0.8	6.4	2.2	2.1
Golden-Mars Alternative Route 2	New	27.5	15.5	0.8	5.8	2.3	3.1
	Existing	7.2	6.4	NA	0.5	0.2	0.1
	Total	34.7	21.9	0.8	6.4	2.4	3.2
Golden-Mars Alternative Route 3	New	20.9	13.4	NA	3.1	1.7	2.7
	Existing	7.2	6.4	NA	0.5	0.2	0.1
	Total	28.1	19.8	NA	3.6	1.9	2.8
Golden-Mars Alternative Route 4	New	22.6	15.4	NA	3.0	1.7	2.1
	Existing	7.2	6.4	NA	0.5	0.2	0.2
	Total	29.8	22.1	NA	3.6	1.9	2.2
Golden-Mars Alternative Route 5	New	20.5	9.1	0.6	6.3	2.5	2.0
	Existing	6.6	6.3	NA	0.2	NA	0.1
	Total	27.2	15.5	0.6	6.5	2.5	2.1
Lockridge 230 kV Loop	New	0.8	0.7	NA	NA	NA	0.2
	Existing	0.3	0.3	NA	NA	NA	<0.1
	Total	1.2	1.0	NA	NA	NA	0.2
Sojourner 230 kV Loop	New	3.1	2.2	NA	0.5	<0.1	0.3

NA = not applicable, wetland type not crossed.

^a Values within the “new” column include only aquatic resources within only proposed new right-of-way only. “Existing” consists of wetlands within the rights-of-way of existing or permitted transmission lines

^b Values have been rounded to the tenths place; as a result, the totals may not reflect the sum of the addends. A value of <0.1 indicates that less than 0.05 acre of a wetland type is present.

Golden-Mars Lines

Golden-Mars Alternative Route 1

Golden-Mars Alternative Route 1 right-of-way encompasses approximately 27.2 acres of wetlands and waterbodies, including approximately 15.8 acres of PFO, 0.8 acre of palustrine shrub-scrub (“PSS”) wetlands, 6.4 acres of palustrine emergent (“PEM”) wetlands, 2.2 acres of palustrine unconsolidated bottom (“PUB”) open water features, and 2.1 acres of riverine features.

Golden-Mars Alternative Route 1 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 6.6 acres of new wetland impacts within the shared right-of-way.

Golden-Mars Alternative Route 2

Golden-Mars Alternative Route 2 right-of-way encompasses approximately 34.7

acres of wetlands and waterbodies, including approximately 21.9 acres of PFO wetlands, 0.8 acre of PSS wetlands, 6.4 acres of PEM wetlands, 2.4 acres of PUB open water features, and 3.2 acre of riverine features.

Golden-Mars Alternative Route 2 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 7.2 acres of new wetland impacts within the shared right-of-way.

Golden-Mars Alternative Route 3

Golden-Mars Alternative Route 3 right-of-way encompasses approximately 28.1 acres of wetlands and waterbodies, including approximately 19.8 acres of PFO, 3.6 acres of PEM wetlands, 1.9 acres of PUB open water features, and 2.8 acres of riverine features.

Golden-Mars Alternative Route 3 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 7.2 acres of new wetland impacts within the shared right-of-way.

Golden-Mars Alternative Route 4

Golden-Mars Alternative Route 4 right-of-way encompasses approximately 29.8 acres of wetlands and waterbodies, including approximately 22.1 acres of PFO, 3.6 acres of PEM wetlands, 1.9 acres of PUB open water features, and 2.2 acres of riverine features.

Golden-Mars Alternative Route 4 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 7.2 acres of new wetland impacts within the shared right-of-way.

Golden-Mars Alternative Route 5

Alternative Route 5 of the Golden-Mars Lines new right-of-way encompasses approximately 27.2 acres of wetlands and waterbodies, including approximately 15.5 acres of PFO, 0.6 acre of palustrine scrub-shrub PSS, 6.5 acres of palustrine emergent PEM wetlands, 2.5 acres of palustrine unconsolidated bottom PUB open water features, and 2.1 acres of riverine features.

Alternative Route 5 partially shares a right-of-way with existing or permitted transmission line route rights-of-way, which avoids 6.6 acres of new wetland impacts within the shared right-of-way.

Lockridge 230 kV Loop

Proposed Route

The Proposed Route of the Lockridge 230 kV Loop right-of-way encompasses approximately 1.2 acres of wetlands and waterbodies, including approximately 1.0 acre of PFO and 0.2 acre of riverine features.

The Proposed Route shares a right-of-way with the Prentice Drive Substation (not proposed as part of this Project), which avoids 0.3 acre of new wetland impacts within the shared right-of-way.

Sojourner 230 kV Loop

Proposed Route

The Proposed Route of the Sojourner 230 kV Loop right-of-way encompasses approximately 3.1 acres of wetlands and waterbodies, including approximately 2.2 acres of PFO, 0.5 acre of PEM wetlands, less than 0.1 acre of PUB open water features, and 0.3 acre of riverine features.

All wetlands will require protective matting to be installed to support construction vehicles, equipment, and materials during construction. While most wetlands are anticipated to be spanned, with impacts limited to temporary construction impacts, permanent impacts would include any necessary structure placement within wetlands and clearing and conversion of PFO/PSS-type wetlands to PEM wetland types after construction is complete. This conversion would reduce riparian buffer benefits such as stream bank stabilization and erosion control, nutrient and sediment filtration, floodwater storage and peak flow reduction, and water temperature changes due to loss of shading. Construction impacts from the transmission lines on PEM and riverine wetlands would be temporary and would be restored to pre-construction conditions when construction is complete. Within PFO and PSS wetlands, vegetation will be allowed to return to maintained right-of-way heights, consistent with open meadow and/or shrub-scrub habitat, after construction is completed, which would provide some filtration and stabilization to protect waterbodies from runoff.

Prior to construction, the Company will delineate wetlands and other waters of the United States using the *Routine Determination Method*, as outlined in the *1987 Corps of Engineers Wetland Delineation Manual* and methods described in the *2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (Version 2.0). The Company will obtain any necessary permits to impact jurisdictional resources. The Company has sited structures to avoid wetlands and streams to the extent practicable. Temporary impacts will be restored to pre-existing conditions, and permanent impacts will be mitigated in accordance with all applicable federal and state regulations and laws. The Project is expected to require a Virginia Water Protection

general permit and a Nationwide Permit 57. A JPA will be submitted for further evaluation and final permit need determination by DEQ, VMRC, and the Corps.

E. Floodplains

As depicted on the Federal Emergency Management Agency's ("FEMA") online Flood Insurance Rate Maps #24031C0295D (effective date 9/29/2006), 51059C0020E, 51059C0025E, 51059C0110E, and 51059C0100E (effective dates 9/17/2010), 51107C02044E, 51007C0261E, 51107C0265E, 51107C0268E, 51107C0263E, 51107C0385E, 51107C0380E, and 51107C0360E (effective dates 2/17/2017), and 51059C0105E (effective date 9/17/2017), the Project study area contains Zone A, areas of a 1% annual chance flood hazard (around Stallion Branch and its intermittent tributaries, and intermittent tributaries to Broad Run), and Zone AE, the 100-year flood zone (around Broad Run, Beaverdam Run, Cabin Branch, Horsepen Run, Indian Creek, Stallion Branch, and associated tributaries). The Company will coordinate with the local floodplain coordinators as required.

F. Solid and Hazardous Waste

ERM identified environmentally regulated sites that use and/or store hazardous materials or waste-producing facilities operating under regulatory permits in the study area using publicly available GIS databases obtained from the U.S. Environmental Protection Agency ("EPA") and the DEQ. These databases provide information about facilities, sites, or places subject to environmental regulation or of environmental interest. These include sites that use and/or store hazardous materials; waste producing facilities operating under permits from the EPA or other regulatory authorities; Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA" or "Superfund") sites; Resource Conservation and Recovery Act ("RCRA") sites; Brownfield sites; petroleum storage and petroleum release sites; and solid waste sites. The identification of a site in the databases does not mean that the site necessarily has contaminated soil or groundwater.

Sites regulated by the EPA under the Clean Air Act Compliance Monitoring Program, Toxic Release Inventory ("TRI"), National Pollutant Discharge Elimination System ("NPDES"), and RCRA, and sites regulated by the DEQ under the Air, Solid Waste, Virginia Pollutant Discharge Elimination System, Voluntary Response Program ("VRP"), and Registered Petroleum Tank Facilities programs not associated with a petroleum leak, site assessment, remediation, corrective action or emergency response case are anticipated to have no effect on, and will not be affected by the Project. These sites are not discussed further.

A summary of the information from the EPA and DEQ databases within a 0.5-mile buffer of the right-of-way of the Golden-Mars Lines Proposed and Alternative Routes, Lockridge Loop Proposed Route, and Sojourner Loop Proposed Route is provided in Table F-1 below. The locations of the sites are depicted in Attachment 2.F.1.

TABLE F-1 Golden-Mars 500-230 kV Electric Transmission Project ^a Environmental Regulated Facilities and Hazardous Waste/Petroleum Release Sites within 0.5 - Mile							
	Golden-Mars Lines					Lockridge 230 kV Loop	Sojourner 230 kV Loop
Database	Alternative Route 1	Alternative Route 2	Alternative Route 3	Alternative Route 4	Alternative Route 5	Proposed Route	Proposed Route
Waste	20	31	31	31	20	7	1
Toxics	1	1	1	1	1	0	0
Land	26	27	24	24	26	5	3
Air	40	45	45	45	40	4	1
Water	58	58	57	58	58	18	6
Solid Waste Facilities	0	0	0	0	0	0	0
Petroleum Facilities	15	16	16	17	15	2	3
Petroleum Releases	14	14	14	14	14	3	2
Total ^b	174	192	188	190	174	39	16
^a Note that a single facility may be associated with multiple environmental permits; as such, the total number reflects the number of permits and releases within the specified distance from the Project. Notes Waste (Active and Inactive RCRA Facilities that handle or generate hazardous wastes) Toxics (TRI Regulated facilities that handle and release toxic substances to the environment) Land (Site cleanup under Superfund, RCRA or Brownfield programs, and/or DEQ VRP or Pollution Response program) Air (EPA and DEQ regulated facilities with a release of pollutants to the air) Water (EPA and DEQ regulated facilities that discharge or process water to surface water) Solid Waste Facilities (Former and existing landfills) Petroleum Facilities (Regulated petroleum storage facilities) Petroleum Releases (Typically associated with storage tank releases)							

Superfund and Brownfield sites are the only types of sites evaluated with the potential to impact the Project from a distance of up to 0.5 mile, while other site types would need to be closer to a route alternative to potentially impact the Project. Based on the most recent available data in the EPA’s “Cleanups in My Community” database, no Brownfield or Superfund sites are located within 0.5 mile of the Proposed or Alternative Routes of the Project.

To further evaluate the potential impact to the routes, ERM also assessed the sites within 1,000 feet of the route alternative rights-of-way (Table F-2). The 1,000 feet buffer was used to account for discrepancies between the EPA and VDEQ point data and the actual location of a hazardous waste and/or petroleum release site. Additional review of these sites within 1,000 feet was completed to identify any sites whose actual location may be within 200 feet of a route alternative, as those sites have a higher potential of contaminated media being encountered by the Project.

TABLE F-2 Golden-Mars 500-230 kV Electric Transmission Project ^a Environmental Regulated Facilities and Hazardous Waste/Petroleum Release Sites within 1,000 Feet							
	Golden-Mars Lines					Lockridge 230 kV Loop	Sojourner 230 kV Loop
Site Type	Alternative Route 1	Alternative Route 2	Alternative Route 3	Alternative Route 4	Alternative Route 5	Proposed Route	Proposed Route
Waste	6	8	10	10	6	0	1
Toxics	0	0	0	0	0	0	0
Land	10	10	10	10	11	0	1
Air	14	16	22	22	14	1	1
Water	22	18	20	20	22	8	3
Solid Waste Facilities	0	0	0	0	0	0	0
Petroleum Facilities	6	5	6	6	6	0	0
Petroleum Releases	5	5	5	5	5	0	1
Total ^a	63	62	73	73	64	9	7
^a Note that a single facility may be associated with multiple environmental permits; as such, the total number reflects the number of permits and releases within the specified distance from the Project.							
Notes Waste (Active and Inactive RCRA Facilities that handle or generate hazardous wastes) Toxics (TRI Regulated facilities that handle and release toxic substances to the environment) Land (Site cleanup under Superfund, RCRA or Brownfield programs, and/or DEQ VRP or Pollution Response program) Air (EPA and DEQ regulated facilities with a release of pollutants to the air) Water (EPA and DEQ regulated facilities that discharge or process water to surface water) Solid Waste Facilities (Former and existing landfills) Petroleum Facilities (Regulated petroleum storage facilities) Petroleum Releases (Typically associated with storage tank releases)							

Potential impacts of sites within 200 feet of a route alternative are discussed below and further detailed in Table F-3.

EPA Regulated Sites

There are two EPA-regulated RCRA sites and twelve EPA-regulated NPDES sites located within 200 feet of the routes. However, since each site is regulated for monitoring purposes and no reported contamination releases are affiliated with either site, no further review of EPA regulated sites was conducted.

DEQ Regulated Sites

ERM reviewed DEQ Petroleum Release, Voluntary Remediation Program (“VRP”), and Pollution Response Program (“PREP”) databases to identify sites within 200 feet of the routes. Five PREP sites and four petroleum release sites were identified within 200 of the route alternatives. Additional information on these sites is further discussed below.

TABLE F-3 Golden-Mars 500-230 kV Electric Transmission Project ^a Environmental Regulated Facilities and Hazardous Waste/Petroleum Release Sites within 200 Feet (with included site descriptions when applicable)						
Site Name	Site Type	Regulatory Authority	Most Proximate Route ^a	Distance from Route (feet)	Gradient from Project (up/down/side)	Agency Status
E&S Controls - Utility Work (IR Number 291922)	PREP	DEQ	Golden-Mars Alternative Route 2	Adjacent	N/A	Closed (2020)
Paint Particulates Concern – Carvau (IR Number 313187)	PREP	DEQ	Golden-Mars Alternative Route 3	Adjacent	N/A	Closed (2024)
Pan Am Flight Academy former (PC 20023154)	Petroleum Release	DEQ	Golden-Mars Alternative Route 2	Adjacent	N/A	Closed (2002)
Water Main Break - Loudoun Water (IR Number 315093)	PREP	DEQ	Golden-Mars Alternative Route 1	Adjacent	N/A	Closed (2024)
Unknown RP - E&S Concern (IR Number 299651)	PREP	DEQ	Golden-Mars Alternative Route 2	60 feet	Upgradient	Closed (2021)
Michaels Farm (PC 20083212)	Petroleum Release	DEQ	Golden-Mars Alternative Route 1	110 feet	Side-gradient	Closed (2009)
Diesel Spill with Vehicle Fire - Doza Trucking (IR Number 307636)	PREP	DEQ	Sojourner 230 kV Loop	180 feet	Downgradient	Closed (2022)
Exxon Station 19939 (PC 20103165)	Petroleum Release	DEQ	Golden-Mars Alternative Route 1	200 feet	Upgradient	Closed (2010)
Mercurie Industrial (PC 20083300)	Petroleum Release	DEQ	Golden-Mars Alternative Route 3	200 feet	Downgradient	Closed (2008)

E&S Controls - Utility Work

The E&S Controls – Utility Work PREP site (IR Number 291922) is located adjacent to the Golden-Mars Alternative Route 2 along Loudoun County Parkway between Evergreen Ridge Drive and Claiborne Parkway. Based upon a review of DEQ files, a stormwater compliance violation was cited in 2019 for a land disturbance project along the Loudoun County Parkway right-of-way. The violation was related to the omission of adequate erosion and sediment controls for the extensive trench system being developed at the time. Because the incident was a stormwater compliance violation and did not involve the release of petroleum or other hazardous chemicals, there were no reportable impacts to soil or groundwater. The site was closed by the DEQ in 2020.

Due to the reported site history and the absence of hazardous chemical releases, it is not anticipated that soil and/ or groundwater have been impacted in the immediate area of the routes. However, should previously unidentified contamination be observed during Project construction, the Company will implement its standard response and reporting procedures.

Paint Particulates Concern – Carvau

The Paint Particulates Concern – Carvau PREP site (IR Number 313187) is located adjacent to the Golden-Mars Alternative Route 3 along Pebble Run Place. Based upon a review of DEQ files, an incident was reported in 2024 involving improper ventilation of aerosol paints to infiltrate the ventilation systems of several apartment units within the building. Due to the nature of this incident being an air quality violation and not a petroleum and/or chemical release, impacts to soil and/or groundwater were not reported. Further remediation activities were not deemed necessary. The site was closed by the DEQ in 2024.

Due to the reported nature of this incident, the Project’s construction activities will not be impacted by this site.

Pan Am Flight Academy former

The Pan Am Flight Academy former petroleum release site (PC 20023154) is located adjacent to Golden-Mars Alternative Route 2 along Broderick Drive between Waxpool Road and Prentice Drive. Based upon a review of DEQ files, a petroleum release was reported in 2001 at the site. According to the 2002 Limited Site Characterization and Underground Storage Tank Removal Report, impacts to soil were reported. The detected soil contaminant was TPH-DRO (800 mg/kg) at a depth of 9 feet bgs. Information regarding potential extent of contamination to groundwater and/or the nearby stormwater management pond located approximately 20 feet north of the site (adjacent to the Golden-Mars Alternative Route 2 centerline) was not readily available in DEQ files. The point of petroleum release from the UST was located approximately 100 feet northeast of the proposed structure location 5003/70. The site was closed by the DEQ in 2002.

Due to the proximity to the Project and unknown extent of contamination, the site may have impacted soil and/or groundwater in the Project area. However, due to the duration of time that has elapsed since the release, and the fact that the sites were closed by the agency, there is limited risk that contamination will be encountered during the construction of the proposed Project. Should previously unidentified contamination be observed during Project construction, the Company will implement its standard response and reporting procedures.

Located within the same parcel boundary as the Pan Am Flight Academy former petroleum release site is the Pacific - Ashburn Campus petroleum release site (PC 20243090). Based upon a review of DEQ files, the site reported a petroleum release following the excavation and removal of two UST’s located approximately 370 feet and 0.25 mile southwest of the Golden-Mars Alternative Route 2 right-of-way. Impacts to soil and groundwater were

reported from both UST locations. The site is estimated to be located hydraulically upgradient of the Project area. However, due to the distance from the Project, it is not anticipated that soil and/or groundwater in the Project area were impacted by the site

Water Main Break - Loudoun Water

The Water Main Break - Loudoun Water PREP site is located adjacent to the Golden-Mars Alternative Route 1 along Pacific Boulevard. Based upon a review of DEQ files, in August 2024, a damaged water line along Pacific Boulevard caused the discharge of chlorinated and sediment-laden water into an adjacent stormwater drain which connected to a nearby stormwater management pond (a pond located adjacent to Project). Information regarding the presence of specific chemical constituents in the discharged stormwater was not readily available from DEQ files. It was determined that no detrimental impacts were observed to the stormwater pond and further remediation activities were not deemed necessary. The site was closed by the DEQ in 2024.

Although impacts were reported to the stormwater management pond located adjacent to the Golden-Mars Alternative Route 1, it is not anticipated that soil and/ or groundwater have been impacted in the immediate area of the routes. However, should previously unidentified contamination be observed during Project construction, the Company will implement its standard response and reporting procedures.

Unknown RP - E&S Concern

The Unknown RP – E&S Concern PREP site (IR Number 299651) is located approximately 60 feet north of the Golden-Mars Alternative Route 2 near the Waxpool Road crossing of Broad Run. Based on a review of DEQ files, the site was opened in 2021 following a report of utility work occurring along the embankment of Broad Run with concern for potential contamination to the adjacent surface water body. Erosion and sediment controls were implemented along the perimeter of work area. No impacts to soil, groundwater, or surface water bodies. The site was closed by the DEQ in 2021.

The site is located hydraulically side-gradient of the Project area. Due to the reported site history, it is not anticipated that soil and/ or groundwater have been impacted in the immediate area of the routes. However, should previously unidentified contamination be observed during Project construction, the Company will implement its standard response and reporting procedures.

Michaels Farm

The Michaels Farm petroleum release site (PC 20083212) is located approximately 110 feet south of the Golden-Mars Alternative Route 1 near Carters School Road. Based upon a review of DEQ files, a petroleum release from two aboveground storage tanks was reported at the site in 2001. According to the 2009 Closure Report, soil and groundwater impacts were reported. The soil contaminants included TPH-DRO (140 mg/kg) and total petroleum hydrocarbons – gasoline range organics (TPH-GRO; 2.4 mg/kg). The only

detected groundwater contaminant was TPH-DRO (3.20 milligrams per liter [mg/L]). The depth to groundwater at the site was reported to range between 12 and 14 feet bgs. The site was closed by the DEQ in 2009.

The site is estimated to be located hydraulically side-gradient of the Project area. Due to the distance and hydraulic gradient, it is not anticipated that soil and/ or groundwater have been impacted in the immediate area of the routes. However, should previously unidentified contamination be observed during Project construction, the Company will implement its standard response and reporting procedures.

Diesel Spill with Vehicle Fire - Doza Trucking

The Diesel Spill with Vehicle Fire – Doza Trucking PREP site (IR Number 307636) is located approximately 180 feet north of the Sojourner 230 kV Loop along Beaver Meadow Road. Based upon a review of DEQ files, a release of approximately 75-100 gallons of petroleum fluid were reported during a commercial vehicle fire. According to the 2022 Initial Abatement Measures Report, soils were impacted by concentrations of total petroleum hydrocarbons – diesel range organics (TPH-DRO; 294 milligrams per kilogram [mg/kg]). An estimated 80 tons of contaminated soil were excavated and removed from the site. Impacts to groundwater, surface water, or stormwater drains were not reported. The site was closed by the DEQ in 2022.

The site is estimated to be located hydraulically downgradient of the Project area. Due to the reported extent of contamination and hydraulic gradient, it is not anticipated that soil and/ or groundwater have been impacted in the immediate area of the routes. However, should previously unidentified contamination be observed during Project construction, the Company will implement its standard response and reporting procedures.

Exxon Station 19939

The Exxon Station 19939 petroleum release site (PC 20103165) is located approximately 200 feet northwest of the Golden-Mars Alternative Route 1 along Flagstaff Plaza. Based upon a review of DEQ files, a petroleum release was reported at the site in 2009. According to the 2010 Site Characterization Report, impacts to soil and groundwater were reported. The detected soil contaminants included total petroleum hydrocarbons – diesel range organics (TPH-DRO; 20.8 milligrams per kilogram [mg/kg]) and total petroleum hydrocarbons – oil range organics (TPH-ORO; 30.3 mg/kg). The detected contaminants in groundwater included TPH-DRO (0.153 milligrams per liter [mg/L]) and methyl tert-butyl ether (MTBE; 0.0209 mg/L). The reported depth to groundwater at the site ranges between 8 and 11 feet below ground surface (bgs). The site was closed by the DEQ in 2010.

According to the 2009 Phase II Environmental Site Assessment, the local groundwater flow direction at the site is to the east and northeast, side-gradient of the Project area. Due to the distance from the Project and local hydraulic gradient, it is not anticipated that soil and/ or groundwater have been impacted in the immediate area of the routes. However,

should previously unidentified contamination be observed during Project construction, the Company will implement its standard response and reporting procedures.

Mercurie Industrial

The Mercurie Industrial petroleum release site (PC 20083300) is located approximately 200 feet from Golden-Mars Alternative Route 3 along Mercurie Circle. Based upon a review of DEQ files, a petroleum release was reported at the site in 2008. Information regarding the nature and exact location of the incident, along with the potential extent of contamination to soil and/or groundwater was not readily available from DEQ database. The site was closed by the DEQ in 2022.

The site is estimated to be located hydraulically downgradient of the Project area. Due to the distance from the Project and hydraulic gradient, it is not anticipated that soil and/or groundwater have been impacted in the immediate area of the routes. However, should previously unidentified contamination be observed during Project construction, the Company will implement its standard response and reporting procedures.

Summary

The four PREP sites and five petroleum release sites located within proximity to the Project have been closed by the DEQ, which deems them case closed once there is no further risk to the general public. However, it was determined after review of available DEQ files that one petroleum release site, the Pan Am Flight Academy former petroleum release site (PC 20023154), may have impacted soil and/or groundwater in the Project area. As such, proper procedures will be followed to safely identify, manage, and dispose of any suspected hazardous and contaminated media that may be encountered during Project activities in accordance with applicable federal, state, and local regulations.

Although the Project is constructing overhead lines, minor subsurface work is required during installation. This disturbance occurs at discrete locations along the route, with temporary spoils contained as they are generated. The Company has a procedure in place to safely identify, manage, and dispose of any suspected hazardous or contaminated media encountered during construction. If contaminated soil or groundwater are identified, the Company will coordinate with the associated regulatory agency, and the soils will be disposed of in accordance with applicable regulations.

Care will be taken to operate and maintain construction equipment to prevent any fuel or oil spills. Any waste created by the construction crews will be disposed of in a proper manner and recycled where appropriate and will be further detailed in the Company's stormwater pollution prevention plan, a component of the Virginia Stormwater Management Program, which falls under the purview of the DEQ.

G. Natural Heritage, Threatened and Endangered Species

Threatened and Endangered Species

On behalf of the Company, ERM conducted online database searches for threatened and endangered (“T&E”) species within the study area and/or within a 2.0-mile radius of the study area of the Project. One online database search included the Virginia Department of Conservation and Recreation (“DCR”) Natural Heritage Data Explorer (“NHDE”). The NHDE Screening Layer includes two components: Conservation Sites and Stream Conservation Sites (“SCSS”). ERM also obtained query results from the Virginia Department of Wildlife Resources (“DWR”) Fish and Wildlife Information Service (“VaFWIS”), and the USFWS Information for Planning and Consultation (“IPaC”) System to identify federal- and state-listed species that may occur within the study area and/or within a 2.0-mile radius of the study area.³ Digital data were obtained from the DCR-NHDE to identify locations within the study area that potentially support protected species. Results of these queries are provided in Attachment 2.G.1.

The review accounted for regulatory changes and requirements associated with the USFWS uplisting of the Northern long-eared bat (“NLEB,” *Myotis septentrionalis*) from federally threatened to federally endangered. On October 15, 2024, USFWS issued the NLEB Final Guidance for development projects. The USFWS Interim Guidance for the NLEB expired on November 30, 2024, and the Final Guidance for NLEB took effect.

The review also accounted for regulatory changes and requirements associated with Tricolored bat (“TCB,” *Perimyotis subflavus*) and Monarch butterfly (*Danaus plexippus*) and the proposed USFWS listing of these species as federally endangered and federally threatened, respectively. The Company is anticipating the TCB and Monarch butterfly will be listed; therefore, it assumes any regulatory changes associated with the potential listing of the TCB and Monarch butterfly will affect this Project. On September 14, 2022, the TCB was proposed to be listed as Endangered by the USFWS. USFWS extended its Final Rule issuance target from September 2023 to the end of 2024, but as of the date of this filing, the TCB listing decision has not been issued. On December 12, 2024, the Monarch butterfly was proposed to be listed as Threatened by the USFWS, and the 90-day public comment period was extended and will close on May 19, 2025. The Company is tracking actively this ruling and evaluating the effects of potential outcomes on Company projects’ permitting, construction, and in-service dates, including electric transmission projects.

In October 2024 USFWS issued a final NLEB and TCB Range-wide Determination Key (“DKey”) to allow project proponents to assess project impacts, practicable avoidance and minimization measures, and consultation requirements under the final NLEB guidance and the eventual TCB listing ahead of the final decision. The Company will utilize the DKey to further assess project impacts and determine appropriate avoidance and minimization

³ The VaFWIS database results include the study area and a 2.0-mile buffer surrounding the study area.

measures to ensure compliance with state and federal regulations when the Project enters permitting.

To obtain the most current eagle nest data, ERM reviewed the Center for Conservation Biology (“CCB”) Virginia Eagle Nest Locator mapping portal, which provides information about the Virginia Bald eagle (*Haliaeetus leucocephalus*) population, including the results of the CCB’s annual eagle nest survey.

Based on the CCB Virginia Eagle Nest Locator mapping portal, the study area is not located within an Eagle Concentration Area, and the Project’s Proposed or Alternative Routes do not intersect any Primary Buffers (*i.e.*, 330-feet) of currently documented Bald eagle nests as identified in The Bald Eagle Protection Guidelines for Virginia (2012). However, all five of the routes for the Golden-Mars Lines are within a Secondary Buffer (660-foot area around a Bald eagle nest). According to the CCB database, the closest nest (Nest ID LD1901) is along Broad Run, south of the intersection of Waxpool Road and Loudoun County Parkway, and approximately 400 feet south of the right-of-way of the Golden–Mars Route Alternatives. This nest was last observed to be occupied in 2023. The Company will work with the appropriate jurisdictional agencies to minimize impacts on this species.

Eight federal- and/or state-listed or proposed T&E species have the potential to occur within the Project study area (Table G-1). For additional information, see Section 5.2.3 of the Environmental Routing Study.

TABLE G-1 Golden-Mars 500-230 kV Electric Transmission Project Potential Federal-and State-Listed Species in the Study Area				
Species	Status	Database	Habitat	Results
Northern long-eared bat (<i>Myotis septentrionalis</i>)	FE, ST	IPaC, DWR Winter Habitat and Roost Tree Map, DWR NLEB Regulatory Buffer Interactive Tool	Generally associated with old growth or late successional interior forests. Use partially dead or decaying trees for breeding, summer day roosting, and foraging. Hibernation occurs primarily in caves, mines, and tunnels.	Species not confirmed as present. Summer foraging habitat present, but no known hibernacula or maternity roost trees are documented within the Project area. The Project would require clearing of forested areas; however, given the lack of confirmed species presence, impacts are not anticipated.

**TABLE G-1
Golden-Mars 500-230 kV Electric Transmission Project
Potential Federal-and State-Listed Species in the Study Area**

Species	Status	Database	Habitat	Results
Tricolored bat (<i>Perimyotis subflavus</i>)	FPE, SE	IPaC, VaFWIS, DWR Winter Habitat and Roost Tree Map	Typically roost in trees near forest edges during summer. Hibernate deep in caves or mines in mountainous areas with warm, stable temperatures during winter.	VaFWIS Search Report confirmed species presence within 2.0-mile radius of study area boundary. Summer foraging habitat present, but no known hibernacula or maternity roost trees are documented within the Project area. The Project would require clearing of forested areas; however, given the documentation was 0.5-mile southwest of the study area, impacts are not anticipated.
Monarch butterfly (<i>Danaus plexippus</i>)	FPT	IPaC	Habitat generalists that rely on flowering plants. Require milkweed to lay eggs and for reproduction and the caterpillar stage.	Species not confirmed as present. Suitable habitat may exist in open space areas along the Project.
Dwarf wedgemussel (<i>Alasmidonta heterodon</i>)	FE, SE	IPaC	Large rivers and small streams, often burrowed into clay banks among the root systems of trees; also associated with mixed substrates of cobble, gravel, and sand.	Species not confirmed as present, and no instream work will be performed. However, shading along streambanks could be reduced due to tree clearing. Indirect impacts are anticipated if streambank shade is significantly reduced.
Green floater (<i>Lasmigona subviridis</i>)	FPT, ST	IPaC	Small to medium streams in quiet pools and eddies with gravel and sand substrates.	Species not confirmed as present, and no instream work will be performed. However, shading along streambanks could be reduced due to tree clearing. Indirect impacts are anticipated if streambank shade is significantly reduced.
Wood turtle (<i>Glyptemys insculpta</i>)	ST	VaFWIS	Forested floodplains, fields, wet meadows, and farmland with a perennial stream nearby.	VaFWIS Search Report confirmed species presence within 2.0-mile radius of study area boundary. No instream work will be performed, but suitable habitat may be cleared for right-of-way. The closest occurrence was recorded approximately 0.4 mile east of the study area, so impacts are not anticipated.

TABLE G-1 Golden-Mars 500-230 kV Electric Transmission Project Potential Federal-and State-Listed Species in the Study Area				
Species	Status	Database	Habitat	Results
Henslow's sparrow (<i>Ammodramus henslowii</i>)	ST	VaFWIS	Open grasslands with few or no woody plants and tall dense grasses and litter layer.	VaFWIS Search Report listed as potentially confirmed as present in Virginia Breeding Bird Atlas Survey. Impacts to grassland habitats will be minimal. No impacts are anticipated.
Torrey's mountain-mint (<i>Pycnanthemum torreyi</i>)	ST	NHDE	Dry, rocky or sandy woodlands and clearings. Occurs on both extremely acidic and strongly basic substrates.	Species not confirmed as present, and potential habitat is likely not present.
Federal/State Status:				
FE Federally listed as endangered		FT Federally listed as threatened		FPE Federally proposed as endangered
SE State listed as endangered		ST State listed as threatened		FPT Federally proposed as threatened

Within the Project study area and/or within a 2.0-mile radius of the study area, database queries identified two federally listed species and three species with a federally proposed listing under the Endangered Species Act (“ESA”) that could potentially occur in the study area: NLEB, TCB, Monarch butterfly, Dwarf wedgemussel (*Alasmidonta heterodon*), and Green floater (*Lasmigona subviridis*). NLEB, TCB, Dwarf wedgemussel, and Green floater are also all state-listed species. The federal listing of the TCB, Monarch butterfly, and Green floater has been proposed but have not been officially listed. Wood turtle (*Glyptemys insculpta*), Henslow's sparrow (*Ammodramus henslowii*), and Torrey's mountain-mint (*Pycnanthemum torreyi*) are state-listed species, which are not federally listed, identified by database queries as having the potential to occur within the study area and/or within a 2.0-mile radius of the study area as well.

All eight of these species were identified by the DWR, the DCR Division of Natural Heritage (“DNH”), and/or USFWS databases as having potential occurrence within the Project study area. The VaFWIS database identified the TCB, Wood turtle, and Henslow's sparrow as species that have confirmed occurrences within the study area and/or within a 2.0-mile buffer around the study area.

While DWR's Winter Habitat and Roost Tree Application and Regulatory Interactive Tool do not document any occurrences of federal- and state-listed bat hibernaculum (winter habitat) within a 2.0-mile radius of the study area, the TCB was observed along the southwest boundary of the study area according to the VaFWIS database. Summer foraging habitat for this species is likely present within forested habitats crossed by each route alternative. No impacts to TCB are anticipated for any route alternative if trees are cleared during the winter according to DWR time-of-year restrictions.

While none of the routes cross the area where the Wood turtle was documented by the VaFWIS database in 2022, 2015, and 1998, the route alternatives span potentially suitable habitat where they cross streams and wetlands. No instream construction activities will be

required, but forested floodplains may be cleared adjacent to waterbodies within the right-of-way. Coordination with the DWR may be needed to determine if surveys and/or construction timing windows are warranted for the Project to avoid the Wood turtle.

Although suitable habitat might be present near the route alternatives, the Henslow's sparrow has not been documented in the area in the last few decades. The species prefers open grasslands for habitat, but most of the landcover crossed by the routes is forested or developed. Therefore, it is unlikely that there would be an impact on the Henslow's sparrow.

Natural Heritage Resources

On behalf of the Company, ERM submitted the Project to DCR-DNH for review. The DCR completed its review on November 25, 2024, as discussed in detail below (see [Attachment 2.G.1](#)). DCR-DNH concluded that the Project will not affect any documented state-listed insects and does not cross any State Natural Area Preserves or Conservation Sites under DCR's jurisdiction. However, the study area contains habitat for rare plants, an SCS, and ecological cores.

Diabase Glades

According to a DCR-DNH biologist, "several rare plants [and one state-listed plant species, Torrey's mountain-mint], which are typically associated with prairie vegetation and inhabit semi-open diabase glades in Virginia," may occur at this location if suitable habitat is present. "Diabase glades are characterized by historically fire-dominated grassland vegetation on relatively nutrient-rich soils underlain by Triassic bedrock. Diabase flatrock, a hard, dark-colored volcanic rock, is found primarily in northern Virginia counties and is located within the geologic formation known as the Triassic Basin. Where the bedrock is exposed, a distinctive community type of drought-tolerant plants occurs. Diabase flatrocks are extremely rare natural communities that are threatened by activities such as quarrying and road construction." See [Attachment 2.G.1](#).

Due to the potential for the study area to support populations of natural heritage resources, DCR-DNH recommends an inventory for rare plants associated with diabase glades. With the survey results, DCR-DNH indicates that it can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to documented resources.

Regarding DCR-DNH's recommendation for an inventory for rare plants associated with diabase glades, the Company notes, for context, that diabase refers to unique plant communities that form in certain circumstances in the presence of underlying igneous diabase rock. Most diabase associated plant species, whose occurrence in Virginia is often associated with diabase derived soils, are not formally listed as endangered or threatened. One plant species having the potential to occur is Torrey's mountain-mint, which is listed as threatened in Virginia. Most of these plants (with the exception of Torrey's mountain-

mint) and associated habitat, while considered rare by DCR-DNH, are not protected by any regulations.

Impacts to Diabase Flatrocks are primarily associated with quarrying and road construction, which have a very direct permanent impact on the habitats within a defined Project area. Electric transmission lines, as proposed in the Application for this Project, typically do not have a significant permanent impact outside of structure foundation locations. Habitat conversion is possible but limited to conversion of forested habitat emergent/shrub habitat within the transmission line corridor. Clearing activities are limited to utilizing equipment on mats to minimize land disturbance, stumps are cut to within three inches of the ground surface and left in place. Overall, land disturbance and impacts to vegetation are limited. Upon completion of the transmission line installation, the rights-of-ways will be maintained as a natural emergent/scrub shrub habitat that resembles successional conditions that would allow for natural communities to exist within this converted habitat regime. The successional conditions created and maintained within transmission rights-of-ways- resemble semi-open habitat that mirror a natural disturbance regime. The permanent impacts associated with the proposed Project are discrete and limited to the structure foundation locations only.

Diabase communities are most likely to occur in semi-open areas that have a disturbance regime similar to that of pre-settlement wildfires, and that also have not been heavily infested by invasive plants. Areas that do not receive this type of intermediate disturbance (including areas that are subject to intense disturbance) typically do not provide high quality habitat for the diabase associated species.

Dominion Energy Virginia strives to be in compliance with local, state, and federal regulations. Rare species are not classified as endangered or threatened, as such, do not have regulatory requirements to complete inventory surveys. A requirement to inventory these resources prior to construction would result in significant delay to the construction schedule and increased project costs.

Due to the low likelihood of diabase plants in the Project area, and the lack of any legal status via federal or state law for the majority of these species (excluding Torrey's mountain-mint), the Company has considered the DCR-DNH recommendations and concludes that DCR-DNH's recommendation for an inventory for rare plants associated with diabase glades in the Project area is not applicable. In lieu of conducting an inventory of these resources prior to construction, Dominion Energy Virginia suggests that it provide the Company's construction team with information about the rare diabase plant species and coordinate with DCR-DNH if a species of concern is observed.

Stream Conservation Sites

DCR-DNH indicated that one SCS (Broad Run - Rt. 607 SCS) is present within the study area. SCSs are given a biodiversity ranking on a scale of 1 through 5, with 1 being the

most significant. This ranking is based on the rarity, quality, or number of natural heritage resources.

The Broad Run - Rt. 607 SCS consists of 590 acres of land with a conservation rating of B4, indicating a site of moderate significance. The species associated with this SCS is the Yellow lampmussel, which is neither federally listed nor state-listed, but it is classified as Tier II in the Virginia Wildlife Action Plan, indicating a very high conservation need for the species. This freshwater mussel thrives in larger streams and rivers with moderate currents over sand/gravel substrates and in small creeks/ponds.

A significant amount of the SCS land has likely been compromised prior to the Project due to development within the SCS. Additionally, no instream work would be performed; therefore, with adherence to applicable state/local erosion and sediment control requirements and stormwater management laws and regulations, it is unlikely that construction or right-of-way maintenance along the routes would have an impact on the SCS or Yellow lampmussel. All routes for the Golden-Mars Lines and the Lockridge 230 kV Loop would cross the SCS. Of the Golden-Mars Lines routes, Alternative Routes 1 and 5 would cross the smallest area of SCS at 13.3 acres. Golden-Mars Alternative Routes 2, 3, and 4 would each cross 16.3 acres of the SCS, and the Lockridge 230 kV Loop crosses 2.2 acres of the SCS. The Company will work with the DCR and other appropriate jurisdictional agencies to minimize any impacts on the SCS.

Ecological Cores

Ecological cores (cores) are areas of 100-acres or more of contiguous natural land cover associated with areas of high ecological value. They are ranked from C1 (Outstanding) to C5 (General). Smaller areas of continuous interior cover (*i.e.*, 10 to 99 acres), called habitat fragments, support ecological cores and provide similar functions and values. As part of its official review, DCR-DNH found that the Project intersects ecological cores of ranks C4 (moderate ecological integrity) and C5 (general ecological integrity).

During the Project routing process, ERM attempts to avoid higher-ranking ecological cores to the extent practicable, while also taking into consideration other routing constraints. When avoidance is not possible, ERM attempts to minimize the crossing length of higher-ranking cores, collocate with existing linear corridors, cross previously cleared or disturbed areas, and to minimize fragmentation by following ecological core boundaries to the extent practicable. Where cores are crossed, the habitat is not fully lost as the transmission lines are maintained as open meadow/shrub habitat that is consistent with successional habitat.

The DCR-DNH review identified ecological cores within the study area, ranking from C4 to C5. No ecological cores ranked C1, C2, or C3 are crossed by the route alternatives, so no formal impact analysis is provided for the cores crossed, per the recommendation of

DCR⁴ (see Attachment 2.G.1). Ecological cores crossed by the Golden-Mars Lines Proposed and Alternative Routes, the Lockridge Loop and the Sojourner Loop are summarized in the Table G-2 below.

Table G-2 Golden-Mars 500-230 kV Electric Transmission Project Ecological Cores Crossed by the Proposed and Alternative Routes								
		Golden-Mars Lines					Lockridge 230 kV Loop	Sojourner 230 kV Loop
Ecological Cores	Unit	Alternative Route 1	Alternative Route 2	Alternative Route 3	Alternative Route 4	Alternative Route 5	Proposed Route	Proposed Route
Outstanding (C1)	acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Very High (C2)	acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0
High (C3)	acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Moderate (C4)	acres	11.8	11.8	11.8	11.8	11.8	0.0	15.7
General (C5)	acres	12.1	23.4	22.4	23.8	12.1	4.8	0.0
Total ^a	acres	23.9	35.2	34.2	35.6	23.9	4.8	15.7

a Totals may not equal the sum of addends due to rounding.

Of the Golden-Mars Routes, Alternative Routes 1 and 5 would impact the smallest area of ecological cores. All ecological cores crossed by the route alternatives contain some amount of development or cleared areas or are planned for development. Prior to the Project, the impacted cores have been or will be altered; therefore, the Project is unlikely to create significant impacts on the cores crossed.

The Company will work with the appropriate jurisdictional agencies to minimize any impacts on SCSs, ecological cores, and protected species during implementation of the Project. Additional analysis on ecological core impacts can be found in the Environmental Routing Studies for the Project.

Construction and maintenance of the new transmission line facilities could have minor effects on wildlife; however, impacts on most species will be short-term in nature, and limited to the period of construction.

For impacts on wildlife habitat (forested, agricultural, open space, and open water/waterbodies), see Section K. No other natural heritage resources (habitat of rare, threatened, or endangered species, unique or exemplary natural communities, or significant geological formations) were identified within the study area by the DCR.

New and updated information is continually added to DCR's Biotics database. The Company shall re-submit Project information and a map for an update on this natural

⁴ Nicki Gustafson, DCR e-mail message to ERM, May 23, 2024.

heritage information if the scope of the Project changes and/or six months have passed before this information is utilized.⁵

H. Erosion and Sediment Control

The DEQ approved the Company's *Standards & Specification for Erosion & Sediment Control and Stormwater Management for Construction of Linear Electric Transmission Facilities (TE VEP 8000)*. These specifications are given to the Company's contractors and require erosion and sediment control measures to be in place before construction of the line begins and specifies the requirements for rehabilitation of the right-of-way. A copy of the current DEQ approval letter dated February 27, 2024, is provided as Attachment 2.H.1. According to the approval letter, coverage is effective from February 27, 2024, through February 26, 2025. The Company is actively coordinating with DEQ to renew the Standards and Specifications and will continue to operate under the currently approved agreement until agency approval is obtained.

I. Archaeological, Historic, Scenic, Cultural, or Architectural Resources

ERM conducted a Stage I Pre-Application Analysis ("Stage I Analysis") of potential impacts on cultural resources for the Golden-Mars Route Alternatives, Lockridge 230 kV Loop Proposed Route, and Sojourner 230 kV Loop Proposed Route in accordance with the Virginia Department of Historic Resources' (VDHR's) *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (Guidelines). A copy of the Stage I Analysis, which was provided to VDHR on March 27, 2025, is included as Attachment 2.I.1. The analysis identified and considered previously recorded resources within the following study tiers as specified in the Guidelines:

- National Historic Landmark ("NHL") properties located 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 -listed properties, NHLs, battlefields, and historic landscapes within a 0.5-mile radius of each route centerline.
- Qualifying architectural resources and archaeological sites located within the right-of-way for each route.

⁵ The Company updated this commitment consistent with discussions held between Company and DCR-DNH representatives on August 23, 2022.

Information on cultural resources within each of these study tiers was obtained from the Virginia Cultural Resources Information System (“VCRIS”).

In addition to the VCRIS, ERM collected information from the History of Loudoun County, Virginia (2024), Loudoun County Preservation Society (2024), Loudoun County Heritage Commission (2024), Loudoun County Preservation and Conservation Commission (2024), and the Loudoun County African-American Historic Architectural Resources Survey (2004) to identify locally significant resources within a 1.0-mile radius of the centerline for each route.

Along with a records review carried out for the four tiers as defined by VDHR, ERM also conducted a field assessment of the considered aboveground resources for the Golden-Mars Route Alternatives in accordance with the VDHR Guidelines. Photo simulations were prepared to assess potential viewshed impacts from construction of the proposed transmission line for each considered resource and relevant route. For previously recorded archaeological sites under consideration, aerial photographs were examined to assess the current land condition and the spatial relationship between the sites and any existing or planned transmission lines.

A summary of the considered resources identified in the vicinity of the route alternatives, and recommendations concerning Project effects are provided in the following discussion. The information presented here derives from existing records and does not purport to encompass the entire suite of historic and archaeological resources that may ultimately be affected by the undertaking.

The resources located within the right-of-way of the route alternatives may be subject to both direct impacts from placement of the transmission line across the property as well as visual impacts from changes to the viewshed introduced by the new transmission infrastructure. Resources in the 0.0-0.5-mile study tier would not be directly impacted but would likely be visually impacted unless topography or vegetation obscures the view from the resource to the transmission line. At a distance over 0.5 mile, it becomes less likely that a resource would be within line-of-sight of the new transmission facilities. Beyond 1.0 mile, it becomes even less likely that a given resource would be within line-of-sight of the Project. However, a full architectural survey (to be completed following the selection of a route) is necessary to determine which resources would be visually impacted and to survey for additional unrecorded resources.

The nature of the impacts of the route alternatives, while estimated in this study with the assistance of photo simulations, will depend on the final Project design in which the exact placement and height of transmission line structures are confirmed. As part of the forthcoming architectural survey, Project impacts on these and any newly identified resources would be assessed. The study area for the survey would be defined based on the height of the transmission line structures, topography, tree cover, and other factors impacting line-of-sight from resources to the route.

Golden-Mars Lines

The Golden-Mars Lines include five routes, all of which overlap in the areas where the considered historic resources lay. Thus, findings for all five routes are identical for the five considered historic resources. The resource descriptions and impact assessments below are therefore applicable for all five Golden-Mars routes, except where noted.

Five above ground historic resources were identified within the VDHR study tiers for the Golden-Mars Lines (Table I-1). Construction and operation of the facilities would have a minimal impact on all five resources (053-0008, 053-0276, 053-0968, 053-6406, and 053-6416).

The Dulles International Airport Historic District (053-0008), which is within the Dulles Airport property, is approximately 0.4 mile south of the common alignment of the routes at their terminus at the Company's approved Mars Substation. The resource's southern runway and associated taxiways are closest to the routes, with grass directly surrounding the runway bordered by trees. Simulations indicate that the tops of transmission structures could be visible from portions of the district during leaf-off seasons and from the air as aircraft take off and land. The structures would only be visible from the westernmost runway and would not be visible from the district's terminal. In addition, the recorded boundary for the resource encompasses 1,300 acres, of which only a small portion (approximately 4.4 acres) is within the 0.5-mile study tier for the routes. Mature vegetation and distance between the district and transmission line would likely to block the view from vantage points throughout most of the district (*i.e.*, except for the southern runway and associated taxiway). Thus, ERM recommends that the Golden-Mars Lines would have a minimal impact on 053-0008.

The Washington and Old Dominion Railroad Historic District (053-0275) traverses the common alignment of Routes 1 through 5 in an area where the alignment collocates with the Company's existing Lines #2150/#2081. The surrounding area is urban, with multiple commercial buildings. The routes would cross the resource in two locations where the 230 kV and 500 kV are separated exiting the future Golden Substation. Simulations indicate that the Golden-Mars Lines would be visible from other portions of the resource. Multiple of the Company's existing transmission lines intersect the district and share its right-of-way, and these lines would be more prominent in the landscape than the Golden-Mars Lines, except where they cross the resource. Away from this crossing, the Project's new transmission infrastructure would be visible to viewers near the resource, but the visibility would small in comparison to the resource as a whole. Thus, ERM recommends that the Golden-Mars Lines would have a minimal impact on 053-0275.

Guilford Baptist Church (053-0968) is approximately 0.5 mile southeast of the common alignment of the Golden-Mars Lines. Numerous commercial structures and modern townhouses are between the resource and routes. Simulations indicate that three transmission structures would be faintly visible in the distance when looking to the west from the resource, but the Company's existing transmission lines would be more prominent

in the landscape. The route would not be visible to the northwest, due to intervening infrastructure. Because the Project would introduce an additional modern element to the landscape (albeit small), it constitutes a change in viewshed. Thus, ERM recommends that the Golden-Mars Lines would have a minimal impact on 053-0968.

Tippet's Hill Cemetery (053-6406) is approximately 0.5 mile southeast of the common alignment of where the Golden-Mars Lines intersect the Company's existing Lines #2165/#2170 south Waxpool Road. The surrounding environment is urban, with large data centers directly between the routes and resource. Simulations indicate that transmission structures installed along the alignment would be mostly screened by the data centers located directly adjacent to the resource. The tips of three structures near the intersection of Waxpool Road and Pacific Boulevard, would be visible when looking to the northwest from the resource's northwestern corner. It is important to note that the Company's existing Lines #2165/#2170 are approximately 160 feet south of the resource and are visible when looking from the resource's southern and eastern boundary. This, in addition to the data centers, has already added modern elements to the landscape. While the viewshed impact from the Golden-Mars Lines would be minor, it nonetheless constitutes a change, because it introduces an additional modern element into the landscape. Thus, ERM recommends that the Golden-Mars Lines would have a minimal impact on 053-6406.

Ox Road Trace (053-6416) is approximately 165 feet northwest of the common alignment of the routes where they are adjacent to the Company's existing Lines #2149/#2203/#2214. The surrounding area mostly consists of data centers and wooded areas along Broad Run, which is directly south of the resource (the former alignment of Ox Road likely crossed the creek in this location). Simulations indicate that multiple sets of transmission structures would be visible to the east and south from inside the road trace. Existing data centers and transmission lines have compromised the resource's historic viewshed. In addition, the Company's existing Lines #2149/#2203 currently intersects the resource. Other than the southern and eastern viewshed, viewsheds from the Ox Road Trace would remain unchanged. The Project's infrastructure would be visible from multiple vantage points within the resource and would add additional modern elements to the landscape but would not significantly change existing conditions. Thus, ERM recommends that the Golden-Mars Lines would have a minimal impact on 053-6416.

TABLE I-1 Golden-Mars 500-230 kV Electric Transmission Project Resources in VDHR Tiers for the Golden-Mars Lines				
Buffer (miles)	Considered Resources	VDHR #	Description	Impact
1.0-1.5	National Historic Landmarks	NA	NA	NA
1.0-0.5	National Register - Listed	NA	NA	NA
	Battlefields	NA	NA	NA
	Locally Significant (National Register – Unevaluated)	053-0968	Guilford Baptist Church	Minimal
0.0-0.5	National Register – Eligible	053-0008	Dulles International Airport Historic District	Minimal
	Locally Significant (National Register – Potentially Eligible)	053-6416	Ox Road Trace	Minimal
	Locally Significant (National Register – Unevaluated)	053-6406	Tippet’s Hill Cemetery	Minimal
0.0 (within ROW)	National Register -Eligible	053-0276	Washington & Old Dominion Railroad	Minimal

ROW = right-of-way; NA = not applicable; VDHR = Virginia Department of Historic Resources

The Stage I Analysis also considered the potential effects to archaeological resources. Fifteen previously recorded archaeological sites were identified within or adjacent to the Golden-Mars Lines. Because of the common alignment of the routes, the descriptions below are therefore applicable for all five Golden-Mars routes, except where noted.

Site 44LD0111 is a prehistoric (Early Archaic) temporary camp previously assessed as not eligible for listing in the NRHP due to impacts from land clearing and commercial development. The Golden-Mars Lines partially intersect approximately 300 feet within the eastern site boundary, with most of 44LD0111 to the north and west within developed lands in the Company’s Buttermilk Substation, the right-of-way of existing Lines #2152/#2170, and a Digital Loudoun data center. The site was first investigated in 1979, but efforts in 2015 to find the site again were unsuccessful. The authors of a subsequent 2016 study speculated that either the site location was incorrectly plotted in 1979, or the site had been destroyed. ERM’s review of aerial photography indicates the site was disturbed (and likely destroyed) by construction of the existing transmission line in 2006, the excavation of borrow pits in 2008, and construction of the data center and substation between 2016 and 2019.

Site 44LD0170 is a prehistoric temporary camp site with an unspecified temporal affiliation. Approximately 300 feet of the Golden-Mars Lines cross the site’s northern boundary. Initially recorded in 1981, the site was the subject of additional Phase I investigations in 2012, 2013, and 2014. After the 2012 survey, VDHR concluded that the site is not eligible for listing in the NRHP due to low artifact density. The final survey in 2014 failed to find the site again and current aerial imagery indicates the area has since been developed, indicating that 44LD0170 has been destroyed. ERM’s review of aerial photography indicates that the site was cultivated or fallow through 2016. An electric distribution line was built across the site in that year, and most of the site was cleared and graveled for a contractor yard or parking area in 2019. The site is nearly completely covered by the parking area and adjacent road.

Site 44LD0330 is a prehistoric temporary campsite with an unspecified temporal affiliation whose eligibility for listing in the NRHP has not been assessed. Approximately 205 feet of the Golden-Mars Alternative Route 5 bisects the center of the site, which was recorded in 1981 and has not been subject to further survey. Based on current aerial imagery, the site is beneath and was likely destroyed by construction of a road.

Site 44LD0332 is an unknown prehistoric temporary camp site disturbed by previous land clearing and the installation of a paved walking trail. Approximately 200 feet of Golden-Mars Alternative Route 1 intersects the northwestern boundary while approximately 360 feet of Golden-Mars Alternative Route 2 is located within the site's northwestern boundary. It has not been assessed for NRHP eligibility. The original site form for 44LD0332 records a light lithic scatter lacking in diagnostic artifacts or intact cultural features. ERM's review of aerial photography indicates the site area was cultivated through the mid-1990s, then fallow through the mid-2000s, then disturbed by construction of Loudoun County Parkway and an adjacent walking path from 2006 to 2007. Due to the previous ground disturbance, it is unlikely that any intact cultural remains are present at the site.

Site 44LD0333 is an unknown prehistoric temporary camp site that has been disturbed by previous land clearing and the installation of a paved walking trail. Golden-Mars Alternative Routes 1 and 2 cross more than 100 feet within the northern half of the site, which has not been assessed for NRHP eligibility. The original archaeology site form for 44LD0333 recorded a light lithic scatter lacking in diagnostic artifacts or intact cultural features. Review of aerial photography by ERM indicates the site area was cultivated through the mid-1990s, then fallow through the mid-2000s, then disturbed by construction of a Loudoun County Parkway and an adjacent walking path from 2006 to 2007. Due to previous ground disturbance, it is unlikely that any intact cultural remains are present at the site.

Site 44LD0334 is an unknown prehistoric temporary camp site that has been previously disturbed by land clearing and is currently unevaluated for NRHP eligibility. More than 100 feet of Golden-Mars Alternative Route 2 bisects the northeastern portion of the site. A 2003 survey recorded a light surface lithic scatter described as largely destroyed. ERM's review of aerial photography indicates the site area was cultivated from at least 1949 to the mid-1990s and fallow from then until through 2008. The Loudoun Valley Estates II residential development was built between 2010 and 2012 on the parcel containing the site, with the resource in a cleared area on the periphery of the development maintained as mowed grassland. Based on the results of the previous study and observed impacts, it is unlikely that intact cultural deposits are present at the site.

Site 44LD0335 is a prehistoric temporary camp whose eligibility for listing in the NRHP is undetermined. Approximately 230 feet of Golden-Mars Alternative Route 2 bisects the site while approximately 145 feet of Golden-Mars Alternative Route 3 bisects the southern portion of the site, which occupies a forested area along Broad Run. When first recorded in 1981, the site consisted of a surface scatter of non-diagnostic lithic artifacts. A 2004 Phase I survey found one lithic artifact on the site surface. The 2004 investigators

additionally noted that construction of the Broad Run Interceptor through the area appeared to have disturbed the site. ERM's review of aerial photography indicates that the site area was cultivated or fallow from at least 1949 through the 1980s, then reforested through the 1990s, remaining as such today. Based on the previous surveys, it is unlikely that intact cultural deposits are present at the site.

Site 44LD0472 is a prehistoric (Late Archaic) lithic scatter previously disturbed by road grading, whose eligibility for listing in the NRHP is undetermined. The site's western boundary is directly adjacent to the Golden-Mars Lines. Based on ERM's review of aerial photography, 44LD0472 is within a small area which has been forested since at least 1949. Although adjacent areas have been cultivated and/or disturbed by road construction and/or utility installations, ERM found no direct evidence of previous disturbance at the site on examined aerial photography. The site condition is therefore unknown.

Site 44LD0945 is a historic (twentieth century) multiple-dwelling site previously disturbed by surrounding commercial development and roadside grading, although the eligibility of the site for listing in the NRHP is undetermined. Most of the site is within the Golden-Mars Lines. A previous Phase I survey recorded a historic artifact scatter they associated with two structures east of the site dating from the 1960s that were demolished by 1994. Review of aerial photography by ERM indicates that the area within the site boundary was cultivated or fallow farmland from at least 1949 to 2004. In 2002, an electric distribution line was built across the southern edge of the site and in 2006 the site was disturbed by grading and commercial development. The site today is partially covered by a parking lot and partially covered by a paved walking trail and Old Ox Road. There is little potential of intact deposits at the site from the previous impacts.

Site 44LD1244 is a historic (eighteenth century) farmstead site whose eligibility for listing in the NRHP is categorized in VCRIS as unevaluated; however, the history of cultural resource investigations indicates the site was previously determined or treated as eligible. More than 100 feet of the Golden-Mars Alternative Route 1 and Golden-Mars Alternative Route 5 cross the site's northern boundary. A 2019 Phase III mitigation investigation found many diagnostic artifacts and intact cultural features associated with the farmstead within the central portion of the site area. ERM's review of aerial photography indicates that the route rights-of-way is due north of the part of the site covered by the Phase III investigation, in a partially cleared forested area next to the Dulles Greenway. While this area may have been impacted by previous road and utility construction, there is no conclusive evidence of previous disturbance on examined photography. Therefore, intact deposits and features could exist in the portion of the site crossed by the route.

Site 44LD1311 is a historic (nineteenth and twentieth century) dwelling site whose eligibility for listing in the NRHP has not been assessed. The Golden-Mars Alternative Routes 1 and 5 cross less than 100 feet of the southern boundary of the site. A 2025 Phase I recorded 44LD1311 as a historic domestic artifact scatter, partially destroyed by previous ground disturbance activities. ERM's review of USGS topographic quadrangles found two structures at the site on a map dating from 1951 and one structure on a map dating from 1966. Aerial photography dating from 1949 to 1994 shows multiple farm structures at the

site, but all buildings are gone on photography from 2002. The eastern approximately one-third of the site was paved over by a road in 2020.

Site 44LD1742 is a historic (early twentieth century) schoolhouse site (Carter Schoolhouse) previously evaluated as not eligible for listing in the NRHP. The site is entirely within the Golden-Mars Lines in a forested area east of Carters Schoolhouse Road. Previous Phase I and Phase II investigations at 44LD1742 in 2016 recorded the ruined foundation of a one-room schoolhouse with modern dumping obscuring much of the archaeological remain. The site is located on in a forested area. ERM's review of USGS topographic quadrangles found the school depicted on maps from 1951 and 1966 but not on maps from 1994. The school is visible on aerial photography dating from 1949 to 1980.

Site 44LD1909 is a historic (twentieth century) single dwelling site previously determined not eligible for listing in the NRHP. Less than 50 feet of the Golden-Mars Lines cross the southernmost portion of the site. A 2020 Phase I survey recorded a light historic artifact scatter lacking intact cultural deposits or features and with little research value. ERM's review of historic USGS topographic quadrangles indicates that the dwelling once present at the site was built in the first half of the twentieth century sometime after 1908 and prior to 1952. The dwelling and an outbuilding are visible on aerial photography of the site dating from the early 1960s to 2015. Both buildings appear to have been demolished between 2015 and 2016. The site is area is currently forested, with a concrete pad and debris visible through the foliage on 2024 aerial photography.

Site 44LD1922 is a late nineteenth to early twentieth-century single dwelling site, characterized by structural ruins and a scatter of domestic and architectural artifacts, whose NRHP eligibility has not been assessed, although it was recommended not eligible by a previous investigator. The site is directly adjacent to the Golden-Mars Alternative Routes 1 and 5 in a forested area bordered to the east and north by roads and to the west by a residential development. The investigators for a 2021 Phase I survey concluded that between 25 and 49 percent of the site was destroyed. ERM's review of USGS topographic quadrangles documented one or more structures at the site on maps dating from 1915 to 1994. Aerial photography dating from 1949 to 1991 similarly show a farmhouse and outbuildings at the site. The buildings were removed from the site by 2022. Other than removal of the buildings, there is no indication of previous disturbance at the site in examined images.

Site 44LD1978 is a historic (twentieth century) artifact scatter disturbed by previous land clearing activities and construction of an access road, which bisects the site. According to the VCRIS, the site's eligibility for listing in the NRHP is undetermined, although a 2022 Phase I survey interpreted the site as a secondary deposit of domestic refuse not eligible for listing in the NRHP. The Golden-Mars Lines intersect the northwest corner of the site, which is forested other than the access road. ERM's review of aerial photography suggests that the access road occupies what was once a small, tree-lined drainage passing through a cultivated field in production from at least 1949 to the early 1990s. At that time, the field began reverting to forest, with the access road cleared in 2006.

Lockridge 230 kV Loop

There is one above ground historic resource which was identified within the VDHR study tiers for the Lockridge Loop Proposed Route (Table I-6). Construction and operation of the facilities would have no impact on this resource (053-6416).

The Ox Road Trace (053-6416) is located 0.6 mile to the north of the Lockridge Loop Proposed Route in an area where the route uses a greenfield alignment. The surrounding area is wooded with pockets of commercial and data center developments. The Lockridge Loop Proposed Route connects to the Golden-Mars Lines in this area. The Lockridge Loop Proposed Route would not be visible from the resource due to distance and intervening vegetation. Thus, ERM recommends that it would have No Impact on 053-6416.

TABLE I-6 Golden-Mars 500-230 kV Electric Transmission Project Resources in VDHR Tiers for the Lockridge Loop Proposed Route				
Buffer (miles)	Considered Resources	VDHR #	Description	Impact
1.0-1.5	National Historic Landmarks	NA	NA	NA
1.0-0.5	National Register - Listed	NA	NA	NA
	Battlefields	NA	NA	NA
	Locally Significant (National Register – Potentially Eligible)	053-6416	Ox Road Trace	None
0.0-0.5	National Register – Eligible	NA	NA	NA
0.0 (within ROW)	NHL, National Register Properties (Listed and Eligible)	NA	NA	NA

ROW = right-of-way; NA = not applicable; VDHR = Virginia Department of Historic Resources

The Stage I Analysis also considered the potential effects to archaeological resources. There is one previously recorded archeological resource mapped within the Lockridge Loop Proposed Route: 44LD1916.

Site 44LD1916 is a prehistoric lithic scatter with an unspecified temporal affiliation that has been determined not eligible for listing in the NRHP. Approximately 300 feet of the Lockridge Loop Proposed Route crosses the site’s southern boundary. A 2018 Phase I survey recorded the site as a light lithic scatter lacking in diagnostic artifacts or intact cultural features. ERM’s review of aerial photography indicates that the site was pasture or agricultural land from at least 1949 through the 1970s. Since then, the site has reforested and remains woodland.

Sojourner 230 kV Loop

There is one above ground historic resource which was identified within the VDHR study tiers for the Sojourner Loop Proposed Route (Table I-7). Construction and operation of the facilities would have no impact on this resource (053-0008).

The Dulles International Airport Historic District (053-0008) is located approximately 0.4 mile to the south of the Sojourner Loop Proposed Route in an area where the route uses a

greenfield alignment to the point it connects to the planned Mars Substation, associated with the approved Mars-Wishing Star Project. The resource’s runway is closest to the route, with grass directly surrounding the runway bordered by trees. The Sojourner Loop Proposed Route connects to the Golden-Mars Lines in this area. The Sojourner Loop Proposed Route would not be visible from the resource boundary due to intervening vegetation. Thus, ERM recommends it would have no impact on 053-0008.

TABLE I-7 Golden-Mars 500-230 kV Electric Transmission Project Resources in VDHR Tiers for the Sojourner Loop Proposed Route				
Buffer (miles)	Considered Resources	VDHR #	Description	Impact
1.0-1.5	National Historic Landmarks	NA	NA	NA
1.0-0.5	National Register - Listed	NA	NA	NA
	Battlefields	NA	NA	NA
	Locally Significant	NA	NA	NA
0.0-0.5	National Register – Eligible	053-0008	Dulles Internation Airport Historic District	None
0.0 (within ROW)	NHL, National Register Properties (Listed and Eligible)	NA	NA	NA

ROW = right-of-way

The Stage I Analysis also considered the potential effects to archaeological resources. There is one previously recorded archaeological resource mapped within the Sojourner Loop Proposed Route: 44LD0737.

Site 44LD1737 is a historic (twentieth century) farmstead site that has been evaluated as ineligible for listing in the NRHP. Approximately 200 feet of the Sojourner Loop Proposed Route intersects the southern portion of the site. The VDHR evaluation notes indicate that the site consisted of a historic farmhouse and barn, with evidence that the house was burned and the remains removed from the site. No additional cultural features were identified. The VDHR investigators concluded the site lacked the subsurface integrity to be considered significant. The Company’s Sojourner Substation was built over the site.

J. Chesapeake Bay Preservation Areas

Construction, installation, operation, and maintenance of electric transmission lines are conditionally exempt from the Chesapeake Bay Act as stated in the exemption for public utilities, railroads, public roads, and facilities in 9 VAC 25-830-150. Additionally, Loudoun County is not a locality that is subject to the Chesapeake Bay Preservation Act.

K. Wildlife Resources

Forested land, agricultural land, open space, wetlands, and open water features within the study area may provide wildlife habitat. Forested areas within the rights-of-way of the routes for the Golden-Mars Lines, Lockridge Loop, and Sojourner Loop would be cleared of trees and converted to maintained herbaceous vegetation, which would eliminate forest habitat and cover but may provide edge habitat or open space for other species. Waterbody

habitat crossed by the routes for the Golden-Mars Lines, Lockridge Loop, and Sojourner Loop would be spanned by the transmission line, with impacts to aquatic species limited to any temporary construction impacts associated with forested vegetation clearing adjacent to the waterbody and the elimination of riparian buffer benefits (erosion control, water filtration, habitat, and temperature control through shading). Impacts to open space would be limited to structure placement if required and vegetation maintenance; the function of the land use would otherwise remain the same. No agricultural land would be crossed by the alternative routes.

The VGIN statewide land cover dataset (2024) with aerial photo interpretation was utilized to quantify land cover classifications impacted by each proposed route and route alternative. Forested land impacts are reflective of future conditions considering permitted planned developments unrelated to this Project. Desktop-delineated wetlands and waterbodies and the methodology for delineation are discussed further in Section D.

Golden-Mars Lines

Golden-Mars Alternative Route 1

The majority of the Golden-Mars Alternative Route 1 footprint crosses forested land (50.3 acres) and open space (42.4 acres), with a smaller amount of open water (2.2 acres). The route would cross 27.2 acres of wetlands and 33 waterbodies (20 NHD-mapped and 13 non-NHD-mapped waterbodies), including eight perennial waterbodies.

Golden-Mars Alternative Route 2

The majority of the Golden-Mars Alternative Route 2 footprint crosses forested land (64.7 acres) and open space (31.6 acres), with a smaller amount of open water (2.4 acres). The route would cross 34.7 acres of wetlands and 40 waterbodies (23 NHD-mapped and 17 non-NHD-mapped waterbodies), including 14 perennial waterbodies.

Golden-Mars Alternative Route 3

The majority of the Golden-Mars Alternative Route 3 footprint crosses forested land (66.5 acres) and open space (20.2 acres), with a smaller amount of open water (2.0 acres). The route would cross 28.1 acres of wetlands and 34 waterbodies (17 NHD-mapped and 17 non-NHD-mapped waterbodies), including 12 perennial waterbodies.

Golden-Mars Alternative Route 4

The majority of the Golden-Mars Alternative Route 4 footprint crosses forested land (67.0 acres) and open space (19.2 acres), with a smaller amount of open water (1.9 acres). The route would cross 29.8 acres of wetlands and 31 waterbodies (14

NHD-mapped and 17 non-NHD-mapped waterbodies), including eight perennial waterbodies.

Golden-Mars Alternative Route 5

The majority of the Golden-Mars Alternative Route 5 footprint crosses forested land (49.1 acres) and open space (46.8 acres), with a smaller amount of open water (2.2 acres). The route would cross 27.2 acres of wetlands and 37 waterbodies (21 NHD-mapped and 16 non-NHD-mapped waterbodies), including eight perennial waterbodies.

Lockridge 230 kV Loop

Lockridge Loop Proposed Route

The majority of the Lockridge Loop Proposed Route footprint crosses forested land (4.4 acres), with a smaller amount of open space (0.3 acre) and open water (0.1 acre). The route would cross 1.2 acres of wetlands and two waterbodies (one NHD-mapped and one non-NHD-mapped waterbody), including one perennial waterbody.

Sojourner 230 kV Loop

Sojourner Loop Proposed Route

The majority of the Sojourner Loop Proposed Route footprint crosses forested land (23.2 acres), with a smaller amount of open space (4.3 acres) and open water (less than 0.1 acre). The route would cross 3.1 acres of wetlands and five waterbodies (two NHD-mapped and three non-NHD-mapped waterbodies), including no perennial waterbodies.

L. Recreation, Agricultural, and Forest Resources

The Project is expected to have minimal, incremental impacts on recreational and forest resources and no impacts to agricultural resources. Opportunities for collocation with other rights-of-way, particularly the Company's existing infrastructure (*i.e.*, transmission lines, distribution lines, and future/existing substations), buried utility lines (*i.e.*, gas, water, and sewer), and roads (*i.e.*, Sully Road, Pacific Boulevard, Waxpool Road, Dulles Greenway, Loudoun County Parkway, Ryan Road, Claiborne Parkway, Loudoun Reserve Drive, Overland Drive, Pebble Run Place, Old Ox Road, Carter School Road, Beaver Meadow Road, and Digital Dulles Drive) were considered where possible as a means of avoiding or minimizing impacts on resources. Where the route alternatives cross open lands, impacts would be limited to structure placement and agricultural activities could resume post construction. Where forested areas are crossed, trees would be removed and vegetation kept to maintained heights within the right-of-way.

The Virginia Scenic Rivers Act seeks to identify, designate, and protect rivers and streams that possess outstanding scenic, recreational, historic, and natural characteristics of statewide significance for future generations. No state scenic rivers will be crossed by the Project.

The Virginia Agricultural and Forestal Districts Act provides for the creation of conservation districts designed to conserve, protect, and encourage the development and improvement of a locality's agricultural and forested lands. According to the Virginia Department of Forestry, there are no Virginia Agricultural and Forestal Districts crossed by the Project.

Under the Virginia Open-Space Land Act, any public body can acquire title or rights to real property to provide means of preservation of open-space land. Most easements created under the Act are held by the Virginia Outdoors Foundation ("VOF"), but any state agency is authorized to create and hold an open-space easement. Such conservation easements are designed to preserve and protect open space and other resources and must be held for no less than five years in duration and can be held in perpetuity. According to the DCR's Managed Conservation Lands Database and the Protected Areas Database of the United States, there are no easements held by the VOF or Virginia Natural Area Preserves within the study area.

Over 75,000 acres of land are protected by easements managed under the Loudoun County Conservation Easement Stewardship Program to preserve and protect open space or other resources in perpetuity. BOS open space easements are dedicated open space areas within Loudoun County; however, not all BOS open space easements are public land or open to the public because some are owned and maintained by private homeowners associations and not within public park lands. Golden-Mars Alternative Route 5, Lockridge Loop Proposed Route, and Sojourner Loop Proposed Route do not cross BOS open space easements. In contrast, Golden-Mars Alternative Routes 1, 2, 3, and 4 cross BOS open space easements. If the Company cannot obtain permission to cross the BOS open space easements, Golden-Mars Routes 1, 2, 3, and 4 are not viable; however, the BOS has indicated to the Company and through the public adoption of a BOS Resolution that Alternative Routes 3 and 4 would be permitted across County open space easements. Refer to Section 5.1.7.1 of the Environmental Routing Study for additional information on the BOS open space easements crossings.

Loudoun County has local ordinances that are intended to maintain forested/vegetative buffers along waters, referred to in Loudoun County as River and Stream Corridor Resource ("RSCR") buffers. Construction of transmission lines is permitted within RSCR buffers. There are RSCR buffers that exist within the study area, associated with named and unnamed waterbodies including Broad Run, Stallion Branch, and Horsepen Run. All five routes for the Golden-Mars Lines, the Lockridge Loop Proposed Route, and the Sojourner Loop Proposed Route cross these resources. Although transmission lines are exempt from the activity restrictions within RSCR buffers, the Company will work to

minimize any impact to the extent practicable. Refer to Section 5.1.7.2 of the Environmental Routing Study for additional information on the RSCR buffers.

Any tree along the right-of-way that is tall enough to endanger the conductors if it were to break at the stump or uproot and fall directly toward the conductors and exhibits signs or symptoms of disease or structural defect that make it an elevated risk for falling will be designated as a “danger tree” and may be removed. The Company’s arborist will contact the property owner if possible before any danger trees are cut, except in emergency situations. The Company’s Forestry Coordinator will field-inspect the rights-of-way and designate any danger trees present. Qualified contractors working in accordance with the Company’s Electric Transmission specifications will perform all danger tree cutting.

Recreational and forest resources crossed by the Project are discussed below. Table L-1 summarizes recreational resources within 0.25 mile of the Project. An assessment of impacts on these resources is provided in the Environmental Routing Study. There are no recreational resources within 0.25 mile of the Lockridge 230 kV Loop or Sojourner 230 kV Loop.

Table L-1			
Golden-Mars 500-230 kV Electric Transmission Project			
Recreational Resources within 0.25 mile of the Golden-Mars Lines, Lockridge Loop, and Sojourner Loop			
Recreational Resource	Recreational Type and Description	Status	Distance to Project Facilities
1757 Golf Club	Golf Course	Active; operated by Heritage Golf Group	500 feet north of all Golden-Mars Routes
Broad Run Trail	Park and shared use natural surface trails	Active; owned and maintained by Loudoun County	Crossed by Golden-Mars Alternative Routes 2, 3, and 4
Creskide Park	Playground, tennis court, and basketball court	Active; owned and maintained by Loudoun Valley Estates II	0.2 mile west of Golden-Mars Alternative Routes 3 and 4
DGIF Birding and Wildlife Trail: Foothill to Falls Loop	Designation for roads and trails connecting parks, natural areas, and cultural sites	Active; managed by the Virginia DWR	Crossed by all Golden-Mars Routes
Evermoore Neighborhood Park	Amphitheater, pavilions, picnic areas, and playground	Active; owned and maintained by Loudoun County	0.3 mile north of Golden-Mars Alternative Routes 1 and 4
Glenside Park	Playground	Active; owned and maintained by Loudoun Valley Estates II	600 feet west of Golden-Mars Alternative Routes 1 and 2, and 500 feet west of Golden-Mars Alternative Route 5
Highland Park	Walking paths and playground	Active; owned and maintained by Loudoun Valley II	0.2 mile north of Golden-Mars Alternative Routes 1 and 2, and 0.1 mile west of Alternative Route 3
Loudoun County Linear Parks and Trails System	Interconnected multi-use trail system	Countywide Plan Linear Parks and Trails System adopted by Loudoun County in July 2021; owned and maintained through public-private partnership	Crossed multiple times by all Golden-Mars Routes
Loudoun Valley Estates II Playground	Playground and fields	Active; owned and maintained by Loudoun Valley Estates II	600 feet west of Golden-Mars Alternative Route 5
Lyndora Park	Multipurpose trail, fields, picnic areas, playground	Active; owned and maintained by Loudoun County	200 feet north of Golden-Mars Alternative Routes 2, 3, and 4
Moorefield Green Community Park	Walking paths and playground	Active; owned and maintained by Moorefield Station West	0.2 mile north of Golden-Mars Alternative Route 5
Moorefield Station Regional Trail and Neighborhood Trail	Multipurpose trails	Proposed; owned and maintained by Loudoun County	Crossed by Golden-Mars Alternative Routes 1 and 5
Southview Park	Playground, tennis court, and basketball court	Active; owned and maintained by Loudoun Valley Estates II	800 feet west of Golden-Mars Alternative Routes 1, 2, and 5
Stone Hill Residential	Active recreational space	Proposed; owned by Toll Brothers, Inc.	600 feet north of Golden-Mars Alternative Routes 1, 2, and 5
Valley Falls Community Park	Natural area	Active; owned and maintained by Loudoun Valley II	Crossed by Golden-Mars Alternative Routes 1, 2 and 5
Washington & Old Dominion Trail	Shared-use asphalt trail (adjacent gravel equestrian trail)	Active: owned and maintained by NOVA Parks	Crossed by all Golden-Mars Route Alternatives
Woodside Park	Natural area	Active; owned and maintained by Loudoun Valley Estates II	0.2 mile east of Golden-Mars Alternative Routes 1, 2 and 5

Golden-Mars Lines

Forested acreage below for the Golden-Mars Routes has been reduced by 5.5 acres to account for the permitted clearing and construction under the approved Digital Dulles datacenter development. Trees would be cleared prior to Project construction.

Golden-Mars Alternative Route 1

The Golden-Mars Alternative Route 1 crosses approximately 44.8 acres of forested land (36% of the total right-of-way) and no agricultural land. NRCS soils data indicates approximately 62.3 acres within the right-of-way are classified as prime farmland and 17.0 acres are classified as farmland of statewide importance.

Golden-Mars Alternative Route 2

The Golden-Mars Alternative Route 2 crosses approximately 59.2 acres of forested land (49% of the total right-of-way) and no agricultural land. NRCS soils data indicates approximately 54.8 acres within the right-of-way are classified as prime farmland and 14.0 acres are classified as farmland of statewide importance.

Golden-Mars Alternative Route 3

The Golden-Mars Alternative Route 3 crosses approximately 61.0 acres of forested land (56% of the total right-of-way) and no agricultural land. NRCS soils data indicates approximately 45.0 acres within the right-of-way are classified as prime farmland and 15.0 acres are classified as farmland of statewide importance.

Golden-Mars Alternative Route 4

The Golden-Mars Alternative Route 4 crosses approximately 61.5 acres of forested land (56% of the total right-of-way) and no agricultural land. NRCS soils data indicates approximately 45.9 acres within the right-of-way are classified as prime farmland and 14.5 acres are classified as farmland of statewide importance.

Golden-Mars Alternative Route 5

The Golden-Mars Alternative Route 5 crosses approximately 43.7 acres of forested land (34% of the total right-of-way) and no agricultural land. NRCS soils data indicates approximately 67.2 acres within the right-of-way are classified as prime farmland and 15.3 acres are classified as farmland of statewide importance.

Lockridge 230 kV Loop

Lockridge Loop Proposed Route

The Lockridge Loop Proposed Route crosses approximately 4.4 acres of forested land (88% of the total right-of-way) and no agricultural land. NRCS soils data indicates approximately 3.4 acres within the right-of-way are classified as prime farmland and 0.3 acre is classified as farmland of statewide importance.

Sojourner 230 kV Loop

Sojourner Loop Proposed Route

The Sojourner Loop Proposed Route crosses approximately 23.2 acres of forested land (80% of the total right-of-way) and no agricultural land. NRCS soils data indicates approximately 17.0 acres within the right-of-way are classified as prime farmland, and there are no lands classified as farmland of statewide importance.

M. Use of Pesticides and Herbicides

Of the techniques available, selective foliar is the preferred method of herbicide application. The Company typically maintains transmission line rights-of-way by means of selective, low-volume applications of EPA-approved, non-restricted use herbicides. The goal of this method is to exclude tall-growing brush species from the right-of-way by establishing early successional plant communities of native grasses, forbs, and low-growing woody vegetation. “Selective” application means the Company sprays only the undesirable plant species (as opposed to broadcast applications). “Low volume” application means the Company uses only the volume of herbicide necessary to remove the selected plant species. The mixture of herbicides used varies from one cycle to the next to avoid the development of resistance by the targeted plants. There are four means of dispersal available to the Company, including by-hand application, backpack, fixed nozzle-radiarc, and aerial. Very little right-of-way maintenance incorporates aerial equipment. The Company uses licensed contractors to perform this work that are either certified applicators or registered technicians in the Commonwealth of Virginia.

DEQ has previously requested that only herbicides approved for aquatic use by the EPA or the USFWS be used in or around any surface water. The Company intends to comply with this request.

Additionally, based on a discussion between Company and DCR-DNH representatives, the Company reviewed its Integrated Vegetation Management Plan (“IVMP”) for application to both woody and herbaceous species based on the species list available on the DCR website. The Company continues to coordinate with DNH on an addendum to the IVMP to further explain how the Company’s operations and maintenance forestry program addresses invasive species. In November 2023, the Company submitted the addendum draft to DCR for review and continued discussions. DCR provided an initial

response to the addendum in January 2024. The Company is in the process of ongoing coordination with DCR-DNH pertaining to the Company's IVMP with a meeting held on November 11, 2024. The Company is continuing to coordinate with DCR with the commitment to schedule additional meetings to discuss DCR's concern. Once the addendum is finalized, the Company will report on the results of its communications with DCR in future proceedings.⁶

N. Geology and Mineral Resources

The Project study area is within the Piedmont geologic province, which lies between the mountainous Blue Ridge province to the west and the terraced slopes of the Coastal Plain province to the east. The Piedmont is characterized by rolling topography, thick soils, and heavily weathered bedrock primarily caused by the region's humid climate. The geologic terranes of the province are relatively complex where many of the rock units are separated by faults and contain various igneous and metamorphic histories. Based on review of the Geologic Map of Virginia, the Project is within a Mesozoic basin situated between the Blue Ridge and Western Piedmont-Potomac Terranes.

Beginning at the Golden Substation, the five Golden–Mars Lines route alternatives begin within Triassic-age shale and siltstone belonging to the Newark Supergroup, prior to encountering a section of igneous mafic bedrock (diabase). Each route then encounters intervals of interbedded shale, siltstone, and sandstone, as well as the diabase unit. Each route terminates at the Mars Substation location within a bedrock unit consisting of intermixed shale and siltstone.

The Lockridge 230 kV Loop begins and ends within sections of the Newark Supergroup shale and siltstone, with a short encounter of diabase in the middle of each route.

ERM reviewed publicly available Virginia Department of Energy datasets (2023), USGS topographic quadrangles, and recent (2024) digital aerial photographs to identify mineral resources in the Project area. Based on this review, no active mineral resources were identified within 0.25 mile of any of the route alternatives for the Golden–Mars Lines, the Lockridge Loop Proposed Route, or the Sojourner Loop Proposed Route. The closest active permitted mining site is located approximately 1.6 miles southeast of the Project.

⁶ See, *Application of Virginia Electric and Power Company, For approval and certification of electric transmission facilities: 230 kV Line #293 and 115 kV Line #83 Rebuild Project*, Case No. PUR-2021-00272, Final Order at 9-11 (Aug. 31, 2022) (*The Commission agreed with the Chief Hearing Examiner and declined to adopt DCR-DNH's recommendation regarding an invasive species management plan ("ISMP"), but directed the Company to meet with DCR-DNH and to report on the status of the meetings in the Company's next transmission certificate of public convenience and necessity ("CPCN") filing*); see also Report of Alexander F. Skirpan, Jr., Chief Hearing Examiner (Jun. 22, 2022) at 22 (*agreeing with the Company that, with its IVMP, the Company should not be required to undergo the additional cost of DCR-DNH's ISMP; however, recommending that the Company meet with DCR-DNH regarding its IVMP and report the results of the meeting in the next transmission CPCN filing*).

There is one inactive mineral resource site located approximately 0.4 mile southeast of the Golden–Mars Lines.

O. Transportation Infrastructure

Road and Railroad Crossings

The road network in the study area includes a variety of road types ranging from major or principal arterials (such as Dulles Greenway and Route 28), minor arterials (such as Waxpool Road, Loudoun County Parkway, and Old Ox Road), major collectors (such as Pacific Boulevard, Shellhorn Road, Lockridge Road, Ryan Road, Claiborne Parkway, Davis Drive), minor and neighborhood collectors (such as Broderick Drive, Centergate Drive, Westwind Drive, Claude Moore Drive, Creighton Road, Barrister Street, Moran Road, Dresden Street) and local roads. Several of the local and service roads in the study area which are primarily located east and south of Old Ox Road are owned and maintained by the Metropolitan Washington Airport Association (“MWAA”) in association with Dulles Airport.

In addition to roadways within the study area, the Dulles Greenway and Metrorail Silver Line bisect the study area from east to west. The Silver Line is part of Washington Metrorail system which runs from Washington, D.C. to Dulles Airport, then continues west from Dulles Airport along the Dulles Greenway terminating at Ashburn Station. No other railroads or Metrorail lines are located within the study area.

Based on a review of publicly available Loudoun County planning information, there are several planned roadway construction and transportation improvement projects within 0.25 mile of the alternative route corridors. These projects include: Waxpool Road at Pacific Boulevard/Broderick Drive, Waxpool Road & Loudoun County Parkway Intersection, Prentice Drive—Loudoun County Parkway to Shellhorn and Lockridge West, Prentice Drive—Lockridge Road to Loudoun County Parkway Project, Shellhorn Road—East of Loudoun County Parkway to Bullpen Drive/Thumb Drive Project, Shellhorn Road Extension—MWAA Property Boundary to Moran Road Project, and Westwind Drive—Loudoun County Parkway to Old Ox Road Project. In addition to Loudoun County planned roadway projects, the Waxpool Road at Pacific Boulevard/Broderick Drive and Waxpool Road & Loudoun County Parkway Intersection projects are also classified as VDOT roadway construction and transportation improvement projects. Section 5.1.10 of the Environmental Routing Study includes detailed descriptions of these planned roadway projects. Table O-1 provides the roads that are crossed by each route alternative.

Table O-1 Golden-Mars 500-230 kV Electric Transmission Project Roads Crossed by the Golden-Mars Lines, the Lockridge Loop and the Sojourner Loop			
Road Name	Crossed by	Lanes at Crossing	Crossing Type
Loudoun County Parkway	Golden-Mars Alternative Routes 1 and 5	4	Alternative Route 1 (one angled crossing, one perpendicular crossing); Alternative Route 5 (one angled crossing, three perpendicular crossings)
Lockridge Road	Lockridge Loop Proposed Route	2	Perpendicular
Loudoun Reserve Drive	Golden-Mars Alternative Route 3	2	Angled
Old Ryan Road	Golden-Mars Alternative Route 5	4	Perpendicular
Willington Square	Golden-Mars Alternative Route 5	2	Perpendicular
Ryan Road	Golden-Mars Alternative Route 5	4	Angled
Barrister Street	Golden-Mars Alternative Routes 1 and 5	6	Perpendicular
Gleedsville Manor Drive	Golden-Mars Alternative Routes 1 and 5	4	Perpendicular
Dulles Greenway	Golden-Mars Alternative Routes 1-5	6	Angled
Waxpool Road On-ramp	Golden-Mars Alternative Routes 1-5	1	Angled
Pacific Boulevard	Golden-Mars Alternative Routes 1-5	5	Angled
Waxpool Road	Golden-Mars Alternative Routes 1-5	9	Perpendicular
Broderick Drive	Golden-Mars Alternative Routes 1-5	4	Angled
Old Ox Road	Golden-Mars Alternative Routes 1-5	4	Angled
Pebble Run Place	Golden-Mars Alternative Routes 1-5	4	Perpendicular
Auto World Circle	Golden-Mars Alternative Routes 1-5	4	Perpendicular
Dulles Greenway On-ramp	Golden-Mars Alternative Routes 1 and 5	1	Angled
Evergreen Ridge Drive	Golden-Mars Alternative Routes 1, 2 and 5	7	Perpendicular

Temporary closures of roads and or traffic lanes could be required during construction of the Project. No long-term impacts on roads are anticipated. The Company will comply with VDOT requirements for access to the rights-of-way from public roads. At the appropriate time, the Company will obtain the necessary VDOT permits as required and comply with permit conditions. The Company will work with Loudoun County to ensure the planned roads and proposed transmission facilities can co-exist.

Airports

The Federal Aviation Administration (“FAA”) is responsible for overseeing air transportation in the United States. The FAA 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 design of the proposed Project must prevent interference with pilots’ safe ingress and egress at airports in the vicinity of the Project. Such hazards or impediments include interference with navigation and communication equipment and glare from materials and external lights.

The Company reviewed the FAA website⁷ 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 within 10.0 nautical miles of the Project’s routes. Based on this review, the following FAA-restricted airports are located within 10.0 nautical miles of the Golden-Mars Lines, the Lockridge Loop, and the Sojourner Loop:

Table O-2 Golden-Mars 500-230 kV Electric Transmission Project Airports And Heliports Located Within 10.0 Nautical Miles (nm) of the Golden-Mars Lines, the Lockridge Loop and the Sojourner Loop		
Airport/Heliport Name and FAA Identifier	Use Designation	Approximate distance and direction of nearest runway from the nearest project route/ feature
Washington Dulles International Airport (Dulles Airport; IAD)	Public	Dulles Airport has three existing north-south runways and one existing east-west runway. The nearest runways include: <i>Runway 01L/19R</i> : 0.4 nm east of Sojourner 230 kV Loop <i>Runway 12/30</i> : 0.5 nm south of the Mars Substation, the southern terminus of all routes for the Golden-Mars Lines and the Sojourner 230 kV Loop.
Stonesprings Heliport (6VG4)	Private	1.9 nm southwest of Golden–Mars Alternative Routes 1, 2 and 5.
Inova Loudoun Hospital Heliport (34VA)	Private	4.1 nm northwest of the Golden Substation and the northern terminus of all routes for the Golden–Mars Lines.
Reston Hospital Center Heliport (43VA)	Private	4.4 nm southeast of the Golden Substation and the northern terminus of all routes for the Golden–Mars Lines.
Crippen’s Heliport (VA54)	Private	4.8 nm east of the Golden Substation and the northern terminus of all routes for the Golden–Mars Lines.
Leesburg Executive Airport (JYO)	Public	5.2 nm north of Golden–Mars Alternative Route 5.
Goose Hunt Farm Airport (3VA5)	Private	5.6 nm northwest of Golden–Mars Alternative Route 5.

⁷ See <https://oaaaa.faa.gov/oaaaa/external/portal.jsp> and <https://adip.faa.gov/agis/public/#/public>.

Inova Fair Oaks Hospital Heliport (74VA)	Private	6.4 nm southeast of Sojourner 230 kV Loop.
Fairfax County Police Heliport (26VA)	Private	7.9 nm southeast of Sojourner 230 kV Loop.
Egypt Farms Heliport (4VA0)	Private	9.6 nm northwest of Golden–Mars Alternative Route 5.

nm = nautical mile

The Company conducted an airport analysis to determine if any of FAA defined Civil Airport Imaginary Surface would be penetrated by structures associated with the Project. The Company hired ERM to conduct the review.

The regulations that govern objects that may affect navigable airspace are codified in the Code of Federal Regulations, Title 14, Part 77. In these regulations it states that restrictions to structure heights only apply to public use airports and do not apply to privately owned airports. Of the 10 airports identified within 10 nautical miles of the study area, two are public use airports (Washington Dulles International Airport and Leesburg Executive Airport), one is a private use airport, seven are private use heliports, and none are military airports. None of the private facilities listed in Table O-2 are anticipated to have a conflict with the route locations.

ERM reviewed the height limitations associated with FAA defined imaginary surfaces for runways associated with the Washinton Dulles International Airport to determine whether any of the towers planned to be installed for the Project would penetrate any of the relevant runway flight surfaces. Distances from the Project route alternatives to Washinton Dulles International Airport are provided in Table O-2. No overlap or impact to imaginary surfaces associated with Leesburg Executive Airport is anticipated due to the airports distance from the Project area (greater than 31,000 feet).

Dulles Airport currently has four runways. Based on a review of FAA airport data and obstruction categories, all of the runway approaches at Dulles Airport are considered Precision Instrument Approach Runways, with the exception of Runway 30, which is a visual approach runway (B[V]) runway and points to the east, away from the project. The established elevation of Dulles Airport is 312.3 feet above mean sea level (“AMSL”). All route alternatives associated with the Golden-Mars 500 kV / 230 kV Lines, the Sojourner 230 kV Loop and the Lockridge 230 kV Loop are located completely within the horizontal extents of Dulles Airport’s imaginary surfaces.

The Company conducted a Maximum Structure Height analysis that compared ground elevation at planned structure locations to the most restrictive imaginary surface altitudes above them. The highest ground elevations along Golden-Mars Route 1, 2 and 5 occur along Loudoun County Parkway near Evergreen Ridge Drive (up to 318 feet AMSL), and the highest ground elevations along Routes 3 and 4 occur near the future Mars Substation (up to 298 feet AMSL). Ground elevations along the Lockridge Loop range from 222 to 264 feet AMSL, and elevations along the Sojourner Loop range from 273 to 293 feet AMSL. Imaginary surface altitudes vary based on a structure’s distance from the runway; however, in general, structures closer to the runway, or structures placed at higher ground

elevations will be more restricted. Based on the results of this analysis, the following maximum structure height ranges would apply to each route alternative.

- Golden-Mars Lines – Alternative Routes 1-5: 165.1 to 520.7 feet AGL, with the most restricted structure locations occurring along Carter School Road and the Mars Substation for all alternatives.
- Lockridge 230 kV Loop (Proposed Route): 191.9 to 233.6 feet AGL
- Sojourner 230 kV Loop (Proposed Route): 169. to 189.7 feet AGL

Based on a review of the proposed and alternative route plans, the following structure types and heights would apply to each route alternative. Structure type and height will be dependent on location needs and FAA restrictions, and no imaginary surface penetration is anticipated.

- Golden-Mars Lines (all routes): Monopole, 2-pole, 3-pole, H-frame and backbone structures, with heights ranging from 95 feet to 185 feet AGL.
- Lockridge 230 kV Loop: Monopole and backbone structures ranging from 95 to 120 feet AGL.
- Sojourner 230 kV Loop: Monopole, 2-pole and 3-pole structures ranging from 50 to 120 feet AGL.

In no situation will structure heights exceed 200 feet above ground surface, and no structure is anticipated to exceed 200 feet above the established airport elevation (312.3 feet AMSL).

Structures may not be considered a hazard to air navigation if they do not penetrate any imaginary surfaces or exceed obstruction thresholds; however, a notice must be filed with the FAA for each structure that penetrates a 100 to 1 imaginary notice surface within 20,000 feet of the runway primary surfaces at Dulles Airport. All structures associated with all of the Project's route alternatives are within 20,000 feet of at least one runway. Structures associated with the all Golden-Mars Alternative Routes, the Lockridge Loop Proposed Route, and the Sojourner Loop Proposed Route all have structures that will require notification to the FAA for penetrating the 100 to 1 imaginary surface. The Company will utilize FAA Form 7460-1, Notice of Proposed Construction or Alteration, pursuant to 14 CFR Part 77 for FAA notification. The submittal would occur after routes are selected by the SCC during the permitting phase of the Project. Based on the results of the maximum structure height analysis, the Company believes it is unlikely that any route will be infeasible based on FAA requirements, and the Company plans to construct structures below imaginary surfaces in all locations. The FAA may require additional ground elevation surveys to verify that structures are not penetrating imaginary surfaces and may require design alterations to minimize the chance of airspace impacts, including lighting and marker-balls on sections which they deem necessary to protect air safety. The Company plans to consult with the FAA and implement design and routing alterations as required.

P. Drinking Water Wells

The Company has coordinated with the Department of Health (“VDH”), Office of Drinking Water (“ODW”) on the Company’s analysis of drinking water sources in proximity to the Company’s construction projects. VDH-ODW has requested the Company identify known drinking water wells within the Project area on the Company’s Erosion and Sediment Control Plans. Water wells within 1,000 feet of the Project, however, may be outside of the transmission line corridor. The Company does not have the ability or right to field-mark wells located on private property. The Company has agreed to a method of well protection, including plotting and calling out the wells on the Project’s Erosion and Sediment Control Plan, to which VDH-ODW indicated that the Company’s proposed method is reasonable. A copy of that correspondence is included as Attachment 2.P.1. The Company intends to follow this same approach as a standard practice with transmission line projects and will coordinate with VDH-ODW, as needed.

Q. Pollution Prevention

Generally, as to pollution prevention, as part of Dominion Energy Virginia’s environmental compliance, the Company has a comprehensive Environmental Management System Manual in place that ensures it is committed to complying with environmental laws and regulations, reducing risk, minimizing adverse environmental impacts, setting environmental goals, and achieving improvements in its environmental performance, consistent with the Company’s core values. Accordingly, any recommendation by the DEQ to consider development of an effective environmental management system has already been satisfied.

ATTACHMENTS



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Virginia Department of Environmental Quality
Office of Environmental Impact Review
Ms. Bettina Rayfield, Manager
P.O. Box 1105
Richmond, Virginia 23218

DATE

March 28, 2025

SUBJECT

GOLDEN-MARS 230 KV ELECTRIC
TRANSMISSION PROJECT

REFERENCE

0642267

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 Golden-Mars 230 kilovolt (kV) Electric Transmission Line Project (Project) in Loudoun County, Virginia. This delineation was done using desktop resources and methodology. A field delineation is required to verify the accuracy and extent of aquatic resource boundaries. Project route alternatives are shown in Attachment 1, with aquatic resource type and probability shown in Attachments 2 and 3.

Dominion Energy Virginia is filing an application with the State Corporation Commission (SCC) to:

- Construct a new approximately 8.2-mile overhead 500 kV single circuit transmission line and a new overhead 230 kV single circuit transmission line almost entirely on new right-of-way. The new transmission lines will originate at the 500 kV and 230 kV buses of the future 500-230 kV Golden Substation and continue to the future 500-230 kV Mars Substation (Golden–Mars Lines);¹
- Construct a new approximately 0.6-mile overhead double-circuit 230 kV transmission line on one set of double circuit structures by cutting the proposed 230 kV Golden-Mars Line and looping it into and out of the existing 230-34.5 kV Lockridge Substation (Lockridge 230 kV Loop);

¹ The Golden Substation was approved by the SCC for construction and operation as part of the Aspen-Golden 500-230 kV Projects in Case No. PUR-2024-00032, and the Mars Substation was approved by the SCC for construction and operation as part of the approved Mars–Wishing Star Project in Case No. PUR_2022-00183. Construction of the future Golden and Mars Substations is not a part of this Project.



- Construct a new approximately 1.9-mile overhead double circuit 230 kV transmission line on one set of double circuit monopole structures from the future Mars Substation to the existing Sojourner Substation (Sojourner 230 kV Loop); and
- Minor substation-related work at the future Golden and Mars Substations.

These facilities are collectively referred to as the Project.

The Project is necessary to relieve violations of North American Electric Reliability Corporation Reliability Standards brought on by significant increases in electrical demand as well as expected demand growth projected for the future, to interconnect future load, and to maintain the structural integrity and reliability of its transmission system.

The purpose of this desktop analysis is to identify and evaluate potential impacts of the Project on aquatic resources (wetlands, streams, creeks, runs, and open water features) in the area. 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. This report is being submitted to the DEQ as part of the DEQ Wetland Impacts Consultation.

This assessment did not include field investigations required for wetland delineations, as defined in the U.S. Army Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0).

PROJECT STUDY AREA AND POTENTIAL ROUTES

The Project study area encompasses more than 22 square miles in eastern Loudoun County and includes the area around the future Golden Substation, the future Mars Substation, the existing Lockridge Substation, and the existing Sojourner Substation. The study area is generally bounded by the following features:

- Gloucester Parkway to the north;
- Sully Road (Virginia State Route [Rt.] 28) to the east;
- Dulles Airport to the south; and
- Belmont Ridge Road to the west.

The study area encompasses portions of several census-designated places and unincorporated areas within eastern Loudoun County, including Ashburn, Dulles, Moorefield, Brambleton, and Sterling. Notable places within the study area include parts of Data Center Alley (DCA), which is the world's largest agglomeration of data center campuses, Washington Dulles International Airport (Dulles Airport), the Metrorail Silver Line terminus at Ashburn Station, and suburban residential neighborhoods. The study area was predominately farmland prior to 2002 but has developed rapidly over the past 25 years.



Land use in the study area consists primarily of data center campuses, flex industrial warehouses, and low to medium density single-family housing. Broad Run, a tributary of the Potomac River, bisects the study area from northeast to southwest. The stream is surrounded a forested riparian corridor. The Dulles Greenway (Rt. 267) bisects the study area from northwest to southeast and forms a partial divide between data centers and industrial areas to the north (within DCA) and residential areas to the south and west of Broad Run. Loudoun County Parkway (Rt. 607) also bisects the study area from northeast to southwest as it passes through DCA, crosses the Dulles Greenway, and passes residential areas before reaching Old Ox Road (Rt. 606). Old Ox Road is located in southern portion of the study area and separates Dulles Airport from adjacent industrial and residential areas to the north and west. The study area is shown in Attachment 1.

GOLDEN-MARS LINES

ROUTE 1

Route 1 is approximately 9.4 miles long. The route originates at Golden Substation located between Pacific Boulevard and Sully Road north of the W&OD Trail. The route exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. This segment of the route alignment from the Golden Substation to the Dulles Greenway is the same for all Golden-Mars route alternatives.

South of the Greenway, the route turns northwest, paralleling the south side of the Greenway before turning west to parallel the south side of Loudoun County Parkway. The route briefly crosses to the north side of Loudoun County Parkway, then back to the south side and parallels the south and west side of the parkway (as the road turns south) from Gleedsville Manor Drive south to Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carters School Road before terminating at Mars Substation.

ROUTE 2

Route 2 is approximately 9.3 miles long. Route 2 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route continues southwest, parallel to existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns west and crosses Broad Run three times before reaching Loudoun County Parkway. The route continues south and parallels the west side of Loudoun County Parkway past Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old



Ox Road. The route then turns south along Carters School Road before terminating at Mars Substation.

ROUTE 3

Route 3 is approximately 8.3 miles long. Route 3 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route continues southwest, parallel to existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns west, crosses Broad Run three times before turning south and crossing Loudoun Reserve Drive. The route continues south through Broad Run Stream Valley Park and across Overland Road. The route then turns east and parallels the north side of Old Ox Road then turns south along Carters School Road before terminating at Mars Substation.

ROUTE 4

Route 4 is approximately 8.3 miles long. Route 4 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route continues southwest, parallel to existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns south and continues to parallel existing transmission lines before turning west along Loudoun Reserve Drive. The route then turns south through Broad Run Stream Valley Park and across Overland Road. The route turns east and parallels the north side of Old Ox Road then turns south along Carters School Road before terminating at Mars Substation.

ROUTE 5

Route 5 is approximately 9.8 miles long. Route 5 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route turns northwest and follows the south side of the Dulles Greenway before turning west to parallel the south side of Loudoun County Parkway. The route briefly crosses to the north side of Loudoun County Parkway, then back to the south side, and parallels the south and west side of Loudoun County Parkway (as the road turns south) past Gleedsville Manor Drive, then turns west to parallel the north side of Ryan Road. Near Claiborne Parkway, the route turns south to rejoin Loudoun County Parkway and continues south to Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carters School Road before terminating at Mars Substation.



LOCKRIDGE 230 KV LOOP

LOCKRIDGE 230 KV LOOP

The Lockridge 230 kV Loop is approximately 0.6 mile long. The route originates approximately 0.3 mile north of the Dulles Greenway and 0.2 east of Shellhorn Road, where it ties into the Golden–Mars Lines (within the segment shared by Routes 1–5). The route travels east from the Golden–Mars Lines and crosses Broad Run and Lockridge Road before terminating at Lockridge Substation. Because the route is entirely on property owned by SDC Ashburn I LLC and was developed in coordination with the landowner, ERM and Dominion did not consider any alternative routes between the Lockridge Substation and the Golden–Mars Lines.

SOJOURNER 230 KV LOOP

SOJOURNER 230 KV LOOP

The Sojourner Loop Proposed Route is approximately 1.9 miles long. The route originates at Sojourner Substation between Beaver Meadow Road and Digital Dulles Drive. The route travels east before turning south to parallel the western perimeter of Dulles Airport. The route then turns west, terminating at the future Golden Substation. Because the route is entirely on Digital Dulles property and was developed in coordination with the developers of Digital Dulles, ERM and Dominion did not consider any route alternatives between the Sojourner and Mars Substations.

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 NAIP Imagery: Color Infrared NAIP Infrared Images, Virginia, 1-meter pixel resolution (NAIP 2024a)
- USA NAIP Imagery: Natural Color Images (2010-2022), Virginia, 1-meter pixel or better resolution (NAIP 2024b)
- Recent aerial imagery, taken in Fall of 2023 (NAIP 2023);
- Loudoun County Aerial Archive (Loudoun County 2024);
- Google Earth aerial imagery (Google LLC 2024);
- ESRI World Elevation Terrain 2-foot contours (ESRI et al. 2024);
- NWI maps from the USFWS online data mapping portal (USFWS 2024);
- The National Hydrography Dataset (NHD) Plus High Resolution (USGS 2024);



- Soil Survey Geographic Database soils data from the U.S. Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS 2024).

NATURAL COLOR AND INFRARED AERIAL PHOTOGRAPHY

Recent (2023 and 2024) natural color aerial photography was used to provide a visual overview of the Project area and to assist in evaluating current conditions. 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.

TOPOGRAPHIC MAPS

Recent ESRI world topographic maps show the topography of the area as well as other important landscape features such as forest cover, development, buildings, agricultural areas, streams, lakes, and wetlands (USGS 2024; ESRI et al., 2024).

USFWS NATIONAL WETLAND INVENTORY MAPPING

NWI maps provide the boundaries and classifications of potential wetland areas as mapped by the USFWS (USFWS 2024). 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, where 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. In order to acknowledge ERM's adjustment of NWI classifications where appropriate, all the wetland types referenced in this assessment are referred to as "assigned wetland cover types" regardless of whether the cover type was 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 (USDA-NRCS 2024). 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 National Hydrography Dataset (NHD) dataset contains features such as lakes, ponds, streams, rivers, and canals (USGS 2024). 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 proposed routes, as follows:

- Infrared and natural color aerial photography was used in conjunction with 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.
- 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.
- 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

WETLAND AND WATERBODY CROSSINGS

The desktop analysis provides a probability of wetland and waterbody occurrence within each route, with wetlands classified based on the Cowardin classification system described below:

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

As stated above, field delineations were not performed and would be required to verify the accuracy and extent of aquatic resource boundaries.

RESULTS

Results of the probability analysis are presented in Table 2 below. Wetland occurrence probabilities are reported 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 type and 3 depicts the probability of medium or higher interpreted wetlands displayed on color base map images. Summaries are provided in the sections following the table.



Table 2: Summary of the Probabilities of Wetland and Waterbody Occurrence along the Route Alternatives

Probability	Total Within Right-of-way (acres) ^a	Wetland and Waterbody type (acres)				
		PEM (Emergent)	PFO (Forested)	PSS (Scrub-Shrub)	PUB (Freshwater pond)	Riverine (Stream)
Golden-Mars Lines						
Route 1						
High	0.9	0.2	0.3	0.2	NA	0.1
Medium/High	13.9	3.0	8.4	0.5	0.8	1.2
Medium	12.5	3.2	7.0	0.0	1.4	0.7
Medium/Low	0.8	0.3	<0.1	0.1	0.3	0.1
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Route 2						
High	1.1	0.2	0.6	0.2	NA	0.2
Medium/High	18.6	3.2	12.1	0.5	1.0	1.7
Medium	15.0	3.0	9.2	<0.1	1.4	1.3
Medium/Low	0.6	0.3	<0.1	0.1	NA	0.1
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Route 3						
High	0.3	<0.1	0.2	NA	NA	<0.1
Medium/High	14.1	1.4	9.9	NA	1.3	1.5
Medium	13.7	2.2	9.7	NA	0.6	1.3
Medium/Low	0.6	0.3	<0.1	NA	NA	0.2
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Route 4						



DATE
March 28, 2025

REFERENCE
0642267

Probability	Total Within Right-of-way (acres) ^a	Wetland and Waterbody type (acres)				
		PEM (Emergent)	PFO (Forested)	PSS (Scrub-Shrub)	PUB (Freshwater pond)	Riverine (Stream)
High	0.3	<0.1	0.3	NA	NA	<0.1
Medium/High	15.5	1.4	11.6	NA	1.3	1.3
Medium	14.0	2.2	10.3	NA	0.6	0.9
Medium/Low	0.4	0.3	<0.1	NA	NA	0.1
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Route 5						
High	0.9	0.2	0.3	0.3	NA	0.1
Medium/High	14.0	3.1	8.4	0.4	0.9	1.2
Medium	12.2	3.2	6.7	<0.1	1.6	0.7
Medium/Low	0.7	0.3	<0.1	<0.1	0.3	0.1
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Lockridge 230 kV Loop						
High	0.4	NA	0.4	NA	NA	<0.1
Medium/High	0.6	NA	0.4	NA	NA	0.2
Medium	0.2	NA	0.2	NA	NA	<0.1
Medium/Low	NA	NA	NA	NA	NA	NA
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA
Sojourner 230 kV Loop						
High	0.1	<0.1	0.1	NA	NA	<0.1
Medium/High	3.1	0.2	2.7	NA	NA	0.2
Medium	0.1	0.1	<0.1	NA	NA	<0.1



Probability	Total Within Right-of-way (acres) ^a	Wetland and Waterbody type (acres)				
		PEM (Emergent)	PFO (Forested)	PSS (Scrub-Shrub)	PUB (Freshwater pond)	Riverine (Stream)
Medium/Low	NA	NA	NA	NA	NA	NA
Low	NA	NA	NA	NA	NA	NA
Very Low	NA	NA	NA	NA	NA	NA

NA = Not applicable due to absence of a wetland type within the route

Wetland acreages have been rounded to the tenths place; as a result, the totals may not reflect the sum of the addends. If less than 0.05 acre of the wetland is present, it has been symbolized as <0.1.

^a Wetland acreages within this table are inclusive of new and existing right-of-way.

WETLAND CROSSINGS

Wetlands within the Golden-Mars Routes study area are predominantly forested and associated with Broad Run and its tributaries, including Horsepen Run, Stallion Branch, and other associated perennial and intermittent tributaries. Large areas of PFO wetlands are concentrated in the northern and central portions of the study area around Broad Run, Stallion Branch, and Beaverdam Run.

As discussed in more detail below, sections of the Golden-Mars Lines have been collocated with or share right-of-way with existing or future transmission lines along Broad Run between Dulles Greenway and Hemmingford Circle and between Old Ox Road and the future Mars Substation, avoiding new permanent wetland impacts in these locations. Table 3 provides the acres of medium or higher wetlands identified within new and existing or permitted rights-of-way along each route. Impacts on wetlands in shared rights-of-way have either already occurred or will occur in association with other transmission line projects. Where the routes are collocated with existing transmission lines, fragmentation of PFO wetlands is minimized by clearing trees adjacent to existing cleared rights-of-way rather than in unfragmented areas. Therefore, wetlands within shared rights-of-way would be limited to temporary impacts. The Lockridge and Sojourner Loops do not overlap with existing transmission rights-of-way.

Table 3: Acreage of High, Medium-high, and Medium Probability Wetlands and Waterbodies Within the Project Footprint

Route	Right-of-way	Total ^a	PFO	PSS	PEM	PUB	Riverine
Golden-Mars Route 1 ^b	New	20.6	9.4	0.8	6.2	2.2	2.0
	Existing	6.6	6.3	NA	0.2	NA	0.1
	Total	27.2	15.8	0.8	6.4	2.2	2.1



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Golden–Mars Route 2 ^b	New	27.5	15.5	0.8	5.8	2.3	3.1
	Existing	7.2	6.4	NA	0.5	0.2	0.1
	Total	34.7	21.9	0.8	6.4	2.4	3.2
Golden–Mars Route 3 ^b	New	20.9	13.4	NA	3.1	1.7	2.7
	Existing	7.2	6.4	NA	0.5	0.2	0.1
	Total	28.1	19.8	NA	3.6	1.9	2.8
Golden–Mars Route 4 ^b	New	22.6	15.8	NA	3.0	1.7	2.1
	Existing	7.2	6.4	NA	0.5	0.2	0.1
	Total	29.8	22.1	NA	3.6	1.9	2.2
Golden–Mars Route 5 ^b	New	20.5	9.1	0.6	6.3	2.5	2.0
	Existing	6.6	6.3	NA	0.2	NA	0.1
	Total	27.2	15.5	0.6	6.5	2.5	2.1
Lockridge 230 kV Loop	New	0.8	0.7	NA	NA	NA	0.2
	Existing	0.3	0.3	NA	NA	NA	<0.1
	Total	1.2	1.0	NA	NA	NA	0.2
Sojourner 230 kV Loop	New	3.1	2.2	NA	0.5	<0.1	0.3

kV = kilovolt(s); NA = Not applicable due to absence of a wetland type within the Project footprint
^a Values have been rounded to the tenths place; as a result, the totals may not reflect the sum of the addends. A value of <0.1 indicates that less than 0.05 acre of a wetland type is present.

^b Values within the “new” column include only aquatic resources within only proposed new right-of-way only. “Existing” consists of wetlands within the rights-of-way of existing or permitted transmission lines.



GOLDEN-MARS LINES

Route 1

The length of the corridor for Route 1 is approximately 9.4 miles and encompasses a total of approximately 123.5 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 22.0 percent (27.2 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 27.2 acres, 15.8 acres consist of PFO wetlands, 0.8 acre consist of PSS wetlands, 6.4 acres consist of PEM wetlands, 2.2 acres consist of PUB open water features, and 2.1 acres consist of riverine features.

Route 1 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 6.6 acres of new wetland impacts within the shared right-of-way.

Route 2

The length of the corridor for Route 2 is approximately 9.3 miles and encompasses a total of approximately 121.5 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 28.6 percent (34.7 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 34.7 acres, 21.9 acres consist of PFO wetlands, 0.8 acre consist of PSS wetlands, 6.4 acres consist of PEM wetlands, 2.4 acres consist of PUB open water features, and 3.2 acres consist of riverine features.

The Route 2 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 7.2 acres of new wetland impacts within the shared right-of-way.

Route 3

The length of the corridor for Route 3 is approximately 8.3 miles and encompasses a total of approximately 108.3 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 25.9 percent (28.1 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 28.1 acres, 19.8 acres consist of PFO wetlands, 3.6 acres consist of PEM wetlands, 1.9 acres consist of PUB open water features, and 2.8 acres consist of riverine features.

The Route 3 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 7.2 acres of new wetland impacts within the shared right-of-way.

Route 4

The length of the corridor for Route 4 is approximately 8.3 miles and encompasses a total of approximately 109.1 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 27.3 percent (29.8 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 29.8 acres, 22.1 acres consist of PFO wetlands, 3.6 acres consist of PEM wetlands, 1.9 acres consist of PUB open water features, and 2.2 acres consist of riverine features.



The Route 4 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 7.2 acres of new wetland impacts within the shared right-of-way.

Route 5

The length of the corridor for Route 5 is approximately 9.8 miles and encompasses a total of approximately 129.3 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 21.0 percent (27.2 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 27.2 acres, 15.5 acres consist of PFO wetlands, 0.6 acre consist of PSS wetlands, 6.5 acres consist of PEM wetlands, 2.5 acres consist of PUB open water features, and 2.1 acres consist of riverine features.

The Route 5 partially shares right-of-way with existing or permitted transmission line route rights-of-way, which avoids 6.6 acres of new wetland impacts within the shared right-of-way.

LOCKRIDGE 230 KV LOOP

The length of the corridor for this Lockridge 230 kV Loop is approximately 0.6 mile and encompasses a total of approximately 5.0 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 24.0 percent (1.2 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 1.2 acres of wetlands, 1.0 acre consists of PFO wetlands and 0.2 acre consist of riverine features.

SOJOURNER 230 KV LOOP

The length of the corridor for this Sojourner 230 kV Loop is approximately 1.9 miles and encompasses a total of approximately 29.1 acres. Based on the methodology discussed above, the right-of-way footprint will encompass approximately 10.7 percent (3.1 acres) of land with a medium or higher probability of containing wetlands and waterbodies. Of these 3.1 acres, 2.2 acres consist of PFO wetlands, 0.5 acre consist of PEM wetlands, less than 0.1 acre consist of PUB open water features, and 0.3 acre consist of riverine features.

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. Named waterbodies crossed by the Project include the perennial Broad Run (Golden Mars Lines Routes 1-5, multiple crossings, and the Lockridge Line, one crossing) and Stallion Branch (Sojourner 230 kV Loop, one crossing). In addition to these named waterbodies, the Routes would cross unnamed perennial and intermittent tributaries and open waterbody features. Based on recent (2024) aerial imagery, open waterbody features appear to be stormwater features.



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Table 4: Waterbodies Crossed by the Route Alternatives

Waterbodies Crossed	Golden–Mars Route 1	Golden–Mars Route 2	Golden–Mars Route 3	Golden–Mars Route 4	Golden–Mars Route 5	Lockridge 230 kV Loop	Sojourner 230 kV Loop Route
Total Waterbodies Crossed	33	40	34	31	37	2	5
NHD-Mapped Perennial Streams/Rivers	6	13	11	7	6	1	0
NHD-Mapped Intermittent Streams/Rivers	12	9	5	6	13	0	2
NHD-Mapped Perennial Lakes/Ponds	2	1	1	1	2	0	0
Non-NHD Mapped Waterbodies ^a	13	17	17	17	16	1	3

^a Identified via current (Loudoun County 2024), and (Google LLC 2024) aerial imagery during desktop analysis.
Source: NHD – National Hydrography Dataset (USGS 2024)



GOLDEN-MARS LINES

Route 1

Route 1 would cross 33 waterbodies, of which 20 are NHD-mapped, including eight perennial waterbodies (four crossings of Broad Run, two perennial tributaries to Broad Run, and two open waterbodies) and 12 unnamed, intermittent streams. Additionally, ERM identified seven unnamed, unclassified streams and six unnamed, unclassified open water features within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Route 1 would encompass approximately 2.2 acres of PUB open water features, and 2.1 acres of riverine features.

Route 2

Route 2 would cross 40 waterbodies, of which 23 are NHD-mapped, including 14 perennial waterbodies (ten crossings of Broad Run, three tributaries to Broad Run, and one open waterbody) and nine unnamed, intermittent streams. Additionally, ERM identified 12 unnamed, unclassified streams and five unnamed, unclassified open water features within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Route 2 would encompass approximately 2.4 acres of PUB open water features, and 3.2 acres of riverine features.

Route 3

Route 3 would cross 34 waterbodies, of which 17 are NHD-mapped, including 12 perennial waterbodies (ten crossings of Broad Run, three tributaries to Broad Run, and one open waterbody) and five unnamed, intermittent streams. Additionally, ERM identified 14 unnamed, unclassified streams and three unnamed, unclassified open water features within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Route 3 would encompass approximately 1.9 acres of PUB open water features, and 2.8 acres of riverine features.

Route 4

Route 4 would cross 31 waterbodies, of which 14 are NHD-mapped, including eight perennial waterbodies (seven crossings of Broad Run and one open waterbody) and six unnamed, intermittent streams. Additionally, ERM identified 14 unnamed, unclassified streams and three unnamed, unclassified open water features within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Route 4 would encompass approximately 1.9 acres of PUB open water features, and 2.2 acres of riverine features.



Route 5

Route 5 would cross 37 waterbodies, of which 21 are NHD-mapped, including eight perennial waterbodies (four crossings of perennial Broad Run, two associated perennial tributaries to Broad Run, and two open waterbodies) and 13 unnamed, intermittent streams. Additionally, ERM identified eight unnamed, unclassified streams and eight unnamed, unclassified open water features within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for Route 5 would encompass approximately 2.5 acres of open water features 2.0 acres of riverine features.

LOCKRIDGE 230 KV LOOP

The Lockridge 230 kV Loop would cross two waterbodies, of which one is NHD-mapped perennial Broad Run. Additionally, ERM identified one unnamed, unclassified stream within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for the Lockridge 230 kV Loop would encompass approximately 0.2 acre of riverine features.

SOJOURNER 230 KV LOOP

The Sojourner 230 kV Loop would cross five waterbodies, of which two are NHD-mapped, including intermittent Stallion Branch and one unnamed, intermittent stream. Additionally, ERM identified two unnamed, unclassified streams and one unclassified open water feature within the right-of-way using recent aerial imagery (Loudoun County 2024). Based on ERM's desktop wetland and waterbody analysis, the right-of-way for the Sojourner 230 kV Loop would encompass approximately less than 0.1 acre of PUB open water features, and 0.3 acre of riverine features.

PROJECT IMPACTS

Avoiding or minimizing new impacts on wetlands and streams was among the criteria used in developing routes for the Project. To minimize impacts on wetland areas, the transmission line has been designed to span or avoid wetlands and waterbodies where possible, keeping transmission structures outside of aquatic resources to the extent practicable. As discussed in more detail above, sections of the Golden-Mars Lines have been collocated with or share right-of-way with existing or future transmission lines along Broad Run between Dulles Greenway and Hemmingford Circle and between Old Ox Road and the future Mars Substation, avoiding new wetland impacts in these locations. Direct impacts to wetlands would be limited to placement of structures within wetlands if unavoidable and the permanent conversion of PSS/PFO wetlands within the proposed right-of-way to PEM type wetlands.

There would be no change in contours of wetlands and waterbodies, or redirection of the flow of water, and the amount of spoil from foundations and structure placement would be minimal. Excess soil in wetlands generated through foundation construction would be mitigated through



Best Management Practices (erosion and sediment controls) and would be removed from the wetland.

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, habitat diversity, and water temperature modification from shading. 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. Within the stream buffers (100 feet), and as needed to minimize impacts to wetlands, trees and vegetation will be hand felled and stumps left in place to reduce the potential for erosion. Shrubs and trees with a diameter at breast height of less than three inches will be left in place unless it impedes temporary access where they would be clipped, leaving roots in place which will be able to naturally regenerate. Vegetation within the right-of-way would be allowed to return to maintained grasses and shrubs after construction, which would provide some filtration stabilization to help protect waterbodies from pollutants.

Waterbodies crossed in shared rights-of-way are within the existing maintained corridor, with vegetation/riparian buffer only along the proposed expanded right-of-way segments of the features, thereby minimizing riparian buffer loss at these crossings.



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SUMMARY

This Wetland and Waterbody Summary report was prepared in accordance with the Memorandum of Agreement between the DEQ and the SCC for the purpose of initiating a Wetlands Impact Consultation. Please note that a formal onsite wetland delineation was not conducted as part of this review.

In addition, there is 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/nova>.

If you have any questions regarding this wetland assessment, please contact me at 857-302-6502 or by email at jake.bartha@erm.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Jake Bartha", is written over a light grey circular stamp.

Jake Bartha
Environmental Resources Management

cc: James P. Young, Dominion Energy Virginia
Greg R. Baka, Dominion Energy Virginia

Enclosures: Attachments 1, 2, and 3

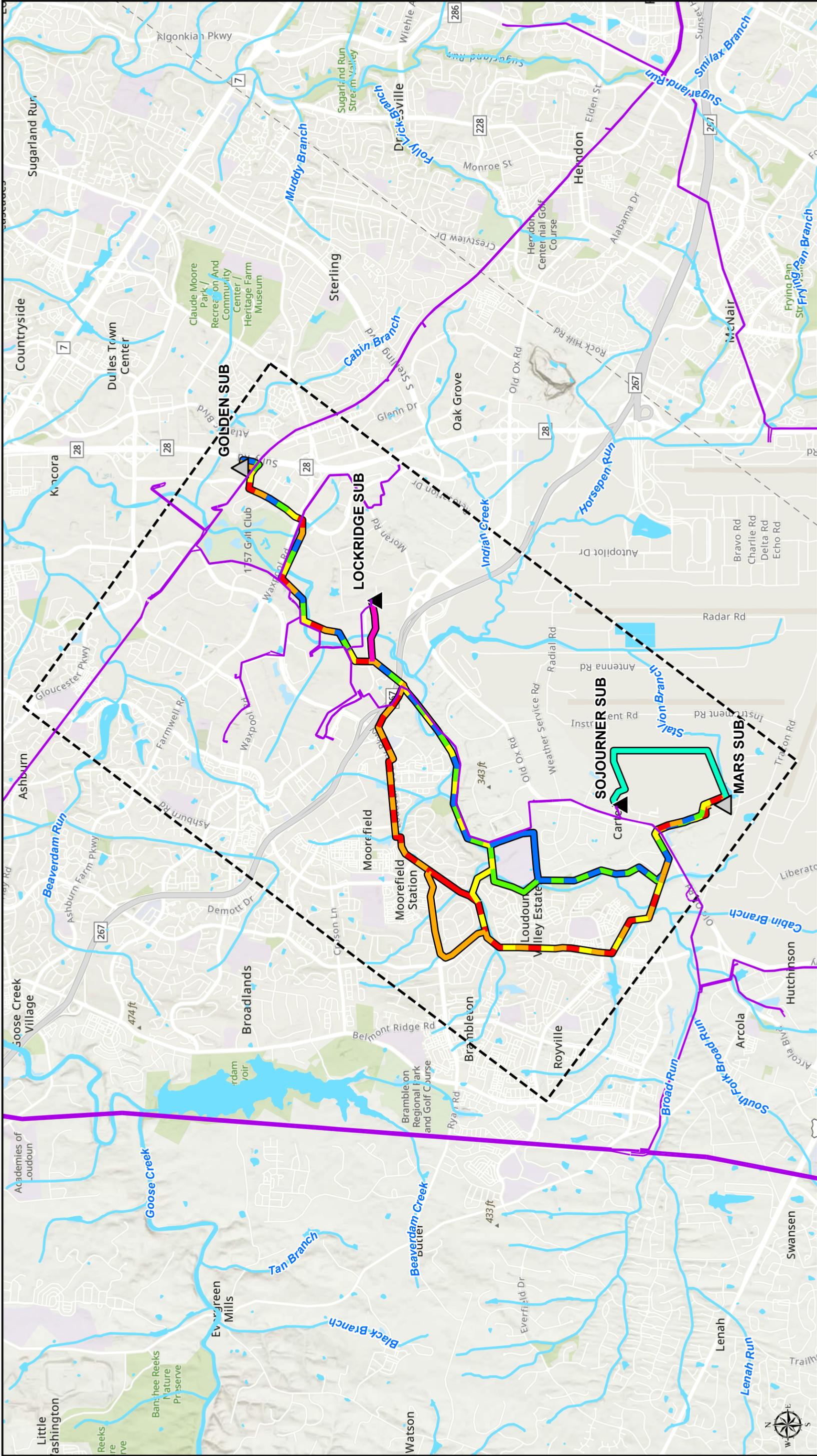


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ATTACHMENT 1



**Attachment 1
Overview Map**
Golden-Mars 500-230 kV Transmission Line Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM

Legend

- ▲ Existing Substation
- △ Approved Substation
- █ Golden-Mars Route 1
- █ Golden-Mars Route 2
- █ Golden-Mars Route 3
- █ Golden-Mars Route 4
- █ Golden-Mars Route 5
- █ Lockridge 230 kV Loop
- █ Sojourner 230 kV Loop
- █ Existing Dominion Transmission Line
- █ NHD Waterbody

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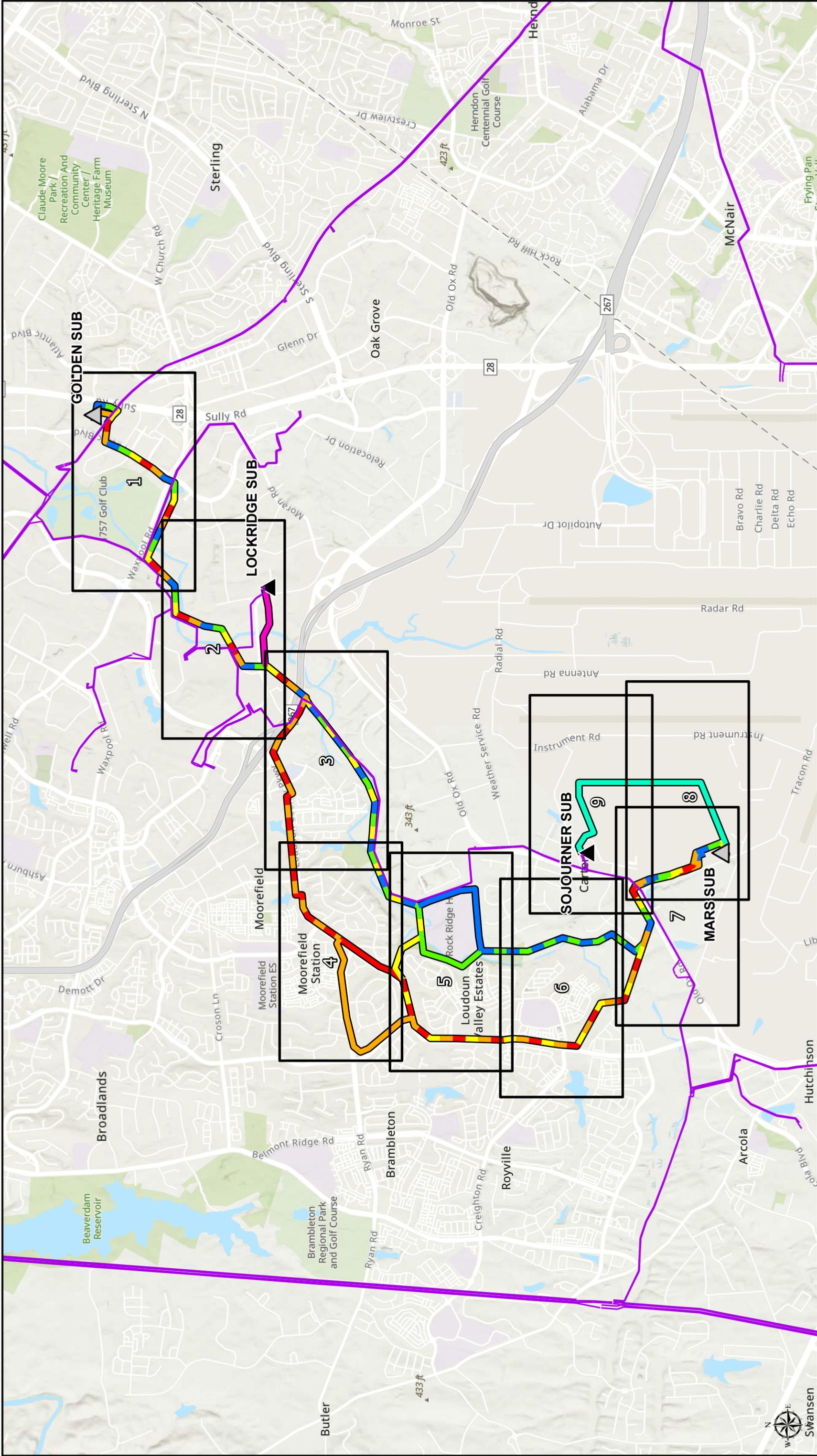
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Project Location

Dominion Energy



ATTACHMENT 2



Attachment 2
Wetland Classification Index
Golden-Mars 500-230 kV Transmission Line Project

ERM
Dominion Energy Virginia
Loudoun County, Virginia

Page 0

1:40,000

0 0.5 1 Miles

Page Index

- ▲ Existing Substation
- ▲ Approved Substation
- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4
- Golden-Mars Route 5
- Lockridge 230 kV Loop
- Sojourner 230 kV Loop
- Existing Dominion Transmission Line

Legend:

- Golden-Mars Route 3
- Golden-Mars Route 4
- Golden-Mars Route 5
- Lockridge 230 kV Loop
- Sojourner 230 kV Loop
- Existing Dominion Transmission Line

Project Location

OH WV VA TN





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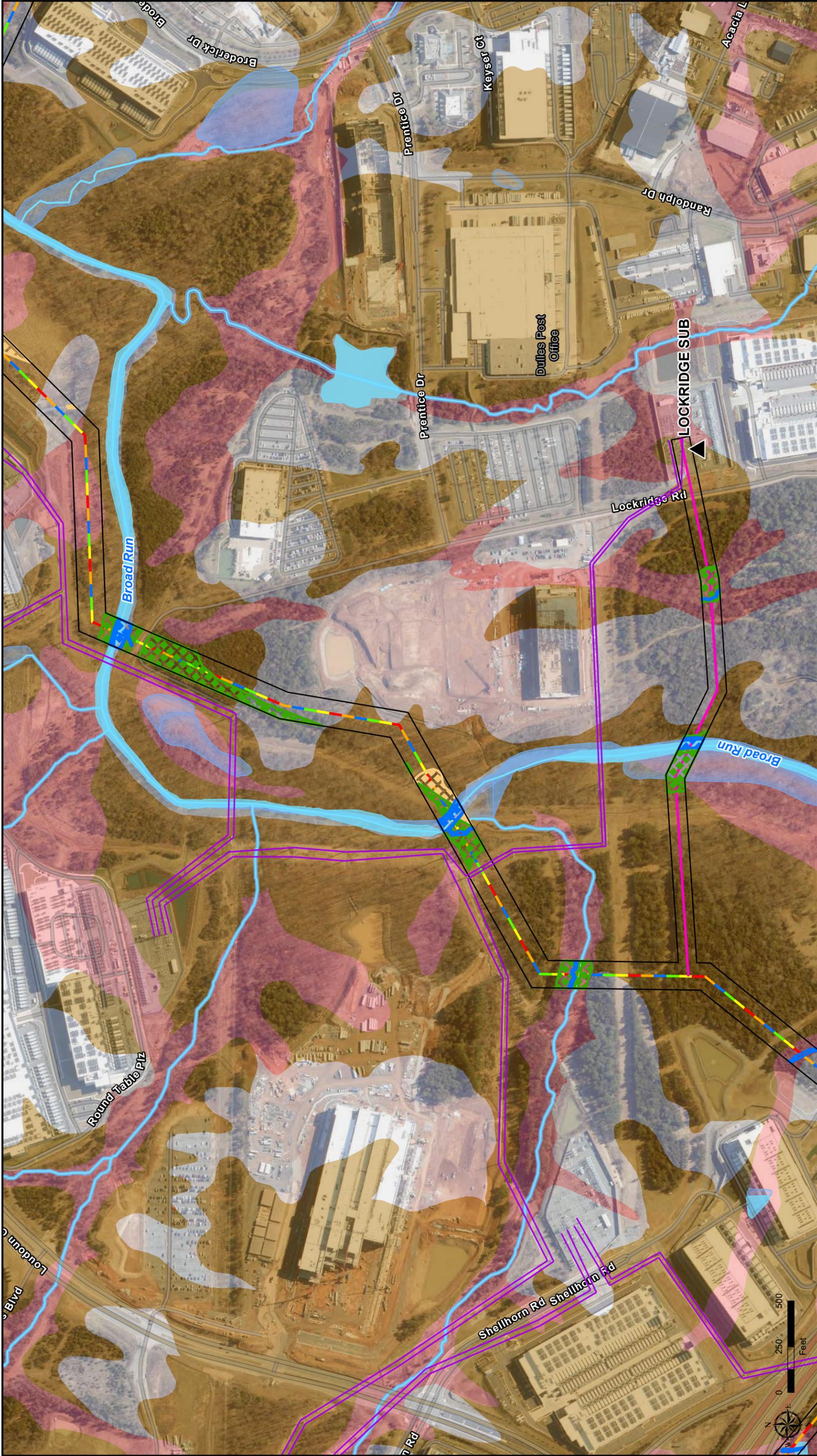
Attachment 2 Wetland Desktop Study Cowardin Classification Mapset Golden-Mars 500-230 kV Transmission Line Project

Dominion Energy Virginia
Loudoun County, Virginia

ERM
Dominion Energy

1:6,000

<p>Approved Substation</p> <ul style="list-style-type: none"> Golden-Mars Route 1 Golden-Mars Route 2 Golden-Mars Route 3 Golden-Mars Route 4 	<p>Golden-Mars Route 5</p> <ul style="list-style-type: none"> Golden-Mars Route 5 <p>Existing Dominion Transmission Line</p> <ul style="list-style-type: none"> Existing Dominion Transmission Line <p>NHD Waterbody</p> <ul style="list-style-type: none"> NHD Waterbody <p>NWI Wetlands</p> <ul style="list-style-type: none"> NWI Wetlands 	<p>Wetland Cover Type</p> <ul style="list-style-type: none"> PEM PFO PUB Riverine 	<p>SSURGO Hydric Soil Rating</p> <ul style="list-style-type: none"> Hydric Partially Hydric Not Hydric
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Attachment 2 Wetland Desktop Study Cowardin Classification Mapset Golden-Mars 500-230 kV Transmission Line Project

Dominion Energy Virginia
Loudoun County, Virginia

ERM
Dominion Energy

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<p>Existing Substation</p> <ul style="list-style-type: none"> ▲ Existing Substation █ Golden-Mars Route 1 █ Golden-Mars Route 2 █ Golden-Mars Route 3 █ Golden-Mars Route 4 	<p>Golden-Mars Route 5</p> <ul style="list-style-type: none"> █ Golden-Mars Route 5 █ Lockridge 230 kV Loop █ Existing Dominion Transmission Line █ NHD Waterbody █ NWI Wetlands 	<p>Wetland Cover Type</p> <ul style="list-style-type: none"> █ PEM █ PFO █ Riverine
<p>SSURGO Hydric Soil Rating</p> <ul style="list-style-type: none"> █ Hydric █ Partially Hydric █ Not Hydric 		



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Attachment 2 Wetland Desktop Study Cowardin Classification Mapset

Golden-Mars 500-230 kV Transmission Line Project

Dominion Energy Virginia
Loudoun County, Virginia

SSURGO Hydric Soil Rating

 Hydric
 Partially Hydric
 Not Hydric

Wetland Cover Type

 PEM
 PFO
 PUB
 Riverine

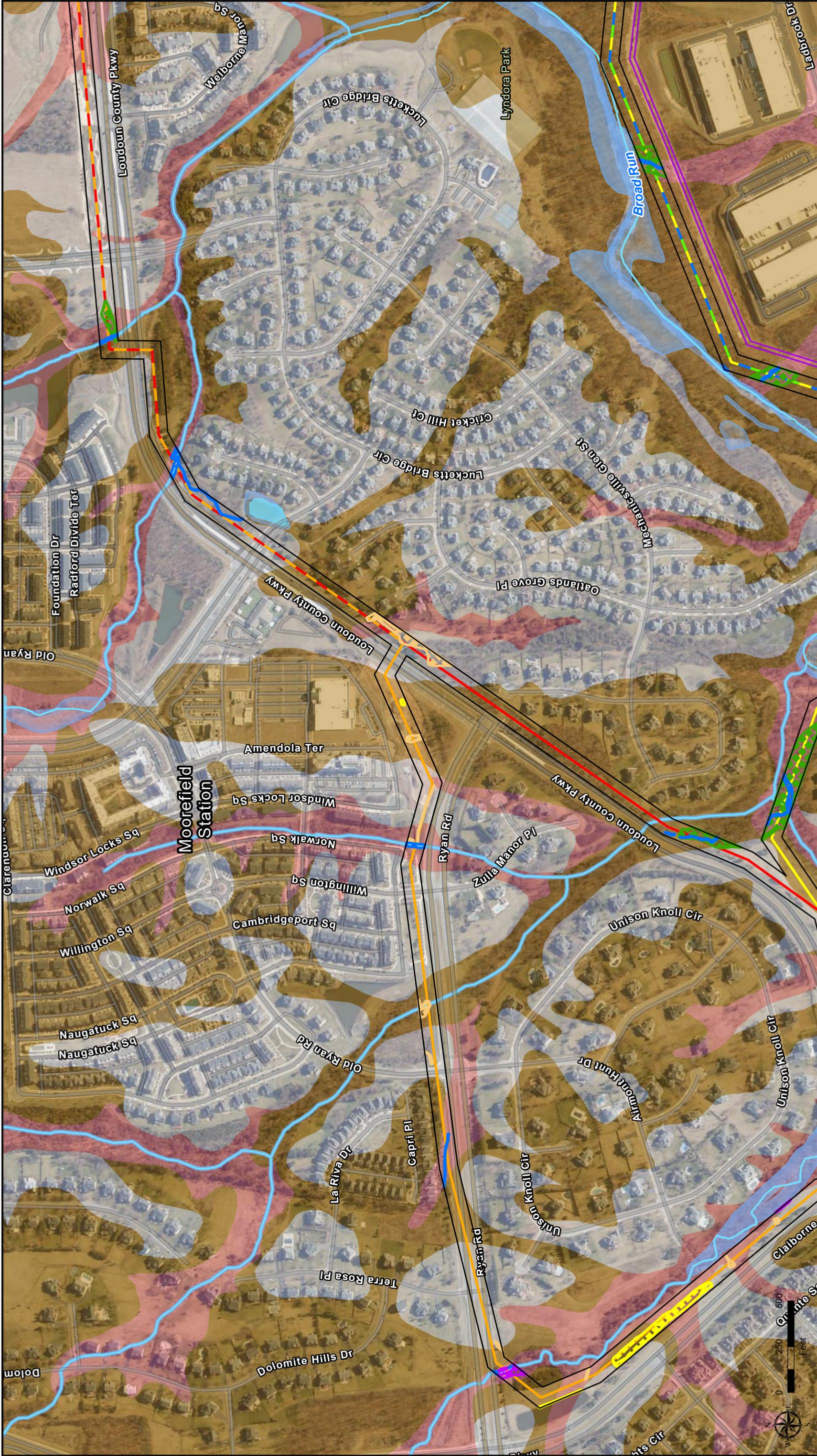
Legend

 Existing Dominion
 Transmission Line
 NHD Waterbody
 NWI Wetlands

Golden-Mars Routes

 Golden-Mars Route 1
 Golden-Mars Route 2
 Golden-Mars Route 3
 Golden-Mars Route 4
 Golden-Mars Route 5
 Lockridge 230 kV Loop

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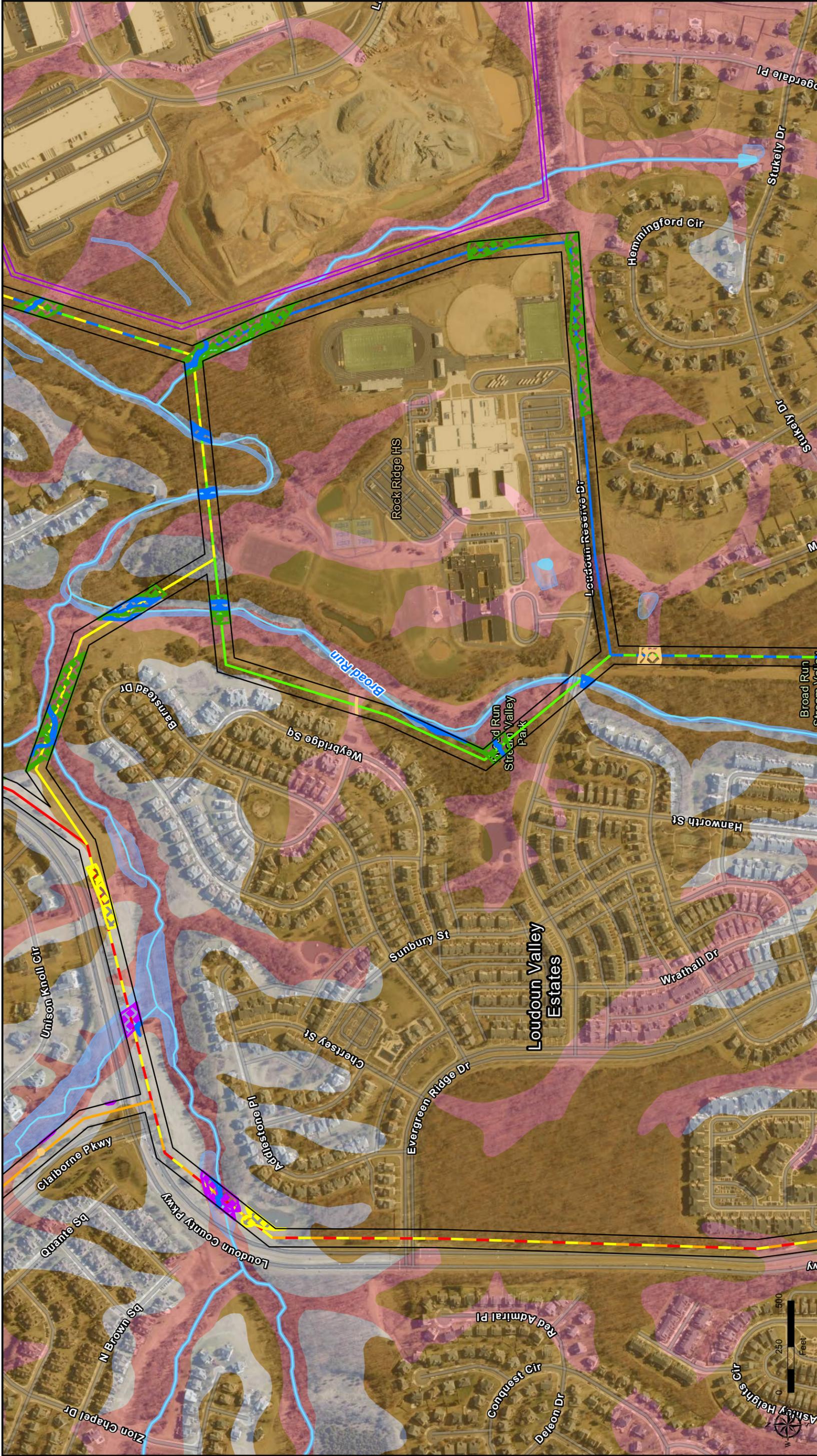
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Wetland Desktop Study
Cowardin Classification Mapset
Golden-Mars 500-230 kV Transmission Line Project

Dominion Energy Virginia
Loudoun County, Virginia

ERM
Dominion Energy

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<ul style="list-style-type: none"> Golden-Mars Route 1 Golden-Mars Route 2 Golden-Mars Route 3 Golden-Mars Route 4 Golden-Mars Route 5 	<ul style="list-style-type: none"> Existing Dominion Transmission Line NHD Waterbody NWI Wetlands 	<p>Wetland Cover Type</p> <ul style="list-style-type: none"> PEM PFO PSS PUB Riverine 	<p>SSURGO Hydric Soil Rating</p> <ul style="list-style-type: none"> Hydric Partially Hydric Not Hydric
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Attachment 2
Wetland Desktop Study
Cowardin Classification Mapset
Golden-Mars 500-230 kV Transmission Line Project

Dominion Energy Virginia
Loudoun County, Virginia

ERM
Dominion Energy

1:6,000

Golden-Mars Route 1 (Red dashed line)

Golden-Mars Route 2 (Yellow dashed line)

Golden-Mars Route 3 (Green dashed line)

Golden-Mars Route 4 (Blue dashed line)

Golden-Mars Route 5 (Red dashed line)

Existing Dominion Transmission Line (Black line)

NHD Waterbody (Light blue area)

NWI Wetlands (Light blue area)

Wetland Cover Type

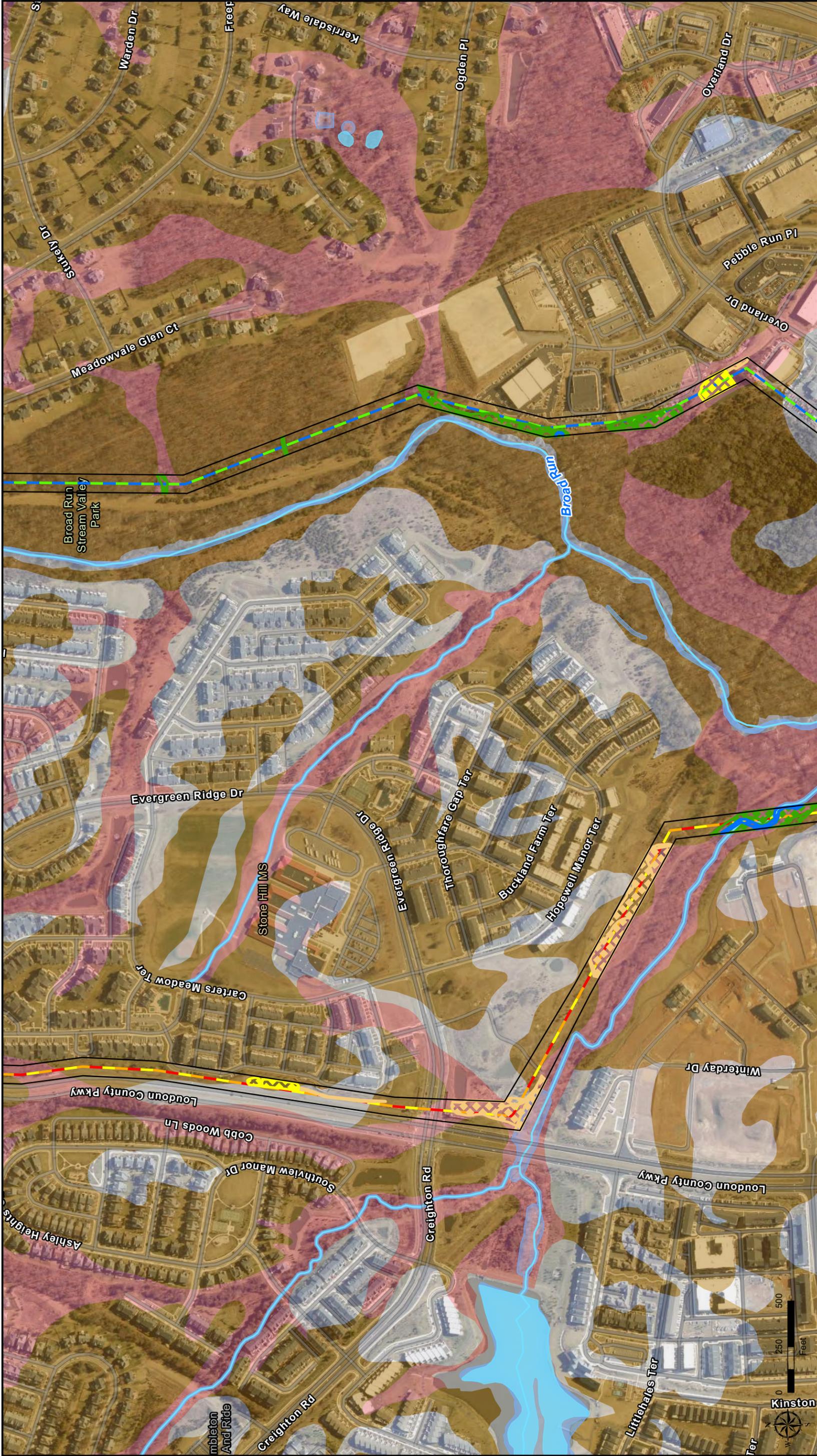
- PEM
- PFO
- PSS
- PUB
- Riverine

SSURGO Hydric Soil Rating

- Hydric
- Partially Hydric
- Not Hydric

Scale: 0, 250, 500 Feet

North Arrow



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Attachment 2 Wetland Desktop Study Cowardin Classification Mapset

Golden-Mars 500-230 kV Transmission Line Project

Dominion Energy Virginia
Loudoun County, Virginia

ERM
Dominion Energy

1:6,000

<p>Golden-Mars Route 1 (Red dashed line)</p> <p>Golden-Mars Route 2 (Yellow dashed line)</p> <p>Golden-Mars Route 3 (Green dashed line)</p> <p>Golden-Mars Route 4 (Blue dashed line)</p> <p>Golden-Mars Route 5 (Black dashed line)</p>	<p>NHD Waterbody (Light blue line)</p> <p>NWI Wetlands (Blue shaded area)</p>	<p>Wetland Cover Type</p> <p>PEM (Orange pattern)</p> <p>PFO (Green pattern)</p> <p>PUB (Yellow pattern)</p> <p>Riverine (Blue pattern)</p>	<p>SSURGO Hydric Soil Rating</p> <p>Hydric (Pink)</p> <p>Partially Hydric (Tan)</p> <p>Not Hydric (Grey)</p>
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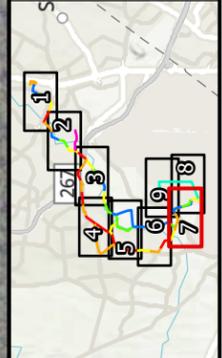
Attachment 2
Wetland Desktop Study
Cowardin Classification Mapset
Golden-Mars 500-230 kV Transmission Line Project

Dominion Energy Virginia
Loudoun County, Virginia

ERM
Dominion Energy

1:6,000

<ul style="list-style-type: none"> Approved Substation Golden-Mars Route 1 Golden-Mars Route 2 Golden-Mars Route 3 Golden-Mars Route 4 	<ul style="list-style-type: none"> Golden-Mars Route 5 Sojourner 230 kV Loop Existing Dominion Transmission Line NHD Waterbody NWI Wetlands 	<p>Wetland Cover Type</p> <ul style="list-style-type: none"> PEM PFO PUB Riverine 	<p>SSURGO Hydric Soil Rating</p> <ul style="list-style-type: none"> Hydric Partially Hydric Not Hydric
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Attachment 2 Wetland Desktop Study Cowardin Classification Mapset

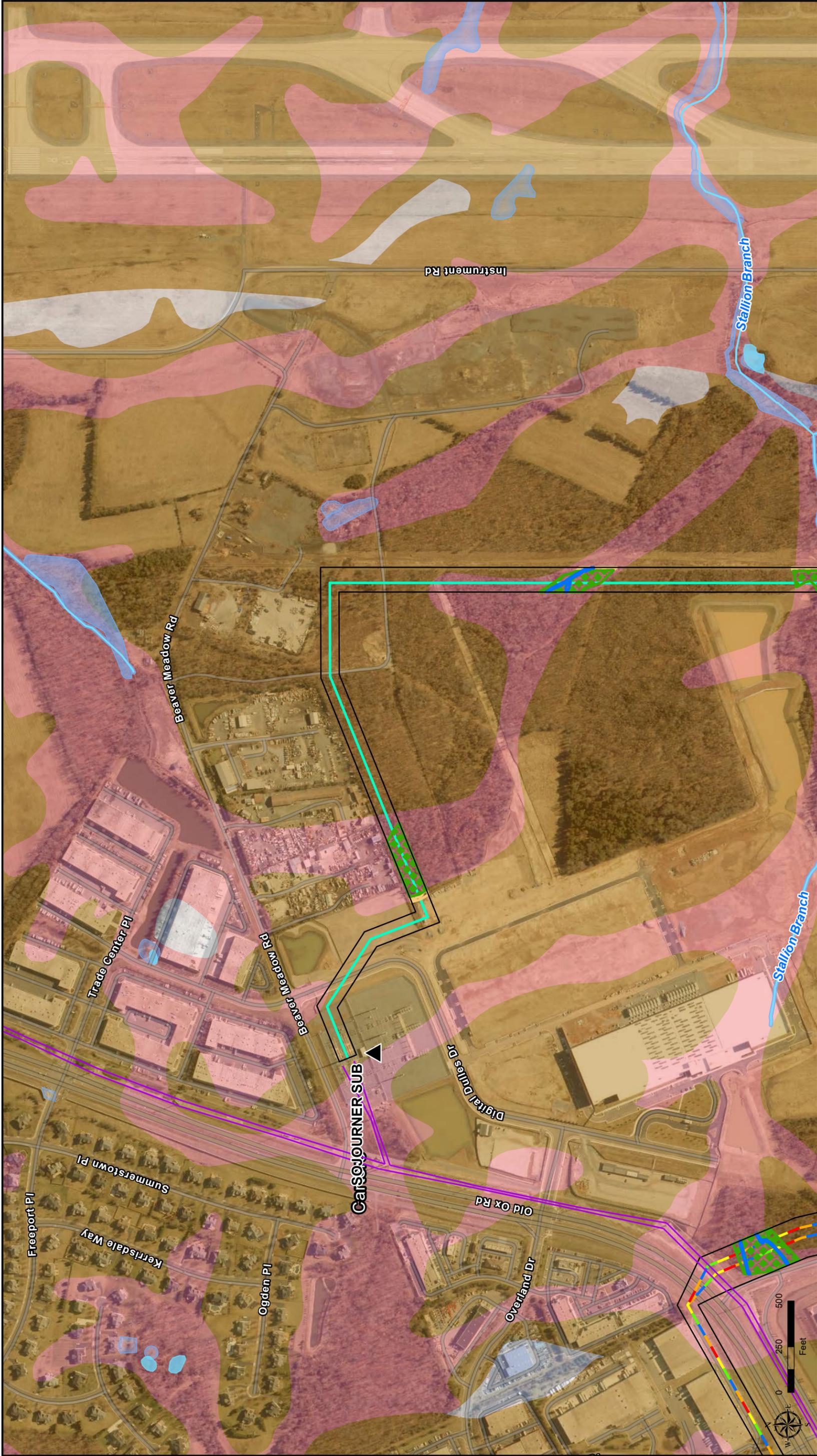
Golden-Mars 500-230 kV Transmission Line Project

Dominion Energy Virginia
Loudoun County, Virginia

ERM
Dominion Energy

1:6,000

<p>Approved Substation</p> <ul style="list-style-type: none"> △ Golden-Mars Route 1 △ Golden-Mars Route 2 △ Golden-Mars Route 3 △ Golden-Mars Route 4 	<p>Wetland Cover Type</p> <ul style="list-style-type: none"> PEM PFO PUB Riverine 	<p>SSURGO Hydric Soil Rating</p> <ul style="list-style-type: none"> Hydric Partially Hydric Not Hydric
<p>Golden-Mars Route 5</p> <p>Sojourner 230 kV Loop</p> <p>Existing Dominion Transmission Line</p> <p>NHD Waterbody</p> <p>NWI Wetlands</p>		



Attachment 2
Wetland Desktop Study
Cowardin Classification Mapset
Golden-Mars 500-230 kV Transmission Line Project
Dominion Energy Virginia
Loudoun County, Virginia

Page 9 of 9

ERM
Dominion Energy Virginia
Loudoun County, Virginia

Existing Substation

- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4

Golden-Mars Route 5

- Sojourner 230 kV Loop
- Existing Dominion Transmission Line
- NHD Waterbody
- NWI Wetlands

Wetland Cover Type

- PEM
- PFO
- Riverine

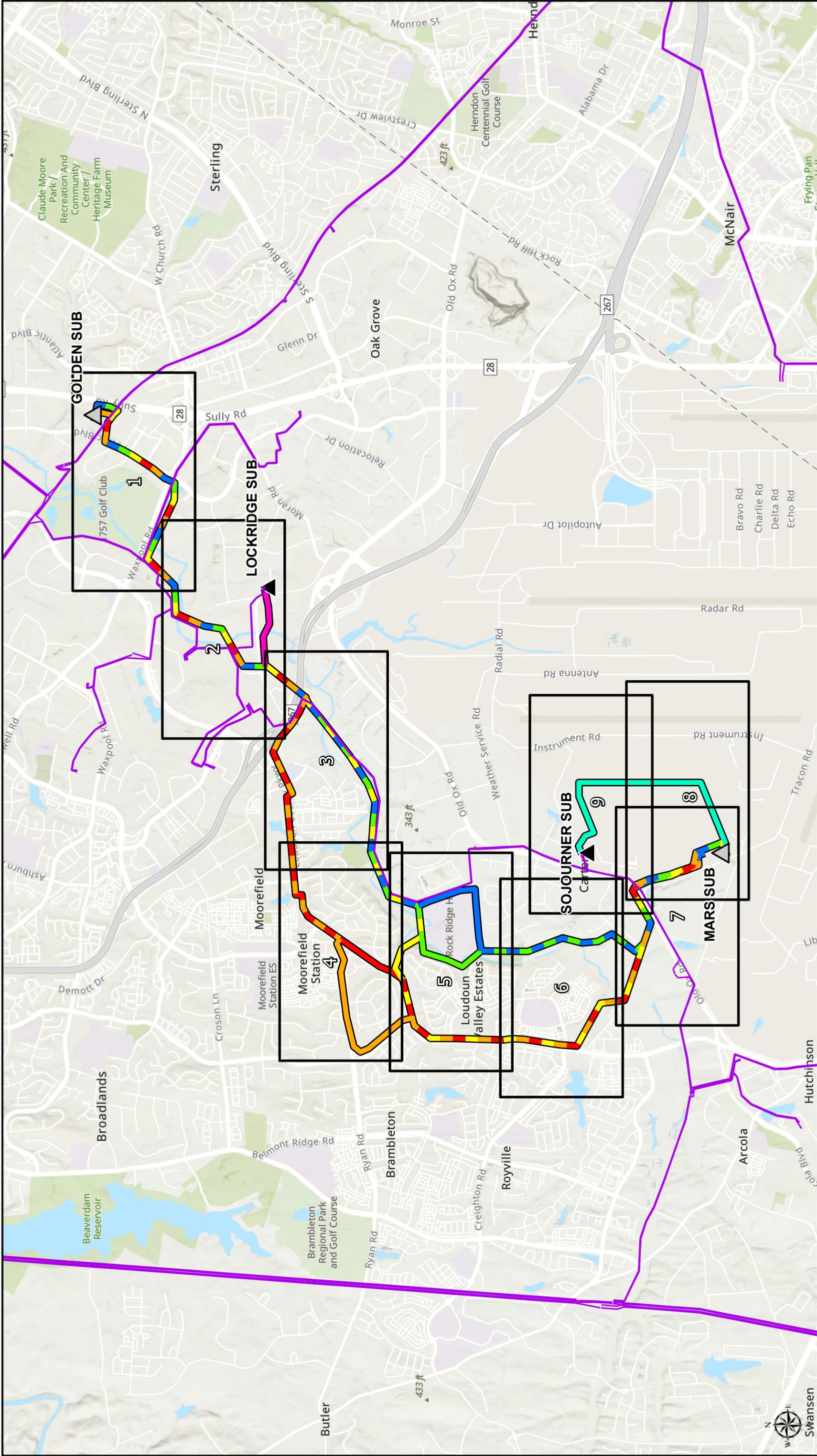
SSURGO Hydric Soil Rating

- Hydric
- Partially Hydric
- Not Hydric

Scale: 1:6,000



ATTACHMENT 3



Attachment 3
Wetland Desktop Study
Probability Index
Golden-Mars 500-230 kV Transmission Line Project

ERM
Dominion Energy Virginia
Loudoun County, Virginia

Page 0

1:40,000

0 0.5 1 Miles

Page Index

- ▲ Existing Substation
- ▲ Approved Substation
- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4
- Golden-Mars Route 5
- Lockridge 230 kV Loop
- Sojourner 230 kV Loop
- Existing Dominion Transmission Line

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9



Wetland Probability

- High
- Medium/High
- Medium

SSURGO Hydric Soil Rating

- Hydric
- Partially Hydric
- Not Hydric

1:6,000

ERM

Golden-Mars 500-230 kV Transmission Line Project
Probability Mapset

Attachment 3
Wetland Desktop Study

Page 1 of 9

Dominion Energy
Loudoun County, Virginia

Legend

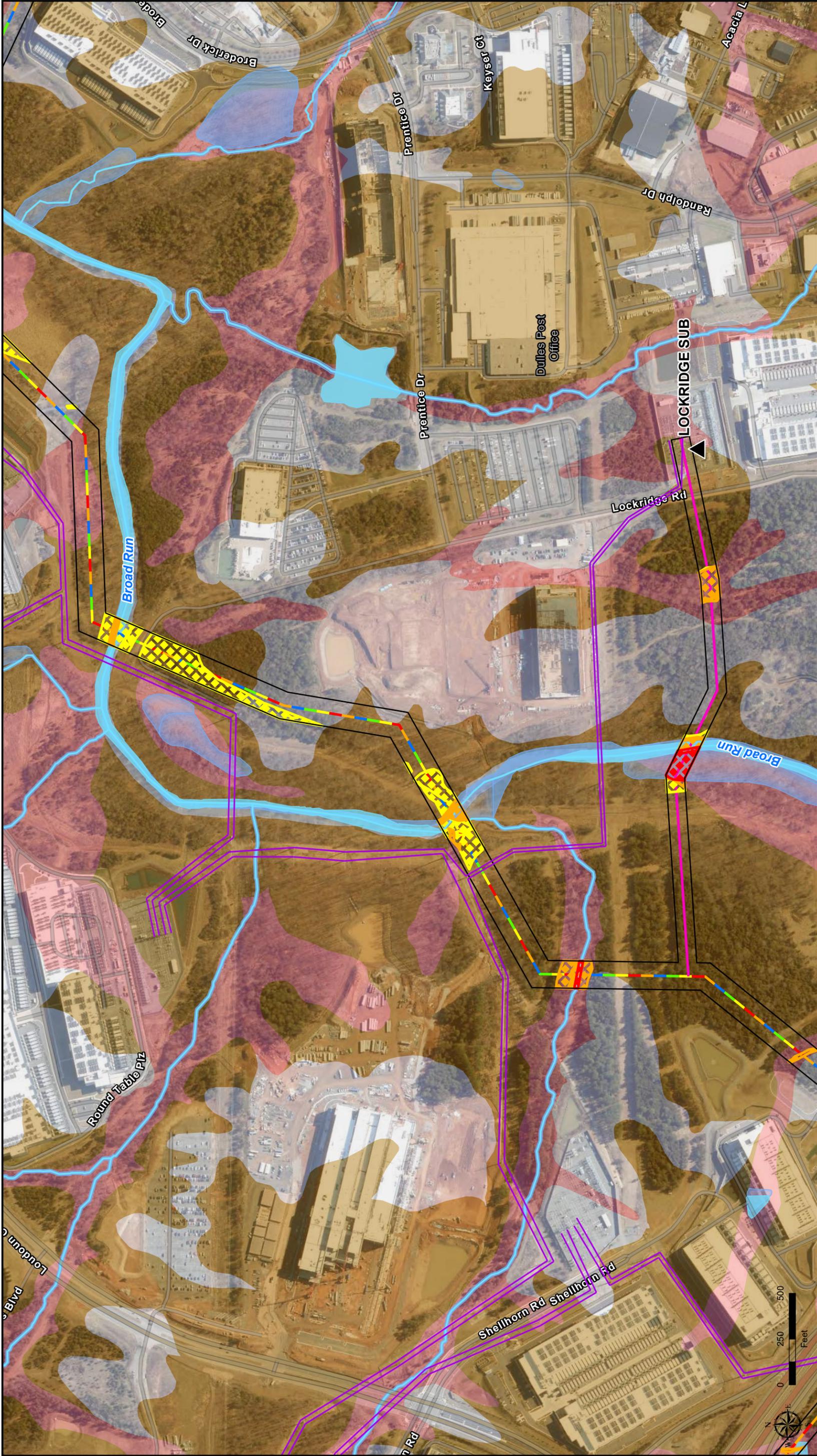
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- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4
- Golden-Mars Route 5
- Existing Dominion Transmission Line
- NHD Waterbody
- NW1 Wetlands

Scale

0 250 500 Feet

North Arrow

Inset Map



Attachment 3
Wetland Desktop Study
Probability Mapset
Golden-Mars 500-230 kV Transmission Line Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM

1:6,000

Existing Substation

- Existing Substation
- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4

Golden-Mars Route 5

- Golden-Mars Route 5
- Lockridge 230 kV Loop
- Existing Dominion Transmission Line
- NHD Waterbody
- NWI Wetlands

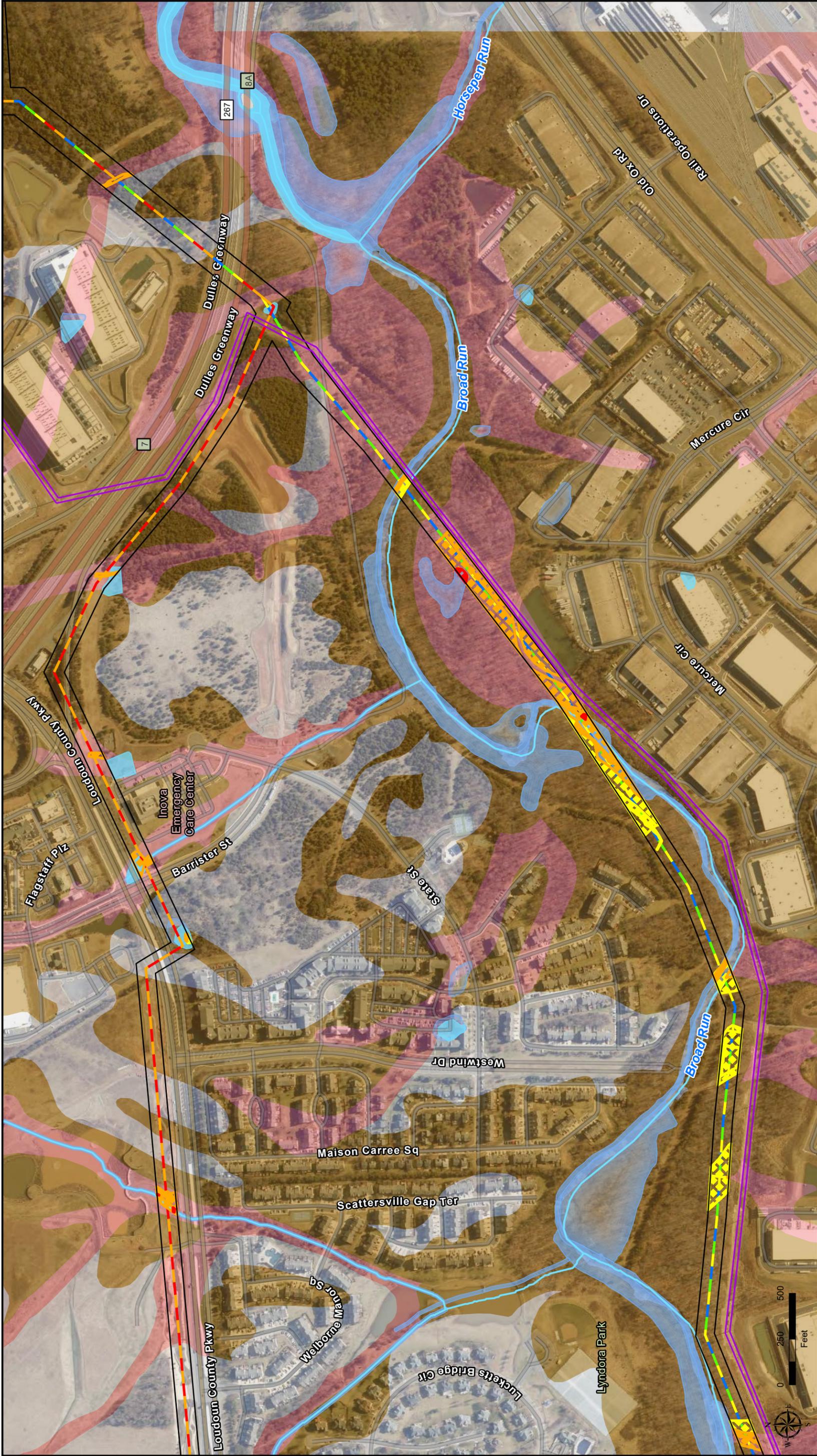
Wetland Probability

- High
- Medium/High
- Medium

SSURGO Hydric Soil Rating

- Hydric
- Partially Hydric
- Not Hydric

Page 2 of 9



Page 3 of 9

Attachment 3 Wetland Desktop Study Probability Mapset

Golden-Mars 500-230 kV Transmission Line Project

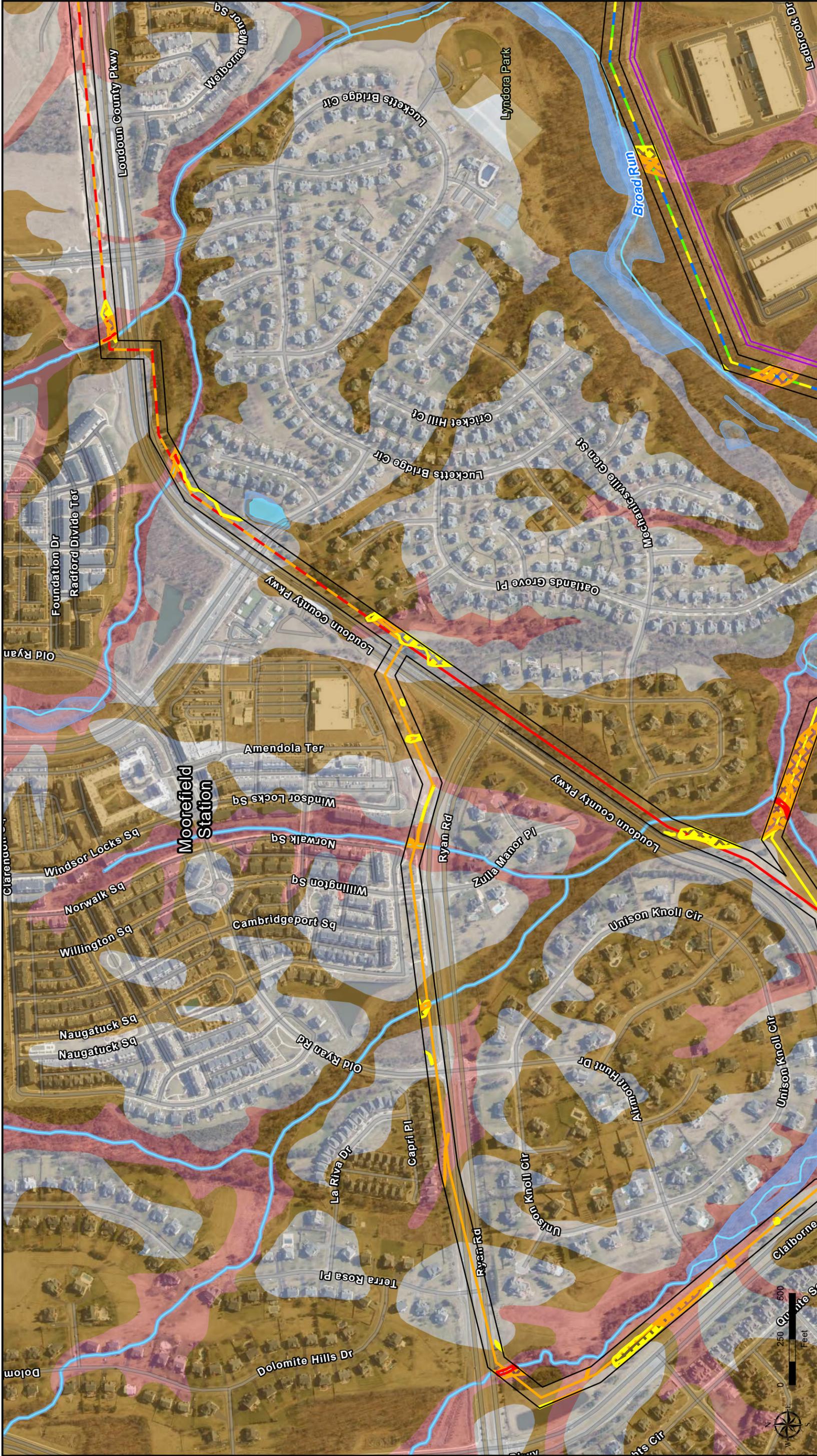
Dominion Energy Virginia
Loudoun County, Virginia

ERM
Dominion Energy

1:6,000

<p>Existing Dominion</p> <ul style="list-style-type: none"> Existing Dominion Transmission Line NHD Waterbody NWI Wetlands 	<p>Wetland Probability</p> <ul style="list-style-type: none"> High Medium/High Medium 	<p>SSURGO Hydric Soil Rating</p> <ul style="list-style-type: none"> Hydric Partially Hydric Not Hydric
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<ul style="list-style-type: none"> Golden-Mars Route 1 Golden-Mars Route 2 Golden-Mars Route 3 Golden-Mars Route 4 Golden-Mars Route 5 Lockridge 230 kV Loop 		<p>0 250 500 Feet</p>
--	--	---------------------------



Attachment 3
Wetland Desktop Study
Probability Mapset
Golden-Mars 500-230 kV Transmission Line Project

ERM
Dominion Energy Virginia
Loudoun County, Virginia

Page 4 of 9

1:6,000

SSURGO Hydric Soil Rating

- Hydric
- Partially Hydric
- Not Hydric

Wetland Probability

- High
- Medium/High
- Medium

Existing Dominion

- Transmission Line
- NHD Waterbody
- NWI Wetlands

Golden-Mars Route 1

Golden-Mars Route 2

Golden-Mars Route 3

Golden-Mars Route 4

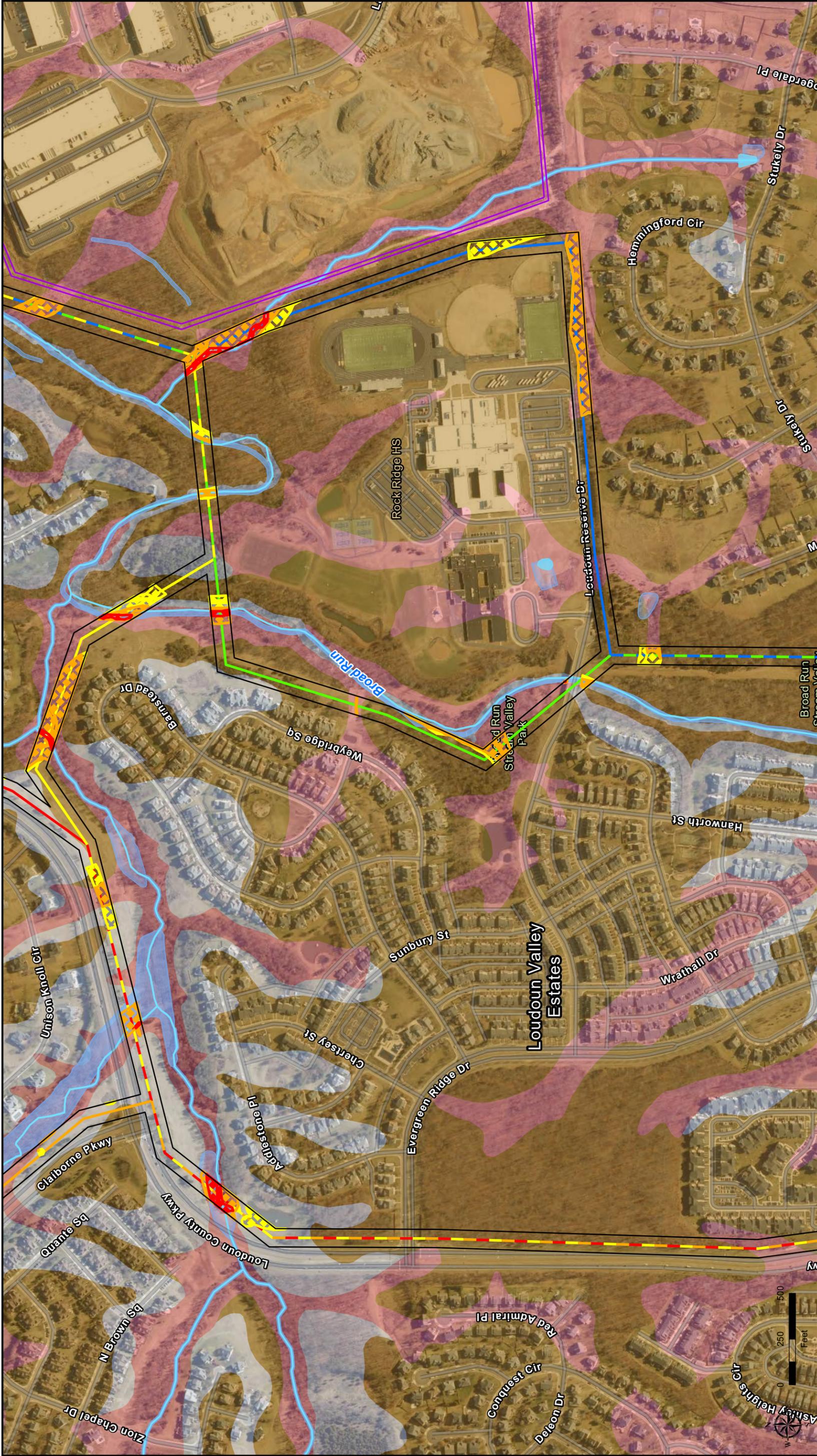
Golden-Mars Route 5

Scale

0 250 500 Feet

North Arrow

Inset Map



Page 5 of 9

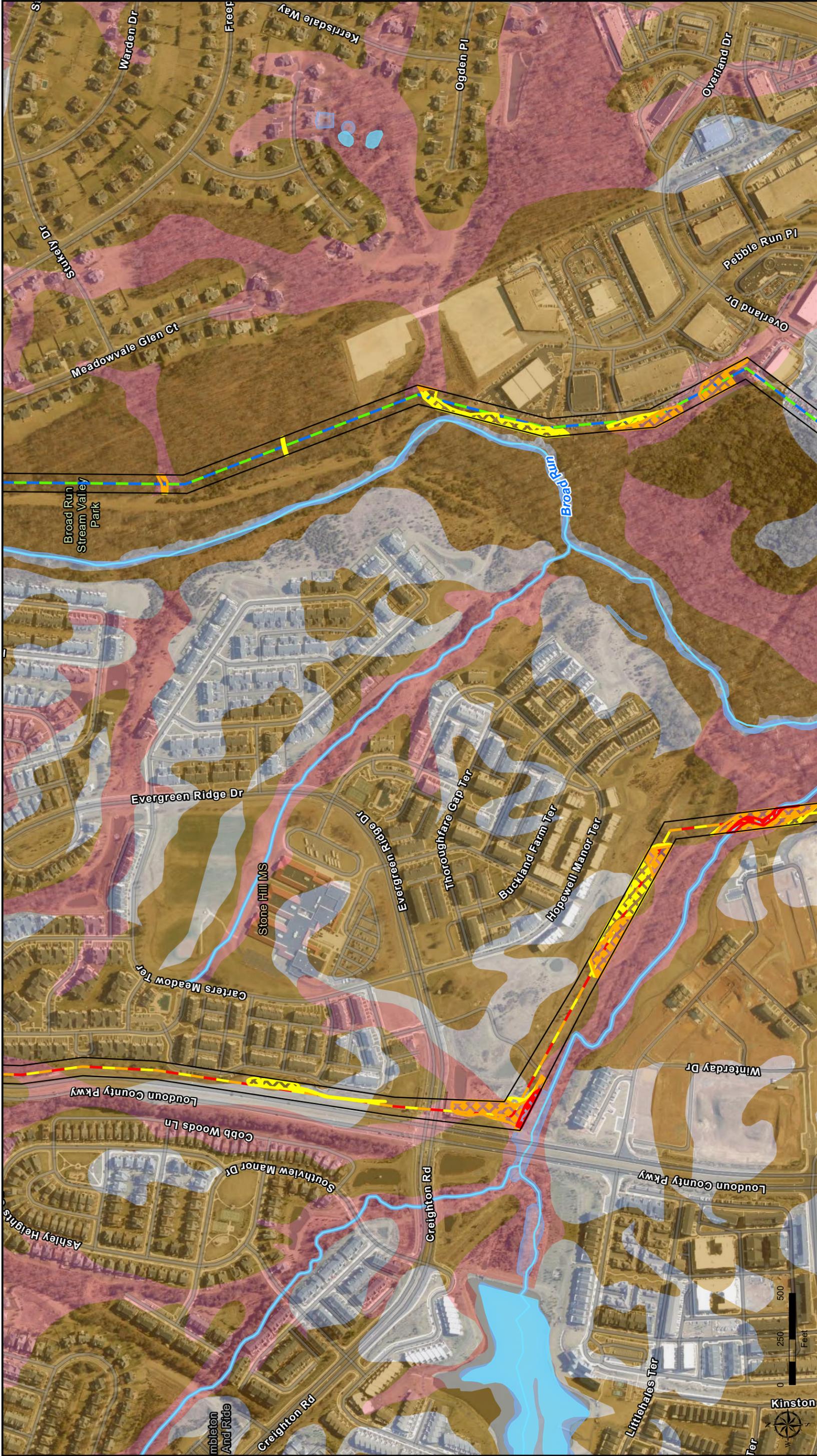
Attachment 3
Wetland Desktop Study
Probability Mapset
Golden-Mars 500-230 kV Transmission Line Project

Dominion Energy
Loudoun County, Virginia

ERM

1:6,000

<p>Wetland Probability</p> <ul style="list-style-type: none"> High Medium/High Medium 	<p>SSURGO Hydric Soil Rating</p> <ul style="list-style-type: none"> Hydric Partially Hydric Not Hydric
<p>Existing Dominion</p> <ul style="list-style-type: none"> Transmission Line NHD Waterbody NWI Wetlands 	<p>Golden-Mars Routes</p> <ul style="list-style-type: none"> Golden-Mars Route 1 Golden-Mars Route 2 Golden-Mars Route 3 Golden-Mars Route 4 Golden-Mars Route 5



Attachment 3
Wetland Desktop Study
Probability Mapset
Golden-Mars 500-230 kV Transmission Line Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM
1:6,000

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Golden-Mars Route 1
Golden-Mars Route 2
Golden-Mars Route 3
Golden-Mars Route 4
Golden-Mars Route 5

Wetland Probability
 High
 Medium/High
 Medium

SSURGO Hydric Soil Rating
 Hydric
 Partially Hydric
 Not Hydric

NHD Waterbody
 NWI Wetlands

Legend:
 Red dashed line: High Wetland Probability
 Yellow dashed line: Medium/High Wetland Probability
 Green dashed line: Medium Wetland Probability
 Blue dashed line: Hydric Soil Rating
 Brown dashed line: Partially Hydric Soil Rating
 Grey dashed line: Not Hydric Soil Rating

Scale: 0, 250, 500 Feet

North Arrow: Kinston

Inset Map: Shows the project location within a larger regional context, with numbered boxes 1 through 9 indicating the study area.



Approved Substation

- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4

Golden-Mars Routes 5

- Sojourner 230 kV Loop
- Existing Dominion Transmission Line
- NHD Waterbody
- NWI Wetlands

Wetland Probability

- High
- Medium/High
- Medium

SSURGO Hydric Soil Rating

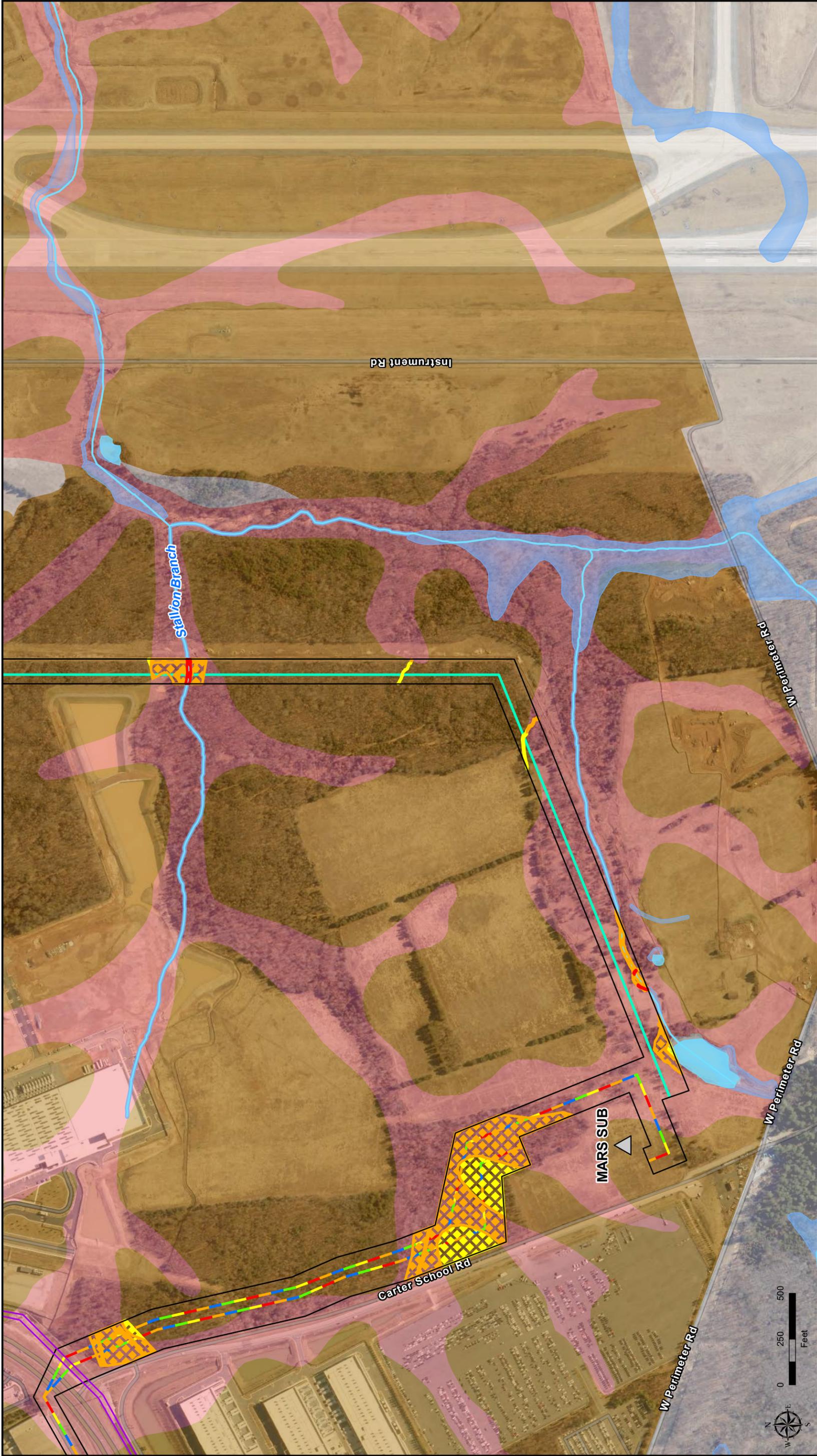
- Hydric
- Partially Hydric
- Not Hydric

Scale: 1:6,000

Page 7 of 9

Attachment 3
Wetland Desktop Study
Probability Mapset
Golden-Mars 500-230 kV Transmission Line Project

Dominion Energy Virginia
Loudoun County, Virginia



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Attachment 3 Wetland Desktop Study Probability Mapset

Golden-Mars 500-230 kV Transmission Line Project

Dominion Energy Virginia
Loudoun County, Virginia

ERM

1:6,000

<p>Approved Substation</p> <ul style="list-style-type: none"> Approved Substation Golden-Mars Route 1 Golden-Mars Route 2 Golden-Mars Route 3 Golden-Mars Route 4 	<p>Golden-Mars Route 5</p> <ul style="list-style-type: none"> Golden-Mars Route 5 Sojourner 230 kV Loop Existing Dominion Transmission Line NHD Waterbody NWI Wetlands 	<p>Wetland Probability</p> <ul style="list-style-type: none"> High Medium/High Medium 	<p>SSURGO Hydric Soil Rating</p> <ul style="list-style-type: none"> Hydric Partially Hydric Not Hydric
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Page 9 of 9

Attachment 3
Wetland Desktop Study
Probability Mapset
Golden-Mars 500-230 kV Transmission Line Project
Dominion Energy Virginia
Loudoun County, Virginia

ERM
1:6,000

Existing Substation

- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4

Golden-Mars Route 5

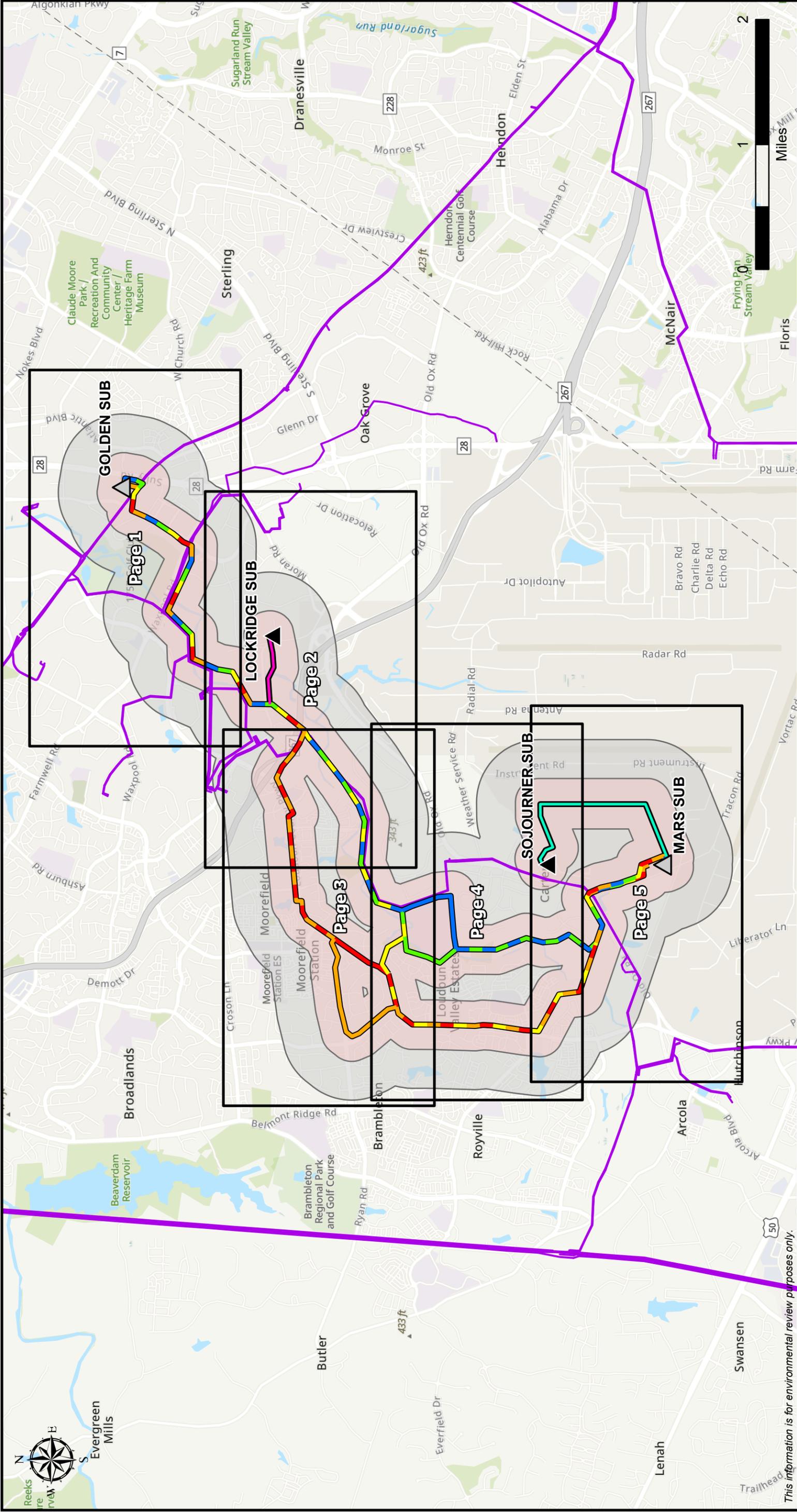
- Sojourner 230 kV Loop
- Existing Dominion
- Transmission Line
- NHD Waterbody
- NWI Wetlands

Wetland Probability

- Medium/High
- Medium

SSURGO Hydric Soil Rating

- Hydric
- Partially Hydric
- Not Hydric



This information is for environmental review purposes only.

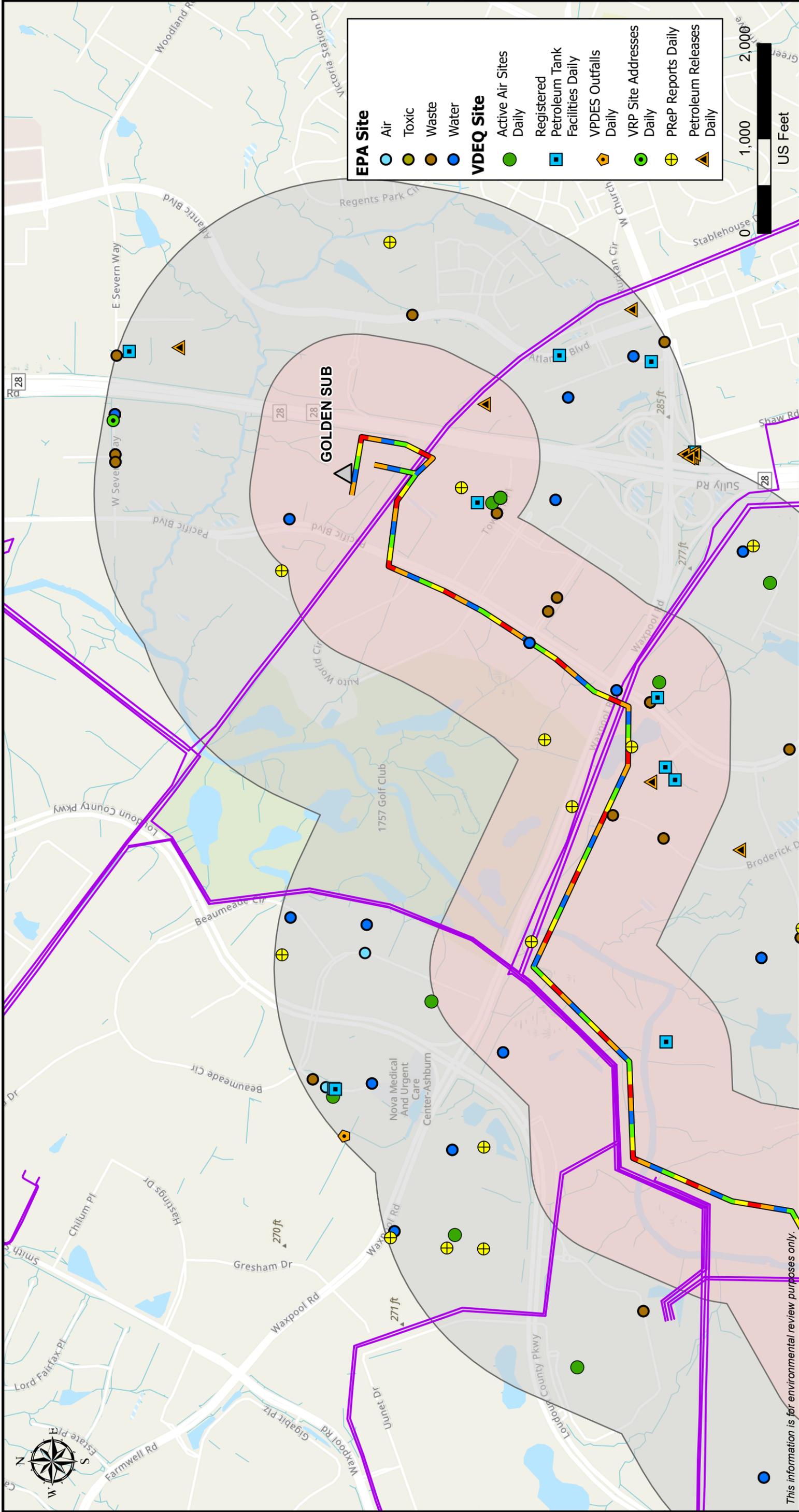


- | | | | |
|--|---------------------------------|--|--------------------------------------|
| | Golden-Mars Alternative Route 1 | | 1,000-Foot Buffer of Project Impacts |
| | Golden-Mars Alternative Route 2 | | 0.5 Mile Buffer of Project Impacts |
| | Golden-Mars Alternative Route 3 | | Existing Substation |
| | Golden-Mars Alternative Route 4 | | Future Substation |
| | Golden-Mars Alternative Route 5 | | Existing Dominion Transmission Lines |
| | Lockridge 230 kV Loop | | Page Index |
| | Sojourner 230 kV Loop | | |

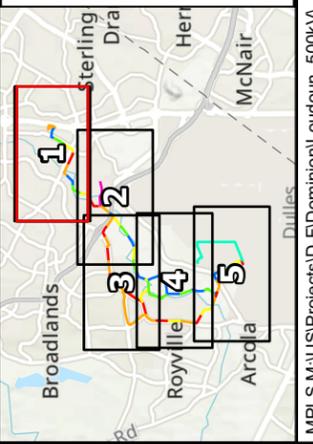


Attachment 2.F.1
Solid and Hazardous Waste Sites Within
1,000 Feet and Half Mile of the Right-of-Way
Golden-Mars 230-500 kV Transmission Line Project
 Dominion Energy Virginia
 Loudoun County, Virginia
 Page Index





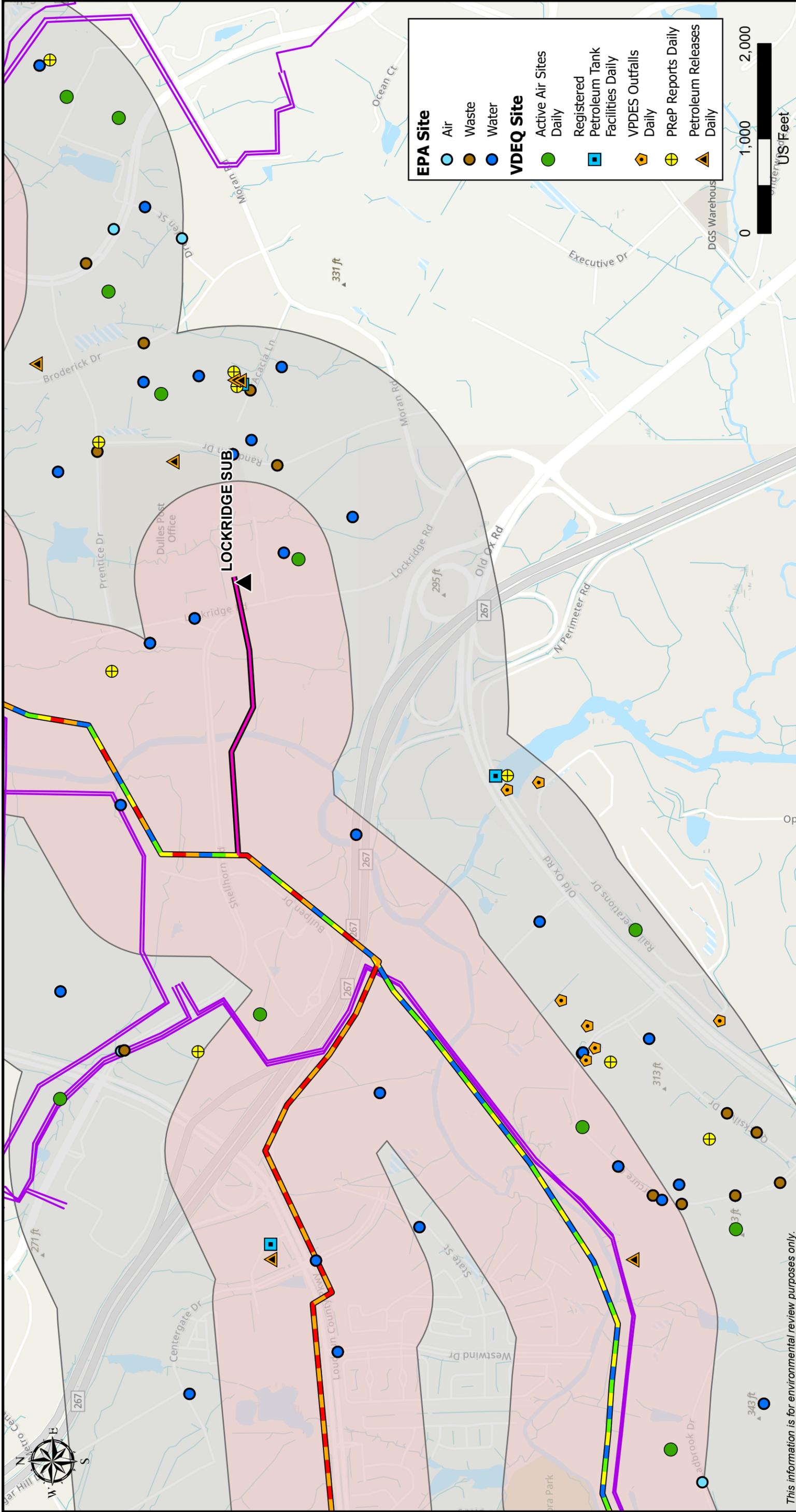
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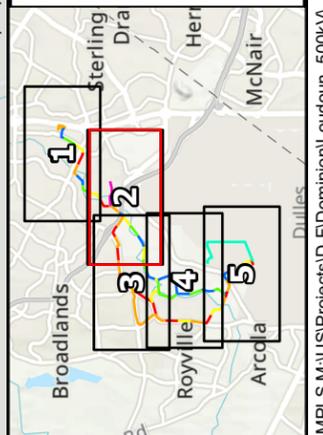
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- Golden-Mars Alternative Route 2
- Golden-Mars Alternative Route 3
- Golden-Mars Alternative Route 4
- Golden-Mars Alternative Route 5
- 1,000-Foot Buffer of Project Impacts
- 0.5 Mile Buffer of Project Impacts
- Future Substation
- Existing Dominion Transmission Lines

Attachment 2.F.1
Solid and Hazardous Waste Sites Within 1,000 Feet and Half Mile of the Right-of-Way Golden-Mars 230-500 kV Transmission Line Project
Dominion Energy Virginia
Loudoun County, Virginia
Page 1 of 5





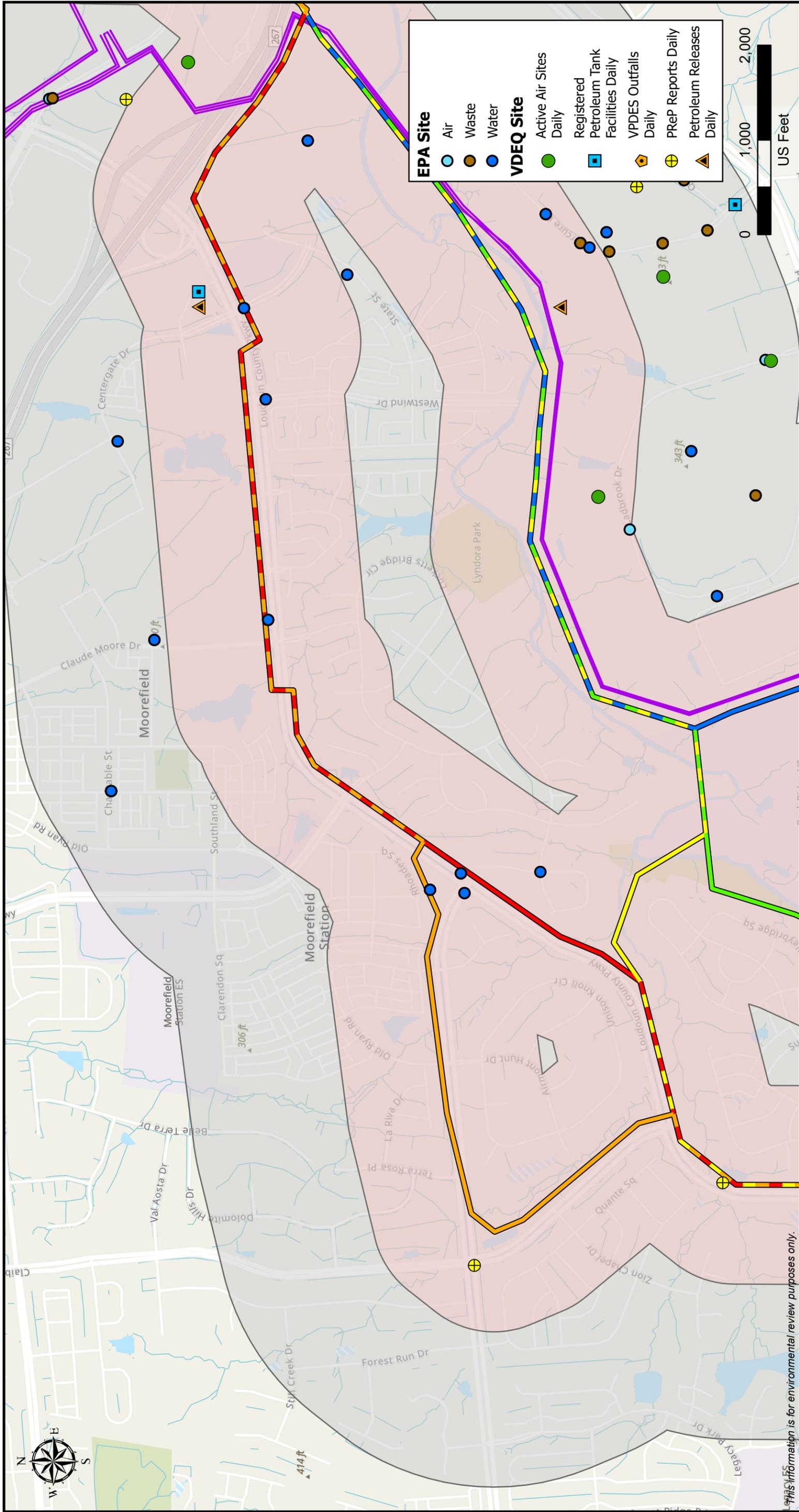
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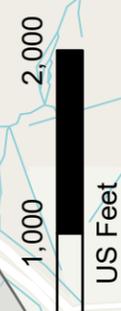
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- Golden-Mars Alternative Route 2
- Golden-Mars Alternative Route 3
- Golden-Mars Alternative Route 4
- Golden-Mars Alternative Route 5
- Lockridge 230 kV Loop
- 1,000-Foot Buffer of Project Impacts
- 0.5 Mile Buffer of Project Impacts
- Existing Substation
- Existing Dominion Transmission Lines

Attachment 2.F.1
Solid and Hazardous Waste Sites Within 1,000 Feet and Half Mile of the Right-of-Way Golden-Mars 230-500 kV Transmission Line Project
Dominion Energy Virginia
Loudoun County, Virginia
Page 2 of 5

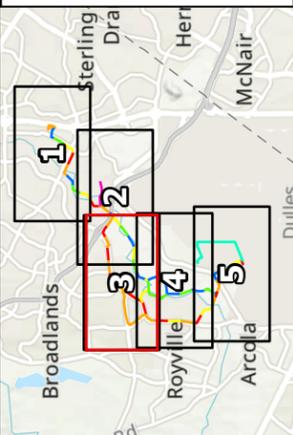




EPA Site	
	Air
	Waste
	Water
VDEQ Site	
	Active Air Sites Daily
	Registered Petroleum Tank Facilities Daily
	VPDES Outfalls Daily
	PRP Reports Daily
	Petroleum Releases Daily

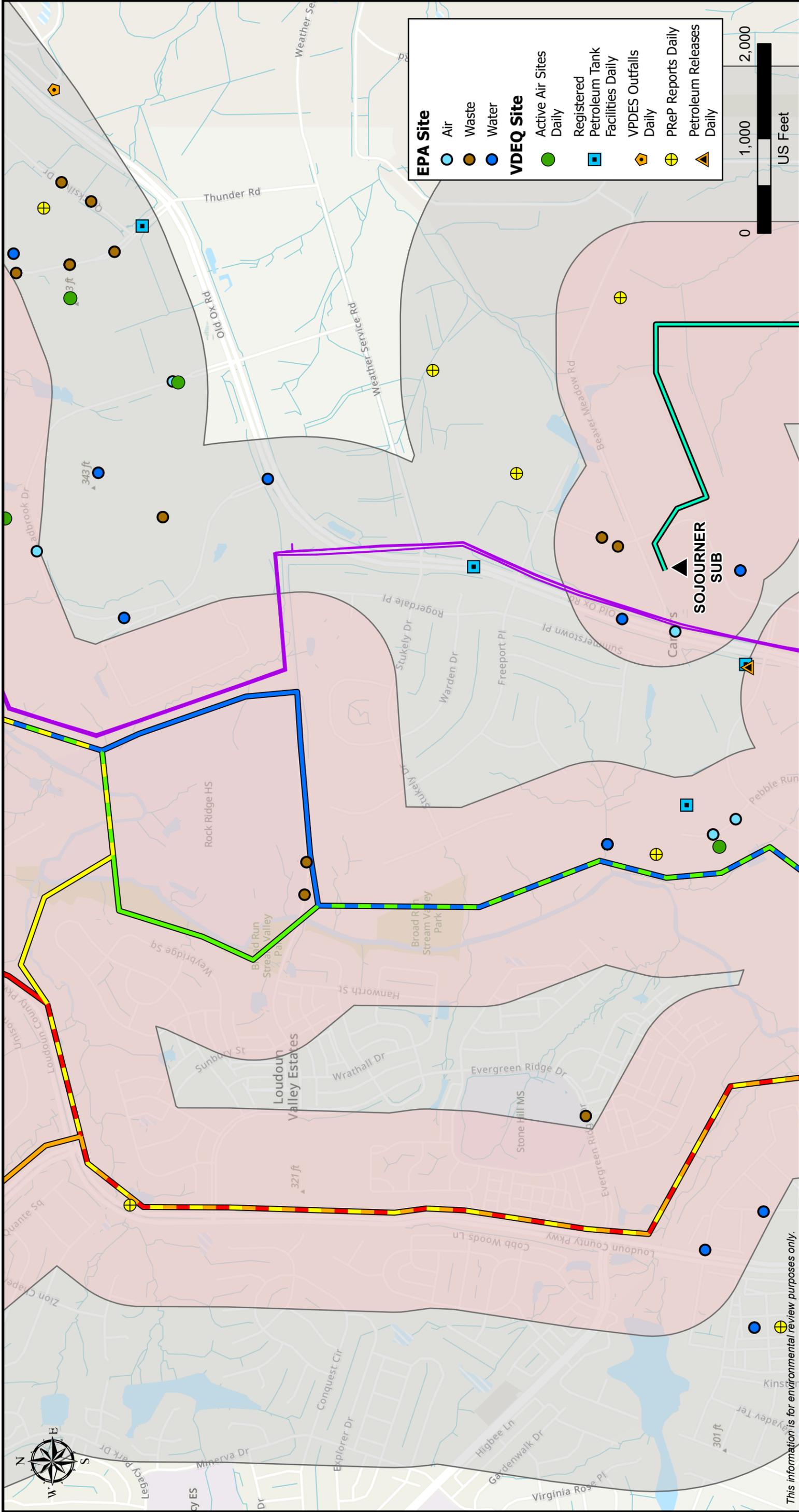


	Golden-Mars Alternative Route 1
	Golden-Mars Alternative Route 2
	Golden-Mars Alternative Route 3
	Golden-Mars Alternative Route 4
	Golden-Mars Alternative Route 5
	1,000-Foot Buffer of Project Impacts
	0.5 Mile Buffer of Project Impacts
	Existing Dominion Transmission Lines

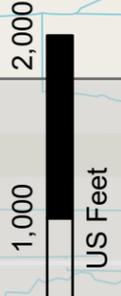


Attachment 2.F.1
Solid and Hazardous Waste Sites Within 1,000 Feet and Half Mile of the Right-of-Way Golden-Mars 230-500 kV Transmission Line Project
Dominion Energy Virginia
Loudoun County, Virginia
Page 3 of 5

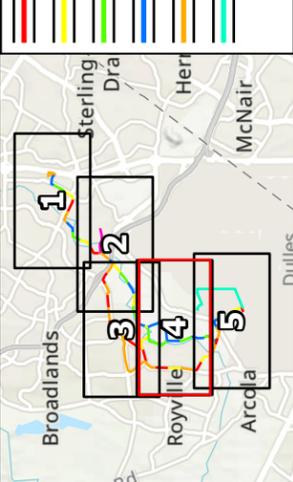




EPA Site		VDEQ Site	
	Air		Active Air Sites Daily
	Waste		Registered Petroleum Tank Facilities Daily
	Water		VPDES Outfalls Daily
			PRP Reports Daily
			Petroleum Releases Daily



	1,000-Foot Buffer of Project Impacts
	0.5 Mile Buffer of Project Impacts
	Existing Substation
	Existing Dominion Transmission Lines



- Golden-Mars Alternative Route 1
- Golden-Mars Alternative Route 2
- Golden-Mars Alternative Route 3
- Golden-Mars Alternative Route 4
- Golden-Mars Alternative Route 5
- Sojourner 230 kV Loop

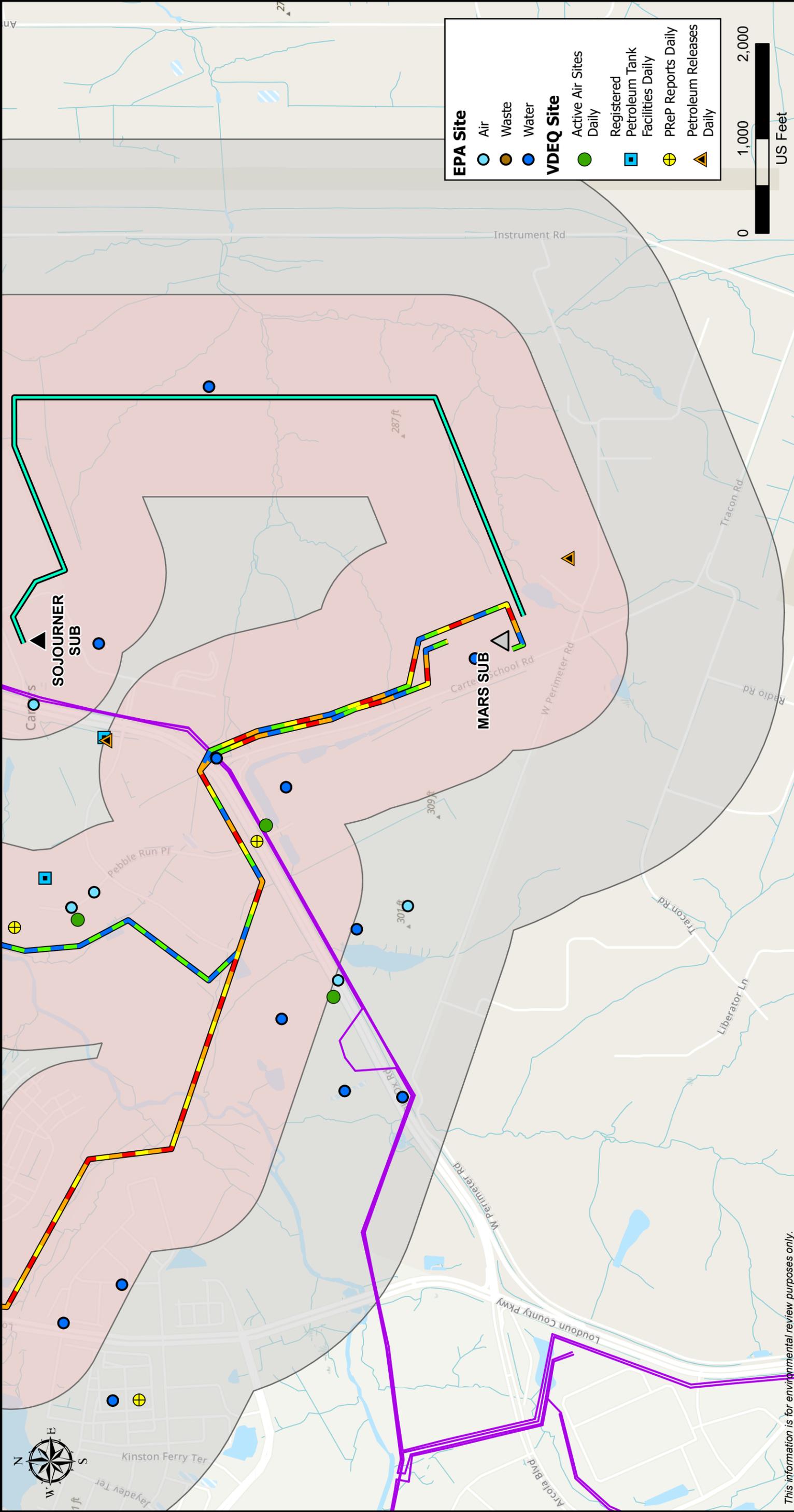
Attachment 2.F.1
Solid and Hazardous Waste Sites Within 1,000 Feet and Half Mile of the Right-of-Way Golden-Mars 230-500 kV Transmission Line Project



Dominion Energy Virginia
Loudoun County, Virginia
Page 4 of 5



This information is for environmental review purposes only.



This information is for environmental review purposes only.

	Golden-Mars Alternative Route 1		1,000-Foot Buffer of Project Impacts
	Golden-Mars Alternative Route 2		0.5 Mile Buffer of Project Impacts
	Golden-Mars Alternative Route 3		Existing Substation
	Golden-Mars Alternative Route 4		Future Substation
	Golden-Mars Alternative Route 5		Existing Dominion Transmission Lines
	Sojourner 230 kV Loop		

Attachment 2.F.1
Solid and Hazardous Waste Sites Within 1,000 Feet and Half Mile of the Right-of-Way Golden-Mars 230-500 kV Transmission Line Project
Dominion Energy Virginia
Loudoun County, Virginia
Page 5 of 5

ERM

Dominion Energy

Matthew S. Wells
Director



Andrew W. Smith
Chief Deputy Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

Darryl Glover
Deputy Director for
Dam Safety,
Floodplain Management and
Soil and Water Conservation

Laura Ellis
Deputy Director for
Administration and Finance

November 25, 2024

Briana Cooney
Environmental Resource Management
222 South 9th Street, Suite 2900
Minneapolis, MN 55402

Re: 0642267, Golden-Mars Rereview

Dear Ms. Cooney:

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

Additionally, according to the information in our files, the Broad Run - Rt. 607 Stream Conservation Site (SCS) is located within the project area. SCSs encompass stream/river reaches, waterbodies, and terrestrial contributing areas containing or associated with aquatic or semi-aquatic resources, including upstream and downstream reaches and tributaries up to 3-km stream distance from the aquatic resources. The size and dimensions of an SCS are based on the hydrology of the waterway and surrounding landscape, taking into consideration dam locations and whether the waterway is tidal. SCSs are also given a biodiversity significance ranking (B-rank) based on the rarity, quality, and number of element occurrences they contain. The Broad Run - Rt. 607 SCS has been given a B-rank of B4, which represents a site of moderate significance. The natural heritage resource associated with this SCS is:

Lampsilis cariosa

Yellow Lampmussel

G3G4/S2/NL/NL

The Yellow Lampmussel ranges from Nova Scotia to Georgia in Atlantic slope drainages (NatureServe, 2009). In Virginia, it is recorded from the Roanoke, Chowan, James, York, and Potomac drainages. It is found in larger streams and rivers where good currents exist over sand and gravel substrates and in small creeks and ponds (Johnson, 1970).

Considered good indicators of the health of aquatic ecosystems, freshwater mussels are dependent on good water quality, good physical habitat conditions, and an environment that will support populations of host fish species (Williams et al., 1993). Because mussels are sedentary organisms, they are sensitive to water quality degradation related to increased sedimentation and pollution. They are also sensitive to habitat destruction through dam construction, channelization, and dredging, and the invasion of exotic mollusk species.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water

management laws and regulations, establishment/enhancement of riparian buffers with native plant species and maintaining natural stream flow.

According to the diabase screening layer and a review by a DCR biologist, several rare plants which are typically associated with prairie vegetation and inhabit semi-open diabase glades in Virginia, may also occur at this location if suitable habitat is present. Diabase glades are characterized by historically fire-dominated grassland vegetation on relatively nutrient-rich soils underlain by Triassic bedrock. Diabase flatrock, a hard, dark-colored volcanic rock, is found primarily in northern Virginia counties and is located within the geologic formation known as the Triassic Basin. Where the bedrock is exposed, a distinctive community type of drought-tolerant plants occurs. Diabase flatrocks are extremely rare natural communities that are threatened by activities such as quarrying and road construction (Rawinski, 1995).

In Northern Virginia, diabase supports occurrences of several global and state rare plant species: Earleaf False foxglove (*Agalinis auriculata*, G3/S1/NL/NL), American bluehearts (*Buchnera americana*, G5?/S1S2/NL/NL), Downy phlox (*Phlox pilosa*, G5/S1/NL/NL), Torrey's Mountain-mint (*Pycnanthemum torreyi*, G2/S2/SOC/LT), Stiff goldenrod (*Solidago rigida var. rigida*, G5T5/S2/NL/NL), and Hairy hedgenettle (*Stachys arenicola*, G4?/S1/NL/NL).

Please note that Torrey's Mountain-mint is listed as threatened by the Virginia Department of Agriculture and Consumer Services (VDACS). Torrey's Mountain-mint is also listed as a Species of Concern (SOC) by United States Fish and Wildlife Service (USFWS); however, this is not a legal designation.

Due to the potential for this site to support populations of natural heritage resources, DCR recommends an inventory for rare plants associated with diabase soils in the study area. With the survey results we can more accurately evaluate potential impacts to natural heritage resources and offer specific protection recommendations for minimizing impacts to the documented resources.

DCR-Division of Natural Heritage biologists are qualified to conduct inventories for rare, threatened, and endangered species. Please contact Anne Chazal, Natural Heritage Chief Biologist, at anne.chazal@dcr.virginia.gov or 804-786-9014 to discuss availability and rates for field work.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. Survey results should be coordinated with DCR-DNH. Upon review of the results, if it is determined the species is present, and there is a likelihood of a negative impact on the species, DCR-DNH will recommend coordination with VDACS to ensure compliance with Virginia's Endangered Plant and Insect Species Act.

Furthermore, if tree removal occurs outside of the open area or existing rights-of-way (ROWs), the proposed project has the potential to impact multiple Ecological Cores (C4) as identified in the Virginia Natural Landscape Assessment (<https://www.dcr.virginia.gov/natural-heritage/vaconvisvnl>). Mapped cores in the project area can be viewed via the Virginia Natural Heritage Data Explorer, available here: <http://vanhde.org/content/map>.

Ecological Cores are areas of at least 100 acres of continuous interior, natural cover that provide habitat for a wide range of species, from interior-dependent forest species to habitat generalists, as well as species that utilize marsh, dune, and beach habitats. Interior core areas begin 100 meters inside core edges and continue to the deepest parts of cores. Cores also provide the natural, economic, and quality of life benefits of open space, recreation, thermal moderation, water quality (including drinking water recharge and protection, and erosion prevention), and air quality (including sequestration of carbon, absorption of gaseous pollutants, and production of oxygen). Cores are ranked from C1 to C5 (C5 being the least significant) using nine prioritization criteria, including the habitats of natural heritage resources they contain.

Impacts to cores occur when their natural cover is partially or completely converted permanently to developed land uses. Habitat conversion to development causes reductions in ecosystem processes, native biodiversity, and habitat quality due to habitat loss; less viable plant and animal populations; increased predation; and increased introduction and establishment of invasive species.

DCR recommends avoidance of impacts to cores. When avoidance cannot be achieved, DCR recommends minimizing the area of impacts overall and concentrating the impacted area at the edges of cores, so that the most interior remains intact.

DCR recommends the development and implementation of an invasive species plan to be included as part of the maintenance practices for the right-of-way (ROW). The invasive species plan should include an invasive species inventory for the project area based on the current DCR Invasive Species List (<https://www.dcr.virginia.gov/natural-heritage/document/nh-invasive-plant-list-2023.pdf>) and methods for treating the invasives. DCR also recommends the ROW restoration and maintenance practices planned include appropriate revegetation using native species in a mix of grasses and forbs, robust monitoring and an adaptive management plan to provide guidance if initial revegetation efforts are unsuccessful or if invasive species outbreaks occur.

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

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

A fee of \$1,000.00 has been assessed for the service of providing this information. Please find attached an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, DCR Finance, 600 East Main Street, 24th Floor, Richmond, VA 23219. Payment is due within thirty days of the invoice date. Please note late payment may result in the suspension of project review service for future projects.

The Virginia Department of Wildlife Resources (VDWR) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed <https://services.dwr.virginia.gov/fwis/> or contact Hannah Schul at Hannah.Schul@dwr.virginia.gov.

Should you have any questions or concerns, feel free to contact me at 804-625-3979. Thank you for the opportunity to comment on this project.

Sincerely,



Nicki Gustafson
Natural Heritage Project Review Assistant

Literature Cited

Johnson, R.I. 1970. The systematics and zoogeography of the Unionidae (Mollusca: Bilvava) of the southern Atlantic slope region. Bulletin Museum of Comparative Zoology vol 140(6): 362-365.

NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. Available <http://www.natureserve.org/explorer>. (Accessed: April 27, 2010).

Rawinski, T.J. 1995. Natural communities and ecosystems: Conservation priorities for the future. Unpublished report for DCR-DNH.

Williams, J.D., M.L. Warren, Jr., K.S. Cummings, J.L. Harris, and R.J. Neves. 1993. Conservation status of freshwater mussels of the United States and Canada. Fisheries 18: 6-9.

VaFWIS Search Report Compiled on 1/22/2025, 4:28:11 PM[Help](#)

Known or likely to occur within a **2 mile buffer around line beginning 39.0342600 -77.4598099**
in **059 Fairfax County, 107 Loudoun County, VA**

[View Map of
Site Location](#)

748 Known or Likely Species ordered by Status Concern for Conservation
(displaying first 36) (36 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
050022	FEST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
060003	FESE	Ia	Wedgemussel, dwarf	Alasmidonta heterodon		BOVA
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
060029	FTST	IIa	Lance, yellow	Elliptio lanceolata		BOVA,HU6
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA,HU6
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus	Yes	BOVA,SppObs
060006	SE	Ib	Floater, brook	Alasmidonta varicosa		BOVA
030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes	BOVA,Habitat,SppObs,HU6
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
040379	ST	Ia	Sparrow, Henslow's	Centronyx henslowii	Potential	BOVA,BBA,HU6
100155	ST	Ia	Skipper, Appalachian grizzled	Pyrgus wyandot		BOVA,HU6
060081	FPST	IIa	Floater, green	Lasmigona subviridis		BOVA,HU6
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100248	FP	Ia	Fritillary, Regal	Speyeria idalia idalia		BOVA,HU6
100079	FP	IIIa	Butterfly, Monarch	Danaus plexippus		BOVA
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA,HU6
030012	CC	IVa	Rattlesnake, timber	Crotalus horridus		BOVA,HU6

010077		Ia	Shiner, bridge	Notropis bifrenatus		BOVA
040092		Ia	Eagle, golden	Aquila chrysaetos		BOVA
040040		Ia	Ibis, glossy	Plegadis falcinellus		BOVA,HU6
040306		Ia	Warbler, golden-winged	Vermivora chrysoptera		BOVA
040213		Ic	Owl, northern saw-whet	Aegolius acadicus		BOVA,HU6
040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6
040033		IIa	Egret, snowy	Egretta thula		BOVA
040029		IIa	Heron, little blue	Egretta caerulea caerulea		BOVA
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea	Potential	BOVA,BBA
040181		IIa	Tern, common	Sterna hirundo		BOVA,HU6
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140		IIa	Woodcock, American	Scolopax minor		BOVA,HU6
060071		IIa	Lampmussel, yellow	Lampsilis cariosa		BOVA,HU6
040203		IIb	Cuckoo, black-billed	Coccyzus erythrophthalmus		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA
040304		IIc	Warbler, Swainson's	Limnothlypis swainsonii		BOVA,HU6
100154		IIc	Butterfly, Persius duskywing	Erynnis persius persius		BOVA,HU6
100166		IIc	Skipper, Dotted	Hesperia attalus slossonae		BOVA,HU6

To view **All 748 species** [View 748](#)

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

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Wildlife Action Plan Conservation Opportunity Ranking:

a - On the ground management strategies/actions exist and can be feasibly implemented.; b -

On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.; c -

No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

[View Map of All Query Results from All Observation Tables](#)

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Impediments to Fish Passage (4 records)

[View Map of All Fish Impediments](#)

ID	Name	River	View Map
1239	ASHBURN VILLAGE LAKE #1	TR-RUSSEL BRANCH	Yes
1221	DULLES AIRPORT DAM	TR-HORSEPEN RUN	Yes
1220	HORSEPEN DAM	HORSEPEN RUN	Yes
1233	QUAIL RIDGE DAM	TR-BROAD RUN	Yes

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests

N/A

Species Observations (564 records - displaying first 20 , 5 Observations with Threatened or Endangered species)

[View Map of All Query Results Species Observations](#)

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE *	Highest Tier **	
635472	SppObs	Nov 14 2022	Leah Card; Ellison Orcutt; Steve Roble	1	ST	I	Yes

642036	SppObs	Nov 14 2022	Leah Card; Ellison Orcutt; Steve Roble	1	ST	I	Yes
623115	SppObs	Jul 23 2015	Linda; Sieh	1	ST	I	Yes
59558	SppObs	Sep 12 1998	TOM ACKRE	1	ST	I	Yes
644076	SppObs	Jul 29 2022	Chanston Osborne	1	FPSE	I	Yes
632616	SppObs	Jun 22 2016	Gabriela Conrad-DiStasio; Lauren Worley	1		III	Yes
632608	SppObs	Oct 6 2015	Dorothy Lewis	1		III	Yes
633211	SppObs	Jun 17 2015	Rick Browder; Gabriel Darkwah	4		III	Yes
618039	SppObs	Aug 27 2013	Bobby; Colicci	2		III	Yes
616962	SppObs	May 29 2012	Dorothy; Lewis	1		III	Yes
601718	SppObs	Jun 2 2009	Richard; Browder	8		III	Yes
605059	SppObs	Oct 31 2008	Dorothy; Lewis	1		III	Yes
600623	SppObs	Oct 9 2008	Jan; Cornwell	1		III	Yes
318779	SppObs	Mar 13 2007	Christine Geist	7		III	Yes
318780	SppObs	Jan 9 2007	Christine Geist	1		III	Yes
317211	SppObs	Aug 3 2006	Christine Geist	1		III	Yes
317210	SppObs	Aug 2 2006	Christine Geist	1		III	Yes
317209	SppObs	Jul 28 2006	Christine Geist	1		III	Yes
317200	SppObs	Jun 13 2006	Christine Geist	1		III	Yes
313415	SppObs	May 4 2005	Meredyth Breed Principle Permitee	1		III	Yes

Displayed 20 Species Observations

Selected 564 Observations [View 500 \(system constraint\) Species Observations](#)

Habitat Predicted for Aquatic WAP Tier I & II Species (13 Reaches)

[View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species](#)

Stream Name	Tier Species						View Map
	Highest TE*	BOVA Code, Status*, Tier**, Common & Scientific Name					
Beaverdam Creek (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Beaverdam Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes

Broad Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Cabin Branch (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Cub Run (20700101)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Dead Run (20700101)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Horsepen Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Lenah Run (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Russell Branch (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Sand Branch (20700101)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
Stallion Branch (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
tributary (20700081)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
tributary (20700101)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes
tributary (20700101)	ST	030062	ST	Ia	Turtle, wood	Glyptemys insculpta	Yes

Habitat Predicted for Terrestrial WAP Tier I & II Species

N/A

Virginia Breeding Bird Atlas Blocks (16 records)

[View Map of All Query Results](#)
[Virginia Breeding Bird Atlas Blocks](#)

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
50204	Arcola, CE	41		III	Yes
50203	Arcola, CW	44		III	Yes
50202	Arcola, NE	43		III	Yes
50201	Arcola, NW	45		III	Yes
50206	Arcola, SE	72	ST	I	Yes
51204	Herndon, CE	59		III	Yes
51203	Herndon, CW	29		IV	Yes

51202	Herndon, NE	51		III	Yes
51201	Herndon, NW	47	ST	I	Yes
51205	Herndon, SW	49		III	Yes
50214	Leesburg, CE	63		III	Yes
50216	Leesburg, SE	69		III	Yes
51214	Sterling, CE	76		II	Yes
51213	Sterling, CW	64		III	Yes
51216	Sterling, SE	72		III	Yes
51215	Sterling, SW	6		III	Yes

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
059	Fairfax	559	FESE	I
107	Loudoun	438	FESE	I

USGS 7.5' Quadrangles:

Arcola
Leesburg
Herndon
Sterling

USGS NRCS Watersheds in Virginia:

N/A

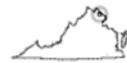
USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
PL14	Goose Creek-Big Branch	59	FTST	I
PL17	Broad Run-Lenah Run	49	FPST	I
PL18	Horsepen Run	61	FPST	I
PL19	Broad Run-Beaverdam Run	53	FPST	I
PL20	Potomac River-Selden Island	47	FPST	I
PL21	Sugarland Run	63	FPSE	I
PL45	Cub Run	70	FTST	I

Compiled on 1/22/2025, 4:28:11 PM I3497797.0 report=all searchType= L dist= 3218 poi= 39.0342600 -77.4598099 siteDD= 39.0342600 -77.4598198;39.0307600 -77.4536898;39.0272600 -77.4475698;39.0237600 -77.4414498;39.0202600 -77.4353198;39.0167600 -77.4291998;39.0132600 -77.4230798;39.0100500 -77.4174698;39.0046200 -77.4228498;38.9996100 -77.4278098;38.9946000 -77.4327798;38.9895900 -77.4377398;38.9845800 -77.4427098;38.9795700 -77.4476698;38.9745600 -77.4526398;38.9695500 -77.4575998;38.9645400 -77.4625698;38.9595300 -77.4675298;38.9545200 -77.4724998;38.9495100 -77.4774598;38.9445000 -77.4824198;38.9441900 -77.4879998;38.9477700 -77.4940798;38.9513500 -77.5001598;38.9549200 -77.5062398;38.9585000 -77.5123198;38.9620700 -77.5183998;38.9656500 -77.5244798;38.9692300 -77.5305598;38.9741500 -77.5268898;38.9792400 -77.5220098;38.9843400 -77.5171298;38.9894300 -77.5122498;38.9945200 -77.5073698;38.9996200 -77.5024898;39.0047100 -77.4976098;39.0098000 -77.4927298;39.0148900 -77.4878498;39.0199900 -77.4829698;39.0250800 -77.4780898;39.0301700 -77.4732098;39.0352700 -77.4683298;38.9696200 -77.5312298;39.0377700 -77.4659398;38.9422300 -77.4846698;

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VAFWIS - Department of Wildlife Resources



38.98997 -77.47435

is the Search Point

[back](#)

Map Click

[Refresh Browser Page](#)

Map Scale

Screen Size

Search Point

- Change to "clicked" map point
- Fixed at 38.98997 -77.47435

Show Position Rings

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

Show Search Area

- Yes No
- 2 Search distance miles buffer

Search Point is at map center

Base Map Choices

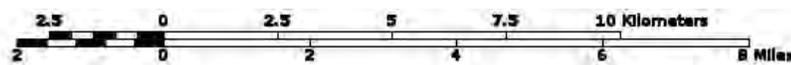
Color Aerial Photography

Map Overlay Choices

Current List: Search

Map Overlay Legend

 2 mile radius Search Area



Point of Search 38.98997 -77.47435

Map Location 38.98997 -77.47435

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

Base Map source: Color Aerial Photography 2002 - Virginia Base Mapping Program, Virginia Geographic Information Network

Map projection is UTM Zone 18 NAD 1983 with left 272899 and top 4331376. Pixel size is 32 meters . Coordinates displayed are decimal Degrees North and West. Map is currently displayed as

800 columns by 800 rows for a total of 640000 pixels. The map display represents 25600 meters east to west by 25600 meters north to south for a total of 655.3 square kilometers. The map display represents 84003 feet east to west by 84003 feet north to south for a total of 253.1 square miles.

Topographic maps and Black and white aerial photography for year 1990+ are from the United States Department of the Interior, United States Geological Survey. Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.

Shaded topographic maps are from TOPO! ©2006 National Geographic
<http://www.national.geographic.com/topo>

All other map products are from the Commonwealth of Virginia Department of Wildlife Resources.

map assembled 2024-03-11 17:07:45 (qa/qc March 21, 2016 12:20 - tn=1820416 dist=3218 I)
\$poi=39.0342600 -77.4598200



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694

In Reply Refer To:

01/22/2025 20:20:58 UTC

Project Code: 2024-0061009

Project Name: Golden to Mars - 0642267

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf>

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see <https://www.fws.gov/program/migratory-bird-permit/what-we-do>.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see <https://www.fws.gov/library/collections/threats-birds>.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit <https://www.fws.gov/partner/council-conservation-migratory-birds>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office

6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

PROJECT SUMMARY

Project Code: 2024-0061009
Project Name: Golden to Mars - 0642267
Project Type: Transmission Line - New Constr - Above Ground
Project Description: This request is a part of a pre-permitting effort to determine feasibility of overhead powerline routes.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@38.99000385,-77.47452758851136,14z>



Counties: Loudoun County, Virginia

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

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

CLAMS

NAME	STATUS
Dwarf Wedgemussel <i>Alasmidonta heterodon</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/784	Endangered
Green Floater <i>Lasmigona subviridis</i> There is proposed critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7541	Proposed Threatened

INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> There is proposed critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

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

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act ² and the Migratory Bird Treaty Act (MBTA) ¹. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

1. The [Bald and Golden Eagle Protection Act](#) of 1940.
2. The [Migratory Birds Treaty Act](#) of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your [project](#) area.

Measures for Proactively Minimizing Eagle Impacts

For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the [National Bald Eagle Management Guidelines](#). You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to [Bald Eagle Nesting and Sensitivity to Human Activity](#).

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

If disturbance or take of eagles cannot be avoided, an [incidental take permit](#) may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the [Do I Need A Permit Tool](#). For assistance making this determination for golden eagles, please consult with the appropriate Regional [Migratory Bird Office](#) or [Ecological Services Field Office](#).

Ensure Your Eagle List is Accurate and Complete

If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the [Supplemental Information on Migratory Birds and Eagles](#), to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds elsewhere

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

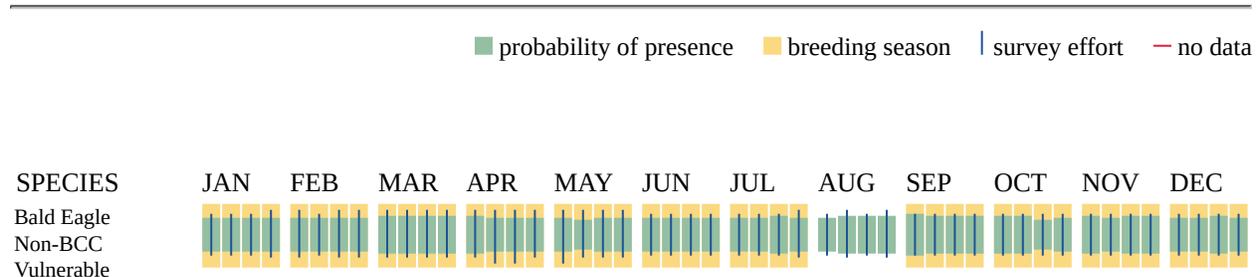
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)

Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (—)

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



Golden Eagle
Non-BCC
Vulnerable



Additional information can be found using the following links:

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

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) ¹ prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

-
1. The [Migratory Birds Treaty Act](#) of 1918.
 2. The [Bald and Golden Eagle Protection Act](#) of 1940.
 3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Sep 1 to Jul 31
Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10

NAME	BREEDING SEASON
<p>Cerulean Warbler <i>Setophaga cerulea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974</p>	Breeds Apr 28 to Jul 20
<p>Chimney Swift <i>Chaetura pelagica</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406</p>	Breeds Mar 15 to Aug 25
<p>Chuck-will's-widow <i>Antrostomus carolinensis</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9604</p>	Breeds May 10 to Jul 10
<p>Eastern Whip-poor-will <i>Antrostomus vociferus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10678</p>	Breeds May 1 to Aug 20
<p>Golden Eagle <i>Aquila chrysaetos</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680</p>	Breeds elsewhere
<p>Grasshopper Sparrow <i>Ammodramus savannarum perpallidus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8329</p>	Breeds Jun 1 to Aug 20
<p>Kentucky Warbler <i>Geothlypis formosa</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9443</p>	Breeds Apr 20 to Aug 20
<p>King Rail <i>Rallus elegans</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936</p>	Breeds May 1 to Sep 5
<p>Prairie Warbler <i>Setophaga discolor</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9513</p>	Breeds May 1 to Jul 31
<p>Prothonotary Warbler <i>Protonotaria citrea</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9439</p>	Breeds Apr 1 to Jul 31

NAME	BREEDING SEASON
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Rusty Blackbird <i>Euphagus carolinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9478	Breeds elsewhere
Wood Thrush <i>Hylocichla mustelina</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9431	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "[Supplemental Information on Migratory Birds and Eagles](#)", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)

Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)

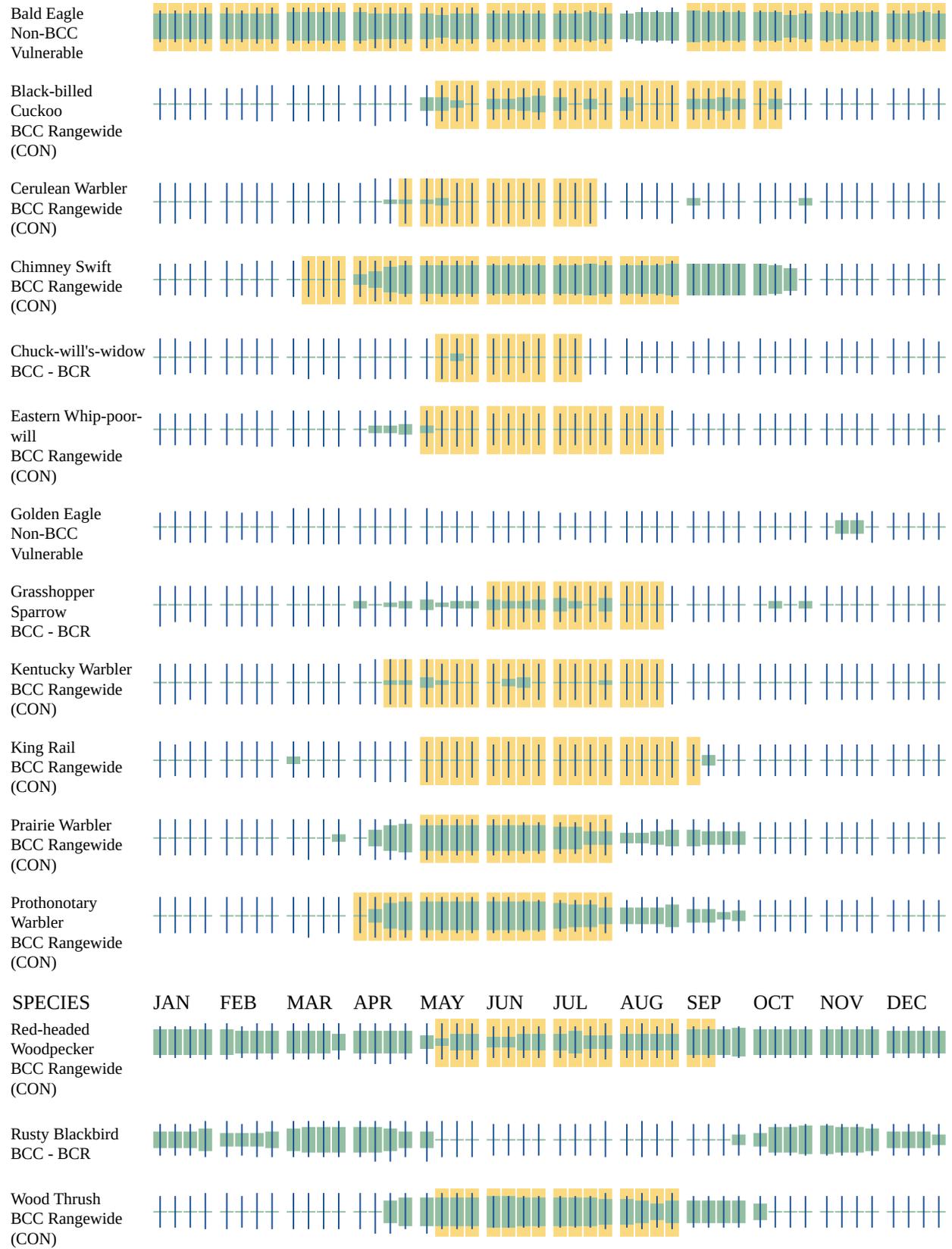
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (—)

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

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

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



Additional information can be found using the following links:

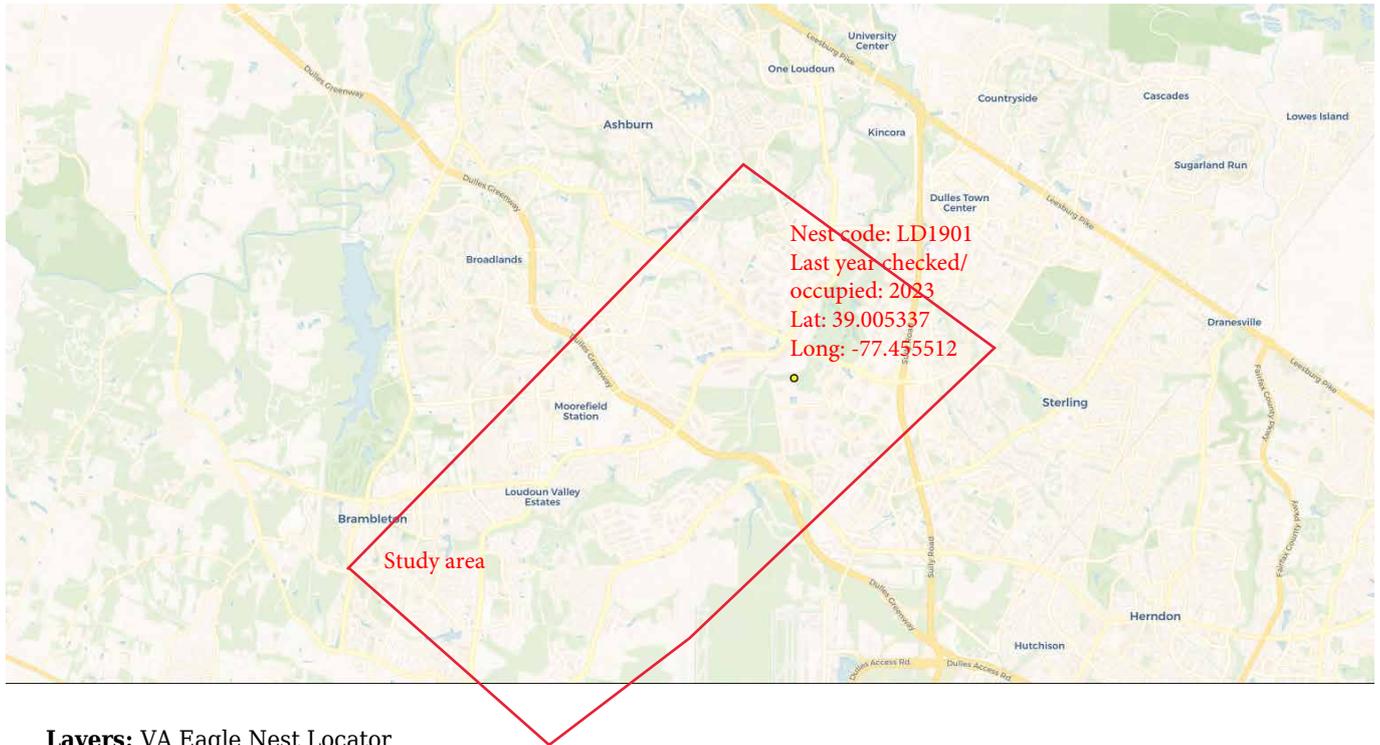
- Eagle Management <https://www.fws.gov/program/eagle-management>
- Measures for avoiding and minimizing impacts to birds <https://www.fws.gov/library/collections/avoiding-and-minimizing-incident-take-migratory-birds>
- Nationwide avoidance and minimization measures for birds
- Supplemental Information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

IPAC USER CONTACT INFORMATION

Agency: Environmental Resources Management
Name: Briana Cooney
Address: 222 South 9th Street
Address Line 2: Suite 2900
City: Minneapolis
State: MN
Zip: 55402
Email: briana.cooney@erm.com
Phone: 6123477114



CCB Mapping Portal



Layers: VA Eagle Nest Locator

Map Center [longitude, latitude]: [-77.49069213867188, 39.00004253852356]

Map Link:

https://ccbbirds.org/maps/#layer=VA+Eagle+Nest+Locator&zoom=13&lat=39.00004253852356&lng=-77.49069213867188&legend=legend_tab_7c321b7e-e523-11e4-aaa0-0e0c41326911&base=Street+Map+%28OSM%2FCarto%29

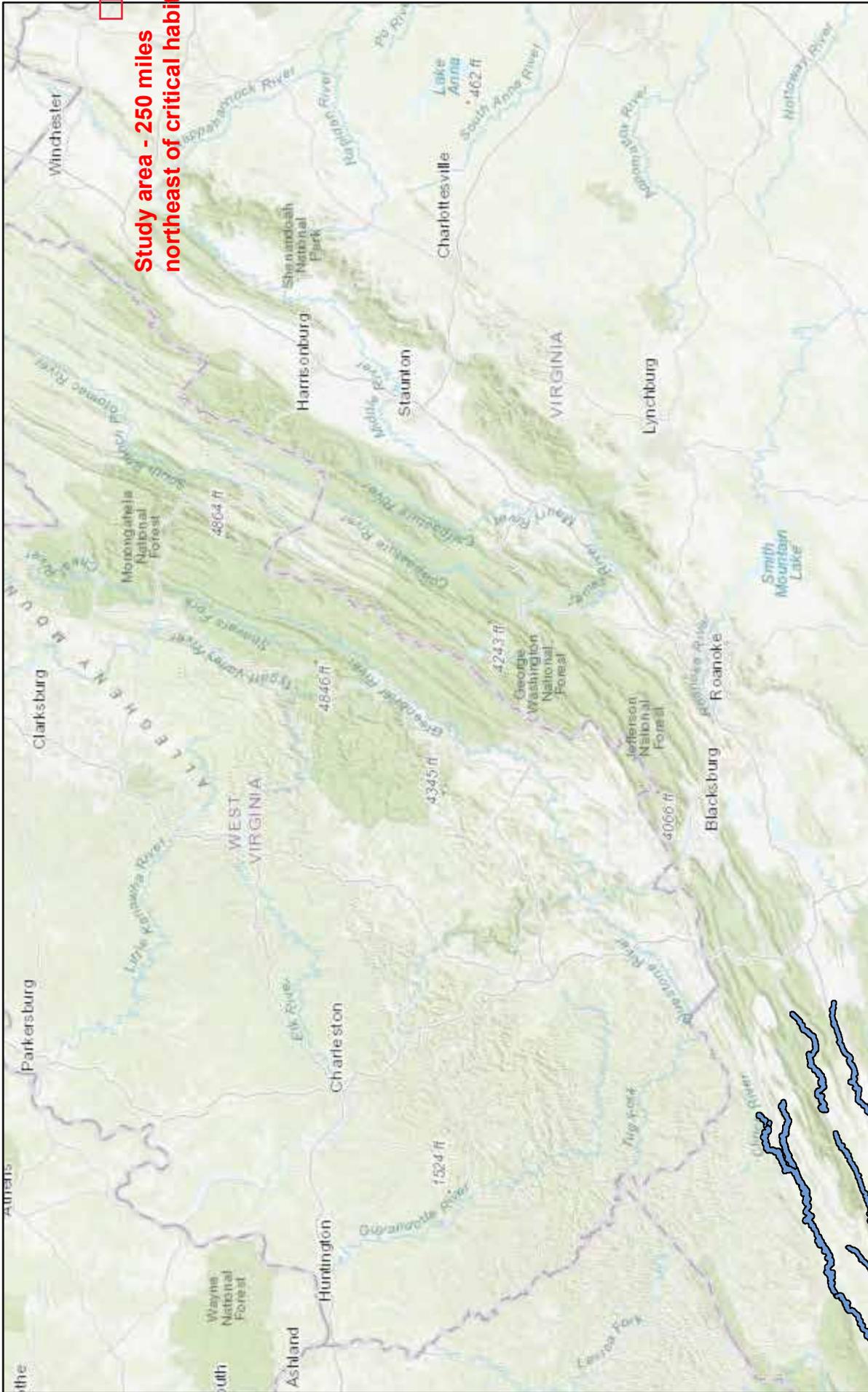
Report Generated On: 03/08/2024

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

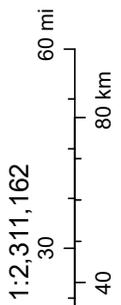
Report generated by [The Center for Conservation Biology Mapping Portal](#).

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

Critical Habitat - Golden to Mars



Study area - 250 miles
northeast of critical habitat



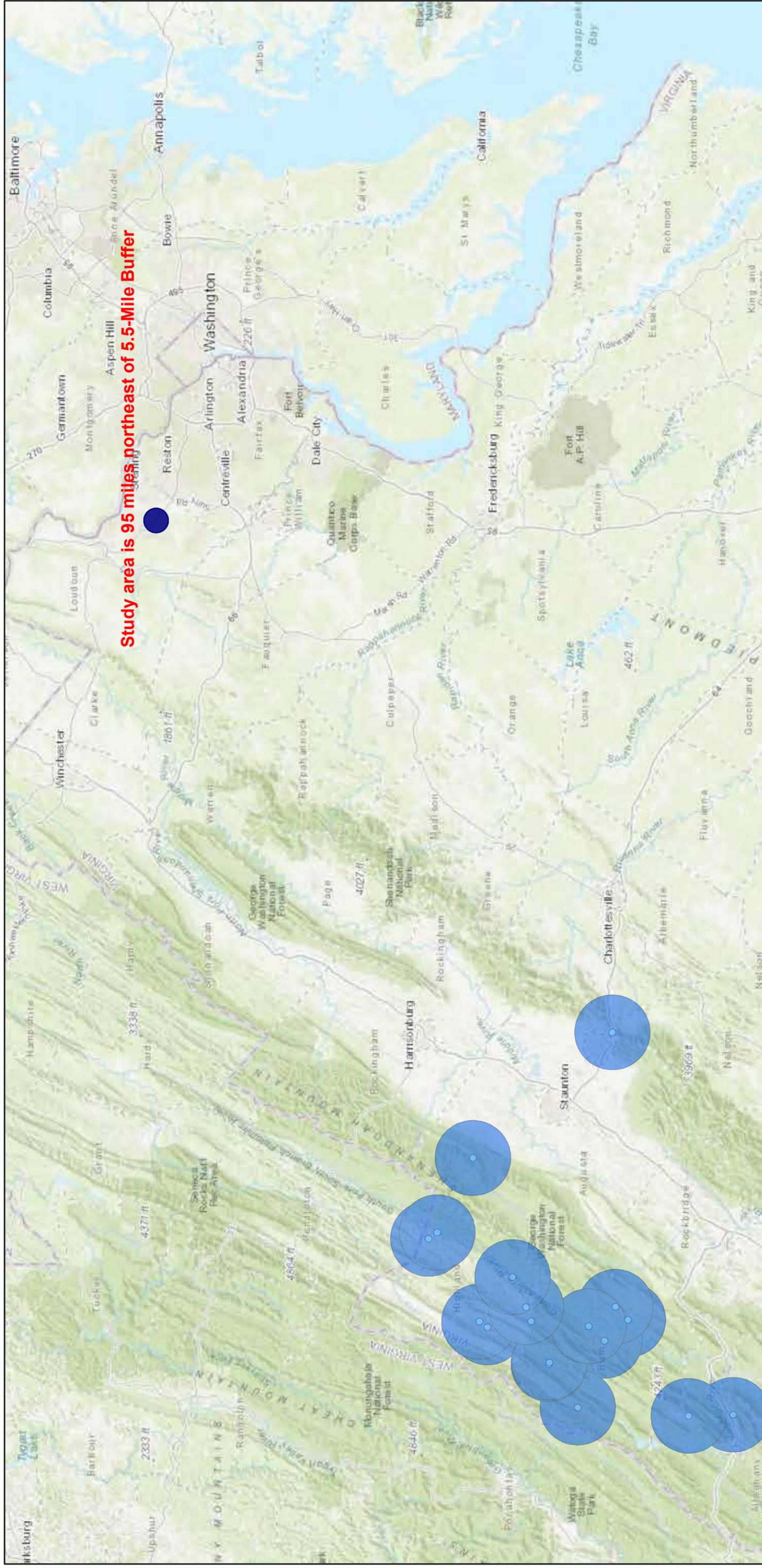
1:2,311,162

Esri, HERE, Garmin, FAO, USGS, EPA, NPS

March 8, 2024

Virginia Critical Habitat (published)

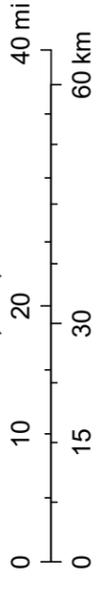
MYLU-PESU Locations and Roost Trees - Golden to Mars



3/8/2024, 1:55:13 PM

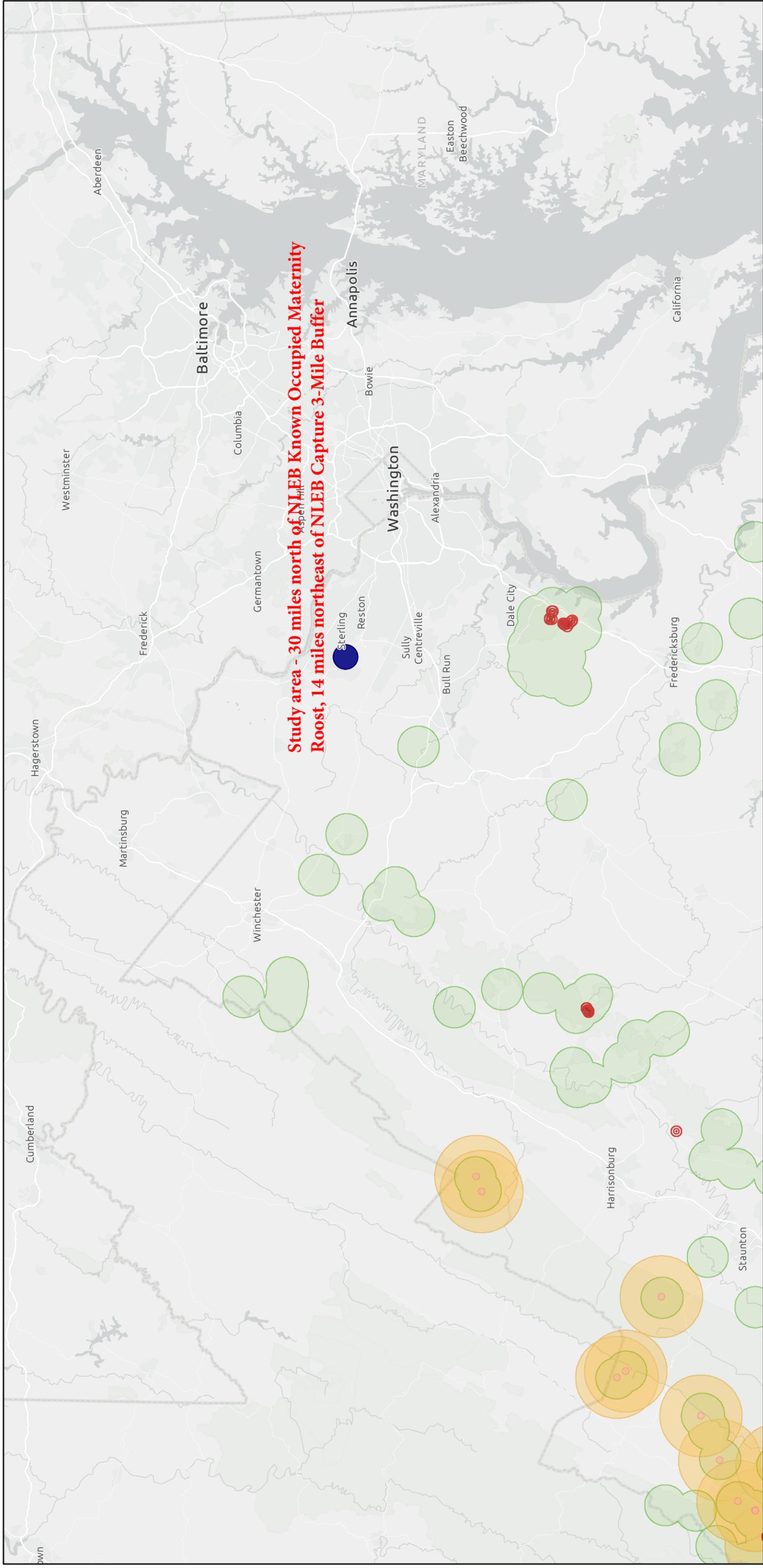
- Tri-colored and Little Brown Hibernaculum Half Mile Buffer
- Tri-colored and Little Brown Hibernaculum 5.5 Mile Buffer

1:1,155,581



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

NLEB Locations and Roost Trees - Golden to Mars

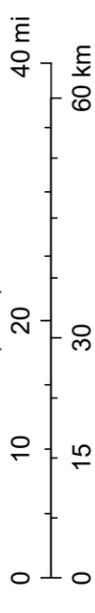


3/8/2024, 1:58:46 PM

📍 NLEB Known Occupied Maternity Roost (Summer Habitat)

- NLEB Roost Tree 150-Foot Buffer
- NLEB Hibernaculum Half Mile Buffer
- NLEB Hibernaculum 5.5 Mile Buffer
- NLEB Capture 3 Mile Buffer

1:1,155,581



County of Loudoun, VGIN, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, USFWS

From: [nhreview \(DCR\)](#)
To: [Briana Cooney](#)
Cc: [Hypes, Rene \(DCR\)](#); [Weber, Joseph \(DCR\)](#)
Subject: Re: 0642267, Golden-Mars
Date: Thursday, May 23, 2024 9:58:13 AM
Attachments: [image002.png](#)
[image003.png](#)
[image.png](#)
[image.png](#)

EXTERNAL MESSAGE

Briana,

Thanks for your patience with this. I've reiterated your questions in blue, with answers below.

I was reviewing the SCS shapefile you all sent, and I noticed that there are pieces of the SCS that are now developed. Have there been any studies of this area recently? Are you able to tell me when this SCS area was created or last modified?

- Our **Chief of Biodiversity Information and Conservation Tools** said that there does seem to be areas of the SCS that were developed since it was created. Much of the SCS is still intact, however, and perhaps even more important for maintaining water quality for NHR.
- It looks like the SCS was last modified 7/6/2023. Stream Conservation Sites do not represent protected areas, but waterways and terrestrial areas that contribute to the habitat quality of the documented resource. These areas will affect the water quality of the Yellow lampmussel habitat regardless of their current land use.

I also noticed that the natural heritage resource associated with this SCS is the Yellow lampmussel; however, in my database searches, I haven't seen a documented occurrence of this species within the SCS or study area. Do you have additional information on the presence of this species?

- Generally we do not share the location of our documented resources, only the associated SCS or Conservation Site. Looking at my data, the Yellow lampmussel **is documented within the SCS**. The documented locations are in Broad Run, the main branch of the SCS in the northern portion. The other stream areas included in the SCS are upstream of documented occurrences and changes to the water quality within the SCS will impact the documented resource.
- I can't really comment on the lack of the Yellow lampmussel in the databases without knowing which ones you used. It would not be found in DWR or USFWS databases as it is not a listed species. NHDE (*Natural Heritage Database Explorer*) only shows documented occurrences to Tier 3 users, which is only available to our conservation partners.

I've also noticed in this project and previous projects that some ecological cores identified are less than 100 acres, and the VDCR letter states: "Ecological Cores are areas of at least 100 acres of continuous interior..." Should we continue to study cores that are under 100 acres?

- The cores are found in [Virginia Natural Landscape Assessment](#) Ecological Cores and Habitat Fragments data layer. It looks like the feature in question is a habitat fragment, the link above can give you some more information about Cores and Habitat Fragments.
- From our Chief of Biodiversity Information and Conservation Tools: "**Smaller areas of continuous interior cover (i.e., 10 to 99 acres) called Habitat Fragments support Ecological**

Cores and provide similar functions and values. Both feature types are discussed on the website.

- Ecological Cores and Habitat Fragments are ranked by Ecological Integrity based on variables including rare species habitats, habitat diversity, resilience, and water quality, to reflect the wide range of important benefits and ecosystem services they provide. Brief descriptions of Ecological Integrity rankings are:
 - C1 – Outstanding: These cores tend to be large in area, of deepest interior, of greatest water quality protections, highest in habitat diversity and rich in rare species, including species listed as threatened or endangered. Of all Ecological Cores in the Commonwealth 1% are ranked as C1.
 - C2 – Very High: These cores have all or many of the same characteristics and values as C1 cores, though to a lesser extent. About 2.5% of all cores in the Commonwealth are ranked C2.
 - C3 – High, C4 – Moderate, and C5 – General: These cores, as well as **habitat fragments**, have some of the same quantifiable values and characteristics as higher-ranked cores, though much reduced due to their having substantially less interior area and smaller area overall.
 -
 - There are no Habitat Fragments ranked above C3. "
- Due to Habitat Fragments ability to provide important ecological functions and values, we do still recommend avoiding impacts and when impacts can not be avoided to keep them to the edge of the fragment/core. We only recommend a formal impact analysis for C1 and C2 Cores, which never include fragments.

Hopefully this information is helpful. I have Cc'd Joe Weber our Chief of Biodiversity Information and Conservation Tools and Rene' Hypes our Project Review Coordinator. Let me know if you have anymore questions or if any of the information here needs clarification.

Thank you,

Nicki Gustafson (*she/her*)

Project Review Assistant

Division of Natural Heritage

Virginia Department of Conservation and Recreation

600 E. Main Street, 24th Floor

Richmond, VA 23219

804-625-3979 | nicki.gustafson@dcr.virginia.gov



From: nhreview (DCR) <nhreview@dcr.virginia.gov>
Sent: Tuesday, May 21, 2024 11:48 AM
To: Briana Cooney <Briana.Cooney@erm.com>
Subject: Re: 0642267, Golden-Mars

Briana,

Thanks for you for reaching out again. We passed your question on to our Data Management Division when we received your email. They do the modeling for the Ecological Cores and the Stream Conservation Sites and we wanted to be sure we were giving you accurate information. I will circle back with them and see if they have more information for you. Thank you for your patience with this.

Best,

Nicki Gustafson (*she/her*)
Project Review Assistant
Division of Natural Heritage
Virginia Department of Conservation and Recreation
600 E. Main Street, 24th Floor
Richmond, VA 23219
804-625-3979 | nicki.gustafson@dcr.virginia.gov



From: Briana Cooney <Briana.Cooney@erm.com>
Sent: Tuesday, May 21, 2024 11:37 AM
To: nhreview (DCR) <nhreview@dcr.virginia.gov>
Subject: RE: 0642267, Golden-Mars

Hello!

I just wanted to follow up on my email below. Is someone able to address my questions? Thanks!



ERM

Sustainability is our business

Briana Cooney
Senior Consultant, Scientist
She/Her/Hers

Minneapolis
612-347-7114

erm.com



Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

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(800) 592-5482

www.deq.virginia.gov

Travis A. Voyles
Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director
(804) 698-4020

February 27, 2024

Dominion Energy
120 Tredegar Street
Richmond, VA 23219
Attn: Elizabeth L. Hester

Transmitted Via Email: (Elizabeth.l.hester@dominionenergy.com)

Re: Dominion Energy (Electric Transmission) - AS&S - Program Renewal – 2024/2025

Dear Ms. Hester:

The Virginia Department of Environmental Quality (DEQ) hereby approves the Annual Standards and Specifications for Erosion & Sediment Control and Stormwater Management for Construction and Maintenance of Linear Electric Transmission Facilities for Dominion Energy's document dated "February 2024". This coverage is effective from February 27, 2024, to February 26, 2025.

To ensure compliance with approved specifications, the Virginia Erosion and Sediment Control Law and the Virginia Stormwater Management Act, DEQ staff will conduct random site inspections, respond to complaints, and provide on-site technical assistance with specific erosion and sediment control and stormwater management measures and plan implementation.

Please note that your approved Annual Standards and Specifications include the following requirements:

1. Variance, exception, and deviation requests must be submitted to DEQ separately from this Annual Standards and Specifications' submission. DEQ may require project-specific plans associated with such requests to be submitted for review and approval.
2. The following information must be submitted to DEQ for each project at least two weeks in advance of the commencement of regulated land-disturbing activities. Notifications shall be sent by email to: StandardsandSpecs@deq.virginia.gov
 - a. Project name or project number;
 - b. Project location (including nearest intersection, latitude and longitude, access point);
 - c. On-site project manager name and contact info;

- d. Responsible Land Disturber (RLD) name and contact info;
 - e. Project description;
 - f. Acreage of disturbance for project;
 - g. Project start and finish date; and
 - h. Any variances/exceptions/deviations associated with this project.
3. Project tracking of all regulated land disturbing activities (LDA) must be submitted to DEQ once per 6-month period. Project tracking records shall contain the same information as required in the two week e-notifications for each regulated LDA.
 4. Erosion & Sediment Control and Stormwater Management plans must be reviewed by DEQ-certified Plan Reviewers. Dominion Energy, as the AS&S holder, retains the authority to approve plans and must do so in writing. Should an AS&S holder contract out to a third-party to fulfill the plan review function, the third-party Plan Reviewer may recommend approval of the plan, but final approval must come from the AS&S holder.

To ensure an efficient information exchange and response to inquiries, DEQ Central Office is your primary point of contact. Central Office staff will coordinate with our Regional Office staff as appropriate

Please contact Abigail Snider at 804-486-0365 or Abigail.Snider@deq.virginia.gov if you have any questions about this letter.

Respectfully,



Kyle Kennedy, Manager
Office of Stormwater Management

Cc: Larry Gavan, DEQ-CO
Antony Angueira, DEQ-CO

APPENDIX H STAGE 1 PRE-APPLICATION ANALYSIS

Golden-Mars 500-230 kV Electric Transmission Project

Pre-Application Report

REDACTED

PREPARED FOR



Dominion Energy Virginia

DATE

27 March 2025

REFERENCE

0642267



SIGNATURE PAGE

Golden-Mars 500-230 kV Electric Transmission Project

Pre-Application Report

0642267



Mary Beth Derrick
Senior Architectural Historian



Jeffrey L. Holland
Senior Historian



Kara Wallace
Archaeologist, MA, RPA



MacKenzie Carroll
Architectural Historian

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ACRONYMS AND ABBREVIATIONS

Acronyms	Description
3D	Three dimensional
AF	Auto Focus
CMOS	Complementary Metal Oxide Semiconductor
DCA	Data Center Alley
ERM	Environmental Resources Management
ESRI	Environmental Systems Research Institute
FAA	Federal Aviation Administration
GNSS	Global Navigation Satellite System
JPEG	Joint Photographic Experts Group format
KOP	Key Observation Point
kV	Kilovolt
LLC	Limited Liability Company
NHL	National Historic Landmark
NPS	National Park Service
NRHP	National Register of Historic Places
PBR	Physically Based Rendering
PDF	Portable Document Format
PJM	PJM Interconnection, L.L.C.
Rt.	Route
ROW	Right-Of-Way
SCC	State Corporation Commission
SLR	Single-Lens Reflex
UTM	Universal Transverse Mercator
VCRIS	Virginia Cultural Resource Information System
VDHR	Virginia Department of Historic Resources
W&OD	Washington & Old Dominion

EXECUTIVE SUMMARY

This report presents the findings of a pre-application analysis completed 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 third and final component of PJM Interconnection, L.L.C.'s (PJM) Data Center Alley (DCA) Local solution: the new 500-230 kilovolt (kV) Golden–Mars Lines located in Loudoun County, Virginia (Project). The Project, along with the Company's Mars–Wishing Star Project approved in Case No. PUR-2022-00183 and the Aspen–Golden 500-230 kV Project approved in Case No. PUR-2024-00032, will complete a 500 kV transmission loop in the Northern Virginia area surrounding DCA, which generally includes areas near Washington Dulles International Airport (Dulles Airport). These three projects are needed to provide electrical capacity to the Eastern Loudoun Load Area, while also mitigating identified North American Electric Reliability Corporation Reliability Standards violations and maintaining reliable service for overall load growth in the Project area and region.

For this Project, the Company is proposing to construct and operate:

- A new approximately 8.3-mile overhead 500 kV single circuit transmission line and a new overhead 230 kV single circuit transmission line almost entirely on new right-of-way. The new transmission lines will originate at the 500 kV and 230 kV buses of the future 500-230 kV Golden Substation and continue to the future 500-230 kV Mars Substation in a 5-2 configuration (Golden–Mars Lines);^{1 2}
- A new approximately 0.6-mile overhead double-circuit 230 kV transmission line on one set of double circuit structures by cutting the proposed 230 kV Golden-Mars Line at Structure #2412/8 and looping it into and out of the existing 230-34.5 kV Lockridge Substation (Lockridge 230 kV Loop);
- A new approximately 1.9-mile overhead double circuit 230 kV transmission line on one set of double circuit monopole structures from the future Mars Substation to the existing Sojourner Substation (Sojourner 230 kV Loop); and
- Minor substation-related work at the future Golden and Mars Substations.

This pre-application analysis assesses and compares potential impacts on previously recorded historic and archaeological resources in relation to five route alternatives under consideration for the Golden–Mars Lines as well as routes proposed for the Lockridge and Sojourner Loops. ERM conducted the analysis on behalf of Dominion Energy Virginia to assist in the development of a feasible Project design that minimizes impacts to historic resources. The pre-application analysis is a required study for transmission line projects regulated by the State Corporation Commission (SCC). The study was completed in accordance with the Virginia Department of Historic Resources'

¹ The Golden Substation was approved by the SCC for construction and operation as part of the Aspen-Golden 500-230 kV Projects in Case No. PUR-2024-00032, and the Mars Substation was approved by the SCC for construction and operation as part of the approved Mars–Wishing Star Project in Case No. PUR_2022-00183. Construction of the future Golden and Mars Substations is not a part of this Project.

² A "5-2 configuration" means that the conductors will be vertically or horizontally aligned such that one position of the structure will have a 500 kV circuit and one position will have a 230 kV circuit.

(VDHR's) *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (VDHR 2008) (Guidelines).

Seventeen known archaeological sites are within or adjacent to the right-of-way for the routes under consideration. Of these, 11 sites are considered unevaluated for listing in the National Register of Historic Places (NRHP) and six have been determined not eligible for listing in the NRHP. For the Golden-Mars Lines, 12 archaeological sites are located within or adjacent to the right-of-way for Route 1, 11 are within or adjacent to Route 2, eight are within or adjacent to Route 3, seven are within or adjacent to Route 4, and 11 are within or adjacent to Route 5. One archaeological site each is located within the right-of-way for the Lockridge Loop and Sojourner Loop. The archaeological sites along each route and their current NRHP status are summarized in Table 1. The sites could be impacted by construction traffic, clearing within the right-of-way, or installation of transmission structures. A confident evaluation of the nature of archaeological deposits at each site and impacts on the sites from prior land use activities would require a field survey.

Five previously recorded aboveground historic resources meeting criteria specified in the Guidelines fall within study tiers defined by the VDHR for identifying aboveground historic resources along and near transmission line routes (Table 2). Because the Golden-Mars alternative routes use a common alignment where they pass near these resources, impacts would be identical regardless of the route selected. ERM recommends that each Golden-Mars alternative route would have a minimal impact on those five associated resources. The Lockridge Loop and Sojourner Loop would each have no impact on a single (different in each case) resource.

While this report addresses potential impacts on resources meeting the criteria for study inclusion in the Guidelines, our comparison of routes is limited to the Golden-Mars Lines since only one route is under consideration in the case of the Lockridge and Sojourner Loops. Because the findings for the historic resources are identical for the Golden-Mars alternatives, the routes must be differentiated based on potential impacts to archaeological sites. Considering this, Route 4 appears to present the least impact on known archaeological resources because there are seven previously recorded archaeological sites adjacent to or within its right-of-way compared to 12 for Route 1, 11 for Route 2, eight for Route 3, and 11 for Route 5. As shown in the study, however, many of these sites are previously disturbed and unlikely to contain intact cultural deposits or features and some sites are presumed destroyed.

TABLE 1 EXECUTIVE SUMMARY OF NATIONAL REGISTER STATUS OF CONSIDERED ARCHAEOLOGICAL RESOURCES IN THE STUDY AREA OF THE ROUTE ALTERNATIVES

Considered Resource	Alternative Routes									
	Golden-Mars 500-230 kV Lines					Lockridge 230 kV Loop	Sojourner 230 kV Loop			
	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge Loop	Sojourner Loop			
44LD0111	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Lockridge Loop	Sojourner Loop			
44LD0170	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible					
44LD0330					Unevaluated					
44LD0332	Unevaluated	Unevaluated								
44LD0333	Unevaluated	Unevaluated								
44LD0334		Unevaluated								
44LD0335		Unevaluated	Unevaluated							
44LD0472	Unevaluated	Unevaluated	Unevaluated	Unevaluated	Unevaluated					
44LD0945	Unevaluated	Unevaluated	Unevaluated	Unevaluated	Unevaluated					
44LD1244	Unevaluated				Unevaluated					
44LD1311	Unevaluated				Unevaluated					
44LD1737							Not Eligible			
44LD1742	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible					
44LD1909	Not Eligible	Not Eligible	Not Eligible	Not Eligible	Not Eligible					
44LD1916						Not Eligible				
44LD1922	Unevaluated				Unevaluated					
44LD1978	Unevaluated	Unevaluated	Unevaluated	Unevaluated	Unevaluated					

Source: VDHR 2024

TABLE 2 EXECUTIVE SUMMARY OF PROJECT IMPACTS TO CONSIDERED ABOVEGROUND HISTORIC RESOURCES IN THE STUDY AREA OF THE ROUTE ALTERNATIVES

Considered Resource	Alternative Routes						
	Golden-Mars 500-230 kV Lines					Lockridge 230 kV Loop	Sojourner 230 kV Loop
	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge Loop	Sojourner Loop
053-0008	Minimal	Minimal	Minimal	Minimal	Minimal		None
053-0276	Minimal	Minimal	Minimal	Minimal	Minimal		
053-0968	Minimal	Minimal	Minimal	Minimal	Minimal		
053-6406	Minimal	Minimal	Minimal	Minimal	Minimal		
053-6416	Minimal	Minimal	Minimal	Minimal	Minimal	None	

Source: VDHR 2024

1. INTRODUCTION

This report presents the findings of a pre-application analysis completed 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 third and final component of the PJM's DCA Local solution: the new 500-230 kV Golden–Mars Lines located in Loudoun County, Virginia (Project). The Project, along with the Company's Mars–Wishing Star Project approved in Case No. PUR-2022-00183 and the Aspen–Golden 500-230 kV Project approved in Case No. PUR-2024-00032, will complete a 500 kV transmission loop in the Northern Virginia area surrounding DCA, which generally includes areas near Dulles Airport. For this Project, the Company is proposing to construct and operate:

- A new approximately 8.3-mile overhead 500 kV single circuit transmission line and a new overhead 230 kV single circuit transmission line almost entirely on new right-of-way. The new transmission lines will originate at the 500 kV and 230 kV buses of the future 500-230 kV Golden Substation and continue to the future 500-230 kV Mars Substation in a 5-2 configuration (Golden–Mars Lines);^{3 4}
- A new approximately 0.6-mile overhead double-circuit 230 kV transmission line on one set of double circuit structures by cutting the proposed 230 kV Golden-Mars Line at Structure #2412/8 and looping it into and out of the existing 230-34.5 kV Lockridge Substation (Lockridge 230 kV Loop);
- A new approximately 1.9-mile overhead double circuit 230 kV transmission line on one set of double circuit monopole structures from the future Mars Substation to the existing Sojourner Substation (Sojourner 230 kV Loop); and
- Minor substation-related work at the future Golden and Mars Substations.

The pre-application analysis assesses potential impacts on previously recorded historic and archaeological resources relative to alternatives under consideration for the Golden–Mars route as well as the routes proposed for the Lockridge and Sojourner loops. ERM conducted the pre-application analysis on behalf of Dominion Energy Virginia to assist in the development of a feasible Project design that minimizes impacts on historic resources. The study was completed in accordance with Virginia Department of Historic Resources' (VDHR's) *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (VDHR 2008) (Guidelines).

1.1 OVERVIEW

Through extensive public outreach, agency consultation, desktop study, and field investigation, ERM identified the following routes for the Project (Figure 1):

³ The Golden Substation was approved by the SCC for construction and operation as part of the Aspen-Golden 500-230 kV Projects in Case No. PUR-2024-00032, and the Mars Substation was approved by the SCC for construction and operation as part of the approved Mars–Wishing Star Project in Case No. PUR_2022-00183. Construction of the future Golden and Mars Substations is not a part of this Project.

⁴ A "5-2 configuration" means that the conductors will be vertically or horizontally aligned such that one position of the structure will have a 500 kV circuit and one position will have a 230 kV circuit.

- Five route alternatives for the Golden–Mars Lines;
- One route for the Lockridge 230 kV Loop; and
- One route for the Sojourner 230 kV Loop.

FIGURE 1 OVERVIEW OF TRANSMISSION LINE SEGMENTS UNDER CONSIDERATION FOR THE PROJECT ROUTE ALTERNATIVES

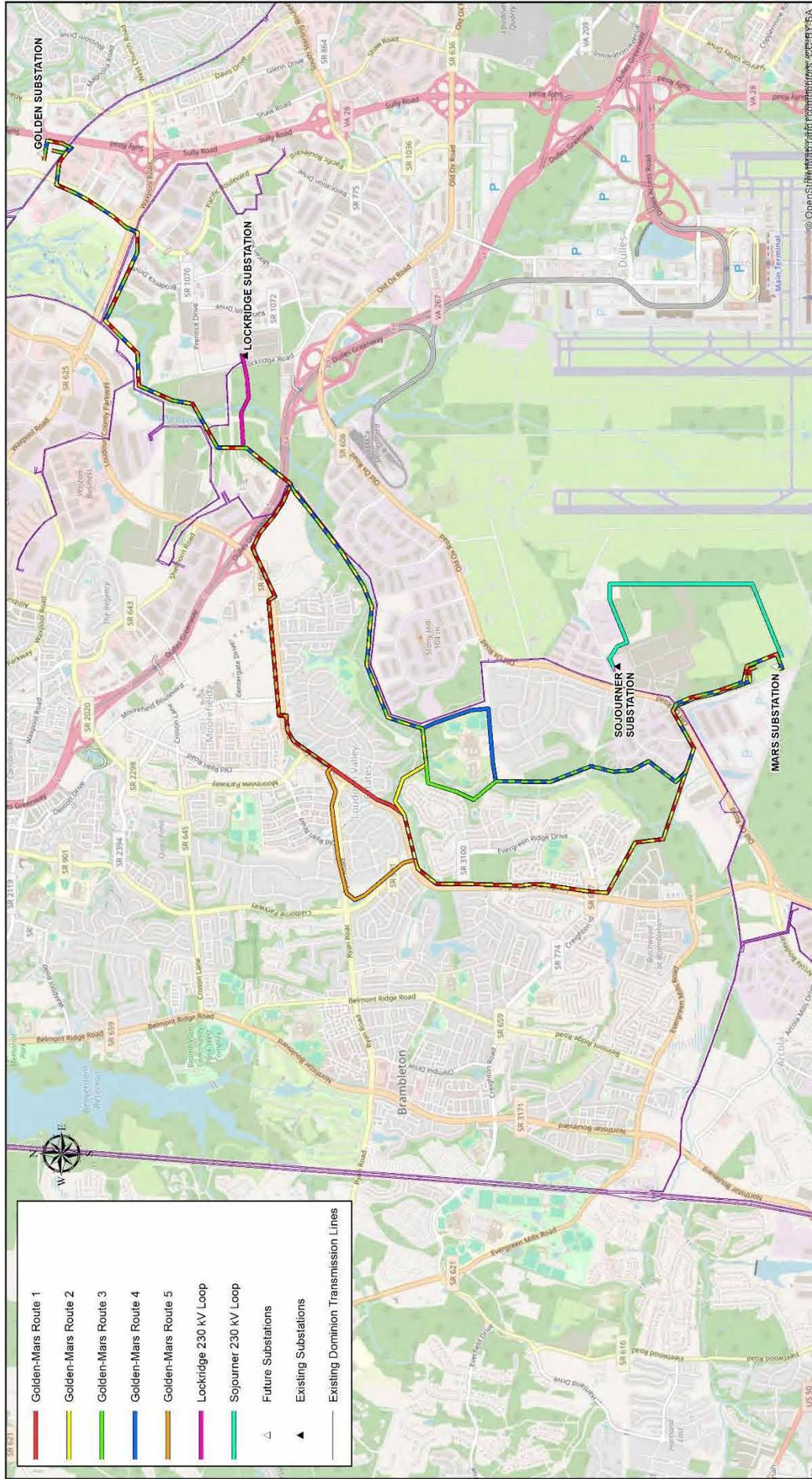


Figure 1
Overview of Transmission Line Segments under Consideration for the Project
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, VA

0 0.5 1 1.5 Miles
1:34,440



1.1.1 GOLDEN-MARS 500-230 KV LINES

The Golden–Mars route alternatives are identical in the northern portion of the study area, where they mostly follow existing 230 kV transmission line rights-of-way between Golden Substation and the Dulles Greenway (Greenway). South of the Greenway, the routes diverge, generally following either Loudoun County Parkway or Broad Run (and existing Lines #2218 and #2095). The routes merge near the southern end of the study area into a common alignment from about Old Ox Road to the future Mars Substation.

For the portion of Routes 1–5 north of the Greenway, the Project would generally use three-pole or two-pole H-frame structures in a 150-foot-wide right-of-way. South of the Greenway, the Project would generally use double circuit monopole or two-pole structures in a 100-foot right-of-way.

1.1.1.1 ROUTE 1

Route 1 is approximately 9.4 miles long. The route originates at Golden Substation, exits the substation to the south, crosses the W&OD Trail, then turns west to cross Pacific Boulevard. The route then turns south and parallels Pacific Boulevard before crossing Waxpool Road where it turns west to parallel existing transmission lines on the south side of Waxpool Road. The route continues across Broad Run before turning southwest, where it parallels existing transmission lines and crosses Broad Run twice before crossing the Dulles Greenway. This segment of the route alignment from the Golden Substation to the Dulles Greenway is the same for all Golden-Mars route alternatives.

South of the Greenway, the route turns northwest, paralleling the south side of the Greenway before turning west to parallel the south side of Loudoun County Parkway. The route briefly crosses to the north side of Loudoun County Parkway, then back to the south side and parallels the south and west side of the parkway (as the road turns south) from Gleedsville Manor Drive south to Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carter School Road before terminating at Mars Substation.

1.1.1.2 ROUTE 2

Route 2 is approximately 9.3 miles long. Route 2 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route continues southwest, parallel to existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns west and crosses Broad Run three times before reaching Loudoun County Parkway. The route continues south and parallels the west side of Loudoun County Parkway past Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carter School Road before terminating at Mars Substation.

1.1.1.3 ROUTE 3

Route 3 is approximately 8.3 miles long. Route 3 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route continues

southwest, parallel to existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns west, crosses Broad Run three times before turning south and crossing Loudoun Reserve Drive. The route continues south through Broad Run Stream Valley Park and across Overland Road. The route then turns east and parallels the north side of Old Ox Road then turns south along Carter School Road before terminating at Mars Substation.

1.1.1.4 ROUTE 4

Route 4 is approximately 8.3 miles long. Route 4 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route continues southwest, parallel to existing transmission lines adjacent to Broad Run. North of Rock Ridge High School, the route turns south and continues to parallel existing transmission lines before turning west along Loudoun Reserve Drive. The route then turns south through Broad Run Stream Valley Park and across Overland Road. The route turns east and parallels the north side of Old Ox Road then turns south along Carter School Road before terminating at Mars Substation.

1.1.1.5 ROUTE 5

Route 5 is approximately 9.8 miles long. Route 5 follows the same alignment as Route 1 from the Golden Substation to the Dulles Greenway. South of the Dulles Greenway, the route turns northwest and follows the south side of the Dulles Greenway before turning west to parallel the south side of Loudoun County Parkway. The route briefly crosses to the north side of Loudoun County Parkway, then back to the south side, and parallels the south and west side of Loudoun County Parkway (as the road turns south) past Gleedsville Manor Drive, then turns west to parallel the north side of Ryan Road. Near Claiborne Parkway, the route turns south to rejoin Loudoun County Parkway and continues south to Evergreen Ridge Drive. After crossing Evergreen Ridge Drive, the route turns southeast, crosses Broad Run, and turns east to parallel the north side of Old Ox Road. The route then turns south along Carter School Road before terminating at Mars Substation.

1.1.2 LOCKRIDGE 230 KV LOOP

The Lockridge 230 kV Loop is approximately 0.6 mile long. The route originates approximately 0.3 mile north of the Dulles Greenway and 0.2 mile east of Shellhorn Road, where it ties into the Golden–Mars Lines (within the segment shared by Routes 1–5). The route travels east from the Golden–Mars Lines and crosses Broad Run and Lockridge Road before terminating at Lockridge Substation. Because the route is entirely on property owned by SDC Ashburn I Limited Liability Company (LLC) and was developed in coordination with the landowner, ERM and Dominion did not consider any alternative routes between the Lockridge Substation and the Golden–Mars Lines.

1.1.3 SOJOURNER 230 KV LOOP

The Sojourner 230 kV Loop is approximately 1.9 miles long. The route originates at Sojourner Substation between Beaver Meadow Road and Digital Dulles Drive. The route travels east before turning south to parallel the western perimeter of Dulles Airport. The route then turns west, terminating at the future Golden Substation. Because the route is entirely on Digital Dulles

property and was developed in coordination with the developers of Digital Dulles, ERM and Dominion did not consider any route alternatives between the Sojourner and Mars Substations.

1.2 MANAGEMENT RECOMMENDATIONS

Seventeen known archaeological sites are within or adjacent to the right-of-way for the routes. Of these, 11 are considered unevaluated for listing in the National Register of Historic Places (NRHP) and six have been determined not eligible for listing in the NRHP. For the Golden-Mars Lines, 12 archaeological sites are within the right-of-way or adjacent to Route 1, 11 are within or adjacent to Route 2, eight are within or adjacent to Route 3, seven are within or adjacent to Route 4, and 11 are within or adjacent to Route 5. One archaeological site within the right-of-way for both the Lockridge Loop and Sojourner Loop.

Five previously recorded historic resources meeting criteria specified in the Guidelines fall within study tiers defined by the VDHR for identifying aboveground historic sites along and near transmission line routes. Because the Golden-Mars alternative routes share common alignments where they cross or pass near these resources, Project impacts would be identical regardless of the route selected by the SCC. The Lockridge Loop and the Sojourner Loop each pass near one resource also with the study tiers for the Golden-Mars alternative routes. ERM recommends that installation of transmission infrastructure Golden-Mars Routes 1 through 5 would result in the same minimal impact on the five resources within the study tiers. The Lockridge Loop and Sojourner Loop would each have no impact on a single resource within their respective study tiers.

While this report addresses potential impacts on all the resources meeting the criteria for inclusion in the Guidelines, our comparison is limited to the Golden-Mars routes because only one route is under consideration for the Lockridge and Sojourner Loops. Because the findings for the historic resources are identical for the Golden-Mars alternatives, the routes may be differentiated based on potential impacts to archaeological sites. Considering this, Route 4 appears to present the least impact on known archaeological resources because there are seven previously recorded archaeological sites adjacent or within its right-of-way compared to 12 for Route 1, 11 for Route 2, eight for Route 3, and 11 for Route 5. As shown in the study, however, many of these sites are previously disturbed and unlikely to contain intact cultural deposits or features and some sites are presumed destroyed.

2. RECORDS REVIEW

2.1 DATA COLLECTION APPROACH

ERM conducted an analysis of potential cultural resource impacts for the alternative routes under consideration in accordance with the Guidelines. For each route, this analysis identified and considered the following previously recorded resources:

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

Information on the considered resources in each study tier was collected from the Virginia Cultural Resource Information System (VCRIS).

In addition to the VCRIS, ERM collected information from the History of Loudoun County, Virginia (2024), Loudoun Preservation Society (2024), Loudoun County Heritage Commission (2024), Loudoun County Preservation and Conservation Commission (2024), and the Loudoun County African American Historic Resources Survey (EHT Tracerics 2024) to identify locally significant resources within a 1.0-mile radius of each route.

Along with the records review, ERM conducted field assessments of the considered aboveground resources along each route in accordance with the Guidelines. Digital photographs of each historic resource and views to the proposed transmission line were taken. Photo simulations were then prepared to assess the potential for visual impacts from the new transmission infrastructure on the resources. For previously recorded archaeological sites under consideration, aerial photographs were examined to assess the current land condition and the spatial relationship between the sites and any existing or planned transmission lines.

2.2 ARCHAEOLOGICAL RESOURCES

Crossings of archaeological sites were considered a constraint in this study due to the potential for an electric transmission line to impact cultural deposits in these areas (for example, due to transmission structure placement, tree clearing, or heavy equipment traffic within a site). The known archaeological sites in the right-of-way for each transmission line route included in the analysis are summarized in Table 3 and site locations are depicted on Figure 2. Individual maps for each route are provided in Attachment 1.

Of the 17 archaeological sites identified adjacent to or within the rights-of-way for the alternative routes, 11 are considered unevaluated for listing in the NRHP and six have been determined not eligible for listing in the NRHP. For the Golden-Mars route alternatives, 12, 11, eight, seven, and 11 sites, respectively, are in the rights-of-way of or adjacent to Routes 1, 2, 3, 4, and 5. One archaeological site each is within the right-of-way for both the Lockridge Loop and Sojourner Loop.

FIGURE 2 LOCATIONS OF ARCHAEOLOGICAL SITES WITHIN THE RIGHT-OF-WAY FOR EACH ROUTE ALTERNATIVE (REDACTED)

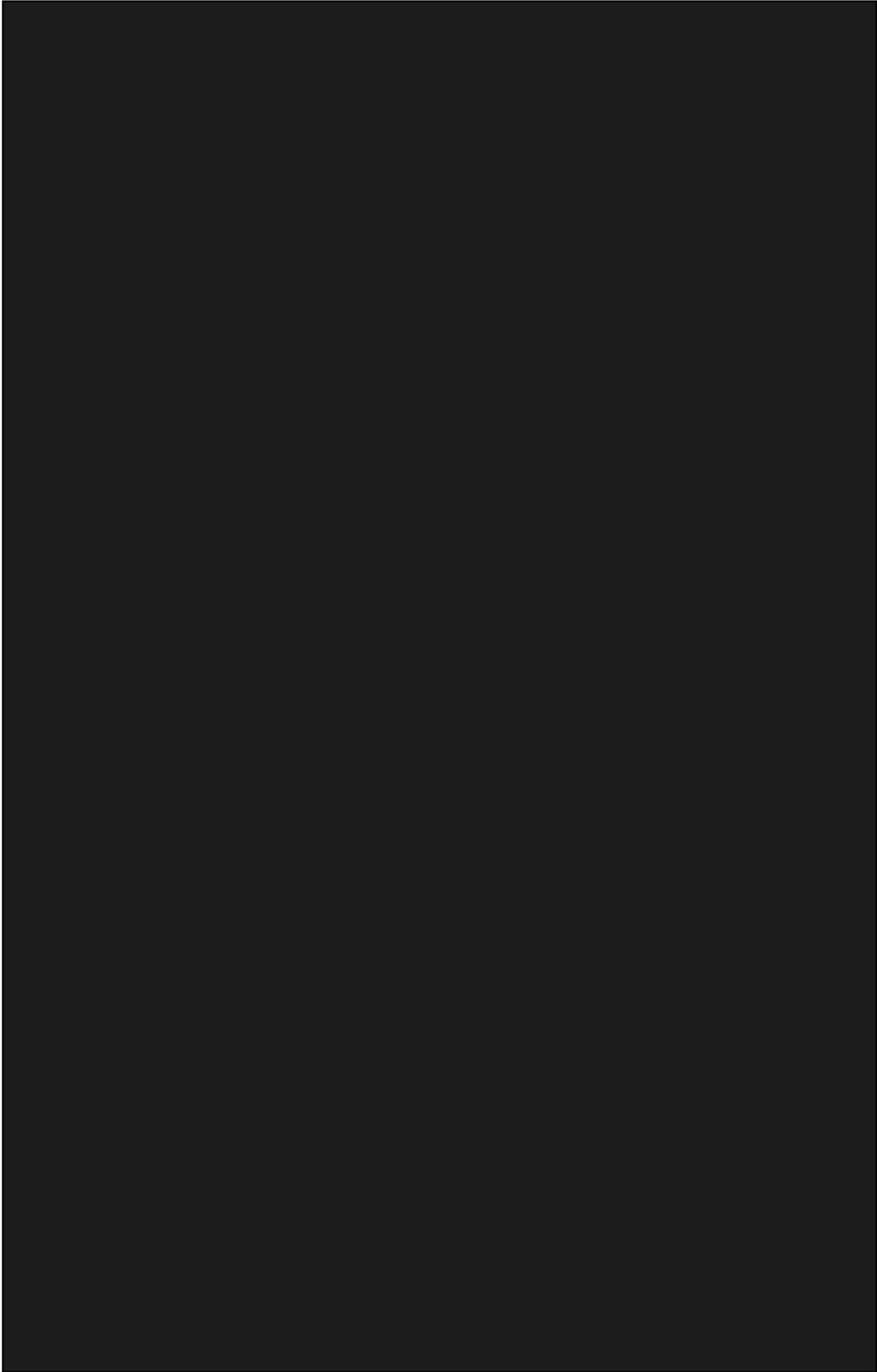


TABLE 3 ARCHAEOLOGICAL RESOURCES WITHIN THE RIGHT-OF-WAY FOR EACH ROUTE

Route Alternative	Greenfield or Existing/ Expanded ROW?	Site Number	Description	NRHP Status
Golden-Mars Route 1	Existing/Expanded ROW	44LD0111	Prehistoric (Early Archaic) camp, temporary	Not Eligible
	Greenfield	44LD0170	Prehistoric (Pre-Contact) camp, temporary	Not Eligible
	Greenfield	44LD0332	Prehistoric (unknown) camp, temporary	Unevaluated
	Greenfield	44LD0333	Prehistoric (unknown) camp, temporary	Unevaluated
	Greenfield	44LD0472	Prehistoric (Late Archaic) lithic scatter	Unevaluated
	Greenfield	44LD0945	Historic (20 th century) dwelling, multiple	Unevaluated
	Greenfield	44LD1244	Historic (18 th century) farmstead	Unevaluated
	Greenfield	44LD1311	Historic (19 th and 20 th century) dwelling, single	Unevaluated
	Greenfield	44LD1742	Historic (20 th century) schoolhouse (Carter Schoolhouse)	Not Eligible
	Greenfield	44LD1909	Historic (20 th century) dwelling, single	Not Eligible
	Greenfield	44LD1922	Historic (19 th and 20 th century) dwelling	Unevaluated
	Greenfield	44LD1978	Historic (19 th and 20 th century) artifact scatter	Unevaluated
Golden-Mars Route 2	Existing/Expanded ROW	44LD0111	Prehistoric (Early Archaic) camp, temporary	Not Eligible
	Greenfield	44LD0170	Prehistoric (Pre-Contact) camp, temporary	Not Eligible
	Greenfield	44LD0332	Prehistoric (unknown) camp, temporary	Unevaluated
	Greenfield	44LD0333	Prehistoric (unknown) camp, temporary	Unevaluated
	Greenfield	44LD0334	Prehistoric (unknown) camp, temporary	Unevaluated
	Greenfield	44LD0335	Prehistoric (unknown) camp, temporary	Unevaluated
	Greenfield	44LD0472	Prehistoric (Late Archaic) lithic scatter	Unevaluated

Route Alternative	Greenfield or Existing/ Expanded ROW?	Site Number	Description	NRHP Status
	Greenfield	44LD0945	Historic (20 th century) dwelling, multiple	Unevaluated
	Greenfield	44LD1742	Historic (20 th century) schoolhouse (Carter Schoolhouse)	Not Eligible
	Greenfield	44LD1909	Historic (20 th century) dwelling, single	Not Eligible
	Greenfield	44LD1978	Historic (19 th and 20 th century) artifact scatter	Unevaluated
Golden-Mars Route 3	Existing/Expanded ROW	44LD0111	Prehistoric (Early Archaic) camp, temporary	Not Eligible
	Greenfield	44LD0170	Prehistoric (Pre-Contact) camp, temporary	Not Eligible
	Greenfield	44LD0335	Prehistoric (unknown) camp, temporary	Unevaluated
	Greenfield	44LD0472	Prehistoric (Late Archaic) lithic scatter	Unevaluated
	Greenfield	44LD0945	Historic (20 th century) dwelling, multiple	Unevaluated
	Greenfield	44LD1742	Historic (20 th century) schoolhouse (Carter Schoolhouse)	Not Eligible
	Greenfield	44LD1909	Historic (20 th century) dwelling, single	Not Eligible
	Greenfield	44LD1978	Historic (19 th and 20 th century) artifact scatter	Unevaluated
Golden-Mars Route 4	Existing/Expanded ROW	44LD0111	Prehistoric (Early Archaic) camp, temporary	Not Eligible
	Greenfield	44LD0170	Prehistoric (Pre-Contact) camp, temporary	Not Eligible
	Greenfield	44LD0472	Prehistoric (Late Archaic) lithic scatter	Unevaluated
	Greenfield	44LD0945	Historic (20 th century) dwelling, multiple	Unevaluated
	Greenfield	44LD1742	Historic (20 th century) schoolhouse (Carter Schoolhouse)	Not Eligible
	Greenfield	44LD1909	Historic (20 th century) dwelling, single	Not Eligible
	Greenfield	44LD1978	Historic (19 th and 20 th century) artifact scatter	Unevaluated

Route Alternative	Greenfield or Existing/Expanded ROW?	Site Number	Description	NRHP Status
Golden-Mars Route 5	Existing/Expanded ROW	44LD0111	Prehistoric (Early Archaic) camp, temporary	Not Eligible
	Greenfield	44LD0170	Prehistoric (Pre-Contact) camp, temporary	Not Eligible
	Greenfield	44LD0330	Prehistoric (Pre-Contact) camp, temporary	Unevaluated
	Greenfield	44LD0472	Prehistoric (Late Archaic) lithic scatter	Unevaluated
	Greenfield	44LD0945	Historic (20 th century) dwelling, multiple	Unevaluated
	Greenfield	44LD1244	Historic (18 th century) farmstead	Unevaluated
	Greenfield	44LD1311	Historic (19 th and 20 th century) dwelling, single	Unevaluated
	Greenfield	44LD1742	Historic (20 th century) schoolhouse (Carter Schoolhouse)	Not Eligible
	Greenfield	44LD1909	Historic (20 th century) dwelling, single	Not Eligible
	Greenfield	44LD1922	Historic (19 th and 20 th century) dwelling	Unevaluated
	Greenfield	44LD1978	Historic (19 th and 20 th century) artifact scatter	Unevaluated
Lockridge Loop	Greenfield	44LD1916	Prehistoric (unknown) lithic scatter	Not Eligible
Sojourner Loop	Existing/Expanded ROW	44LD1737	Historic (20 th century) farmstead	Not Eligible

Source: VDHR 2024
ROW = right-of-way

A confident evaluation of the nature of archaeological deposits at each site and impacts on the sites from prior land use activities would require a field survey.

2.3 HISTORIC RESOURCES

The following discussion summarizes the known historic resources in the vicinity of each alternative route based on the VDHR's tiered study model defined in the Guidelines. The locations of the considered resources and the various alternative routes are shown on Figure 3. Individual maps for the routes are provided in Attachment 1.

FIGURE 3 LOCATIONS OF CONSIDERED HISTORIC RESOURCES ALONG AND NEAR ROUTES

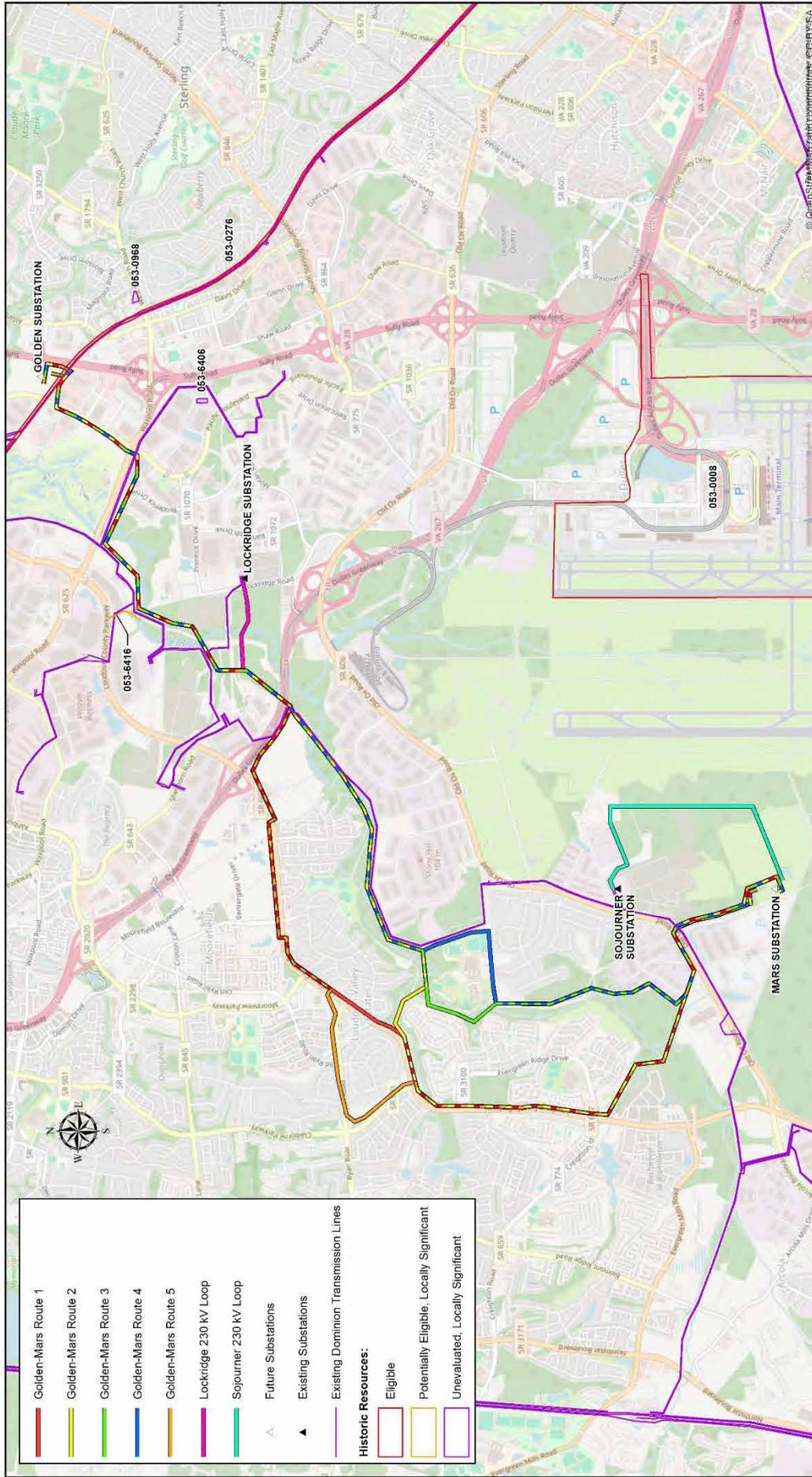


Figure 3
Locations of Considered Historic Resources Along and Near Routes
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, VA



DRAWN BY: GIS



0 0.5 1 1.5
Miles

1:34,440

FILE: C:\Users\Vincent.mack\OneDrive - ERM\Documents\Golden-Mars\Updates 2.24.2025\Dom Golden-Mars Fig 3 2-24-2025.mxd | REVISED: 02/24/2025 | SCALE: 1:34,440 when printed at 11x17

Resources within the right-of-way of a route may be subject to both direct impacts from placement of the line across the property as well as visual impacts from changes to the viewshed introduced by the new transmission line structures and conductors. Resources in the 0.5-mile tier would not be directly impacted, but would likely be visually impacted, unless topography, vegetation, or the built environment obscures the view to the transmission line. At over 0.5 mile, it becomes less likely that a resource would be within line-of-sight of the proposed transmission line due to distance. Beyond 1.0 mile, it becomes even less likely that a given resource would be within line-of-sight of a transmission line.

Because the Golden-Mars alternative routes use common alignments where they pass aboveground resources, impacts would be the same for the Project regardless of the Golden-Mars alternative selected by the SCC. The nature of the impacts, while estimated in this study with the assistance of photo simulations, would depend on the final Project design in which the exact placement and height of transmission structures are determined. The purpose of the simulations and associated assessments in this report are to provide data on likely impacts.

Once a route is certified by the SCC, that route would be subject to a full historic architectural survey in which additional (yet, unrecorded) historic properties could be identified and Project impacts assessed. The survey area would be defined based on the design height of the transmission line structures, topography, tree cover, and other factors impacting line-of-sight from historic resources to the selected route.

2.3.1 GOLDEN-MARS LINES

2.3.1.1 ROUTE 1

The considered resources that lie within the VDHR tiers for Route 1 are presented in Table 4 and depicted in the map provided as Attachment 1, Sheet 1. ERM identified five aboveground historic resources within the VDHR tiers for Route 1. The considered resources were subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

TABLE 4 HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 1

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant	053-0968	Guilford Baptist Church
0.0 to 0.5	National Register – Eligible	053-0008	Dulles International Airport Historic District
	Locally Significant	053-6406	Tippet’s Hill Cemetery
		053-6416	Ox Road Trace
0.0 (within ROW)	National Register – Eligible	053-0276	Washington & Old Dominion Railroad

Source: VDHR 2024

ROW = right-of-way

2.3.1.2 ROUTE 2

The considered resources that lie within the VDHR tiers for Route 2 are presented in Table 5 and depicted in the map provided as Attachment 1, Sheet 2. ERM identified five aboveground historic resources within the VDHR tiers for Route 2. The considered resources were subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

TABLE 5 HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 2

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant	053-0968	Guilford Baptist Church
0.0 to 0.5	National Register – Eligible	053-0008	Dulles International Airport Historic District
	Locally Significant	053-6406	Tippet’s Hill Cemetery
		053-6416	Ox Road Trace
0.0 (within ROW)	National Register – Eligible	053-0276	Washington & Old Dominion Railroad

Source: VDHR 2024
ROW = right-of-way

2.3.1.3 GOLDEN-MARS ROUTE 3

The considered resources that lie within the VDHR tiers for Route 3 are presented in Table 6 and depicted in the map provided as Attachment 1, Sheet 3. ERM identified five aboveground historic resources within the VDHR tiers for Route 3. The considered resources were subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

TABLE 6 HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 3

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant	053-0968	Guilford Baptist Church
0.0 to 0.5	National Register – Eligible	053-0008	Dulles International Airport Historic District
	Locally Significant	053-6406	Tippet’s Hill Cemetery
		053-6416	Ox Road Trace
0.0 (within ROW)	National Register – Eligible	053-0276	Washington & Old Dominion Railroad

Source: VDHR 2024
ROW = right-of-way

2.3.1.4 GOLDEN-MARS ROUTE 4

The considered resources that lie within the VDHR tiers for Route 4 are presented in Table 7 and depicted in the map provided as Attachment 1, Sheet 4. ERM identified five aboveground historic

resources within the VDHR tiers for Route 4. The considered resources were subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

TABLE 7 HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 4

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant	053-0968	Guilford Baptist Church
0.0 to 0.5	National Register – Eligible	053-0008	Dulles International Airport Historic District
	Locally Significant	053-6406	Tippet’s Hill Cemetery
		053-6416	Ox Road Trace
0.0 (within ROW)	National Register – Eligible	053-0276	Washington & Old Dominion Railroad

Source: VDHR 2024

ROW = right-of-way

2.3.1.5 GOLDEN-MARS ROUTE 5

The considered resources that lie within the VDHR tiers for Route 5 are presented in Table 8 and depicted in the map provided as Attachment 1, Sheet 5. ERM identified five aboveground historic resources within the VDHR tiers for Route 5. The considered resources were subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

TABLE 8 HISTORIC RESOURCES IN VDHR TIERS FOR ROUTE 5

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant	053-0968	Guilford Baptist Church
0.0 to 0.5	National Register – Eligible	053-0008	Dulles International Airport Historic District
	Locally Significant	053-6406	Tippet’s Hill Cemetery
		053-6416	Ox Road Trace
0.0 (within ROW)	National Register – Eligible	053-0276	Washington & Old Dominion Railroad

Source: VDHR 2024

ROW = right-of-way

2.3.2 LOCKRIDGE LOOP

The considered resource that lies within the VDHR tiers for the Lockridge Loop is presented in Table 9 and depicted in the map provided as Attachment 1, Sheet 6. ERM identified one aboveground historic resource within the VDHR tiers for the Lockridge Loop. The considered resource was subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

TABLE 9 HISTORIC RESOURCES IN VDHR TIERS FOR LOCKRIDGE LOOP

Buffer (miles)	Resource Category	Resource Number	Description
0.5 to 1.0	Locally Significant	053-6416	Ox Road Trace

Source: VDHR 2024

2.3.3 SOJOURNER LOOP

The considered resource that lies within the VDHR tiers for the Sojourner Loop are presented in Table 10 and depicted in the map provided as Attachment 1, Sheet 7. ERM identified one aboveground historic resource within the VDHR tiers for the Lockridge Loop. The considered resource was subjected to field reconnaissance and a preliminary assessment of impacts, discussed in the next chapter.

TABLE 10 HISTORIC RESOURCES IN VDHR TIERS FOR THE SOJOURNER LOOP

Buffer (miles)	Resource Category	Resource Number	Description
0.0 to 0.5	National Register – Eligible	053-0008	Dulles International Airport Historic District

Source: VDHR 2024

2.4 PREVIOUS SURVEYS

Portions of the Project have previously been surveyed for cultural resources, among 86 studies reported within 1 mile of the Project. Thirty-one of the surveys intersect at least one of the routes under consideration. Large portions of the routes have been subject to previous survey coverage. Information on these previous surveys—including VDHR survey number, report title, report authors, and report date—is provided in Table 11. The extent of the previous survey coverage is depicted on maps provided in Attachment 2.

TABLE 11 CULTURAL RESOURCE SURVEYS WITHIN 1 MILE OF THE PROJECT

VDHR Survey Number	Title	Author	Date
FX-108	Cultural Resource Inventory and Phase I Archaeological Survey of Route 28 (Sully Road) from I-66 to Route 7, Fairfax and Loudoun Counties, Virginia	Joseph E. Granger and Calvert W. McIlhany	1987
FX-262	Phase I Archaeological Survey Park and Ride Lots-Dulles Airport Area, Fairfax and Loudoun Counties, Virginia	Thomas J. Chadderdon	1994
FX-456	Phase I Archeological Investigations for the NOAA Property Adjacent to the Fourth Runway, Washington Dulles International Airport, Fairfax and Loudoun Counties, Virginia	Charles E. Goode, Katherine L. Farnham, Lynn D. Jones, and Donna J. Seifert	2005
LD-004	The Grumman Site (44LD20): An Archaic Surface Site in Loudoun County, Virginia	Jerry Hastings	1970

VDHR Survey Number	Title	Author	Date
LD-037	Report on Cultural Resources Survey for the Proposed Dulles Toll Road Extension	John H. Haynes	1988
LD-047	Report on Phase I Cultural Resources Survey for the U. S. Postal Service Dulles Facility, Loudoun County, Virginia	John Haynes	1989
LD-053	Historic and Archaeological Survey Report Washington Dulles International Airport, Loudoun and Fairfax Counties, Virginia	Parsons Management Consultants	1989
LD-062	Dulles Toll Road Extension: Phase I Archaeological Survey Report for the Selected Alignment	John H. Haynes, Jr.	1990
LD-072	Phase I Cultural Resource Survey Route 637, Loudoun County, Virginia	Philip Pendleton	1993
LD-087	Phase I Survey of The Broadlands Development, Loudoun County, Virginia	Michael D. Petraglia and John Bedell	1994
LD-102	Phase I Archeological Investigations of The Circa 30 Acre Greenway Corporate Park Parcel, Loudoun County, Virginia	William M. Gardner and Kimberly A. Snyder	2000
LD-111	Phase I Archeological Investigations of the Circa 130 Acre Dulles Parkway Center Parcel, Loudoun County, Virginia	William M. Gardner and Michael Clem	2000
LD-113	A Phase I Archaeological Survey of the Proposed Cub Run Wastewater Pumpover Construction Corridor in Loudoun County, Virginia	Clarence R. Geier, James R. Cromwell, Elaine S. Harlow, and Bruce A. Hunter	1989
LD-115	Phase I Archeological Investigation of the Proposed Runway Construction Zone Dulles International Airport, Loudoun County, Virginia	Benjamin R. Fischler	1999
LD-118	Phase I Archaeological Investigation of the National Oceanographic and Atmospheric Administration Facility Relocation in Loudoun County, Virginia	Thomas N. Gannon	2001
LD-125	A Phase I Archeological Study of the Route 659 Watermain Improvements, the Off Site Sanitary Sewer Northern Tributary Construction, Route 772 Watermain Improvements, and Route 772 Roadway Construction Associated with the Proposed Brambleton Community....	William M. Gardner, Kimberly A. Snyder, and Gwen J. Hurst	1999
LD-141	Phase I Cultural Resources Investigations Of 218 Acres on the 352 Acre Loudoun County Sanitation Authority Tract, Loudoun County, Virginia	Alain C. Outlaw, Timothy E. Morgan, and Mary B. Clemons	2001
LD-144	Phase I Archaeological Survey of the Washington Dulles International Airport Portion of the Proposed W-132, Route 606 Water Main, Route 50 to Dulles Trade Center II	Martin T. Fuess and Bryan T. Butina	2003

VDHR Survey Number	Title	Author	Date
LD-156	Archaeological Identification Survey of the Proposed Davis Drive Extension (Route 625) Project Corridor, Associated with the Route 28 PPTA Project, Loudoun County, Virginia	Elizabeth J. Monroe	2004
LD-161	Phase I Archeological Investigations for Runway 4, Washington Dulles International Airport, Fairfax and Loudoun Counties, Virginia	Charles E. Goode, James W. Embrey, Katherine L. Farnham, Lynn D. Jones, and Donna J. Seifert	2004
LD-170	Archaeological Identification Survey of the Proposed Pacific Boulevard to Cedar Green Project Area, Proposed Route 28 Corridor Improvements PPTA Project, Loudoun County, Virginia	Courtney J. Birkett and Elizabeth J. Monroe	2005
LD-171	Phase I Archaeological Survey of the Proposed Broad Run Technology Park Development (SPEX 2004-0027), Sterling, Loudoun County, Virginia	William Hoffman and Thomas Bodor	2005
LD-177	Phase I Archeological Investigations of the Ca. 29 Acre Cockerille Farm Property, Loudoun County, Virginia	Christine Jirikowic, Paw Jorgensen, and Gwen J. Hurst	2004
LD-182	Cultural Resources Survey, Proposed Connector of Pacific Boulevard, Loudoun County, Virginia	Heidi Luchsinger, Bill Hall, and Loretta Lautzenheiser	2006
LD-188	A Phase I Investigation of the Circa 41 Acre Graham-Flynn Assemblage Along Belmont Ridge Road, Loudoun County, Virginia	Joan M. Walker, Joseph Blondino, David Carroll, and Gwen Hurst	2003
LD-191	Cultural Resource Survey of the Proposed 230 kV Brambleton-Greenway Transmission Line, Loudoun County, Virginia	Todd Butler, Edward Moore, and Megan Rupnik	2006
LD-198	An Archaeological Survey of the Proposed Pacific Boulevard Project, Loudoun County, Virginia	Elizabeth J. Monroe	2009
LD-216	Phase I Archeological Investigations of the 340 Acre Minalter Property, Loudoun County, Virginia	Christine Jirikowic and Stephanie Taleff Sperling	2006
LD-218	Addendum: Cultural Resource Survey of the Proposed 230 kV Brambleton-Greenway Transmission Line, Loudoun County, Virginia	Edward Moore	2007
LD-221	Cultural Resources Survey, Proposed Connector of Pacific Boulevard, Loudoun County, Virginia	Dennis Gosser, Bill Hall, and Loretta Lautzenheiser	2007
LD-222	Cultural Resources Survey Proposed Connector of Pacific Boulevard, Loudoun County, Virginia, Addendum: Stormwater Ponds	Loretta Lautzenheiser	2007

VDHR Survey Number	Title	Author	Date
LD-230	A Phase I Investigation of the Circa 420 Acre A.S. Ray Property Along Broad Run, Loudoun County, Virginia	William M. Gardner, Kimberly A. Snyder, John Mullen, and Gwen J. Hurst	2001
LD-240	Cultural Resource Survey of the Ashburn Cellular Tower Site, Loudoun County, Virginia	Heather M. Dollins, Kristen Bloss, and Sean P. Maroney	2007
LD-241	Cultural Resource Survey of Dulles Cellular Tower Site, Loudoun County, Virginia	Heather M. Dollins, Kristin Bloss, and Sean P. Maroney	2007
LD-248	A Phase I Archeological Study of Circa 565 Acres to be Developed as Phase One of the Proposed Brambleton Planned Community, Loudoun County, Virginia	William M. Gardner, Michael Clem, and Gwen J. Hurst	1999
LD-249	A Phase I Archeological Study of Circa 119 Acres Proposed for Development as a Wetlands Mitigation Area, Loudoun County, Virginia	William M. Gardner, Michael Clem, and Gwen J. Hurst	1999
LD-250	A Phase I Archeological Study of Circa 1300 Acres Proposed for Development as part of the Brambleton Planned Community, Loudoun County, Virginia	William M. Gardner, Kimberly A. Snyder, and Gwen J. Hurst	2001
LD-253	Phase I Investigation of the Circa 29 Acre Brambleton Buchanan Property, Loudoun County, Virginia	William M. Gardner, Kimberly A. Snyder, and Gwen J. Hurst	2002
LD-268	Cultural Resource Survey of the Atlantic Boulevard Extension Project, Proposed Route 28 Corridor Improvements PPTA Project, Loudoun County, Virginia	Elizabeth J. Monroe and Elizabeth M. André	2009
LD-274	A Phase I Archeological Investigation of a Circa 42 Acre Property on Shellhorn Road, Loudoun County, Virginia	William M. Gardner, Kimberly A. Snyder, and Gwen J. Hurst	2002
LD-310	Addendum Report: Phase IB/II Archaeological Survey, Dulles Corridor Metrorail Project-Phase 2, Fairfax and Loudoun Counties, Virginia	Frank G. Mikolic and Daniel Wagner	2011
LD-322	Cultural Resources Survey of the Belfort Park Road Network Project, Loudoun County, Virginia	Elizabeth J. Monroe and Mary Ruffin Hanbury	2012
LD-323	Cultural Resources Survey for the Dulles Loop-Route 606 Project, Loudoun County, Virginia	Charles Goode and Sarah Traum	2012
LD-331	Phase I Architectural and Archaeological Survey of the Proposed Waxpool Transmission Line Right-of-Way Expansion Area, Loudoun County, Virginia	David Dutton, Arthur P. Striker, and Danielle A. Worthing	2013
LD-332	Phase I Cultural Resources Survey of the Approximately 350-Acre DuPont-Fabros Development Tract, Loudoun County, Virginia	Amy Humphreys, Dawn Frost, and Carol Tyrer	2011

VDHR Survey Number	Title	Author	Date
LD-333	Supplemental Cultural Resources Survey for the Dulles Loop-Route 606 Project, Loudoun County, Virginia	Charles Goode and Sarah Traum	2013
LD-334	Cultural Resources Survey Environmental Assessment for the Proposed Dulles Air Cargo, Passenger, and Metro Access Highway, Loudoun County, Virginia	J. Eric Deetz, Jeroen van den Hurk, Lindsay Flood, D. Allen Poyner, Amanda Keeny, and Susan E. Bamann	2013
LD-335	Phase I Architectural and Archaeological Survey of the Proposed Waxpool Route D Transmission Line Right-of-Way, Loudoun County, Virginia	David Dutton, Arthur P. Striker, and Danielle A. Worthing	2013
LD-349	A Phase I Cultural Resources Survey for the Proposed VB/VB Loop Replacement for Class Location Change, Loudoun County, Virginia	Aimee J. Leithoff and Ellen Brady	2014
LD-362	Horsepen Run Parallel Sewer and BRIPPI Phase V Alignments, Loudoun County: Phase I Archeological Investigation	Jeremy Smith and Andrés Garzón-Oechsle	2014
LD-365	Phase I Archeological Investigations of the 82.9 Acre Property at 43461 Old Ox Road, Loudoun County, Virginia	Brian Buchanan	2005
LD-366	Phase I Archeological Investigations of the 42.33 Acre Sterling Park Business Center Property, Loudoun County, Virginia	Brian Buchanan	2006
LD-370	Phase I Archeological Investigations of the 25.62 Acre Cedar Green Property, Loudoun County, Virginia	Boyd Sipe	2005
LD-390	Cultural Resources Survey, Proposed Waxpool Road Intersection Project, Loudoun County, Virginia	Elizabeth E. Bell and Mary Ruffin Hanbury	2013
LD-392	Results of a Phase I Archeological Investigation of the Circa 88.8 Acre Beaumeade Corporate Park, Loudoun County, Virginia	William M. Gardner, Kimberly A. Snyder, and Gwen J. Hurst	2002
LD-400	Phase I Cultural Resource Survey of the ±1.9 Kilometer (1.2 Mile) DuPont Transmission Line Relocation Project Right-of-Way, Loudoun County, Virginia	David H. Dutton and Cara H. Metz	2016
LD-404	Roundtable Property, Loudoun County, Virginia: Phase I Cultural Resources Investigation	Jeremy Smith and Anna Maas	2016
LD-407	Supplemental Archeological Survey of Approximately 35 Acres, Dulles Loop-Route 606 Project, Loudoun County, Virginia	Elizabeth E. Bell	2015
LD-408	Archaeological Evaluation of Sie 44LD1726 and Supplemental Survey of Approximately 9.5 Acres, Dulles Loop-Route 606 Project, Loudoun County, Virginia	Elizabeth E. Bell, Elizabeth J. Monroe, and Jessica Bittner	2016

VDHR Survey Number	Title	Author	Date
LD-409	Phase I Archeological Investigations of the Circa 450 Acre Loudoun County Reserve Property, Loudoun County, Virginia	William M. Gardner, Kimberly A. Snyder, and Gwen Hurst	2001
LD-412	Phase I Archeological Survey of the Proposed Presidential Golf Course, Dulles, Loudoun County, Virginia	Karl Franz and Thomas Bodor	2005
LD-413	Supplemental Phase I Archeological Survey of the Proposed Presidential Golf Course, Dulles, Loudoun County, Virginia	Karl Franz and Thomas Bodor	2006
LD-414	Phase I Cultural Resource Survey of the Belfort Project Area, Loudoun County, Virginia	Mike Klein, Heather Dollins, Marco A. González, and Kerri S. Barile	2014
LD-420	Phase I and Phase II Archeological Investigations for Western Lands Area, Washington Dulles International Airport, Loudoun County, Virginia	Henry Ward, Esther Read, Rob Wanner, and Jane Seiter	2016
LD-449	DLR Waxpool Property-I Cultural Resources Investigation, Loudoun County, Virginia	Daniel Baicy	2015
LD-450	DLR Waxpool Property-Archeological Delineation of the Tippets Hill Cemetery, Loudoun County Virginia	Jeremy Smith	2015
LD-466	Phase I Archeological Survey for the Proposed Columbia Gas Transmission-Line VB & VB Loop Line Replacement Project, Loudoun County, Virginia	Michael B. Hornum, Amanda Melton, and Kevin Clark	2018
LD-480	Washington Dulles Gateway (AKA Antigone) Property, Loudoun County, Virginia, Phase I Cultural Resources Investigation	Thomas Cuthbertson and Jeremy Smith	2018
LD-487	Highpoint-Phase I Cultural Resources Investigation, Loudoun County, Virginia	Daniel Baicy and Thomas Cuthbertson	2016 (Revised 2019)
LD-498	Report on the Cultural Resources Survey: Dulles Toll Road Extension Alignment P	John H. Haynes	1988
LD-532	Phase I Archaeological Survey of the Goupda Property East of Arcola, Loudoun County, Virginia	Michael Clem and Nora Sheehan	2006
LD-536	Lockridge Road/Randolph Drive Intersection Improvements, Loudoun County, Virginia: Phase I Archaeological Survey Technical Report	Jean M. Cascardi, Karen Hutchins-Keim, and Jason Shellenhamer	2020
LD-537	Phase I Cultural Resources Survey of the ±5.21-Hectare (±12.9-Acre) Evergreen 230 kV Transmission Line Loop Project, Loudoun County, Virginia	David H. Dutton and Robert J. Taylor	2020

VDHR Survey Number	Title	Author	Date
LD-538	Management Summary for Phase I Archaeological Survey of Dulles Solar Project Washington Dulles International Airport, Loudoun County, Virginia	Rob Wanner, Joseph Clemens, and Henry Ward	2021
LD-549	Phase I Cultural Resources Investigation, Westwind Drive Extension, Loudoun County, Virginia	Daniel Baicy and Jeremy Smith	2021
LD-561	Phase I Cultural Resource Survey of the DTC 230kV Line Loop Project, Loudoun County, Virginia	Robert J. Taylor and David H. Dutton	2023
LD-566	Phase I Archaeological Survey of the Wil-Jac Property (GPIN 045-27-9612), Loudoun County, Virginia	Luke Donohue and Dan Dilks, Jr.	2022
LD-568	Phase I Archaeological Identification Survey for Prentice Drive/Lockridge Road - Phase II West, Loudoun County, Virginia	Jean M. Cascardi, J. Andrew Ross, and Jerry Warner	2022
LD-573	Digital Sterling Premier-Phase I Cultural Resources Investigation, Loudoun County, Virginia	Edward McMullen and Jeremy Smith	2021
LD-581	Metro 606-Phase I Cultural Resources Investigation, Loudoun County, Virginia	Daniel Baicy, Kathleen Jockel Schnieder, and Edward McMullen	2021 (Revised 2022)
LD-584	Phase I Archaeological Identification Survey for the Prentice Drive/Lockridge Road West-Phase I, Loudoun County, Virginia	Jean M. Cascardi, J. Andrew Ross, and Jerry S. Warner	2022
LD-587	Supplemental Phase I Archaeological Survey of the Dulles Western Solar Development, Washington Dulles International Airport, Loudoun County, Virginia	Rob Wanner, Ben Fischler, and Henry Ward	2022
LD-589	A Phase I Archeological Survey of the Proposed Crown Cell Tower Site Located at 202 Lane Court in Sterling, Loudoun County, Virginia	Ryun Papson and Phillip J. Hill	2006
LD-602	Phase I Cultural Resources Survey, Vantage Data Center Project (VA2), Loudoun County, Virginia	Craig Chartier, Price Laird, Larissa A. Thomas, and Jeffrey L. Holland	2023
LD-623	Phase I Cultural Resource Survey of the ±16.11 Hectares (±39.82 Acre) Dulles 28 Project Area, Loudoun County, Virginia	Hope Smith and Lauren Gryctko	2021
LD-625	Phase I Archeological Investigations of 44LD27 and 44LD143, Loudoun County, Virginia	William M. Gardner and Michael Clem	2000

Source: VDHR 2024

* Gray highlighted rows denote surveys that overlap portions of the route alternatives

3. STAGE 1 PRE-APPLICATION ANALYSIS FINDINGS

3.1 METHODS OF ANALYSIS

Fieldwork for the pre-application analysis was conducted by Haley Hoffman and Emma Jennings under the direction of Secretary of the Interior Qualified architectural historian, Mary Beth Derrick between April 17 and 18, 2024. The fieldwork involved photographing five resources requiring visual assessment according to the Guidelines and examining potential line-of-sight views from each resource toward the alternative routes. For resources where property owner approval was granted for historic resource documentation, photographs were taken toward the alternative route(s) from the property at the most prominent view of the landscape. When permission to access such locations was not available, photographs were taken from the public right-of-way (typically a road) nearest to the resource facing toward the applicable route(s).

Panoramic photographs were taken from each resource, with an effort to capture the direction with the clearest, most unobstructed view toward the applicable route or routes. The precise location of the photograph was captured with a mobile tablet device connected to a sub-meter accurate Global Navigation Satellite System (GNSS) receiver, the Trimble R1. The locations from which photographs were taken were noted as Key Observation Points (KOPs). Site visits to the KOPs were prioritized based on their location relative to the resource, so that viewpoints east of the resource were visited in the morning and viewpoints west of the resource were visited in the afternoon. This helped ensure, where possible, that the sun was behind the photographer at the time the viewpoint photography was captured. Additionally, minor adjustments to position were made to obtain as clear a view to the site center as possible, avoiding trees, landscaping, or built obstructions. Tablets recorded the center bearing, angle of view, altitude, and camera lens height. Upon receipt of the viewpoint location information, the viewpoints were plotted onto open-source mapping from the Environmental Systems Research Institute (ESRI) using the Universal Transverse Mercator (UTM) 18N coordinate system.

The process of taking panoramas included setting up the tripod and camera. The camera was placed on the panoramic head in a landscape orientation where its lens height was confirmed and set at 1.5 meters (note: a portrait camera orientation was sometimes used in situations where the viewpoint is very close to a development so that the top of the development is not cut off by the image boundaries). The tripod head and camera combination were then leveled. With the camera's viewfinder centered on the perceived site center, exposure and focus settings were taken. These were then fixed manually on the camera so that they could not be inadvertently altered. The head was rotated 90 degrees to the left where the first frame of the 360-degree sequence was then taken. Each subsequent frame was taken using a 50 percent overlap of the previous frame until the full 360-degree sequence was captured. The camera was then removed from the tripod and a viewpoint location photograph was captured showing the tripod in its position.

The following camera and tripod configuration was used:

- Camera body: Nikon z6ii professional specification digital Single Lens Reflex (SLR) (full frame complementary metal oxide semiconductor [CMOS] sensor)

- Camera lens: Nikkor Auto Focus (AF)50mm f1.8 prime
- Tripod: Ulanzi Zero F38 Quick Release Travel Tripod 3131 with Level
- Panoramic head: Nodal Ninja 6 with Nadir Adapter

After the photos were complete, they were uploaded to a server to begin the simulation/ visualization process. The single-frame photographs were opened in Adobe Photoshop CC 2022 where they were checked, and any camera sensor dust spots were removed before being saved as high-resolution joint photographic experts group format (JPEG) images. If required, discrete color and tonal adjustments were made to each frame before they were saved. The single-frame photographs were stitched together in PTGui Pro version 12.11 professional photographic stitching software using cylindrical projection settings. The camera locations were plotted in Global Mapper version 23.1. Digital models of the transmission line structures were provided by Dominion, then cleaned up and textured in Autodesk 3DS Max 2021. The transmission structures along each route were rendered in Vray version 5.2 from each KOP camera location. Three-dimensional (3D) imagery was produced at the field of view using camera matching. Renderings for each route and each tower combination were then exported for use as an overlay.

Detailed, correctly dimensioned 3D computer models of the transmission structures along each route were generated using Autodesk 3DS Max 2021 and iToo RailClone. The virtual 3D model of the structures was created using real-world measurements and elevation drawings provided by the Company (see Attachment 3). These were textured using Vray physically based rendering (PBR) materials to simulate the weathering steel texture. The detailed, textured models were rendered to a digital image using a simulated physical camera and a sun and sky simulation lighting model in the computer software consistent with conditions within the original viewpoint photography.

Photomontages were produced by overlaying the rendered image on the photograph, using known control points and the wireline imagery showing the tower columns at the correct height and distance. Final adjustments were then made to the brightness and contrast of the rendered images to match them to the photograph. Final photomontages were prepared from each viewpoint for each route. These were then opened in Adobe Photoshop CC 2022 where minor changes were made such as placing relevant tree/building/hedge screening or telegraph wires over the proposed development renders where necessary. Finally, the final images were cropped to the proportions required for the visual simulation figures, and the visualization figures were prepared in Adobe InDesign CC2022 and exported in a portable document format (PDF).

One resource, the Dulles International Airport Historic District (053-008), could not be accessed due to airport security restrictions; thus, ERM's architectural historians could not obtain panoramic photos from the district. The simulations related to this resource were completed through 3D rendering. An existing conditions 3D model of the study area, including terrain, vegetation, and structures, was created from Google Earth data. The 3D model was georeferenced and compiled with aerial imagery and available lidar data to create a polymodal from RGB colored point cloud information 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 3D rendering. Atmospheric data were imported into the 3D model to develop a sun and atmospheric system that matches the location specific reference data. Based on computer aided design, GIS, and power line systems computer-aided design data provided by the Company, a 3D model of the Project was constructed. All information was imported into the 3D existing conditions model using the same georeference and projection and then validated for accuracy. 3D materials and associated specular reflectance information were applied to the proposed 3D information. Easement right-of-way expansion was created by deleting 3D trees from the existing conditions model that fall within this expansion. After all the information was property aligned, atmospherics checked, and materials applied, the 3D information was then rendered using highly accurate raytraced render engines. Finally, photo editing software was used to color correct the final images and export them out in a PDF format.

3.2 STRUCTURE TYPES AND RIGHT-OF-WAY WIDTHS

Dominion proposes to construct the Golden–Mars Lines within almost entirely new right-of-way varying between 100 and 150 feet wide in a 5-2 configuration. The Golden–Mars Lines will use a combination of dulled galvanized steel double circuit monopole or two-pole structures (100-foot-wide right-of-way) or three-pole or two-pole H-frame structures (150-foot-wide right-of-way). The Golden–Mars Lines generally will use an H-frame configuration in areas with fewer constraints and a monopole configuration in areas where the right-of-way needs to narrow as much as possible. Dominion will construct the Lockridge 230 kV Loop and Sojourner 230 kV Loop within new 100-foot-wide rights-of-way, using primarily dulled galvanized steel double circuit monopoles.

The distance (span) between transmission structures depends on the type of structure used (monopole or H-frame), as well as topography, ground elevation, and nearby constraints such as bridge or highway on-ramp crossings. For the Golden–Mars Lines, the average span distance for both the monopole and H-frame configuration will be 600 feet, with structure heights ranging from 110 to 185 feet (average of 155 feet).

The average span distance for the Lockridge 230 kV Loop would be 440 feet with structure heights ranging from 55 to 120 feet (average of 104 feet). The average span distance for the Sojourner 230 kV Loop would be 520 feet with structure heights ranging from 50 to 120 feet (average of 104 feet).

3.3 ASSESSMENT OF POTENTIAL IMPACTS

The assessment of potential Project impacts on individual resources made use of the visual assessment findings and categorized the level of impacts according to the following scale devised by VDHR:

- **None**–Project is not visible from the resource.
- **Minimal**–Viewsheds have existing transmission lines, there would be only a minor change in height, and/or other views are partially obscured by topography or vegetation.
- **Moderate**–Viewsheds have more expansive views of the transmission line, more dramatic changes in height are proposed, and/or the overall visibility of the Project would be greater.

- **Severe**—Existing viewshed contains no transmission line, the view to the Project would be relatively unobstructed, the new transmission line would introduce a significant change to the setting of historic properties, and/or a dramatic change in the height of an existing transmission line would take place in close proximity to historic properties.

3.4 HISTORIC RESOURCE DESCRIPTIONS

3.4.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District, 053-0008, is in the southwest quadrant of the intersection of Sully Road/Route 28 and Dulles Greenway (Toll Road)/Route 267. 053-0008 encompasses 1,300 acres which occupies portions of the Dulles Airport. The resource includes terminals, runways, and associated buildings. The area surrounding the district is occupied by residential, commercial, and light industrial development in all directions. However, forested and agricultural land lies just outside of the district to the south and west. Due to airport security restrictions, ERM's architectural historians were not able to obtain photos of the historic district at the time of the survey. Consequently, aerial imagery is used for the purposes of this report (Attachment 4, Figure 1).

053-0008 was surveyed in 1978 by the Federal Aviation Administration (FAA) when it was first recommended eligible for listing in the NRHP under Criteria A, B, and C. The assessment also referenced Criteria Consideration G for exceptional buildings less than 50 years old. The resource was surveyed in 1988 by Parsons Management Group (FAA 1978; Parsons Management Consultants 1988) and again by Robert Taylor in 2023 for Dutton + Associates, LLC. 053-0008 represents the first airport designed exclusively for jet travel (Taylor 2023). It was designed by the renowned architect, Eero Saarinen, as one of his most significant works. The design revolved around carefully controlling experiences and perceptions for travelers as they navigated through the airport from entry to boarding. The Dulles Airport opened in 1962. VDHR noted as of 1989 that the district included the following contributing components: 13 structures, 18 mobile lounges, the landscaping plan, and approach road.

The Dulles International Airport Historic District was determined eligible for the NRHP in 1989 by VDHR staff. The district lies within the half mile tier for the Golden-Mars Routes 1, 2, 3, 4, and 5, and the Sojourner Loop.

3.4.2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT

The W&OD Railroad Historic District, 053-0276, encompasses 547.45 acres within Arlington, Fairfax, and Loudoun Counties and City of Falls Church, though this report only addresses the portion of the resource within the study tiers for this Project (Attachment 4, Figure 2). The historic district includes six contributing resources (053-0276-0001, -0002, -0003, -0004, -0005, and -0006); however, only 053-0276-0001 (Washington & Old Dominion Railroad) is within the boundaries of the Golden-Mars Lines. The park is owned by the Northern Virginia Regional Park Authority. A trail, called the W&OD Trail, built on the former railroad bed, travels through the urban heartland and countryside of Northern Virginia, running from Shirlington in Arlington County to Purcellville in Loudoun County. This 45-mile long and 100-foot-wide corridor features a hard-

surfaced pedestrian and bicycle trail as well as an adjacent 33-mile bluestone-surfaced bike path between Purcellville and Vienna. For the current Project in 2024, ERM observed portions of the trail and alignment near Pacific Boulevard and on the pedestrian bridge above Sully Road in Sterling, and it appeared to be in good condition.

Built as the Alexandria, Loudoun, and Hampshire Railroad in 1855, the resource was one of the region's major commercial and transportation arteries during the mid to late nineteenth century. The founders hoped to recapture Alexandria's past glory as a world trade center by constructing a rail line from the west over the Allegheny mountains to Alexandria's fading seaport. In 1858, a portion of the line was completed to Leesburg, 38 miles away from Alexandria, with passenger cars arriving in 1860. The Southern Railway purchased the line in 1900, merging it with its own rail network. By 1911, the line transitioned from steam to electric, making it Virginia's largest interurban system to date. As one of the nation's largest steam-to-electric conversion projects, it included 72 route miles, 17 of which were double tracked. Passenger and freight traffic declined with the advent of the automobile in the 1940s and 1950s (Ross 1999).

Although it never reached its goal as a trunk line from the Shenandoah Valley to Alexandria, it served as a local carrier facilitating local development. The line was crucial during the Civil War and Spanish American War, and it also enabled the development of the early Washington, D.C. suburbs of Falls Church and Dunn Loring. The railroad carried vacationers to the Blue Ridge Mountains and hauled agricultural products from the surrounding countryside to Washington, D.C. In its final years, it transported materials used in the construction of Dulles Airport and the Capital Beltway before its demise in 1968 (Neville 2000; Shiflett 2022). The railroad was abandoned in 1968, and the right-of-way purchased by Virginia Electric and Power Company to construct transmission lines. The tracks were removed in the 1970s. In 1982, the Northern Virginia Regional Park Authority purchased 45 miles of the rail bed for use as a public park (Shiflett 2022).

In 1999, Helen P. Ross surveyed the W&OD Railroad and its features, noting that the alignment, grading, bridges, culverts, six stone arches, and six depots and freight stations remained intact. The surveyor noted many of the original features such as the rolling stock, rails, ballast, fencing, repair shops, station houses, water stations, and woodsheds were no longer extant (Ross 1999).

In 2000, Ashley M. Neville prepared an NRHP nomination form for the historic district (Neville 2000). Subsequent surveys of portions of the historic district occurred in 2006, 2008, 2010, 2012, 2013, 2014, 2016, 2018, and 2022 (Andre 2008; CCR, Inc. 2006; DeChard 2022; Derrick 2018; Dovetail CRG 2008, 2010; Hanbury 2012, 2013; Jacobe 2014; Schlupp 2016; Traum 2014).

VDHR determined 053-0276 eligible for the NRHP under Criterion A for its contribution to the broad patterns of Northern Virginia history in the areas of transportation and commerce. VDHR determined 053-0276-0001 eligible for the NRHP in 1999. The railroad is historically significant as one of the major commercial and transportation arteries of the Northern Virginia area from the mid-nineteenth century through the mid-twentieth century. 053-0276 lies within the right-of-way study tier for Golden-Mars Routes 1, 2, 3, 4, and 5.

3.4.3 053-0968, GUILFORD BAPTIST CHURCH

Guilford Baptist Church, 053-0968, is located at 1001 Ruritan Circle, situated on the south side of the road, north of Church Street (Attachment 4, Figure 3). A large parking lot is located to the east of the church, while other commercial properties are to the north and west. The surrounding environment is developed and contains dense suburbs of residential dwellings to the northeast, east, and south.

The resource was most recently surveyed by Elizabeth Andre in 2008. 053-0968 includes a one-story, circa 1873 Gothic Revival church and a circa 1870 shed. The church was described as a frame building clad in board and batten, with a square tower capped by a pyramidal roof with an open belfry (Andre 2008). Pointed arch windows and a pointed arch transom over the front door were also visible, along with a one-story, side-gabled, brick-veneer addition located on the east elevation. The church was in good condition. The circa 1870 shed was described as a one-story, standing seam metal, gabled-roof masonry shed located northwest of the church. Weatherboard siding covered the peaks of the gables, and a louvered cupola was centered on the roof (Andre 2008). The shed was also in good condition.

ERM visited the resource in 2024 and noted major changes since the 2008 survey. First, the 2008 survey fails to mention a two-story, 18-room wing education center that was added to the east elevation in 1966 (Gunderman 2018). This wing has a brick exterior and a side-gabled, asphalt shingle roof. In addition, according to aerial views, the original church was demolished in 2018 (Loudoun County Virginia Online Mapping System 2024). A much larger structure was built in 2019, but the education center remains, attached to its southeast corner. The current church is called the Debre Haile Kidus Raguel Cathedral, and is an Ethiopian Orthodox Church. It displays architectural stylistic elements consistent with that tradition. It is a front-gabled structure that features a dome and a square tower with a domed roof. An arcade of pointed and rounded arches spans the façade on either side of the tower, which contains the double-door entrance and vestibule. The outbuilding mentioned in the 2008 survey is no longer extant, but a circa 1990 garage is located on the parcel.

The Guilford Baptist Church was determined to be a contributing element of the Guildford Historic District (053-6237) by Marc Holma with the VDHR in 2009, but it was not formally evaluated as an individual resource. Although the nineteenth-century portion of the building is no longer extant, ERM considered the Guilford Baptist Church locally significant for the purposes of this Project due to its religious association with the early local community, albeit represented only by the surviving 1960s addition that was once connected to the original sanctuary. 053-0968 is located within the 1-mile study tier for Golden-Mars Lines Routes 1, 2, 3, 4, and 5.

3.4.4 053-6406, TIPPET'S HILL CEMETERY

Tippet's Hill Cemetery (also Tippet Hill and Tippet's Hill), 053-6406, is a locally significant African American resource within Loudoun County. The resource represents an active African American cemetery located off Vantage Data Plaza in Sterling, Virginia, between Pacific Boulevard and Sully Road (Attachment 4, Figure 4). The boundary of the resource defined in VCRIS covers approximately 0.95 acre.

Tippet's Hill Cemetery (053-6406) was previously recorded in 2015 by John Mullen of Thunderbird Archaeology. Mullen described the cemetery as having 115 grave markers of varying styles, with the earliest reported interment dating to 1863 (Mullen 2015). The survey delineated the boundaries of the cemetery, but no details on the findings were provided.

The online cemetery database, Find A Grave, lists 134 memorials within the cemetery (Find A Grave 2023). The oldest grave listed in Find A Grave is Philip J. Coleman, a Confederate soldier who died on July 23, 1863, of wounds sustained in battle on June 9, probably at the Battle of Manassas Gap. However, no photograph of this burial is included with the listing, and no marker for this grave was found by Mullen. The most recent burial recorded in Find A Grave was in 2023. Coleman is the only reported burial dating to the nineteenth century and, as a private in the Confederate army in 1863, he was white. The next oldest graves are members of the African American Johnson, Nokes, and Ewing families from the first three decades of the twentieth century. It is possible that the attribution of Coleman's grave to this cemetery is an error.

According to a historical marker placed at the entrance to the cemetery, the "burying ground" originally served as the slave cemetery for the Tippet's Hill Plantation and markers in the cemetery date to the 1700s. However, no markers or graves of that age have been recorded in previous surveys. The cemetery was turned over to the residents of the Nokes Mountain community in the early 1900s. The Nokes Mountain community was first established in 1901 by George Washington Nokes, who was the first African American landowner in eastern Loudoun County. The location of his home is also a locally significant African American site, 053-5223, at the corner of Nokes Boulevard and Atlantic Boulevard. The community had a small schoolhouse in the 1920s along with Tippet's Hill Cemetery. Beyond George Washington Nokes, the Ewings family was another early African American family that owned land in the community; they operated a large dairy farm. The Nokes Mountain community did not have a church until 1962, when First Baptist was organized (Lee 2004). According to the historical marker, Tippet's Hill Cemetery is still administered by the descendants of Clarence L. Nokes, Sr. (1890–1985), who was one of its longtime caretakers.

The marker at the cemetery was placed in accordance with an agreement that was part of an application by a developer in 2018 to construct data centers on properties surrounding the cemetery. The applicant also agreed to fence off the cemetery during construction, suspend construction during funerals, pave an existing gravel road onto the property from Moran Road, provide four parking spaces, improve pedestrian paths in the cemetery, and remove and replace dead and diseased trees within a 25-foot buffer around the cemetery (Greene 2018). ERM was not able to survey the cemetery in 2024 due to the vegetation surrounding the resource, but no significant changes were visible from the public right-of-way or aerial imagery.

053-6406 has not been formally evaluated by the VDHR. ERM has categorized the resource as locally significant for the purposes of this Project due to its association with the African American community. 053-6406 lies within the half-mile study tier for Golden-Mars Routes 1, 2, 3, 4, and 5.

3.4.5 053-6416, OX ROAD TRACE

The Ox Road Trace, 053-6416, includes 0.33-acre ford and road trace that runs northwest-southeast on the south side of Loudoun County Parkway, west of Waxpool Road (Attachment 4,

Figure 5). The road trace leads to the Broad Run Ford. Approximately 500 feet (of 930 feet) of the road has been paved as a current access road associated with an adjacent data center and additional development in the area (Taylor 2021, 2023).

The road trace was constructed starting in circa 1728 and completed circa 1740 by Robert “King” Carter’s son, Charles Carter to provide a way from Frying Pan Mine in Loudoun County to Copper Mine Landing on the Occoquan (History of Loudoun County, Virginia 2024). The transportation improvement served the tobacco industry until it became a secondary road to the Leesburg Turnpike circa 1820. The resource was most recently surveyed in 2023 by Robert Taylor, who noted that the road trace was cleared of surrounding vegetation and used as an access road for the data center complex. The ford was still evident but lined by riprap. ERM visited the resource in 2024 and noted no changes since the previous survey.

The road trace was determined to be potentially eligible for listing on the NRHP by the VDHR in 2016. Although many sections of the road have been improved and updated, previous surveyors believe that the sections that remain convey the “historic form and configuration” of the road trace and should therefore continue to be considered potentially eligible for listing on the NRHP. ERM included the resource as locally significant due to its association with the early history of the community. 053-6416 is within the half-mile tier for Golden-Mars Routes 1 through 5 and the one-mile tier for Lockridge Loop.

3.5 HISTORIC FINDINGS FOR GOLDEN-MARS LINES

3.5.1 HISTORIC FINDINGS FOR ROUTE 1

3.5.1.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District is approximately 0.42 mile south of Route 1 in an area where the route uses a greenfield alignment to the point it connects to the planned Mars Substation, part of the SCC-approved Mars-Wishing Star Project (Attachment 5, Figure 1). The resource’s western runway is closest to the route, with grass directly surrounding the runway bordered by trees. No in-person KOP was taken from this resource as Dulles Airport would not grant access for photography within the limits of the airport (which extends beyond the historic resource boundary). No other points could be taken in the general vicinity due to lack of public roads surrounding the airport.

Given the absence of accessible viewpoints from the airport historic district, ERM created a simulated Google Earth 3D rendering of existing and future conditions (Attachment 5, Figure 2). As shown in the simulation, which depicts leaf on conditions, the transmission infrastructure installed along the route would not be visible from the runway. The tops of the structures could be visible during leaf-off seasons, however, as well as from the air as aircraft take off and land. These would only be visible from the westernmost runway and would not be visible from the district’s terminal. In addition, the recorded boundary for the resource encompasses 1,300 acres, only a small portion (4.4 acres) of which is within the half-mile study tier for the route. Mature vegetation and distance between the district and transmission infrastructure installed along the route would likely block the view from vantage points throughout the majority of the district (east

of the KOP). Thus, ERM recommends that Route 1 would have a **Minimal Impact** on 053-0008, the Dulles International Airport Historic District.

3.5.1.2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT

The Washington and Old Dominion Railroad Historic District traverses Route 1 twice in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 3). The surrounding area is urban with multiple commercial buildings. Dominion's existing lines share the district's right-of-way with multiple existing substations in the surrounding area. The route connects to Dominion's SCC-approved future Golden Substation, which has not yet been constructed and is associated with a different project.

Two KOPs were chosen for visual simulations along the district's right-of-way, KOPs 001 and 002. KOP 001's simulation shows that Route 1 would be visible from the intersection of the route and the resource (Attachment 5, Figure 4). This location would have the most prominent view of transmission infrastructure installed along the route, though multiple existing Dominion transmission lines intersect the district and share its right-of-way. It is important to note that the planned Golden Substation is visible in the simulation but is not associated with this Project. KOP 002 was taken farther from the intersection of the route and the resource, approximately 0.13 mile away (Attachment 5, Figure 5). Here, the simulation shows that transmission infrastructure installed along the route would not be as prominent in the landscape as the existing Dominion transmission lines. The new transmission line would be visible when it is in close proximity to the resource, but this viewshed change occurs within a small fraction of the overall resource, which already is collocated and intersected multiple times with existing Dominion transmission lines. Thus, ERM recommends that Route 1 would have a **Minimal Impact** on 053-0276, the Washington and Old Dominion Railroad Historic District.

3.5.1.3 053-0968, GUILFORD BAPTIST CHURCH

Guilford Baptist Church is approximately 0.53 mile southeast of Route 1 in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 6). The surrounding area is urban, with commercial structures and modern townhouses located between the resource and the route.

One simulation was prepared for the resource, from KOP 005 along West Church Road/Route 625 (Attachment 5, Figure 7). As shown in the simulation, three transmission structures installed along the route would be faintly visible in the distance when looking to the west, but existing Dominion transmission lines would be more prominent in the landscape. The transmission line would not be visible to the northwest due to intervening infrastructure. Because the transmission line would introduce an additional modern element to the landscape, however, it constitutes a change in viewshed. Thus, ERM recommends that Route 1 would have a **Minimal Impact** on 053-0968, Guilford Baptist Church.

3.5.1.4 053-6406, TIPPET'S HILL CEMETERY

Tippet's Hill Cemetery is approximately 0.45 mile southeast of Route 1 in an area where the route uses a greenfield alignment (Attachment 5, Figure 8). The route also intersects Dominion's

existing Lines #2165/#2170 in this area. The surrounding area is urban, with large data centers directly between the route and resource.

One simulation was prepared for the resource, from KOP 010 on Vantage Data Plaza (Attachment 5, Figure 9). As shown in the simulation, most of the transmission line infrastructure installed along the route would not be visible because of the data centers directly adjacent to the resource. The tips of three structures near the intersection of Waxpool Road and Pacific Boulevard, however, would be visible when looking to the northwest from the resource's northwestern corner. It is important to note that Dominion's existing Lines #2165/#2170 are approximately 160 feet south of the resource and visible when looking from the resource's southern and eastern boundary. This, in addition to the data centers, has added modern elements to the landscape. While the view of the transmission line would be minor, it still constitutes a change, as it introduces an additional modern element into the landscape. Thus, ERM recommends that Route 1 would have a **Minimal Impact** on 053-6406, Tippet's Hill Cemetery.

3.5.1.5 053-6416, OX ROAD TRACE

Ox Road Trace is approximately 166 feet northwest of Route 1 in an area where the route is collocated with Dominion's existing Lines #2149/#2203/#2214 (Attachment 5, Figure 10). The surrounding area mostly consist of data centers and woodland. Broad Run flows directly south of the resource.

Two simulations were prepared along the resource at KOP 014 (Attachment 5, Figures 11 and 12). As shown from the simulations, a transmission line along Route 1 would be visible to the east and south from inside the road trace because of the close proximity of the resource and route. Dominion's transmission existing lines, as well as the construction of the data centers, however, have compromised the resource's historic viewshed. In addition, Dominion's existing Lines #2149/#2203 currently intersects the resource, and other than the southern and eastern viewshed, all other viewsheds from the resource would remain unchanged. While the impact would be minor, a transmission line along the route would be visible from multiple vantage points within the resource adding another modern element to the landscape. Thus, ERM recommends that Route 1 would have a **Minimal Impact** on 053-6416, Ox Road Trace.

3.5.2 HISTORIC FINDINGS FOR ROUTE 2

3.5.2.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District is approximately 0.42 mile to the south of Route 2 in an area where the route uses a greenfield alignment to the point it connects to the planned Mars Substation, part of the SCC-approved Mars-Wishing Star Project (Attachment 5, Figure 13). The resource's western runway is closest to the route, with grass directly surrounding the runway bordered by trees. No in-person KOP was taken from this resource as Dulles Airport would not grant access for photography within the limits of the airport (which extends beyond the historic resource boundary). No other points could be taken in the general vicinity due to lack of public roads surrounding the airport.

Given the absence of accessible viewpoints from the airport historic district, ERM created a simulated Google Earth 3D rendering of existing and future conditions (Attachment 5, Figure 14). As shown in the simulation, which depicts leaf on conditions, the transmission infrastructure installed along the route would not be visible from the runway. The tops of the structures could be visible during leaf-off seasons, however, as well as from the air as aircraft take off and land. These would only be visible from the westernmost runway and would not be visible from the district's terminal. In addition, the recorded boundary for the resource encompasses 1,300 acres, only a small portion (4.4 acres) of which is within the half-mile study tier for the route. Mature vegetation and distance between the district and the transmission infrastructure installed along the route would likely block the view from vantage points throughout the majority of the district (east of the KOP). Thus, ERM recommends that Route 2 would have a **Minimal Impact** on 053-0008, the Dulles International Airport Historic District.

3.5.2.2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT

The Washington and Old Dominion Railroad Historic District traverses Route 2 twice in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 15). The surrounding area is urban with multiple commercial buildings. Dominion's existing lines share the district's right-of-way with multiple existing substations in the surrounding area. The route connects to Dominion's SCC-approved future Golden Substation, which has not yet been constructed and is associated with a different project.

Two simulations were chosen for visual simulations along the district's right-of-way, KOPs 001 and 002. KOP 001's simulation shows that Route 2 would be visible from the intersection of the route and the resource (Attachment 5, Figure 16). This location would have the most prominent view of transmission infrastructure installed along the route, though multiple existing Dominion transmission lines intersect the district and share its right-of-way. It is important to note that the planned Golden Substation is visible in the simulation but is not associated with this Project. KOP 002 was taken farther from the intersection of the route and the resource, approximately 0.13 mile away (Attachment 5, Figure 17). Here, the simulation shows that transmission infrastructure installed along the route would not be as prominent in the landscape as the existing Dominion transmission lines. The new transmission line would be visible when it is in close proximity to the resource, but this viewshed change occurs within a small fraction of the overall resource, which already is collocated and intersected multiple times with existing Dominion transmission lines. Thus, ERM recommends that Route 2 would have a **Minimal Impact** on 053-0276, the Washington and Old Dominion Railroad Historic District.

3.5.2.3 053-0968, GUILFORD BAPTIST CHURCH

Guilford Baptist Church is approximately 0.53 mile southeast of Route 2 in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 18). The surrounding area is urban, with commercial structures and modern townhouses located between the resource and the route.

One simulation was prepared for the resource, from KOP 005 along West Church Road/Route 625 (Attachment 5, Figure 19). As shown in the simulation, three transmission structures installed along the route would be faintly visible in the distance when looking to the west, but existing

Dominion transmission lines would be more prominent in the landscape. The transmission line would not be visible to the northwest due to intervening infrastructure. Because the transmission line would introduce an additional modern element to the landscape, however, it constitutes a change in viewshed. Thus, ERM recommends that Route 2 would have a **Minimal Impact** on 053-0968, Guilford Baptist Church.

3.5.2.4 053-6406, TIPPET'S HILL CEMETERY

Tippet's Hill Cemetery is approximately 0.45 mile southeast of Route 2 in an area where the route uses a greenfield alignment (Attachment 5, Figure 20). The route also intersects Dominion's existing Lines #2165/#2170 in this area. The surrounding area is urban, with large data centers directly between the route and resource.

One simulation was prepared for the resource, from KOP 010 on Vantage Data Plaza (Attachment 5, Figure 21). As shown in the simulation, most of the transmission line infrastructure installed along the route would not be visible because of the data centers directly adjacent to the resource. The tips of three structures near the intersection of Waxpool Road and Pacific Boulevard, however, would be visible when looking to the northwest from the resource's northwestern corner. It is important to note that Dominion's existing Lines #2165/#2170 are approximately 160 feet south of the resource and visible when looking from the resource's southern and eastern boundary. This, in addition to the data centers, has added modern elements to the landscape. While the view of the transmission line would be minor, it still constitutes a change, as it introduces an additional modern element into the landscape. Thus, ERM recommends that Route 2 would have a **Minimal Impact** on 053-6406, Tippet's Hill Cemetery.

3.5.2.5 053-6416, OX ROAD TRACE

Ox Road Trace is approximately 166 feet northwest of Route 2 in an area where the route is collocated with Dominion's existing Lines #2149/#2203/#2214 (Attachment 5, Figure 22). The surrounding area mostly consist of data centers and woodland. Broad Run flows directly south of the resource.

Two simulations were prepared along the resource at KOP 014 (Attachment 5, Figures 23 and 24). As shown from the simulations, a transmission line along Route 2 would be visible to the east and south from inside the road trace because of the close proximity of the resource and route. Dominion's transmission existing lines, as well as the construction of the data centers, however, have compromised the resource's historic viewshed. In addition, Dominion's existing Lines #2149/#2203 currently intersects the resource, and other than the southern and eastern viewshed, all other viewsheds from the resource would remain unchanged. While the impact would be minor, a transmission line along the route would be visible from multiple vantage points within the resource adding another modern element to the landscape. Thus, ERM recommends that Route 2 would have a **Minimal Impact** on 053-6416, Ox Road Trace.

3.5.3 HISTORIC FINDINGS FOR ROUTE 3

3.5.3.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District is approximately 0.42 mile south of Route 3 in an area where the route uses a greenfield alignment to the point it connects to the planned Mars Substation, part of the SCC-approved Mars-Wishing Star Project (Attachment 5, Figure 25). The resource's western runway is closest to the route, with grass directly surrounding the runway bordered by trees. No in-person KOP was taken from this resource as Dulles Airport would not grant access for photography within the limits of the airport (which extends beyond the historic resource boundary). No other points could be taken in the general vicinity due to lack of public roads surrounding the airport.

Given the absence of accessible viewpoints from the airport historic district, ERM created a simulated Google Earth 3D rendering of existing and future conditions (Attachment 5, Figure 26). As shown in the simulation, which depicts leaf on conditions, the transmission infrastructure installed along the route would not be visible from the runway. The tops of the structures could be visible during leaf-off seasons, however, as well as from the air as aircraft take off and land. These would only be visible from the westernmost runway and would not be visible from the district's terminal. In addition, the recorded boundary for the resource encompasses 1,300 acres, only a small portion (4.4 acres) of which is within the half-mile study tier for the route. Mature vegetation and distance between the district and transmission infrastructure installed along the route would likely block the view from vantage points throughout the majority of the district (east of the KOP). Thus, ERM recommends that Route 3 would have a **Minimal Impact** on 053-0008, the Dulles International Airport Historic District.

3.5.3.2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT

The Washington and Old Dominion Railroad Historic District traverses Route 3 twice in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 27). The surrounding area is urban with multiple commercial buildings. Dominion's existing lines share the district's right-of-way with multiple existing substations in the surrounding area. The route connects to Dominion's SCC-approved future Golden Substation, which has not yet been constructed and is associated with a different project.

Two KOPs were chosen for visual simulations along the district's right-of-way, KOPs 001 and 002. KOP 001's simulation shows that Route 3 would be visible from the intersection of the route and the resource (Attachment 5, Figure 28). This location would have the most prominent view of transmission infrastructure installed along the route, though multiple existing Dominion transmission lines intersect the district and share its right-of-way. It is important to note that the planned Golden Substation is visible in the simulation but is not associated with this Project. KOP 002 was taken farther from the intersection of the route and the resource, approximately 0.13 mile away (Attachment 5, Figure 5). Here, the simulation shows that transmission infrastructure installed along the route would not be as prominent in the landscape as the existing Dominion transmission lines. The new transmission line would be visible when it is in close proximity to the resource, but this viewshed change occurs within a small fraction of the overall resource, which already is collocated and intersected multiple times with existing Dominion transmission lines.

Thus, ERM recommends that Route 3 would have a **Minimal Impact** on 053-0276, the Washington and Old Dominion Railroad Historic District.

3.5.3.3 053-0968, GUILFORD BAPTIST CHURCH

Guilford Baptist Church is approximately 0.53 mile southeast of Route 3 in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 30). The surrounding area is urban, with commercial structures and modern townhouses located between the resource and the route.

One simulation was prepared for the resource, from KOP 005 along West Church Road/Route 625 (Attachment 5, Figure 31). As shown in the simulation, three transmission structures installed along the route would be faintly visible in the distance when looking to the west, but existing Dominion transmission lines would be more prominent in the landscape. The transmission line would not be visible to the northwest due to intervening infrastructure. Because the transmission line would introduce an additional modern element to the landscape, however, it constitutes a change in viewshed. Thus, ERM recommends that Route 3 would have a **Minimal Impact** on 053-0968, Guilford Baptist Church.

3.5.3.4 053-6406, TIPPET'S HILL CEMETERY

Tippet's Hill Cemetery is approximately 0.45 mile southeast of Route 3 in an area where the route uses a greenfield alignment (Attachment 5, Figure 32). The route also intersects Dominion's existing Lines #2165/#2170 in this area. The surrounding area is urban, with large data centers directly between the route and resource.

One simulation was prepared for the resource, from KOP 010 on Vantage Data Plaza (Attachment 5, Figure 33). As shown in the simulation, most of the transmission line infrastructure installed along the route would not be visible because of the data centers directly adjacent to the resource. The tips of three structures near the intersection of Waxpool Road and Pacific Boulevard, however, would be visible when looking to the northwest from the resource's northwestern corner. It is important to note that Dominion's existing Lines #2165/#2170 are approximately 160 feet south of the resource and visible when looking from the resource's southern and eastern boundary. This, in addition to the data centers, has added modern elements to the landscape. While the view of the transmission line would be minor, it still constitutes a change, as it introduces an additional modern element into the landscape. Thus, ERM recommends that Route 3 would have a **Minimal Impact** on 053-6406, Tippet's Hill Cemetery.

3.5.3.5 053-6416, OX ROAD TRACE

Ox Road Trace is approximately 166 feet northwest of Route 3 in an area where the route is collocated with Dominion's existing Lines #2149/#2203/#2214 (Attachment 5, Figure 34). The surrounding area mostly consist of data centers and woodland. Broad Run flows directly south of the resource.

Two simulations were prepared along the resource at KOP 014 (Attachment 5, Figures 35 and 36). As shown from the simulations, a transmission line along Route 3 would be visible to the east and south from inside the road trace because of the close proximity of the resource and route.

Dominion's transmission existing lines, as well as the construction of the data centers, however, have compromised the resource's historic viewshed. In addition, Dominion's existing Lines #2149/#2203 currently intersects the resource, and other than the southern and eastern viewshed, all other viewsheds from the resource would remain unchanged. While the impact would be minor, a transmission line along the route would be visible from multiple vantage points within the resource adding another modern element to the landscape. Thus, ERM recommends that Route 3 would have a **Minimal Impact** on 053-6416, Ox Road Trace.

3.5.4 HISTORIC FINDINGS FOR ROUTE 4

3.5.4.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District is approximately 0.42 mile south of Route 4 in an area where the route uses a greenfield alignment to the point it connects to the planned Mars Substation, part of the SCC-approved Mars-Wishing Star Project (Attachment 5, Figure 37). The resource's western runway is closest to the route, with grass directly surrounding the runway bordered by trees. No in-person KOP was taken from this resource as Dulles Airport would not grant access for photography within the limits of the airport (which extends beyond the historic resource boundary). No other points could be taken in the general vicinity due to lack of public roads surrounding the airport.

Given the absence of accessible viewpoints from the airport historic district, ERM created a simulated Google Earth 3D rendering of existing and future conditions (Attachment 5, Figure 38). As shown in the simulation, which depicts leaf on conditions, the transmission infrastructure installed along the route would not be visible from the runway. The tops of the structures could be visible during leaf-off seasons, however, as well as from the air as aircraft take off and land. These would only be visible from the westernmost runway and would not be visible from the district's terminal. In addition, the recorded boundary for the resource encompasses 1,300 acres, only a small portion (4.4 acres) of which is within the half-mile study tier for the route. Mature vegetation and distance between the district and transmission infrastructure installed along the route would likely block the view from vantage points throughout the majority of the district (east of the KOP). Thus, ERM recommends that Route 4 would have a **Minimal Impact** on 053-0008, the Dulles International Airport Historic District.

3.5.4.2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT

The Washington and Old Dominion Railroad Historic District traverses Route 4 twice in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 39). The surrounding area is urban with multiple commercial buildings. Dominion's existing lines share the district's right-of-way with multiple existing substations in the surrounding area. The route connects to Dominion's SCC-approved future Golden Substation, which has not yet been constructed and is associated with a different project.

Two KOPs were chosen for visual simulations along the district's right-of-way, KOPs 001 and 002. KOP 001's simulation shows that Route 4 would be visible from the intersection of the route and the resource (Attachment 5, Figure 40). This location would have the most prominent view of transmission infrastructure installed along the route, though multiple existing Dominion

transmission lines intersect the district and share its right-of-way. It is important to note that the planned Golden Substation is visible in the simulation but is not associated with this Project. KOP 002 was taken farther from the intersection of the route and the resource, approximately 0.13 mile away (Attachment 5, Figure 41). Here, the simulation shows that transmission infrastructure installed along the route would not be as prominent in the landscape as the existing Dominion transmission lines. The new transmission line would be visible when it is in close proximity to the resource, but this viewshed change occurs within a small fraction of the overall resource, which already is collocated and intersected multiple times with existing Dominion transmission lines. Thus, ERM recommends that Route 4 would have a **Minimal Impact** on 053-0276, the Washington and Old Dominion Railroad Historic District.

3.5.4.3 053-0968, GUILFORD BAPTIST CHURCH

Guilford Baptist Church is approximately 0.53 mile southeast of Route 4 in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 42). The surrounding area is urban, with commercial structures and modern townhouses located between the resource and the route.

One simulation was prepared for the resource, from KOP 005 along West Church Road/Route 625 (Attachment 5, Figure 43). As shown in the simulation, three transmission structures installed along the route would be faintly visible in the distance when looking to the west, but existing Dominion transmission lines would be more prominent in the landscape. The transmission line would not be visible to the northwest due to intervening infrastructure. Because the transmission line would introduce an additional modern element to the landscape, however, it constitutes a change in viewshed. Thus, ERM recommends that Route 4 would have a **Minimal Impact** on 053-0968, Guilford Baptist Church.

3.5.4.4 053-6406, TIPPET'S HILL CEMETERY

Tippet's Hill Cemetery is approximately 0.45 mile southeast of Route 4 in an area where the route uses a greenfield alignment (Attachment 5, Figure 44). The route also intersects Dominion's existing Lines #2165/#2170 in this area. The surrounding area is urban, with large data centers directly between the route and resource.

One simulation was prepared for the resource, from KOP 010 on Vantage Data Plaza (Attachment 5, Figure 45). As shown in the simulation, most of the transmission line infrastructure installed along the route would not be visible because of the data centers directly adjacent to the resource. The tips of three structures near the intersection of Waxpool Road and Pacific Boulevard, however, would be visible when looking to the northwest from the resource's northwestern corner. It is important to note that Dominion's existing Lines #2165/#2170 are approximately 160 feet south of the resource and visible when looking from the resource's southern and eastern boundary. This, in addition to the data centers, has added modern elements to the landscape. While the view of the transmission line would be minor, it still constitutes a change, as it introduces an additional modern element into the landscape. Thus, ERM recommends that Route 4 would have a **Minimal Impact** on 053-6406, Tippet's Hill Cemetery.

3.5.4.5 053-6416, OX ROAD TRACE

Ox Road Trace is approximately 166 feet northwest of Route 4 in an area where the route is collocated with Dominion's existing Lines #2149/#2203/#2214 (Attachment 5, Figure 46). The surrounding area mostly consist of data centers and woodland. Broad Run flows directly south of the resource.

Two simulations were prepared along the resource at KOP 014 (Attachment 5, Figures 47 and 48). As shown from the simulations, a transmission line along Route 4 would be visible to the east and south from inside the road trace because of the close proximity of the resource and route. Dominion's transmission existing lines, as well as the construction of the data centers, however, have compromised the resource's historic viewshed. In addition, Dominion's existing Lines #2149/#2203 currently intersects the resource, and other than the southern and eastern viewshed, all other viewsheds from the resource would remain unchanged. While the impact would be minor, a transmission line along the route would be visible from multiple vantage points within the resource adding another modern element to the landscape. Thus, ERM recommends that Route 4 would have a **Minimal Impact** on 053-6416, Ox Road Trace.

3.5.5 HISTORIC FINDINGS FOR ROUTE 5

3.5.5.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District is approximately 0.42 mile south of Route 5 in an area where the route uses a greenfield alignment to the point it connects to the planned Mars Substation, part of the SCC-approved Mars-Wishing Star Project (Attachment 5, Figure 49). The resource's western runway is closest to the route, with grass directly surrounding the runway bordered by trees. No in-person KOP was taken from this resource as Dulles Airport would not grant access for photography within the limits of the airport (which extends beyond the historic resource boundary). No other points could be taken in the general vicinity due to lack of public roads surrounding the airport.

Given the absence of accessible viewpoints from the airport historic district, ERM created a simulated Google Earth 3D rendering of existing and future conditions (Attachment 5, Figure 50). As shown in the simulation, which depicts leaf on conditions, the transmission infrastructure installed along the route would not be visible from the runway. The tops of the structures could be visible during leaf-off seasons, however, as well as from the air as aircraft take off and land. These would only be visible from the westernmost runway and would not be visible from the district's terminal. In addition, the recorded boundary for the resource encompasses 1,300 acres, only a small portion (4.4 acres) of which is within the half-mile study tier for the route. Mature vegetation and distance between the district and transmission infrastructure installed along the route would likely block the view from vantage points throughout the majority of the district (east of the KOP). Thus, ERM recommends that Route 5 would have a **Minimal Impact** on the 053-0008, the Dulles International Airport Historic District.

3.5.5.2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT

The Washington and Old Dominion Railroad Historic District traverses Route 5 twice in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure

51). The surrounding area is urban with multiple commercial buildings. Dominion's existing lines share the district's right-of-way with multiple existing substations in the surrounding area. The route connects to Dominion's SCC-approved future Golden Substation, which has not yet been constructed and is associated with a different project.

Two KOPs were chosen for visual simulations along the district's right-of-way, KOPs 001 and 002. KOP 001's simulation shows that Route 5 would be visible from the intersection of the route and the resource (Attachment 5, Figure 52). This location would have the most prominent view of transmission infrastructure installed along the route, though multiple existing Dominion transmission lines intersect the district and share its right-of-way. It is important to note that the planned Golden Substation is visible in the simulation but is not associated with this Project. KOP 002 was taken farther from the intersection of the route and the resource, approximately 0.13 mile away (Attachment 5, Figure 53). Here, the simulation shows that transmission infrastructure installed along the route would not be as prominent in the landscape as the existing Dominion transmission lines. The new transmission line would be visible when it is in close proximity to the resource, but this viewshed change occurs within a small fraction of the overall resource, which already is collocated and intersected multiple times with existing Dominion transmission lines. Thus, ERM recommends that Route 5 would have a **Minimal Impact** on 053-0276, the Washington and Old Dominion Railroad Historic District.

3.5.5.3 053-0968, GUILFORD BAPTIST CHURCH

Guilford Baptist Church is approximately 0.53 mile southeast of Route 5 in an area where the route is collocated with Dominion's existing Lines #2150/#2081 (Attachment 5, Figure 54). The surrounding area is urban, with commercial structures and modern townhouses located between the resource and the route.

One simulation was prepared for the resource, from KOP 005 along West Church Road/Route 625 (Attachment 5, Figure 55). As shown in the simulation, three transmission structures installed along the route would be faintly visible in the distance when looking to the west, but existing Dominion transmission lines would be more prominent in the landscape. The transmission line would not be visible to the northwest due to intervening infrastructure. Because the transmission line would introduce an additional modern element to the landscape, however, it constitutes a change in viewshed. Thus, ERM recommends that Route 5 would have a **Minimal Impact** on 053-0968, Guilford Baptist Church.

3.5.5.4 053-6406, TIPPET'S HILL CEMETERY

Tippet's Hill Cemetery is approximately 0.45 mile southeast of Route 5 in an area where the route uses a greenfield alignment (Attachment 5, Figure 56). The route also intersects Dominion's existing Lines #2165/#2170 in this area. The surrounding area is urban, with large data centers directly between the route and resource.

One simulation was prepared for the resource, from KOP 010 on Vantage Data Plaza (Attachment 5, Figure 57). As shown in the simulation, most of the transmission line infrastructure installed along the route would not be visible because of the data centers directly adjacent to the resource. The tips of three structures near the intersection of Waxpool Road and Pacific Boulevard, however,

would be visible when looking to the northwest from the resource's northwestern corner. It is important to note that Dominion's existing Lines #2165/#2170 are approximately 160 feet south of the resource and visible when looking from the resource's southern and eastern boundary. This, in addition to the data centers, has added modern elements to the landscape. While the view of the transmission line would be minor, it still constitutes a change, as it introduces an additional modern element into the landscape. Thus, ERM recommends that Route 5 would have a **Minimal Impact** on 053-6406, Tippet's Hill Cemetery.

3.5.5.5 053-6416, OX ROAD TRACE

Ox Road Trace is approximately 166 feet northwest of Route 5 in an area where the route is collocated with Dominion's existing Lines #2149/#2203/#2214 (Attachment 5, Figure 58). The surrounding area mostly consist of data centers and woodland. Broad Run flows directly south of the resource.

Two simulations were prepared along the resource at KOP 014 (Attachment 5, Figures 59 and 60). As shown from the simulations, a transmission line along Route 5 would be visible to the east and south from inside the road trace because of the close proximity of the resource and route. Dominion's transmission existing lines, as well as the construction of the data centers, however, have compromised the resource's historic viewshed. In addition, Dominion's existing Lines #2149/#2203 currently intersects the resource, and other than the southern and eastern viewshed, all other viewsheds from the resource would remain unchanged. While the impact would be minor, a transmission line along the route would be visible from multiple vantage points within the resource adding another modern element to the landscape. Thus, ERM recommends that Route 5 would have a **Minimal Impact** on 053-6416, Ox Road Trace.

3.6 HISTORIC FINDINGS FOR LOCKRIDGE LOOP

3.6.1 053-6416, OX ROAD TRACE

Ox Road Trace is approximately 0.59 mile north of the proposed Lockridge Loop in an area where the route uses a greenfield alignment (Attachment 5, Figure 61). The surrounding area is wooded, with pockets of commercial and data center developments. The Lockridge Loop connects to the Golden-Mars Lines in this area.

One simulation was prepared for the resource at KOP 014 (Attachment 5, Figure 62). As shown in the simulation, the Lockridge Loop would not be visible from the resource due to distance and intervening vegetation. Thus, ERM recommends that the Lockridge Loop would have **No Impact** on 053-6416, Ox Road Trace.

3.7 HISTORIC FINDINGS FOR SOJOURNER LOOP

3.7.1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT

The Dulles International Airport Historic District is approximately 0.41 mile south of Sojourner Loop in an area where the route uses a greenfield alignment to the point where it connects to the planned Mars Substation, part of the approved Mars-Wishing Star Project (Attachment 5, Figure

63). The resource's western runway is closest to the route, with grass directly surrounding the runway bordered by trees. The Sojourner Loop connects to the Golden-Mars Lines in this area.

No in-person KOP was taken from this resource as Dulles Airport would not grant access for photography within the limits of the airport (which extends beyond the historic resource boundary). No other points could be taken in the general vicinity due to lack of public roads surrounding the airport. Given the absence of accessible viewpoints from the resource, ERM created a simulated Google Earth 3D rendering of existing and future conditions (Attachment 5, Figure 64). As shown in the simulation, the Sojourner Loop would not be visible from the resource boundary due to intervening vegetation. Thus, ERM recommends that the Sojourner Loop would have **No Impact** on 053-0008, the Dulles International Airport Historic District.

3.8 ARCHAEOLOGY FINDINGS

There are 17 previously recorded archaeological sites adjacent to or within the right-of-way for the route alternatives (Table 12). Five of the previously recorded sites have been evaluated as not eligible for the NRHP and the remaining 12 sites are currently unevaluated for NRHP eligibility.

TABLE 12 ARCHAEOLOGICAL RESOURCES WITHIN THE RIGHT-OF-WAY FOR THE ROUTE ALTERNATIVES

Considered Resource	Alternative Routes						
	Golden-Mars 500-230 kV Lines					Lockridge 230 kV Loop	Sojourner 230 kV Loop
	Route 1	Route 2	Route 3	Route 4	Route 5	Lockridge Loop	Sojourner Loop
44LD0111	X	X	X	X	X		
44LD0170	X	X	X	X	X		
44LD0330					X		
44LD0332	X	X					
44LD0333	X	X					
44LD0334		X					
44LD0335		X	X				
44LD0472	X	X	X	X	X		
44LD0945	X	X	X	X	X		
44LD1244	X				X		
44LD1311	X				X		
44LD1737							X
44LD1742	X	X	X	X	X		
44LD1909	X	X	X	X	X		
44LD1916						X	
44LD1922	X				X		
44LD1978	X	X	X	X	X		

"X" indicates that the resource is within the right-of-way or directly adjacent to the route.

The sites that would be impacted by each route are described below. The descriptions include information on the eligibility of each site for listing in the NRHP as well as an assessment of each site's condition based on desktop review. A confident evaluation of the nature of archaeological deposits at each site and impacts from prior land use activities would require a field survey to verify the desktop analysis.

3.8.1 GOLDEN-MARS LINES

3.8.1.1 ROUTE 1

Twelve previously recorded archaeological sites were identified within or adjacent to Route 1: 44LD0111, 44LD0170, 44LD0332, 44LD0333, 44LD0472, 44LD0945, 44LD1244, 44LD1311, 44LD1742, 44LD1909, 44LD1922, and 44LD1978.

44LD0111 is a prehistoric (Early Archaic) temporary camp previously assessed as not eligible for listing in the NRHP due to impacts from land clearing and commercial development. The Route 1 right-of-way partially intersects approximately 300 feet within the eastern site boundary, with most of 44LD0111 to the north and west within developed lands in the Company's Buttermilk Substation, the right-of-way of existing Lines #2152/#2170, and a Digital Loudoun data center. The site was first investigated in 1979, but efforts in 2015 to find the site again were unsuccessful. The authors of a subsequent 2016 study speculated that either the site location was incorrectly plotted in 1979, or the site had been destroyed (Smith and Maas 2016). ERM's review of aerial photography indicates the site was disturbed (and likely destroyed) by construction of the existing transmission line in 2006, the excavation of borrow pits in 2008, and construction of the data center and substation between 2016 and 2019.

Site 44LD0170 is a prehistoric temporary camp site with an unspecified temporal affiliation. Approximately 300 feet of the Route 1 crosses the site's northern boundary. Initially recorded in 1981, the site was the subject of additional Phase I investigations in 2012, 2013, and 2014. After the 2012 survey, VDHR concluded that the site is not eligible for listing in the NRHP due to low artifact density. The final survey in 2014 failed to find the site again and current aerial imagery indicates the area has since been developed, indicating that 44LD0170 has been destroyed (Monroe 2014). ERM's review of aerial photography indicates that the site was cultivated or fallow through 2016. An electric distribution line was built across the site in that year, and most of the site was cleared and graveled for a contractor yard or parking area in 2019. The site is nearly completely covered by the parking area and adjacent road.

Site 44LD0332 is an unknown prehistoric temporary camp site disturbed by previous land clearing and the installation of a paved walking trail. Approximately 200 feet of the Route 1 right-of-way intersects the northwestern boundary of the site, which has not been assessed for NRHP eligibility. The original site form for 44LD0332 records a light lithic scatter lacking in diagnostic artifacts or intact cultural features (Rust and Wilson 1981a). ERM's review of aerial photography indicates the site area was cultivated through the mid-1990s, then fallow through the mid-2000s, then disturbed by construction of Loudoun County Parkway and an adjacent walking path from 2006 to 2007. Due to the previous ground disturbance, it is unlikely that any intact cultural remains are present at the site.

Site 44LD0333 is an unknown prehistoric temporary camp site that has been disturbed by previous land clearing and the installation of a paved walking trail. The Route 1 right-of-way crosses more than 100 feet within the northern half of the site, which has not been assessed for NRHP eligibility. The original archaeology site form for 44LD0333 recorded a light lithic scatter lacking in diagnostic artifacts or intact cultural features (Rust and Wilson 1981b). Review of aerial photography by ERM indicates the site area was cultivated through the mid-1990s, then fallow through the mid-2000s, then disturbed by construction of a Loudoun County Parkway and an adjacent walking path from 2006 to 2007. Due to previous ground disturbance, it is unlikely that any intact cultural remains are present at the site.

44LD0472 is a prehistoric (Late Archaic) lithic scatter previously disturbed by road grading, whose eligibility for listing in the NRHP is undetermined (Haynes 1990). The site's western boundary is directly adjacent to the Route 1 right-of-way. Based on ERM's review of aerial photography, 44LD0472 is within a small area which has been forested since at least 1949. Although adjacent areas have been cultivated and/or disturbed by road construction and/or utility installations, ERM found no direct evidence of previous disturbance at the site on examined aerial photography. The site condition is therefore unknown.

44LD0945 is a historic (twentieth century) multiple-dwelling site previously disturbed by surrounding commercial development and roadside grading, although the eligibility of the site for listing in the NRHP is undetermined. Most of the site is within the Route 1 right-of-way. A previous Phase I survey recorded a historic artifact scatter they associated with two structures east of the site dating from the 1960s that were demolished by 1994 (Goode 2002). Review of aerial photography by ERM indicates that the area within the site boundary was cultivated or fallow farmland from at least 1949 to 2004. In 2002, an electric distribution line was built across the southern edge of the site and in 2006 the site was disturbed by grading and commercial development. The site today is partially covered by a parking lot and partially covered by a paved walking trail and Old Ox Road. There is little potential of intact deposits at the site from the previous impacts.

44LD1244 is a historic (eighteenth century) farmstead site whose eligibility for listing in the NRHP is categorized in VCRIS as unevaluated; however, the history of cultural resource investigations indicates the site was previously determined or treated as eligible. More than 100 feet of Route 1 crosses the site's northern boundary. A 2019 Phase III mitigation investigation found many diagnostic artifacts and intact cultural features associated with the farmstead within the central portion of the site area (Smith 2020).⁵ ERM's review of aerial photography indicates that the Route 1 right-of-way is due north of the part of the site covered by the Phase III investigation, in a partially cleared forested area next to the Dulles Greenway. While this area may have been impacted by previous road and utility construction, there is no conclusive evidence of previous disturbance on examined photography. Therefore, intact deposits and features could exist in the portion of the site crossed by the route.

⁵ Completion of a Phase III-level investigation at the site implies it was considered or treated as eligible for listing in the NRHP.

44LD1311 is a historic (nineteenth and twentieth century) dwelling site whose eligibility for listing in the NRHP has not been assessed. The Route 1 right-of-way crosses less than 100 feet of the southern boundary of the site. A 2025 Phase I recorded 44LD1311 as a historic domestic artifact scatter, partially destroyed by previous ground disturbance activities (Thunderbird Archeology 2005). ERM's review of USGS topographic quadrangles found two structures at the site on a map dating from 1951 and one structure on a map dating from 1966. Aerial photography dating from 1949 to 1994 shows multiple farm structures at the site, but all buildings are gone on photography from 2002. The eastern approximately one-third of the site was paved over by a road in 2020.

44LD1742 is a historic (early twentieth century) schoolhouse site (Carter Schoolhouse) previously evaluated as not eligible for listing in the NRHP. The site is entirely within the Route 1 right-of-way in a forested area east of Carters Schoolhouse Road. Previous Phase I and Phase II investigations at 44LD1742 in 2016 recorded the ruined foundation of a one-room schoolhouse with modern dumping obscuring much of the archaeological remains (Ward et al. 2016). The site is located on in a forested area. ERM's review of USGS topographic quadrangles found the school depicted on maps from 1951 and 1966 but not on maps from 1994. The school is visible on aerial photography dating from 1949 to 1980.

44LD1909 is a historic (twentieth century) single dwelling site previously determined not eligible for listing in the NRHP. Less than 50 feet of Route 1 crosses the southernmost portion of the site. A 2020 Phase I survey recorded a light historic artifact scatter lacking intact cultural deposits or features and with little research value (Smith and Gryctko 2021). ERM's review of historic USGS topographic quadrangles indicates that the dwelling once present at the site was built in the first half of the twentieth century sometime after 1908 and prior to 1952. The dwelling and an outbuilding are visible on aerial photography of the site dating from the early 1960s to 2015. Both buildings appear to have been demolished between 2015 and 2016. The site is area is currently forested, with a concrete pad and debris visible through the foliage on 2024 aerial photography.

44LD1922 is a late nineteenth to early twentieth-century single dwelling site, characterized by structural ruins and a scatter of domestic and architectural artifacts, whose NRHP eligibility has not been assessed, although it was recommended not eligible by a previous investigator. The site is directly adjacent to the Route 1 right-of-way in a forested area bordered to the east and north by roads and to the west by a residential development. The investigators for a 2021 Phase I survey concluded that between 25 and 49 percent of the site was destroyed (Nubgaard 2021). ERM's review of USGS topographic quadrangles documented one or more structures at the site on maps dating from 1915 to 1994. Aerial photography dating from 1949 to 1991 similarly show a farmhouse and outbuildings at the site. The buildings were removed from the site by 2022. Other than removal of the buildings, there is no indication of previous disturbance at the site in examined images.

44LD1978 is a historic (twentieth century) artifact scatter disturbed by previous land clearing activities and construction of an access road, which bisects the site. According to the VCRIS, the site's eligibility for listing in the NRHP is undetermined, although a 2022 Phase I survey interpreted the site as a secondary deposit of domestic refuse not eligible for listing in the NRHP (Jockel 2022). Route 1 intersects the northwest corner of the site, which is forested other than the

access road. ERM's review of aerial photography suggests that the access road occupies what was once a small, tree-lined drainage passing through a cultivated field in production from at least 1949 to the early 1990s. At that time, the field began reverting to forest, with the access road cleared in 2006.

3.8.1.2 ROUTE 2

ERM identified 11 previously recorded archaeological resources mapped within the Golden-Mars Route 2 right-of-way. Of these, seven sites—44LD0111, 44LD0170, 44LD0333, 44LD0472, 44LD0945, 44LD1742, 44LD1909, and 44LD1978—are along segments of Route 2 that share a common alignment with Route 1. Impacts on these sites would be the same as described above for Route 1. The Route 2 right-of-way intersects a ninth site, 44LD0332, also crossed by Route 1 but along a different alignment. As noted above, ERM concluded based on the results of a previous survey and review of site conditions via aerial photography, that due to previous ground disturbance, intact cultural remains are unlikely to be present at the site.

44LD0334 is an unknown prehistoric temporary camp site that has been previously disturbed by land clearing and is currently unevaluated for NRHP eligibility. More than 100 feet of Route 2 bisects the northeastern portion of the site. A 2003 survey recorded a light surface lithic scatter described as largely destroyed (Richards 2003). ERM's review of aerial photography indicates the site area was cultivated from at least 1949 to the mid-1990s and fallow from then until through 2008. The Loudoun Valley Estates II residential development was built between 2010 and 2012 on the parcel containing the site, with the resource in a cleared area on the periphery of the development maintained as mowed grassland. Based on the results of the previous study and observed impacts, it is unlikely that intact cultural deposits are present at the site.

44LD0335 is a prehistoric temporary camp whose eligibility for listing in the NRHP is undetermined. Approximately 200 feet of Route 2 bisects the site, which occupies a forested area along Broad Run. When first recorded in 1981, the site consisted of a surface scatter of non-diagnostic lithic artifacts. A 2004 Phase I survey found one lithic artifact on the site surface. The 2004 investigators additionally noted that construction of the Broad Run Interceptor through the area appeared to have disturbed the site (Bodor and Hoffman 2004). ERM's review of aerial photography indicates that the site area was cultivated or fallow from at least 1949 through the 1980s, then reforested through the 1990s, remaining as such today. Based on the previous surveys, it is unlikely that intact cultural deposits are present at the site.

3.8.1.3 ROUTE 3

ERM identified eight previously recorded archaeological resources mapped within the Golden-Mars Route 3 right-of-way. Of these, seven sites—44LD0111, 44LD0170, 44LD0472, 44LD0945, 44LD1742, 44LD1909, and 44LD1978—are along segments of Route 3 that share common alignments with Routes 1 and/or 2. Impacts on these sites would be the same as described above Routes 1 and 2. The Route 3 right-of-way also intersects 44LD0335, but along a different alignment than Route 2. As noted above, ERM concluded based on the results of a previous survey and review of site conditions via aerial photography, it is unlikely that intact cultural deposits are present at the site.

3.8.1.4 ROUTE 4

ERM identified seven previously recorded archaeological resources mapped within the Golden-Mars Route 4 right-of-way: 44LD0111, 44LD0170, 44LD0472, 44LD0945, 44LD1742, 44LD1909, and 44LD1978. All seven sites are along segments of Route 4 that share common alignments with Routes 1, 2, and/or 3. Impacts would be the same as described above for the other routes.

3.8.1.5 ROUTE 5

ERM identified 11 previously recorded archaeological resources mapped within the Golden-Mars Route 5 right-of-way. Of these, ten sites—44LD0111, 44LD0170, 44LD0472, 44LD0945, 44LD1244, 44LD1311, 44LD1742, 44LD1909, 44LD1922, and 44LD1978—are along segments of Route 5 that share common alignments with Routes 1, 2, 3, and/or 4. Impacts would be the same as described above for the other routes.

Site 44LD0330 is a prehistoric temporary campsite with an unspecified temporal affiliation whose eligibility for listing in the NRHP has not been assessed. Approximately 205 feet of Route 5 bisects the center of the site, which was recorded in 1981 and has not been subject to further survey (Rust 1981). Based on current aerial imagery, the site is beneath and was likely destroyed by construction of a road.

3.8.2 LOCKRIDGE LOOP

ERM identified one previously recorded archeological resource within the Lockridge Loop.

Site 44LD1916 is a prehistoric lithic scatter with an unspecified temporal affiliation that has been determined not eligible for listing in the NRHP. Approximately 300 feet of the route crosses the site's southern boundary. A 2018 Phase I survey recorded the site as a light lithic scatter lacking in diagnostic artifacts or intact cultural features (Cascardi et al. 2020). ERM's review of aerial photography indicates that the site was pasture or agricultural land from at least 1949 through the 1970s. Since then, the site has reforested and remains woodland.

3.8.3 SOJOURNER LOOP

One previously recorded archaeological site was identified within the Sojourner Loop: 44LD1737.

44LD1737 is a historic (twentieth century) farmstead site that has been evaluated as ineligible for listing in the NRHP. Approximately 200 feet of the route intersects the southern portion of the site. The VDHR evaluation notes indicate that the site consisted of a historic farmhouse and barn, with evidence that the house was burned and the remains removed from the site. No additional cultural features were identified. The VDHR investigators concluded the site lacked the subsurface integrity to be considered significant (Wanner 2016). The Company's Sojourner Substation was built over the site.

4. CONCLUSION AND RECOMMENDATIONS

The pre-application analysis gathered information on archaeological and historic architectural resources that qualify for consideration according to the VDHR Guidelines for transmission line projects.

Seventeen known archaeological sites are adjacent to or located in the right-of-way of the transmission line routes reviewed in this study. An assessment of the condition and research potential of those sites is contingent upon archaeological field investigations, which will be conducted at relevant sites once a preferred route is selected by the SCC. Potential impacts to sites along the preferred route will be assessed as part of the field survey.

Five aboveground historic resources fall within the VDHR study tiers for the routes under consideration. A comparison of the number of resources impacted and the degree of impact of each route is presented in Table 13. The specific resources affected by each route are covered in the subsections that follow.

TABLE 13 COMPARISON OF PROJECT IMPACTS ON HISTORIC RESOURCES IN THE STUDY AREAS OF THE ALTERNATIVE ROUTES

Route Alternative	Number of Considered Resources in Each Impact Category				
	None	Minimal	Moderate	Severe	Totals
Golden-Mars Route 1		5			5
Golden-Mars Route 2		5			5
Golden-Mars Route 3		5			5
Golden-Mars Route 4		5			5
Golden-Mars Route 5		5			5
Lockridge Loop	1				1
Sojourner Loop	1				1

Final assessments of Project impacts will be dependent on the completion of identification-phase archaeological and historic structure surveys along the Golden-Mars route selected by the SCC followed by review of survey results by VDHR and other consulting parties. For any resources where the agencies concur in a finding of moderate or severe impact, the Company will propose treatments to avoid, minimize, or mitigate those impacts. Treatment options for archaeological sites could include selective structure placement to avoid direct impacts on sites, minor route adjustments to avoid crossing sites, or archaeological data recovery. Treatment options for aboveground historic resources could include detailed site documentation, historic research, and historic preservation studies; preparation of digital media or museum-type exhibits on sites for public interpretation; installation of historic markers or signs; installation of vegetative screening; or contributions to historical preservation organizations or specific preservation projects. Additional mitigations could be identified through consultation with VDHR and other consulting parties.

4.1 GOLDEN-MARS LINES

4.1.1 ROUTE 1

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 1 (Table 14). The route would have a minimal impact on all five resources (053-0008, 053-0276, 053-0968, 053-6406, and 053-6416).

TABLE 14 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 1

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
0.5 to 1.0	National Register Properties (listed)	-	-	-
	Locally Significant (National Register—Unevaluated)	053-0968	Guilford Baptist Church	Minimal
0.0 to 0.5	National Register—Eligible	053-0008	Dulles International Airport Historic District	Minimal
	Locally Significant (National Register—Unevaluated)	053-6406	Tippet's Hill Cemetery	Minimal
	Locally Significant (National Register—Potentially Eligible)	053-6416	Ox Road Trace	Minimal
0.0 (within the ROW)	National Register—Eligible	053-0276	Washington & Old Dominion Railroad Historic District	Minimal

Source: VDHR 2024

ROW = right-of-way

4.1.2 ROUTE 2

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 2 (Table 15). The route would have a minimal impact on all five resources (053-0008, 053-0276, 053-0968, 053-6406, and 053-6416).

TABLE 15 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 2

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
0.5 to 1.0	National Register Properties (listed)	-	-	-
	Locally Significant (National Register—Unevaluated)	053-0968	Guilford Baptist Church	Minimal
0.0 to 0.5	National Register—Eligible	053-0008	Dulles International Airport Historic District	Minimal
	Locally Significant (National Register—Unevaluated)	053-6406	Tippet’s Hill Cemetery	Minimal
	Locally Significant (National Register—Potentially Eligible)	053-6416	Ox Road Trace	Minimal
0.0 (within the ROW)	National Register—Eligible	053-0276	Washington & Old Dominion Railroad Historic District	Minimal

Source: VDHR 2024

ROW = right-of-way

4.1.3 ROUTE 3

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 3 (Table 16). The route would have a minimal impact on all five resources (053-0008, 053-0276, 053-0968, 053-6406, and 053-6416).

TABLE 16 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 3

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
0.5 to 1.0	National Register Properties (listed)	-	-	-
	Locally Significant (National Register—Unevaluated)	053-0968	Guilford Baptist Church	Minimal
0.0 to 0.5	National Register—Eligible	053-0008	Dulles International Airport Historic District	Minimal
	Locally Significant (National Register—Unevaluated)	053-6406	Tippet’s Hill Cemetery	Minimal
	Locally Significant (National Register—Potentially Eligible)	053-6416	Ox Road Trace	Minimal
0.0 (within the ROW)	National Register—Eligible	053-0276	Washington & Old Dominion Railroad Historic District	Minimal

Source: VDHR 2024

ROW = right-of-way

4.1.4 ROUTE 4

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 4 (Table 17). The route would have a minimal impact on all five resources (053-0008, 053-0276, 053-0968, 053-6406, and 053-6416).

TABLE 17 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 4

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
0.5 to 1.0	National Register Properties (listed)	-	-	-
	Locally Significant (National Register—Unevaluated)	053-0968	Guilford Baptist Church	Minimal
0.0 to 0.5	National Register—Eligible	053-0008	Dulles International Airport Historic District	Minimal
	Locally Significant (National Register—Unevaluated)	053-6406	Tippet’s Hill Cemetery	Minimal
	Locally Significant (National Register—Potentially Eligible)	053-6416	Ox Road Trace	Minimal
0.0 (within the ROW)	National Register—Eligible	053-0276	Washington & Old Dominion Railroad Historic District	Minimal

Source: VDHR 2024

ROW = right-of-way

4.1.5 ROUTE 5

Five previously recorded historic resources meet the criteria specified in the Guidelines within the VDHR study tiers for Route 5 (Table 18). The route would have a minimal impact on all five resources (053-0008, 053-0276, 053-0968, 053-6406, and 053-6416).

TABLE 18 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR ROUTE 5

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
0.5 to 1.0	National Register Properties (listed)	-	-	-
	Locally Significant (National Register—Unevaluated)	053-0968	Guilford Baptist Church	Minimal
0.0 to 0.5	National Register—Eligible	053-0008	Dulles International Airport Historic District	Minimal
	Locally Significant (National Register—Unevaluated)	053-6406	Tippet’s Hill Cemetery	Minimal
	Locally Significant (National Register—Potentially Eligible)	053-6416	Ox Road Trace	Minimal
0.0 (within the ROW)	National Register—Eligible	053-0276	Washington & Old Dominion Railroad Historic District	Minimal

Source: VDHR 2024

ROW = right-of-way

4.2 LOCKRIDGE LOOP

One previously recorded historic resource meets the criteria specified in the Guidelines within the VDHR study tiers for the Lockridge Loop (Table 19). The route would have no impact on one resource (053-6406).

TABLE 19 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR THE LOCKRIDGE LOOP

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
0.5 to 1.0	National Register Properties (listed)	-	-	-
	Locally Significant (National Register—Potentially Eligible)	053-6416	Ox Road Trace	None
0.0 to 0.5	National Register—Eligible	-	-	-
0.0 (within the ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	-	-	-

Source: VDHR 2024

ROW = right-of-way

4.3 SOJOURNER LOOP

One previously recorded historic resource meets the criteria specified in the Guidelines within the VDHR study tiers for the Sojourner Loop (Table 20). The route would have no impact on one resource (053-0008).

TABLE 20 IMPACTS ON HISTORIC RESOURCES IN THE VDHR STUDY TIERS FOR THE SOJOURNER LOOP

Buffer (miles)	Resource Category	Resource Number	Description	Impact
1.0 to 1.5	National Historic Landmarks	-	-	-
0.5 to 1.0	National Register Properties (listed)	-	-	-
0.0 to 0.5	National Register—Eligible	053-0008	Dulles International Airport Historic District	None
0.0 (within the ROW)	National Historic Landmarks, National Register Properties (listed and eligible)	-	-	-

Source: VDHR 2024

ROW = right-of-way

4.4 FUTURE INVESTIGATIONS

The next stage of assessing impacts on historic resources will be to conduct an identification-phase field survey to identify and assess resources along the Lockridge and Sojourner Loops and the Golden-Mars route selected by the SCC. Survey will be conducted in accordance with the following guidelines:

- Guidelines for Assessing Impacts of Proposed Electrical Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia (VDHR 2008);
- Guidelines for Conducting Historic Resources Survey in Virginia (VDHR 2017);
- National Register Bulletin 15: How to Apply the National Register Criteria for Evaluation (National Park Service [NPS] 1995).

The survey teams will be led by individuals meeting the Secretary of the Interior’s professional qualifications standards for archaeology and architectural history, respectively. Teams will traverse the length of the Project corridor, revisiting previously recorded archaeological and historic architectural resources and documenting additional as-of-yet unrecorded resources in the survey area defined in the Guidelines for the Project design. The archaeological survey will adhere to VDHR survey standards (VDHR 2017) and will entail systematic coverage of the approved route. All material culture, including artifacts and features, that could be 50 years old or older will be recorded.

Sites will be delineated within the proposed right-of-way and investigations will include subsurface testing sufficient to inform recommendations of potential eligibility for the NRHP under Criterion D.

Each site will be fully documented with appropriate mapping, digital photography, and artifact collection/analysis. Site forms will be prepared for VCRIS submittal along with full descriptions in the technical report.

The historic architectural survey will likewise adhere to VDHR standards. While the NPS Bulletin 15 (NPS 1995) defines a historic property as a resource that is 50 years or older, for the purposes of this Project, survey will include those 45 years or older to accommodate the length of time needed to complete the permitting phase for the Project. Furthermore, the survey will also record those resources that may have reached significance prior to the 50 (45) year age in accordance with NPS guidance if they are integral parts of districts or have merit to be considered eligible for the NRHP on their own. Digital photographs will be taken to record resources' overall appearance and details. Sketch maps will be drawn depicting the relationship of dwellings to outbuildings and associated landscape features. Additional information on the structures' appearance and integrity will be recorded to assist in making recommendations of NRHP eligibility. Historic maps, aerial photographs, and tax assessor data will be consulted to assist in dating the resources.

Resources identified in the field effort will be reported to the VDHR, VCRIS numbers will be obtained, and shapefiles and database information will be provided. Sufficient information will be collected to make recommendations for each identified historic resource regarding eligibility for listing on the NRHP and to assess Project impacts.

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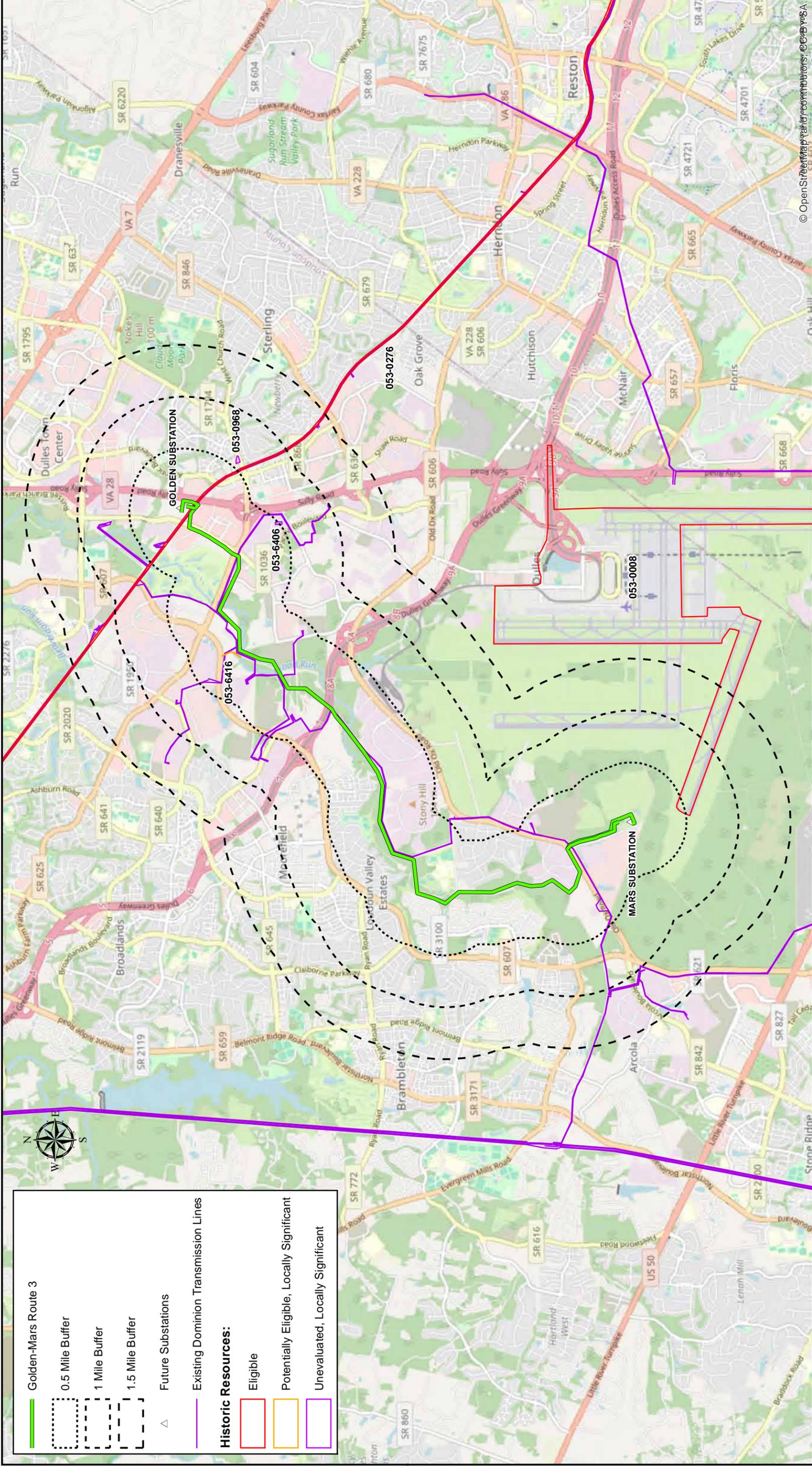
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ATTACHMENT 1 LOCATIONS OF CONSIDERED HISTORIC
RESOURCES ASSOCIATED WITH
PROPOSED PROJECT ALTERNATIVES



Golden-Mars Route 3

- 0.5 Mile Buffer
- 1 Mile Buffer
- 1.5 Mile Buffer

Future Substations

Existing Dominion Transmission Lines

Historic Resources:

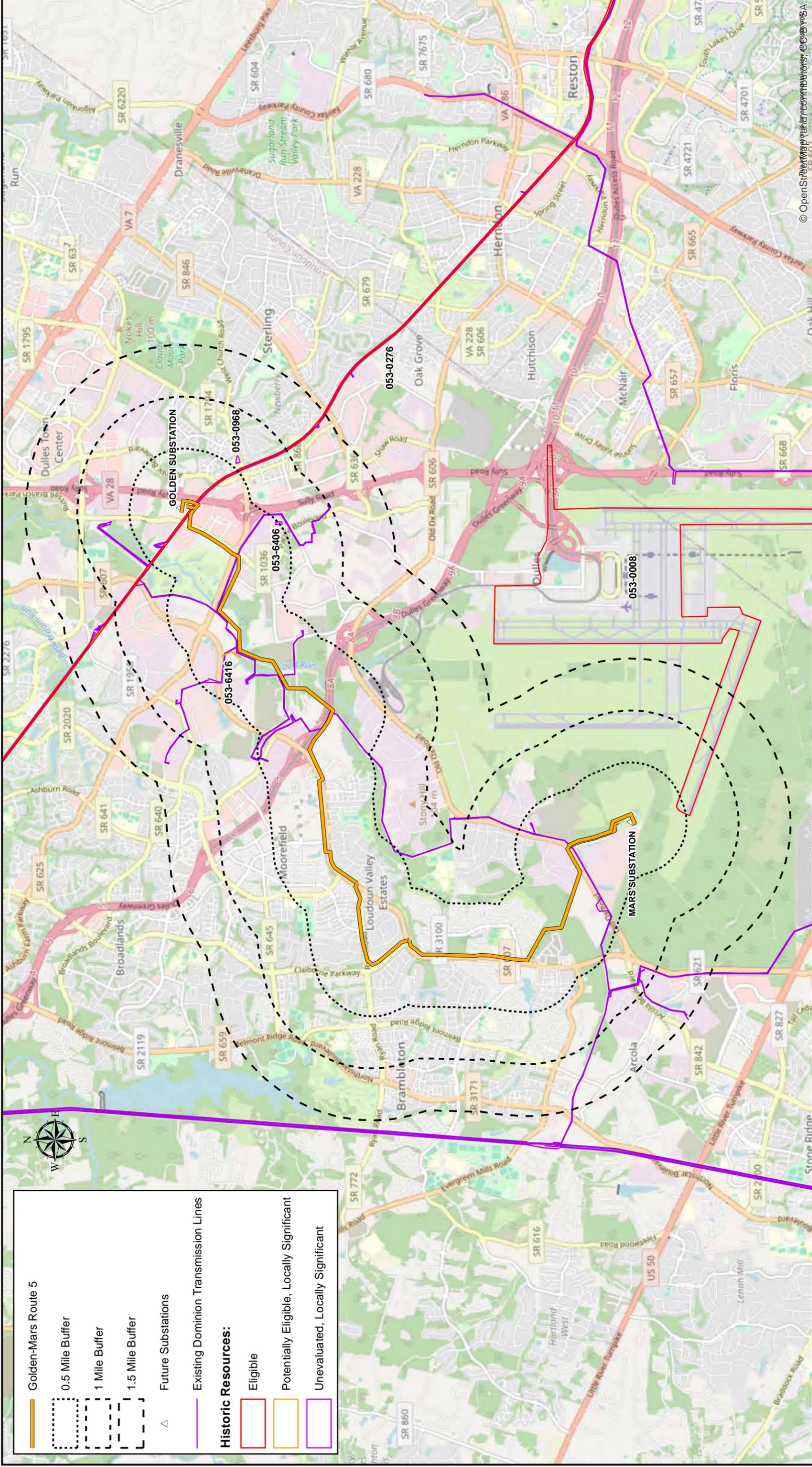
- Eligible
- Potentially Eligible, Locally Significant
- Unevaluated, Locally Significant

Attachment 1, Sheet 3
Locations of Considered Resources associated with the Proposed Project Alternatives - Golden-Mars Route 3
Golden-Mars 500-230 kV Electric Transmission Project
 Dominion Energy Virginia
 Loudoun County, VA



1:56,000





Golden-Mars Route 5

- 0.5 Mile Buffer
- 1 Mile Buffer
- 1.5 Mile Buffer

Future Substations

- Existing Dominion Transmission Lines

Historic Resources:

- Eligible
- Potentially Eligible, Locally Significant
- Unevaluated, Locally Significant

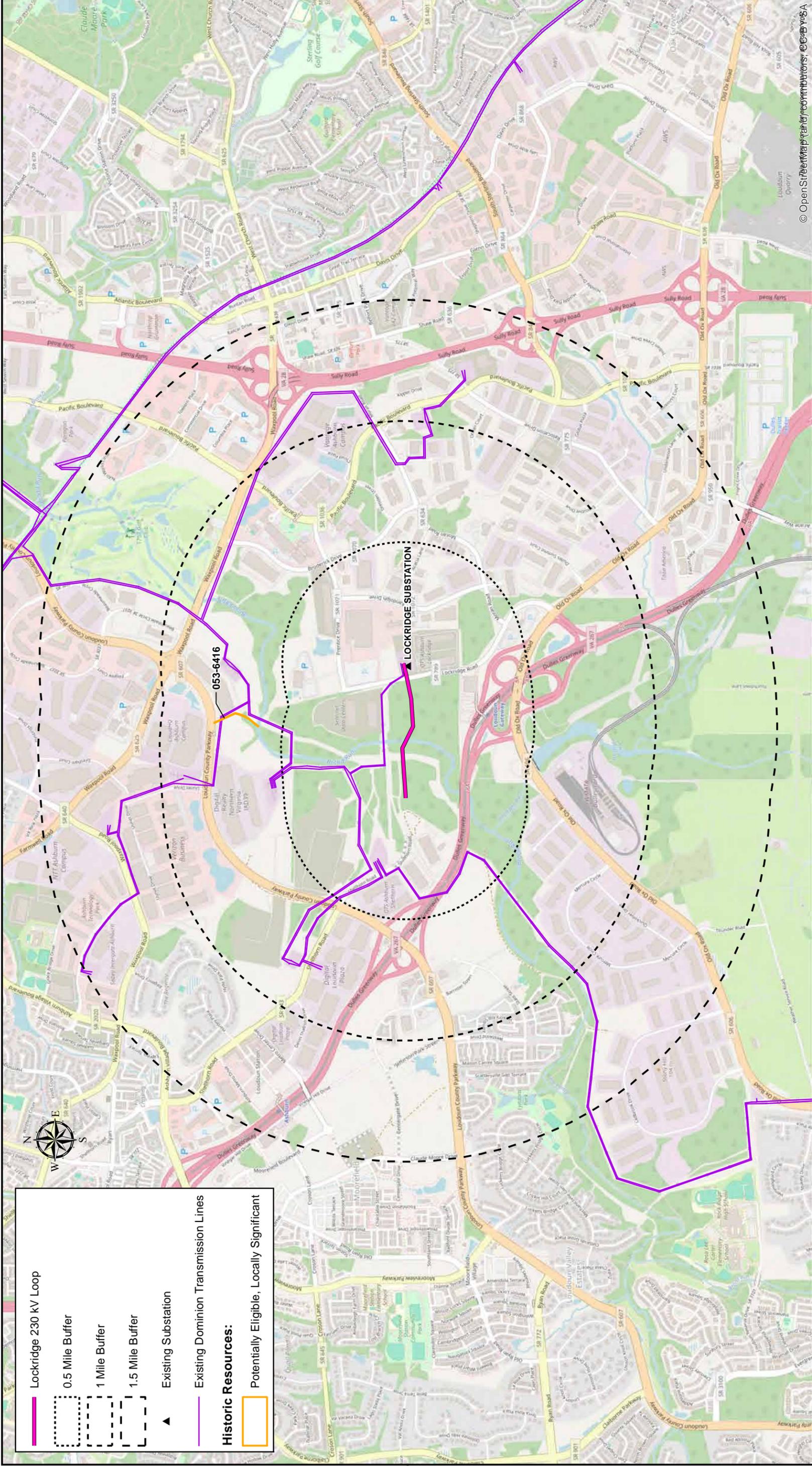


Attachment 1, Sheet 5
Locations of Considered Resources associated with the Proposed Project Alternatives - Golden-Mars Route 5
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, VA



1:56,000



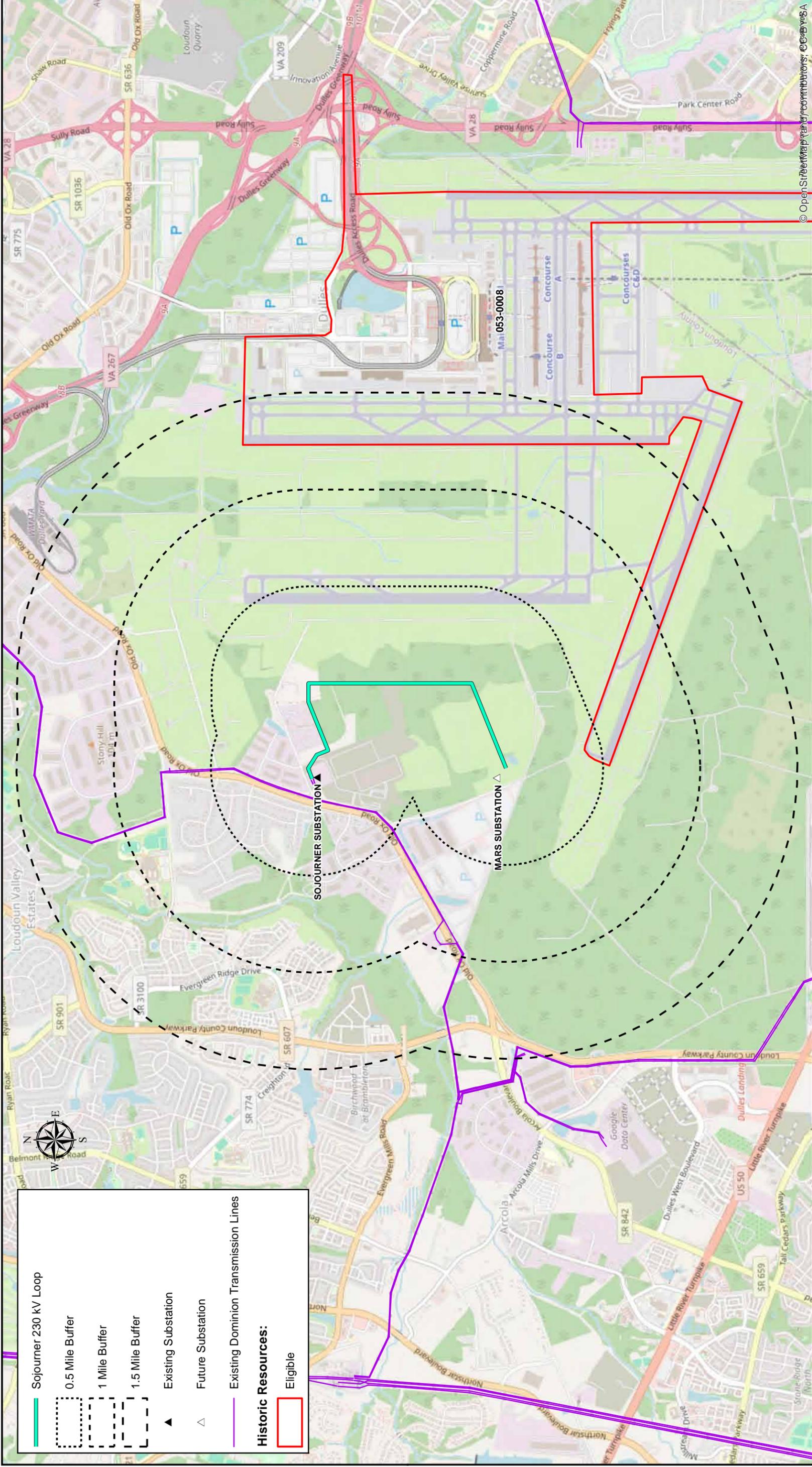


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Attachment 1, Sheet 6
Locations of Considered Resources associated with the Proposed Project Alternatives - Lockridge 230 kV Loop
Golden-Mars 500-230 kV Electric Transmission Project
 Dominion Energy Virginia
 Loudoun County, VA



1:24,000



Sojourner 230 kV Loop

0.5 Mile Buffer

1 Mile Buffer

1.5 Mile Buffer

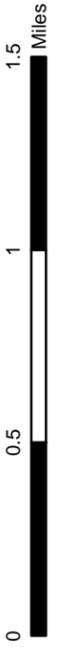
Existing Substation

Future Substation

Existing Dominion Transmission Lines

Historic Resources:

Eligible

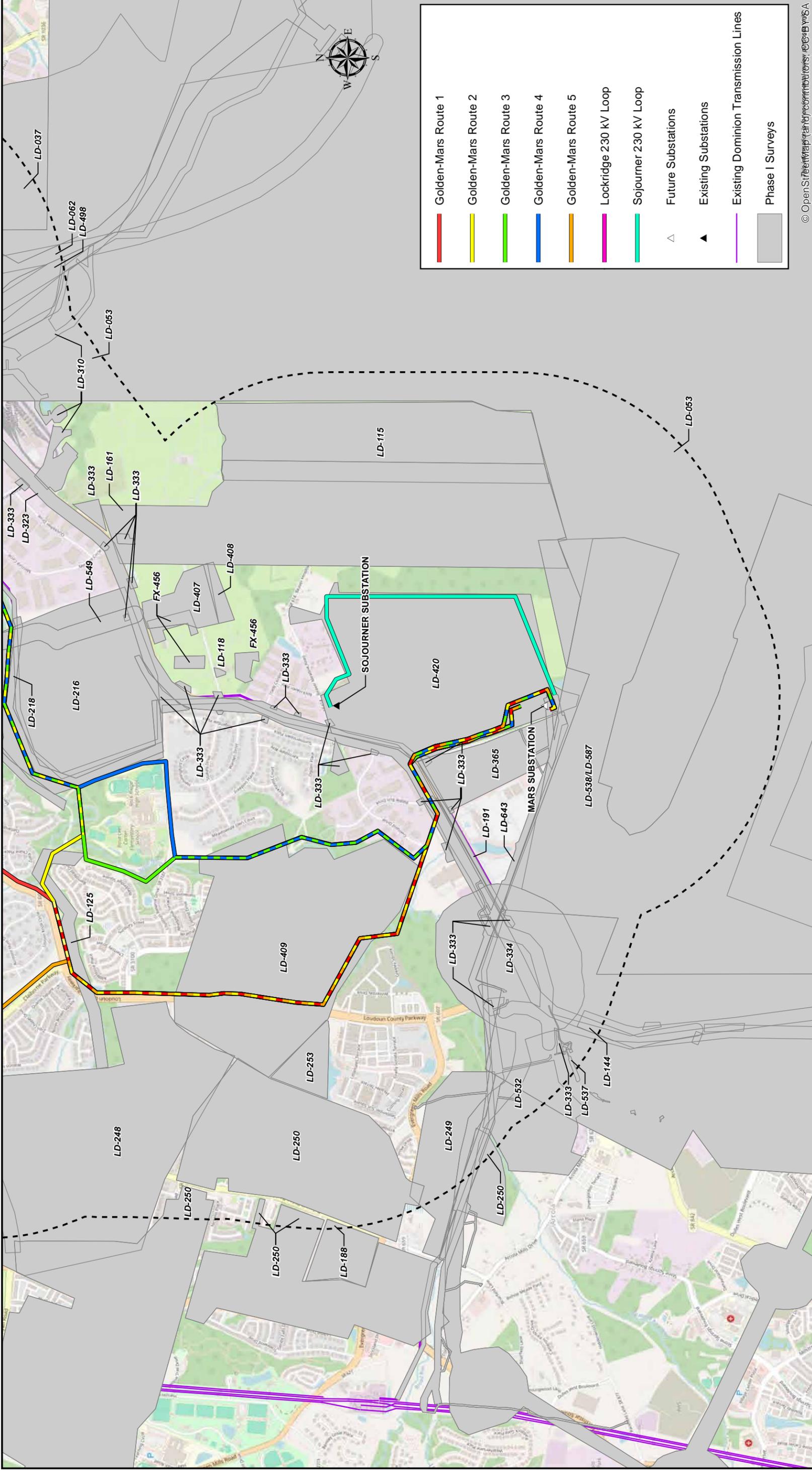


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Attachment 1, Sheet 7
Locations of Considered Resources associated with the Proposed Project Alternatives - Sojourner 230 kV Loop
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
 Loudoun County, VA



ATTACHMENT 2 CULTURAL RESOURCES SURVEY WITHIN 1 MILE OF PROJECT



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SHEET 2 OF 2

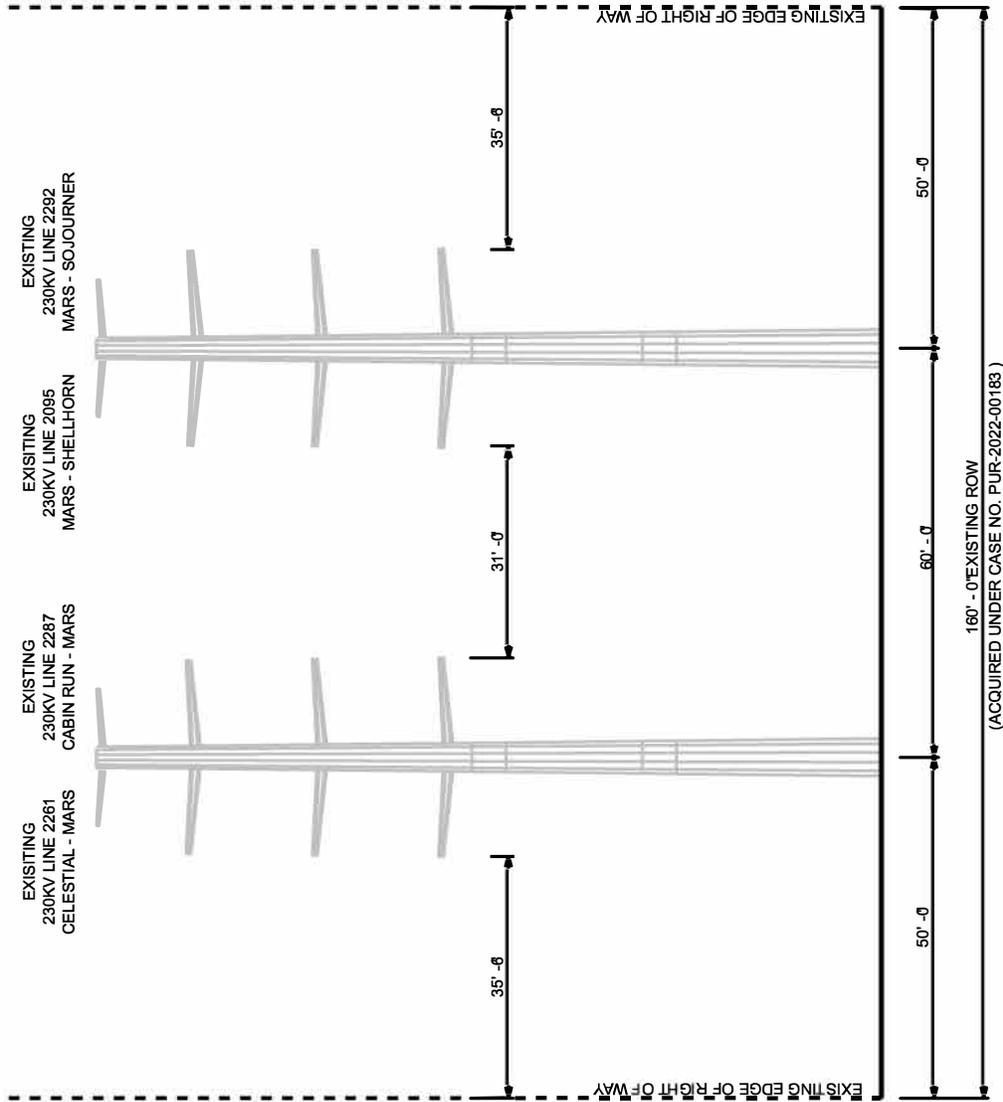


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Attachment 2
Cultural Resource Surveys Within One Mile of Route Alternatives
Golden-Mars 500-230 kV Electric Transmission Project
Dominion Energy Virginia
Loudoun County, VA

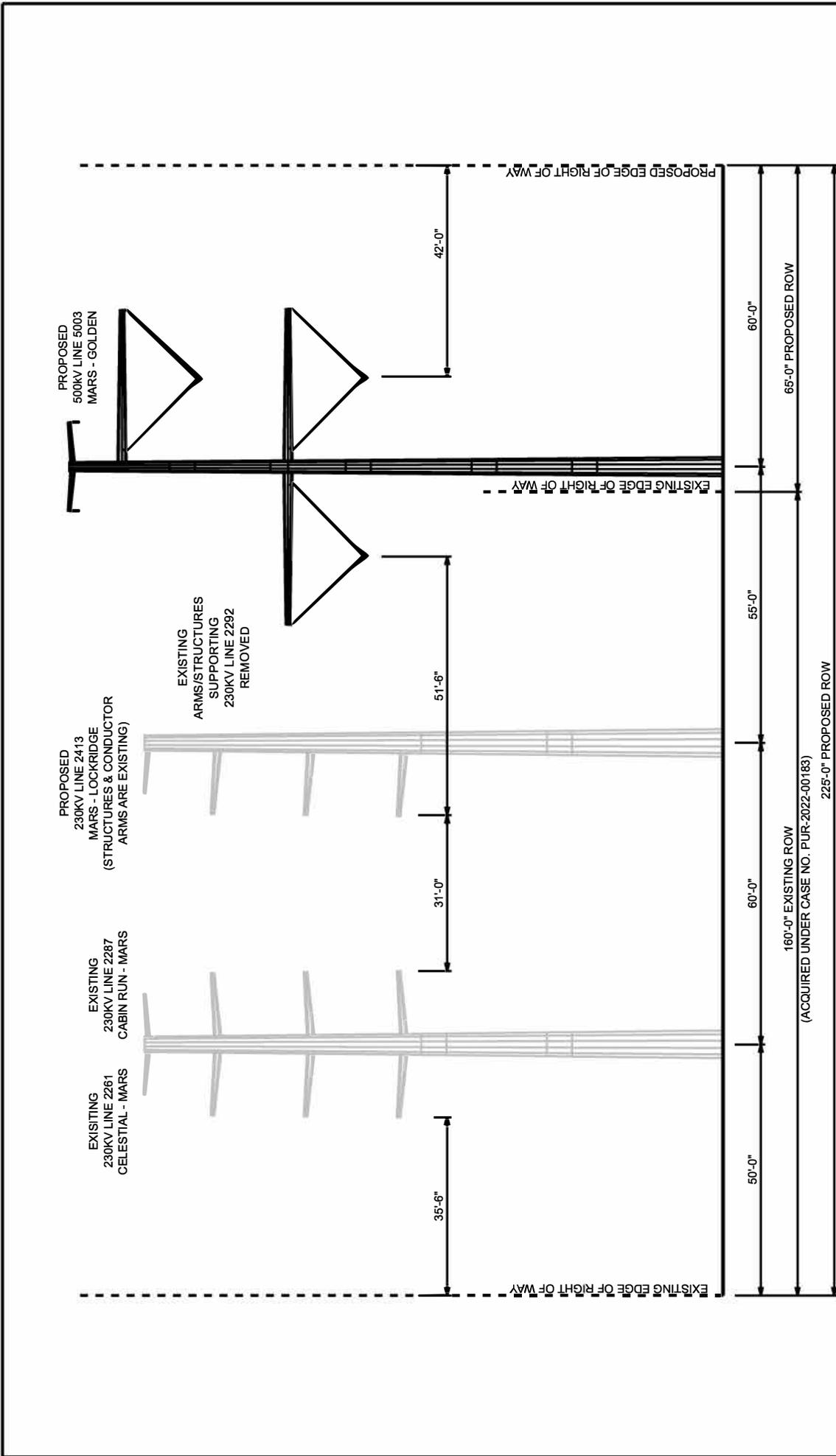


ATTACHMENT 3 TYPICAL DESIGN AND LAYOUT



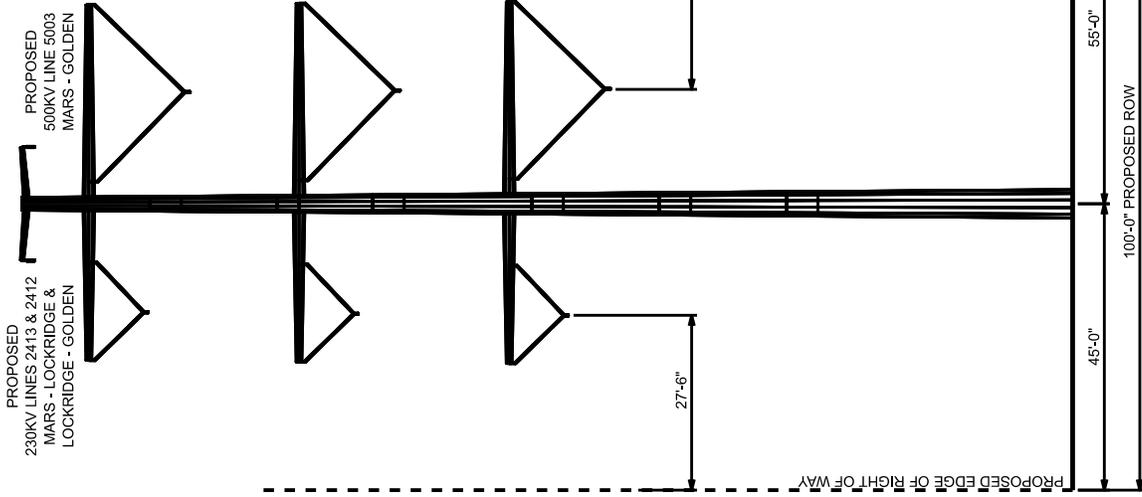
EXISTING ROW CONFIGURATION - CARTERS SCHOOL ROAD SEGMENT

<p>DISCLAIMER</p> <p>THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN</p>	<p>Dominion Energy</p> <p>Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060</p>	<p>DESCRIPTION & VIEW</p> <p>STR. 5003/5 - 5003/10 TYPICAL RIGHT OF WAY LOOKING TOWARDS GOLDEN SUB</p>	<p>ATTACHMENT NO.</p> <p>II.A.5.a</p> <p>DRAWN BY TMR</p>
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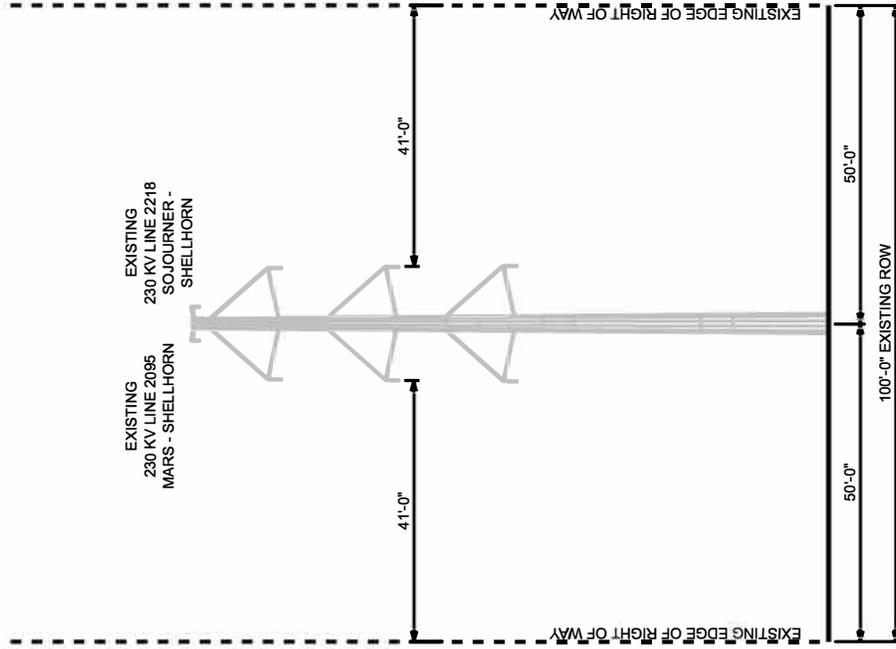
PROPOSED ROW CONFIGURATION - CARTERS SCHOOL ROAD SEGMENT

<p>DISCLAIMER THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN</p>	<p>Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060</p>	<p>DESCRIPTION & VIEW STR. 5003/5 - 5003/10 TYPICAL RIGHT OF WAY LOOKING TOWARDS GOLDEN SUB</p>	<p>ATTACHMENT NO. II.A.5.b</p> <p>DRAWN BY TMR</p>
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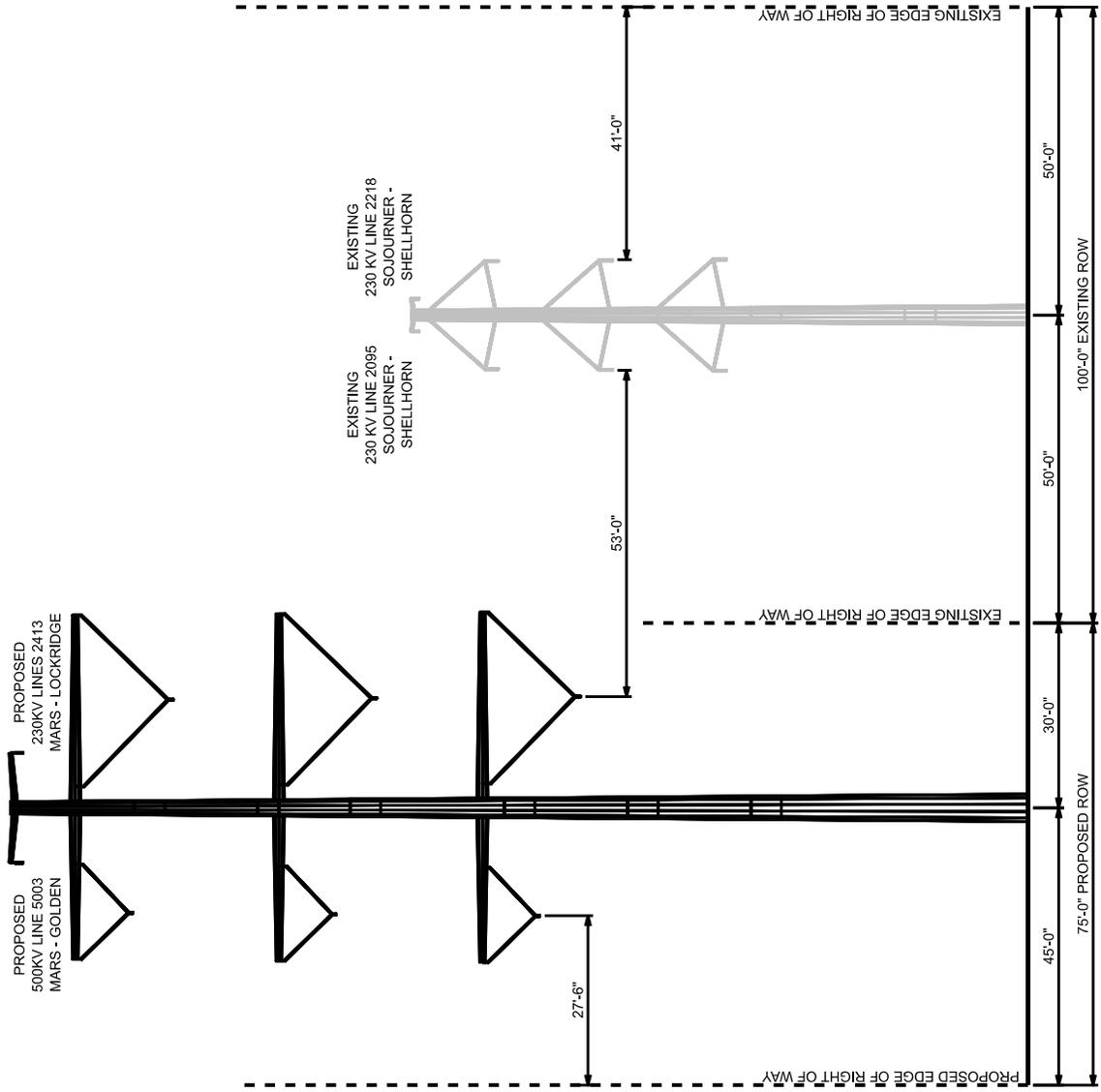
PROPOSED ROW CONFIGURATION - GOLDEN TO MARS LINES

<p>DISCLAIMER THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN</p>	 <p>Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060</p>	<p>DESCRIPTION & VIEW STR. 5003/11 - 5003/42 AND 5003/64 - 5003/69 TYPICAL RIGHT OF WAY LOOKING TOWARDS GOLDEN SUB</p>	<p>ATTACHMENT NO. II.A.5.c</p> <p>DRAWN BY TMR</p>
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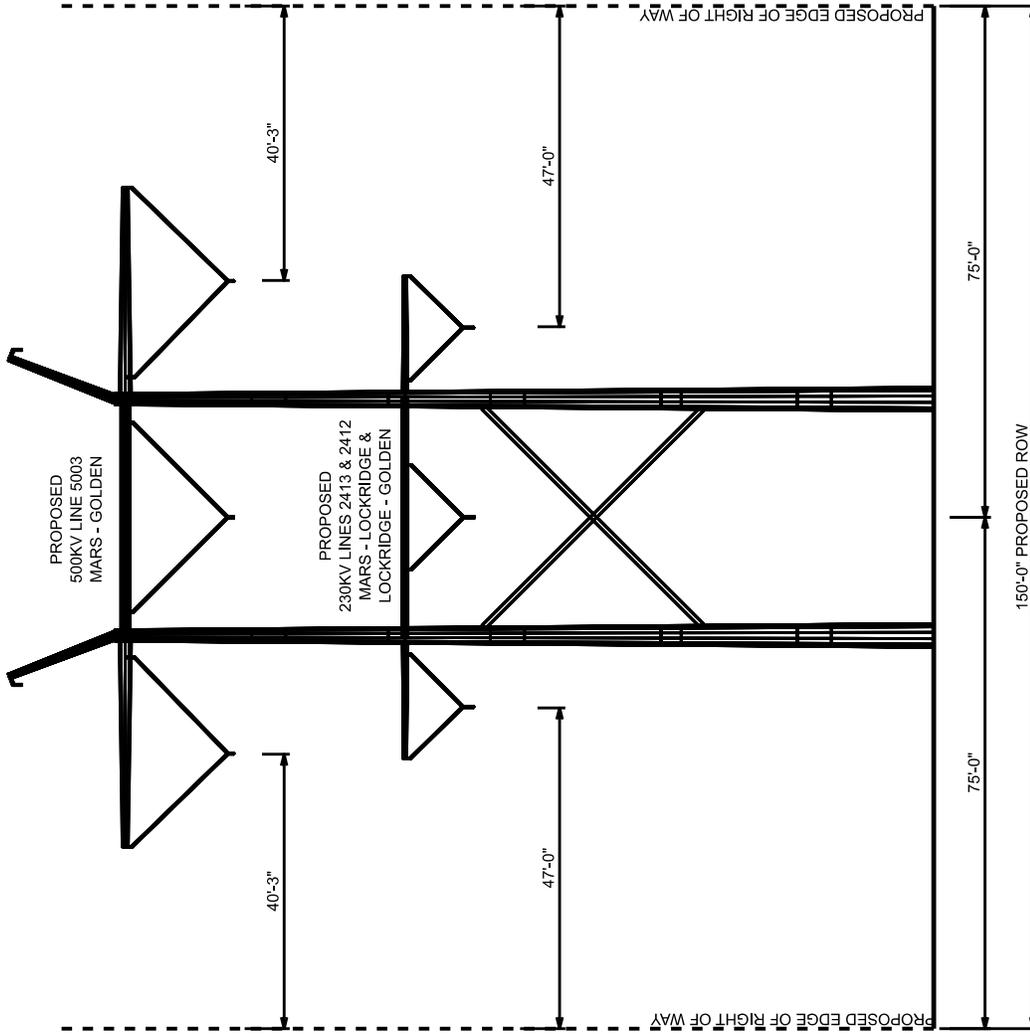
EXISTING ROW CONFIGURATION - GOLDEN TO MARS LINES

<p>DISCLAIMER THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN</p>	 <p>Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060</p>	<p>DESCRIPTION & VIEW STR. 5003/43 - 5003/46 TYPICAL RIGHT OF WAY LOOKING TOWARDS GOLDEN SUB</p>	<p>ATTACHMENT NO. II.A.5.d DRAWN BY TMR</p>
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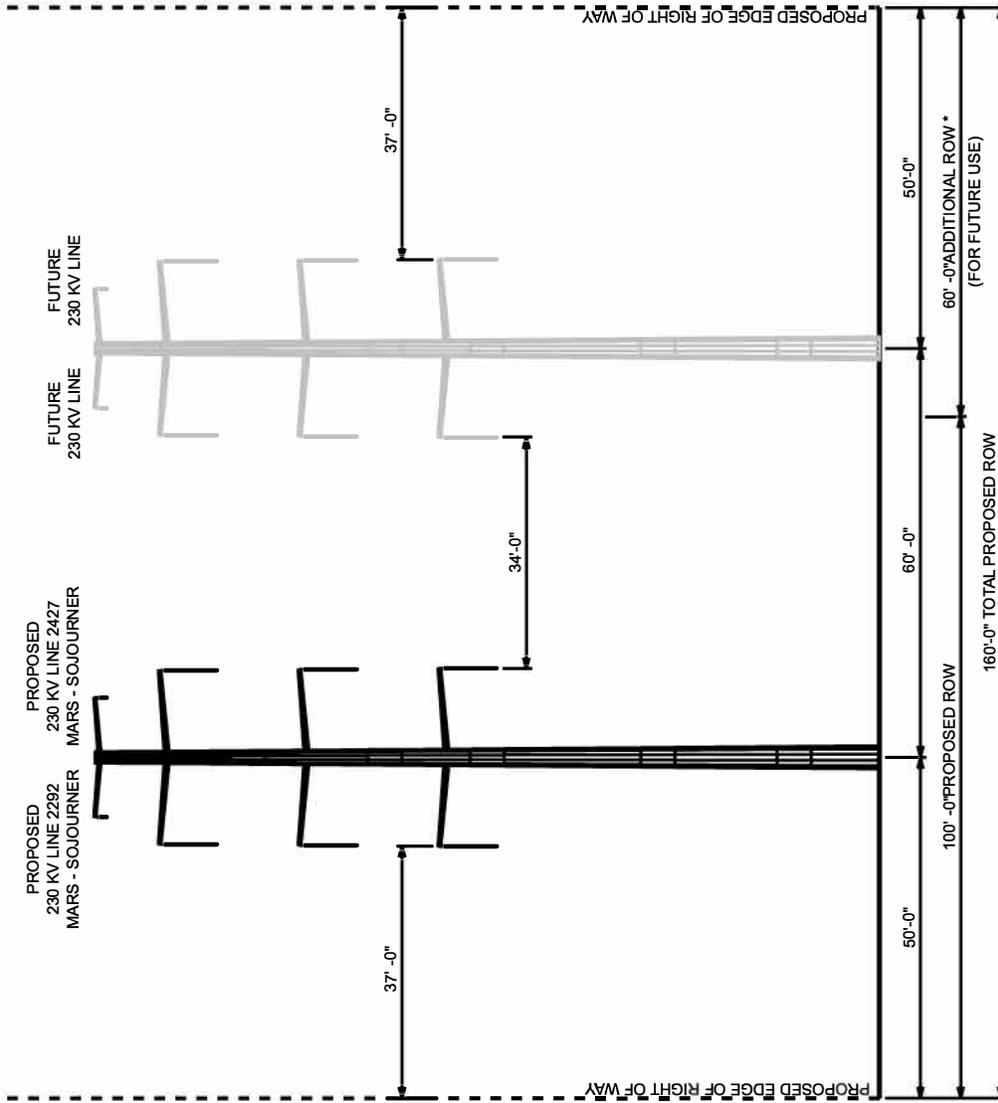
PROPOSED ROW CONFIGURATION - GOLDEN TO MARS LINES

<p>DISCLAIMER THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN</p>	<p>Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060</p>	<p>DESCRIPTION & VIEW STR. 5003/43 - 5003/46 TYPICAL RIGHT OF WAY LOOKING TOWARDS GOLDEN SUB</p>	<p>ATTACHMENT NO. II.A.5.e DRAWN BY TMR</p>
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PROPOSED ROW CONFIGURATION - GOLDEN TO MARS LINES

<p>DISCLAIMER THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN</p>	 <p>Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060</p>	<p>DESCRIPTION & VIEW STR. 5003/2 - 5003/4 AND 5003/47 - 5003/63 TYPICAL RIGHT OF WAY LOOKING TOWARDS GOLDEN SUB</p>	<p>ATTACHMENT NO. II.A.5.f DRAWN BY TMR</p>
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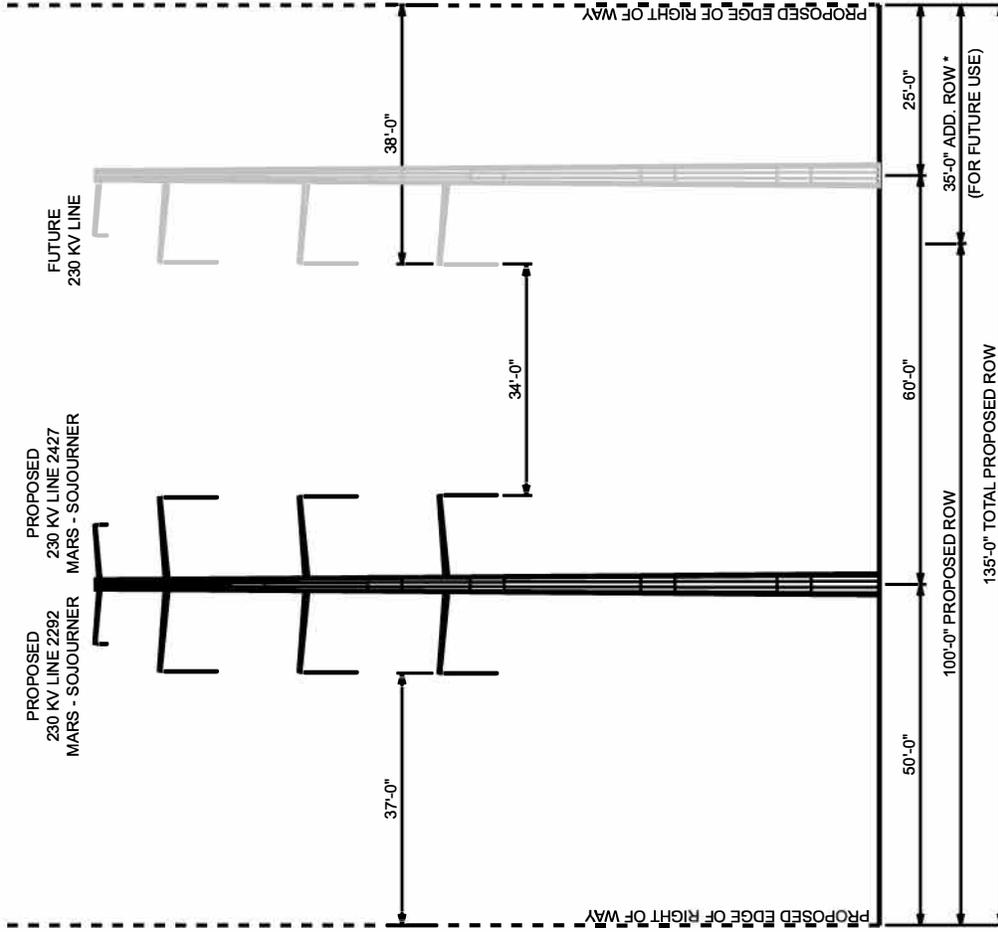


PROPOSED ROW CONFIGURATION - SOJOURNER 230KV LOOP

DISCLAIMER	DESCRIPTION & VIEW	ATTACHMENT NO.
THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN	STR. 2292/5 (2427/2) - 2292/10 (2427/7) TYPICAL RIGHT OF WAY LOOKING TOWARDS SOJOURNER SUB	II.A.5.9 DRAWN BY TMR

Dominion Energy
5000 Dominion Blvd.
Glen Allen, VA 23060

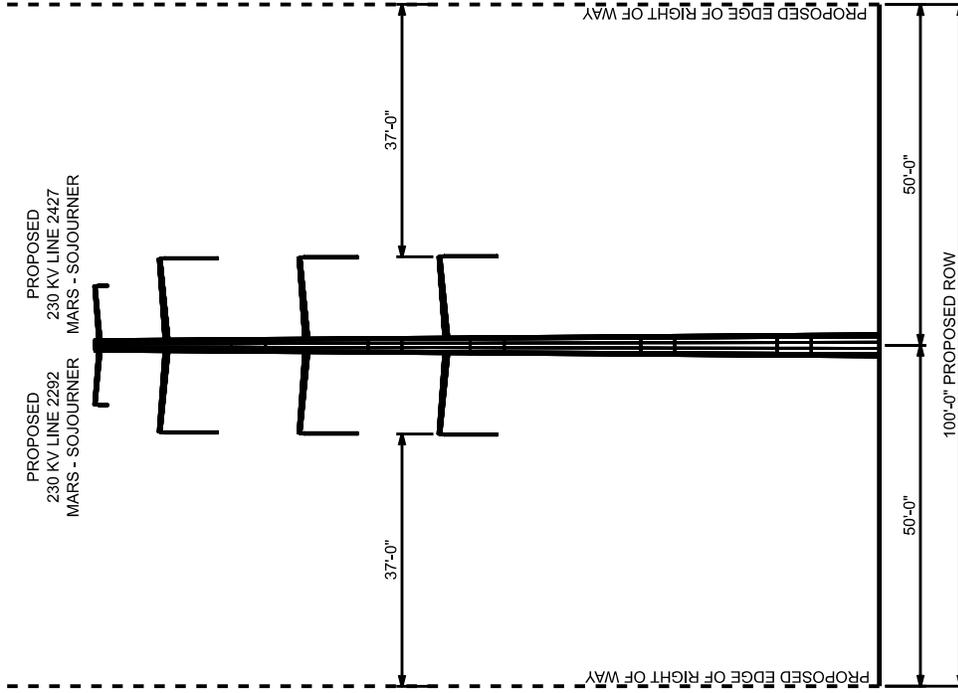




* THE COMPANY IS SEEKING TO VOLUNTARILY OBTAIN THIS ADDITIONAL WIDTH

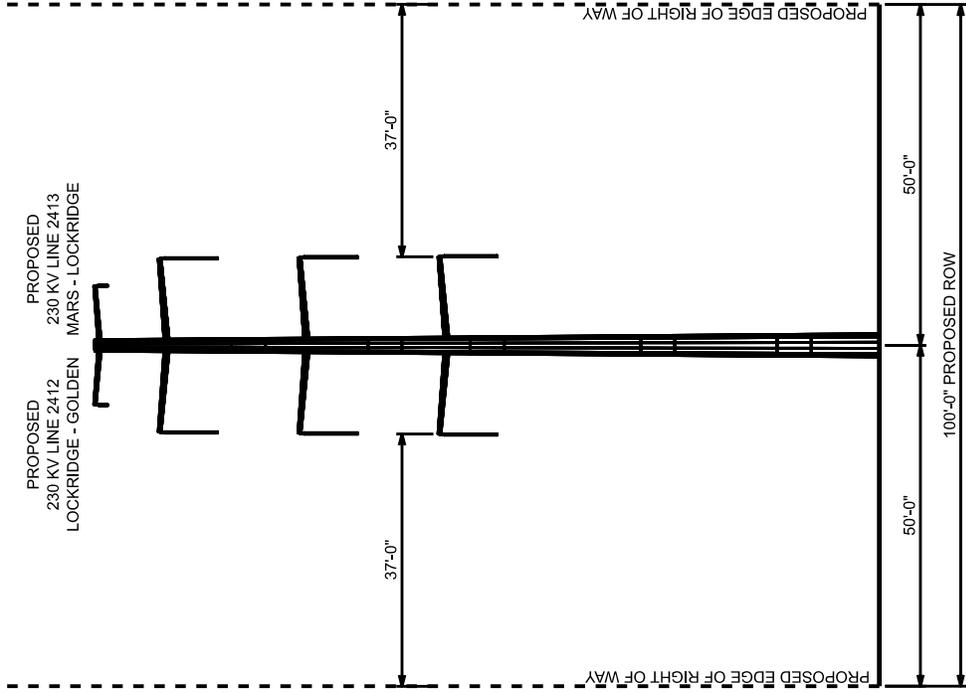
PROPOSED ROW CONFIGURATION - SOJOURNER 230KV LOOP

<p>DISCLAIMER</p> <p>THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN</p>	 <p>Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060</p>	<p>DESCRIPTION & VIEW</p> <p>STR. 2292/10 (2427/7) - 2292/17 (2427/14) TYPICAL RIGHT OF WAY LOOKING TOWARDS SOJOURNER SUB</p>	<p>ATTACHMENT NO.</p> <p>II.A.5.h</p> <p>DRAWN BY TMR</p>
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PROPOSED ROW CONFIGURATION - SOJOURNER 230KV LOOP

<p>DISCLAIMER</p> <p>THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN</p>	 <p>Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060</p>	<p>DESCRIPTION & VIEW</p> <p>STR. 2292/17 (2427/14) - 2292/22 (2427/19) TYPICAL RIGHT OF WAY LOOKING TOWARDS SOJOURNER SUB</p>	<p>ATTACHMENT NO.</p> <p>II.A.5.i</p> <p>DRAWN BY TMR</p>
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PROPOSED ROW CONFIGURATION - LOCKRIDGE 230KV LOOP

<p>DISCLAIMER</p> <p>THE INFORMATION CONTAINED ON THIS DRAWING IS CONSIDERED PRELIMINARY IN NATURE AND IS SUBJECT TO CHANGE BASED ON FINAL DESIGN</p>	 <p>Dominion Energy 5000 Dominion Blvd. Glen Allen, VA 23060</p>	<p>DESCRIPTION & VIEW</p> <p>STR. 2413/49 (2412/7) - 2413/54 (2412/2) TYPICAL RIGHT OF WAY LOOKING TOWARDS LOCKRIDGE SUB</p>	<p>ATTACHMENT NO.</p> <p>II.A.5.j</p> <p>DRAWN BY TMR</p>
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ATTACHMENT 4 HISTORIC RESOURCE PHOTOS

FIGURE 1 053-0008, DULLES INTERNATIONAL AIRPORT HISTORIC DISTRICT, AERIAL VIEW



FIGURE 2 053-0276, WASHINGTON AND OLD DOMINION RAILROAD HISTORIC DISTRICT, VIEW TO THE NORTHWEST



FIGURE 3 053-0968, GUILFORD BAPTIST CHURCH, VIEW TO THE SOUTH



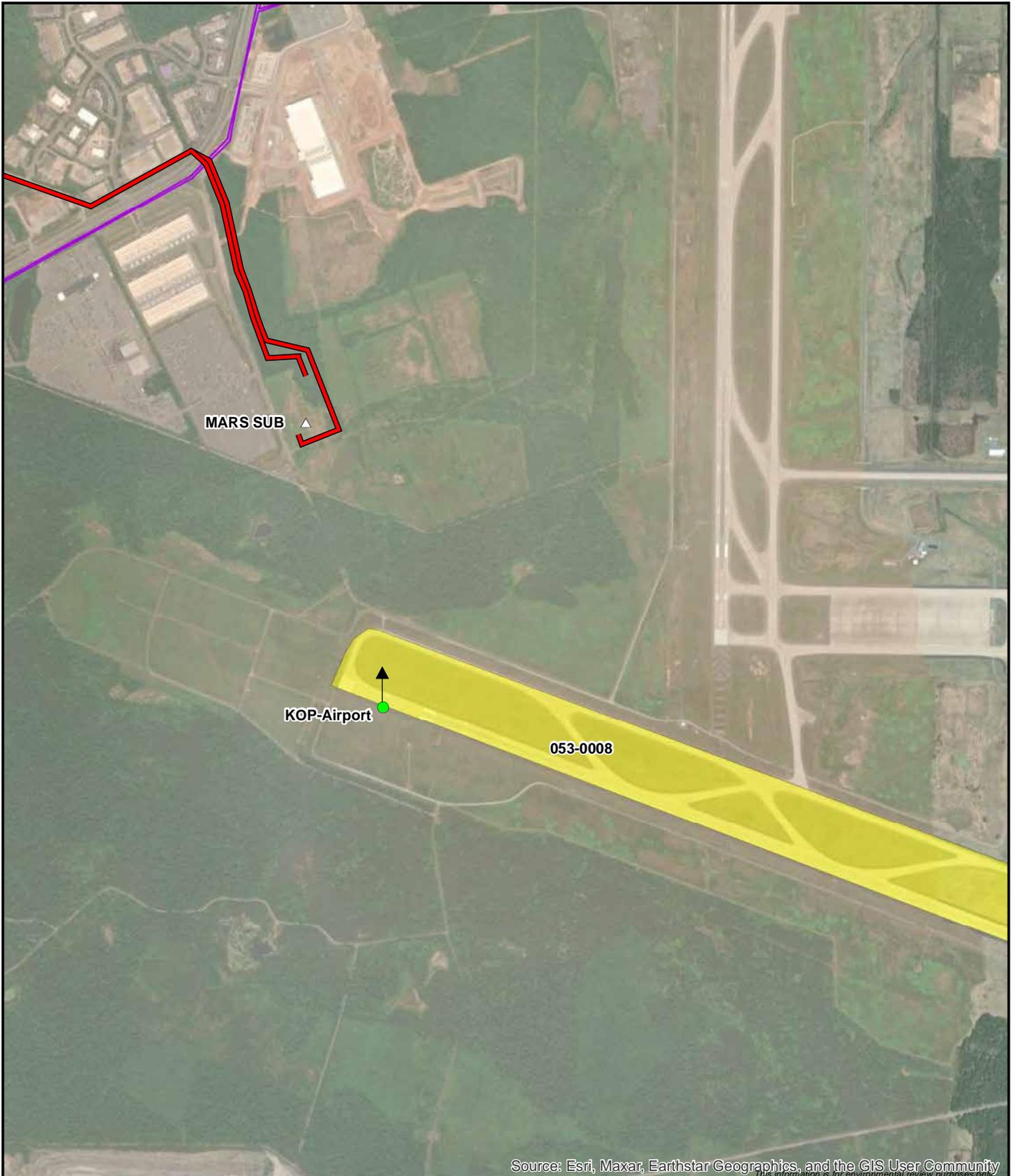
FIGURE 4 053-6406, TIPPET'S HILL CEMETERY (UNABLE TO ACCESS), VIEW TO THE NORTH



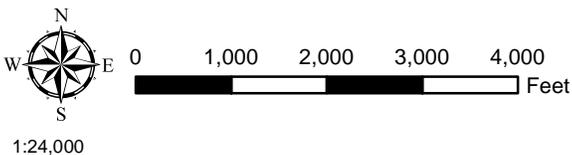
FIGURE 5 053-6416, OX ROAD TRACE, VIEW TO THE NORTHEAST



ATTACHMENT 5 PHOTO SIMULATIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



- Golden-Mars Route 1
- Existing Dominion Transmission Lines
- △ Future Substation
- Historic Resource
- KOP Location



Figure 1. Aerial photograph depicting land use and photo view for 053-0008.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP Airport
 Vortac Rd

Figure 2
Route: Golden-Mars Route 1
Date: 09/21/2024
Time: 10:00 am
Viewing Direction: Northwest
Distance to closest feature: 0.61 miles

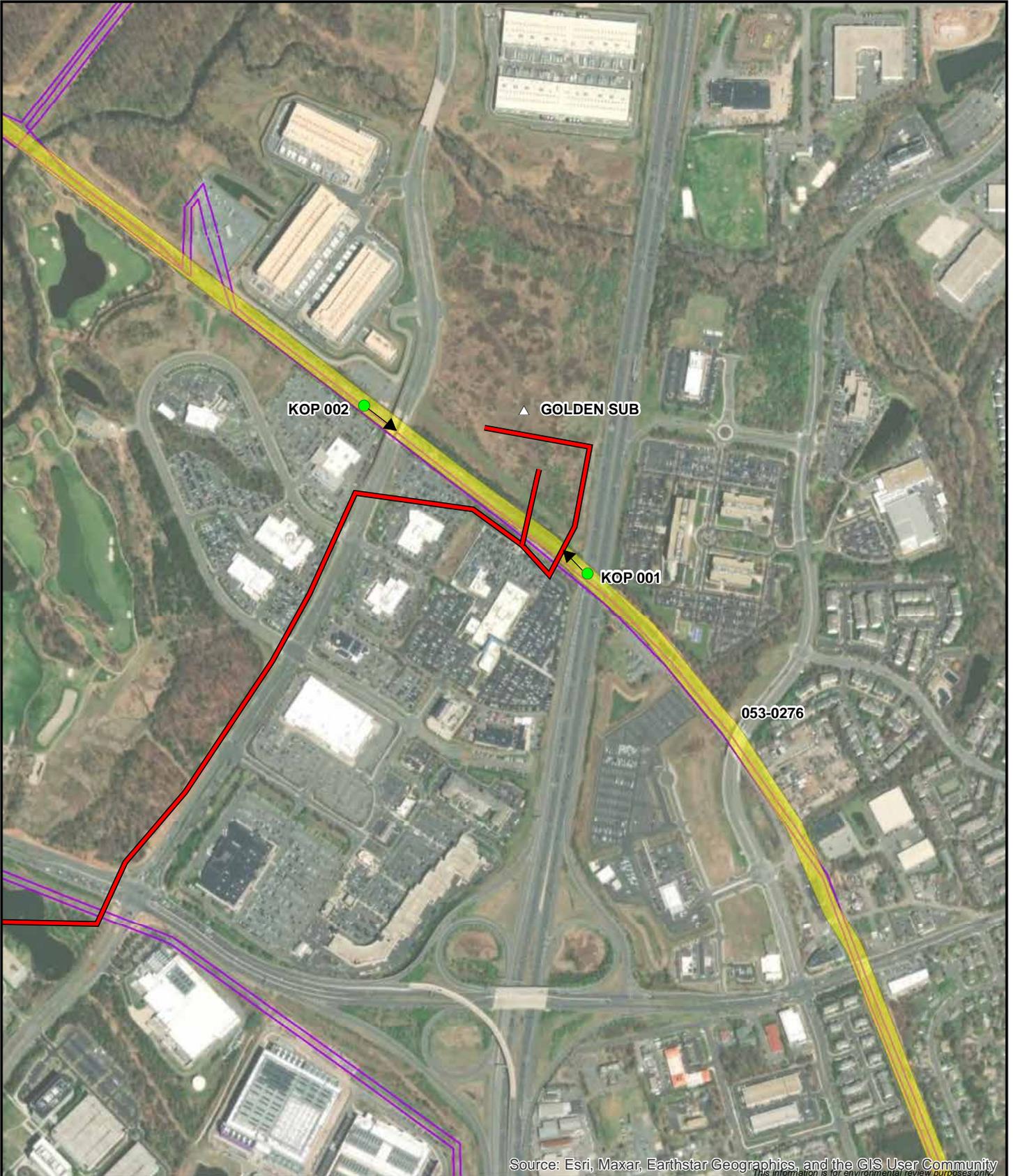


Legend
 Golden-Mars 500-230 kV Electric Transmission Project - Route 1
 KOP View Direction

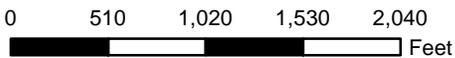
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

EXISTING CONDITIONS

YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



1:12,000

- Golden-Mars Route 1
- Existing Dominion Transmission Lines
- △ Future Substation
- Historic Resource
- KOP Location



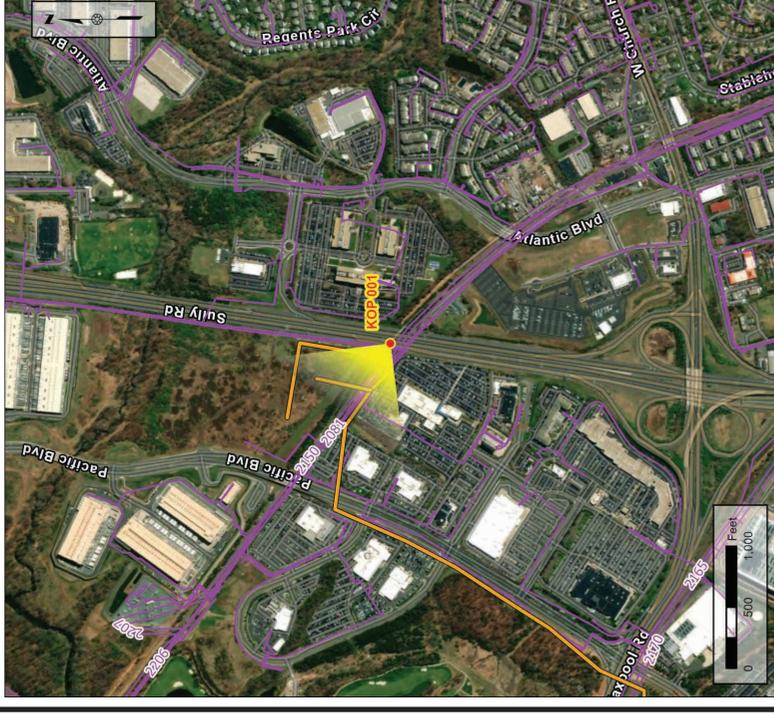
Figure 3. Aerial photograph depicting land use and photo view for 053-0276.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



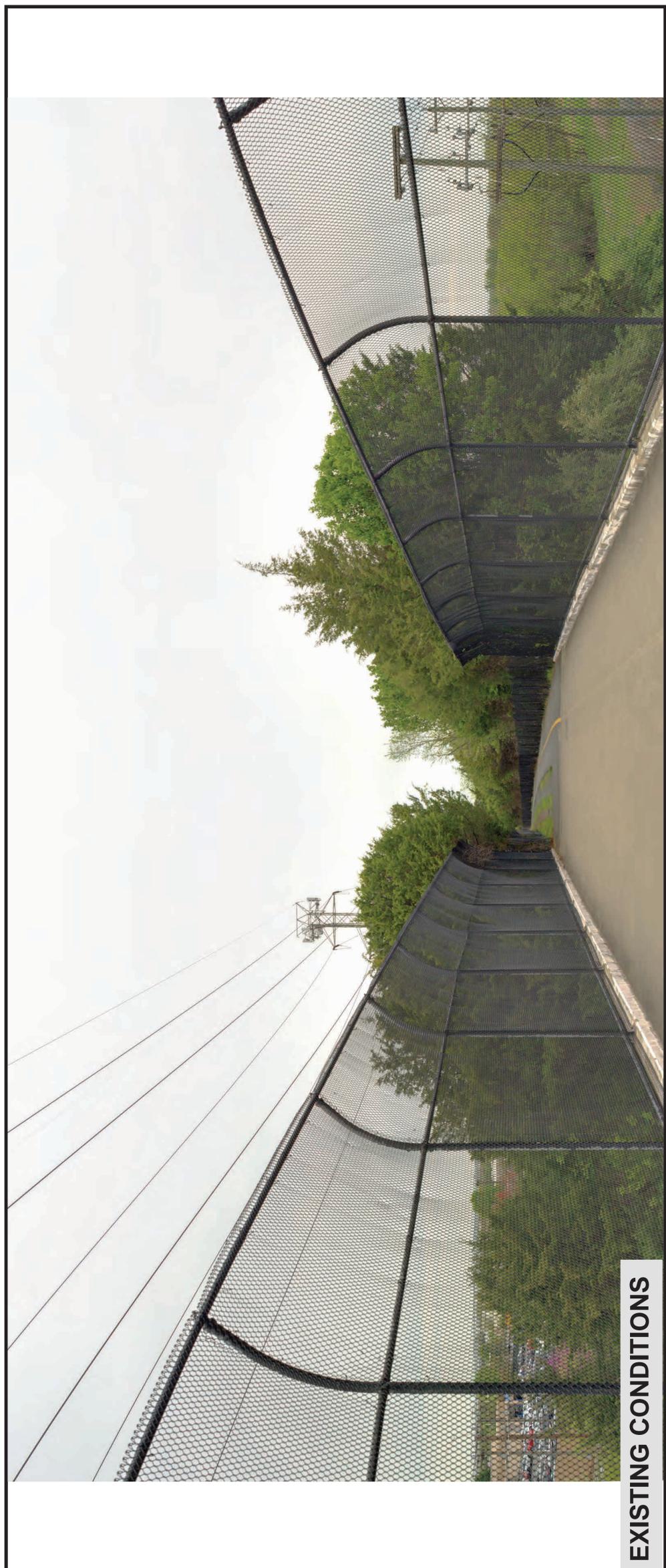
KOP 001
 Sully Rd

Figure 4
Route: Golden-Mars Route 1
Date: 04/17/2024
Time: 11:22 am
Viewing Direction: Northwest
Distance to closest feature: 0.04 miles

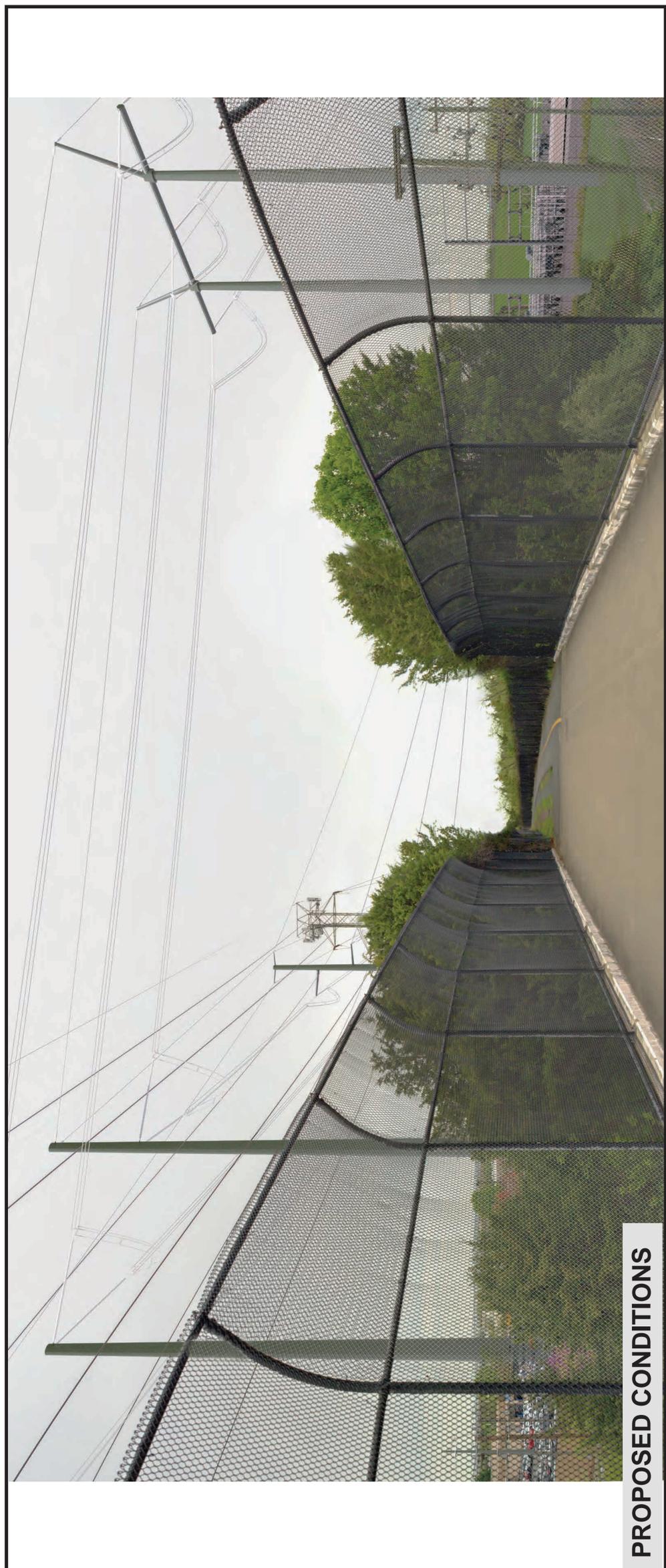


- Legend**
- Existing DOM Infrastructure
 - Golden-Mars 500-230 kV Electric Transmission Project - Route 1
 - KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



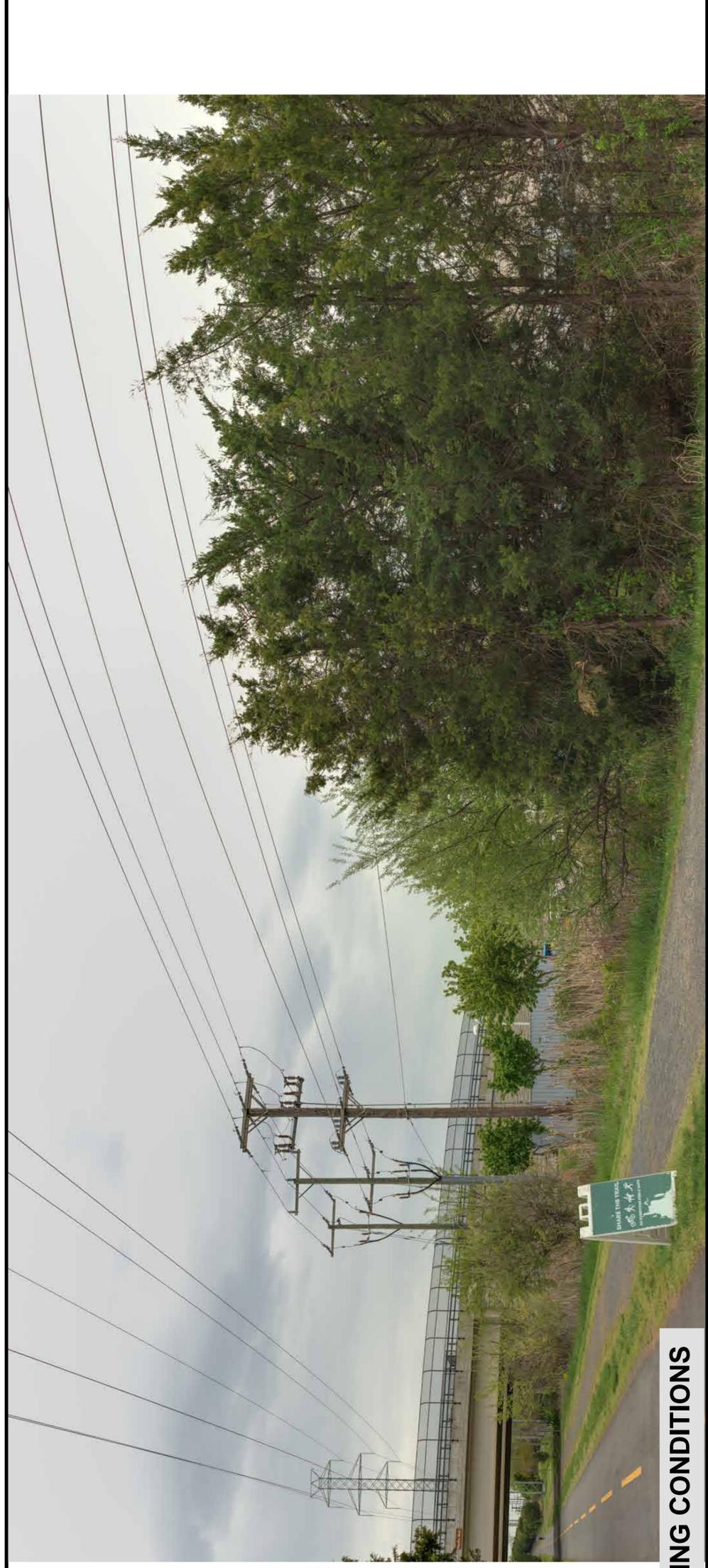
KOP 002
 Pacific Blvd

Figure 5
Route: Golden-Mars Route 1
Date: 04/17/2024
Time: 10:46 am
Viewing Direction: South
Distance to closest feature: 0.10 miles

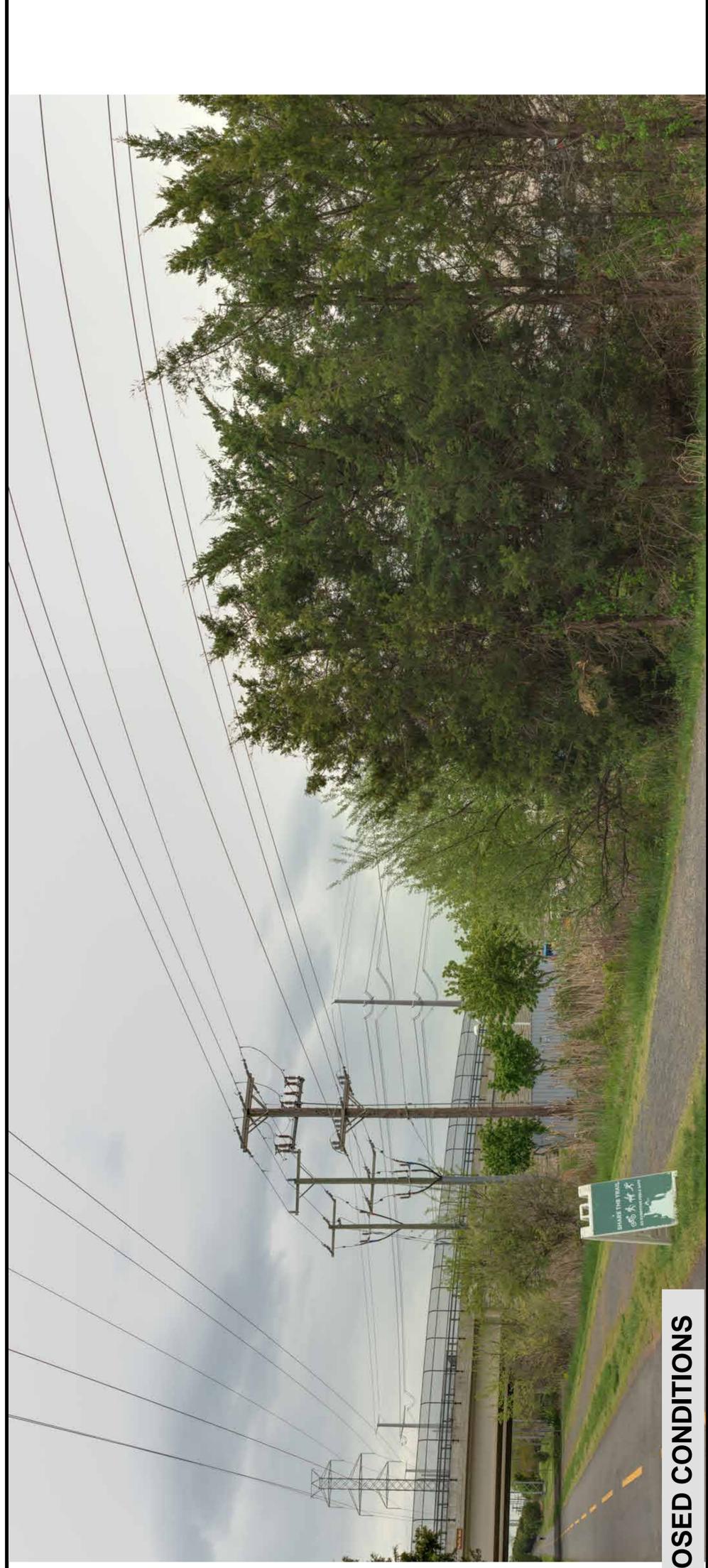


- Legend**
- Existing DOM Infrastructure
 - Golden-Mars 500-230 kV Electric Transmission Project - Route 1
 - ➔ KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



0 500 1,000 1,500 2,000
Feet

1:12,000

- Golden-Mars Route 1
- Existing Dominion Transmission Lines
- △ Future Substation
- Historic Resource
- KOP Location



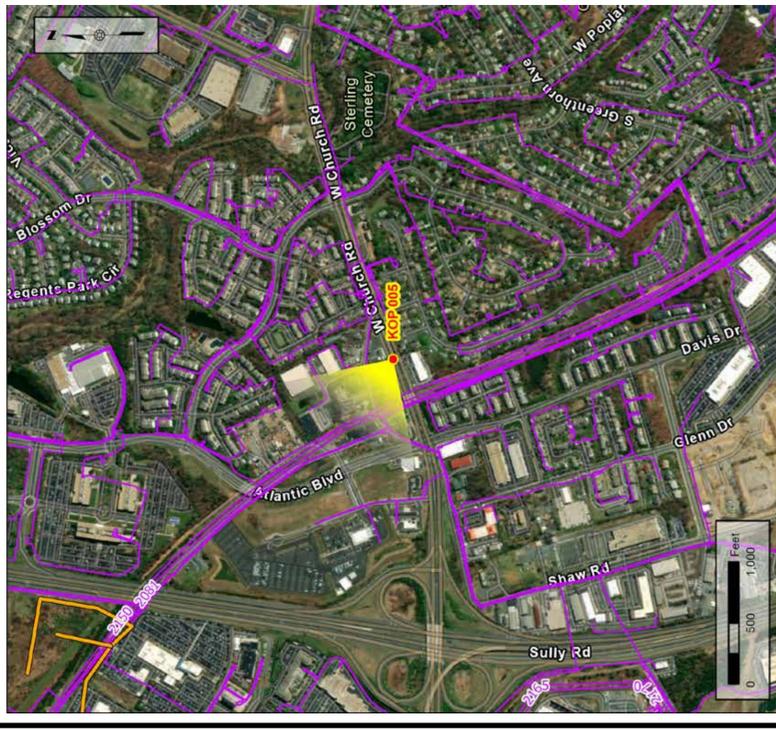
Figure 6. Aerial photograph depicting land use and photo view for 053-0968.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 005
 W Church Rd

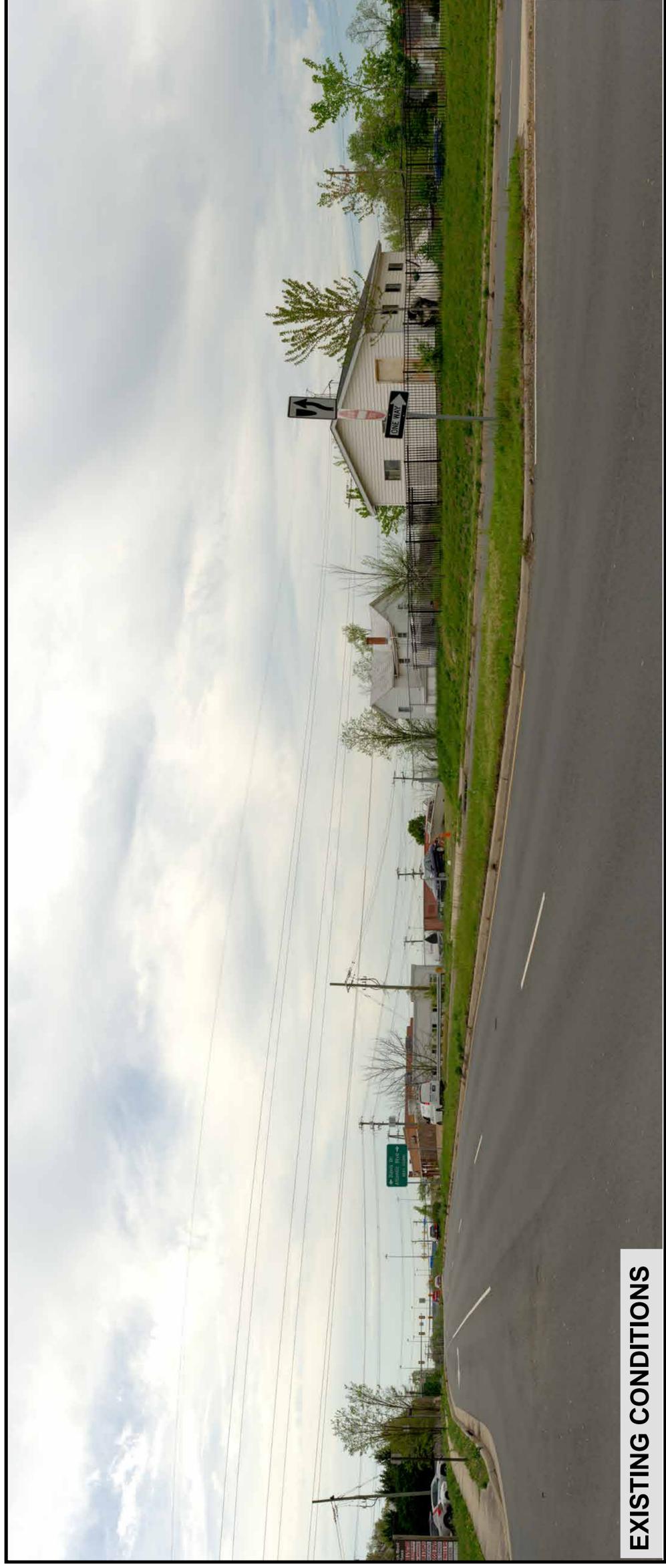
Figure 7
Route: Golden-Mars Route 1
Date: 04/17/2024
Time: 12:49 pm
Viewing Direction: Southeast
Distance to closest feature: 0.58 miles



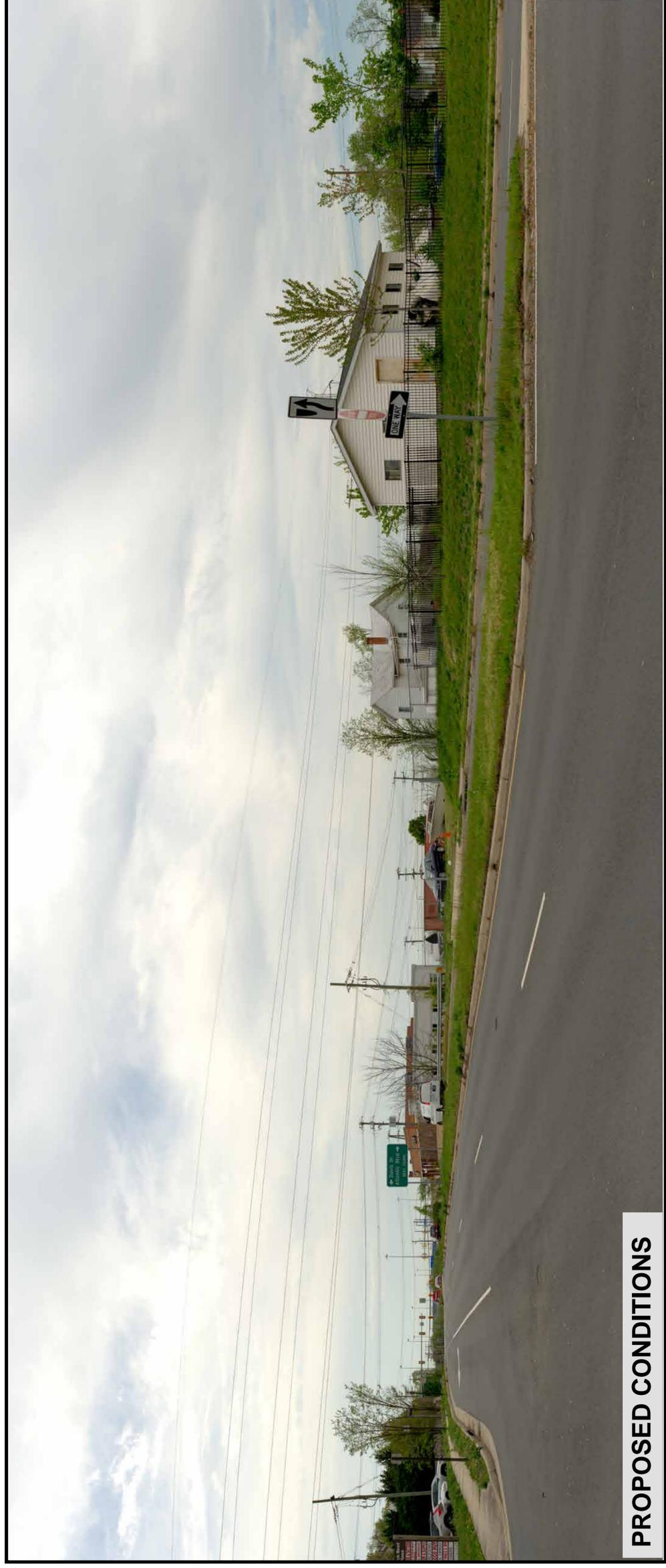
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 1
- KOP View Direction

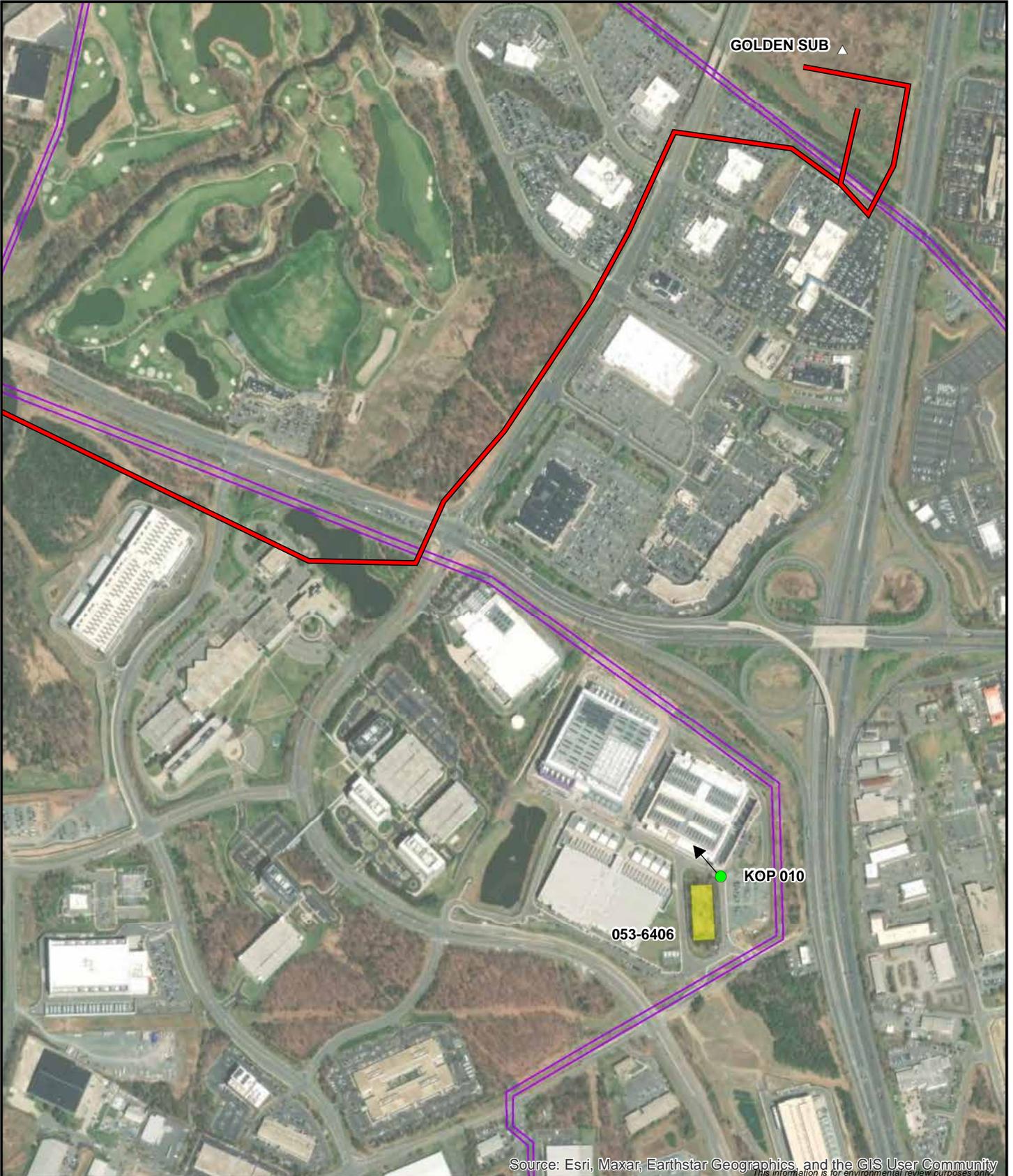
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



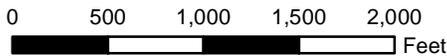
EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



1:12,000

- Golden-Mars Route 1
- Existing Dominion Transmission Lines
- △ Future Substation
- Historic Resource
- KOP Location



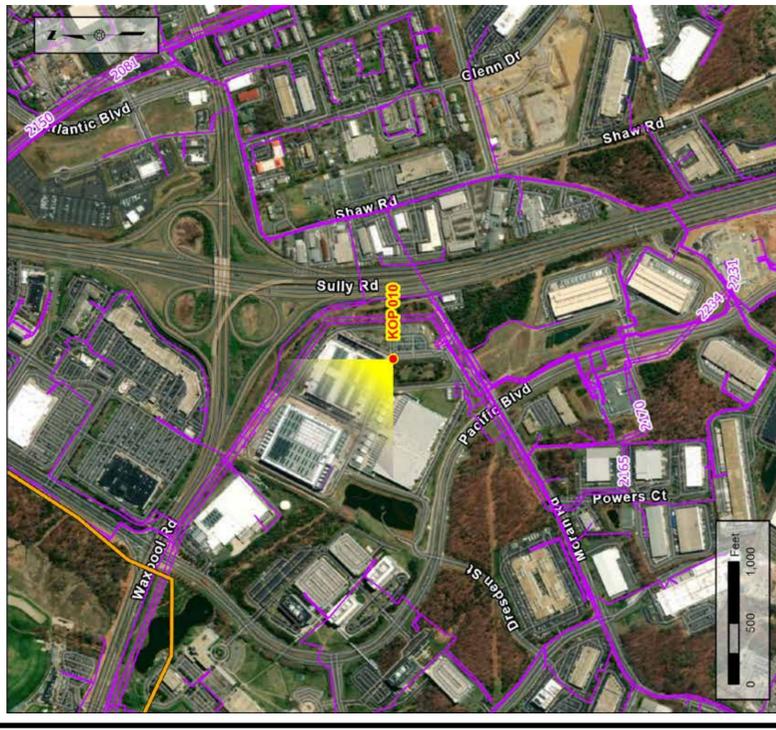
Figure 8. Aerial photograph depicting land use and photo view for 053-6406.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 010
 Vantage Data Plz

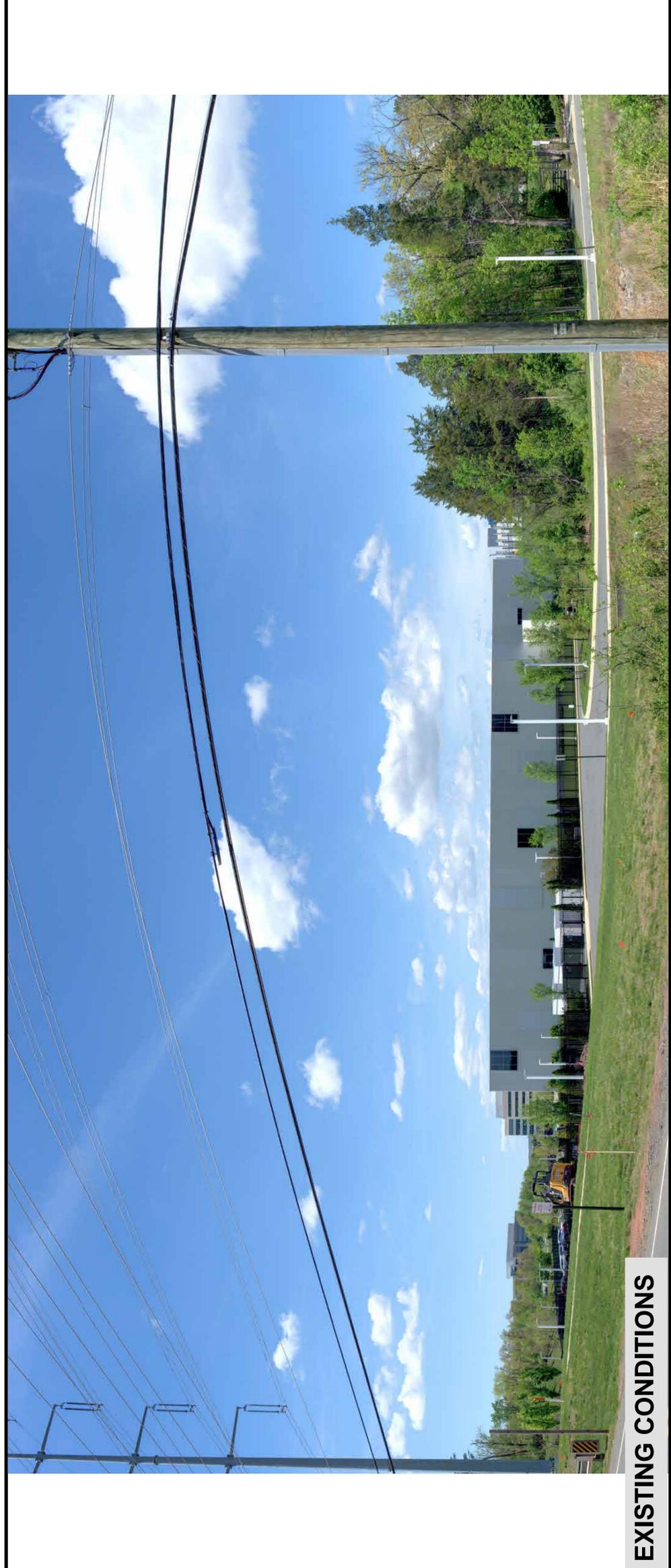
Figure 9
Route: Golden-Mars Route 1
Date: 04/18/2024
Time: 12:10 pm
Viewing Direction: Northwest
Distance to closest feature: 0.48 miles



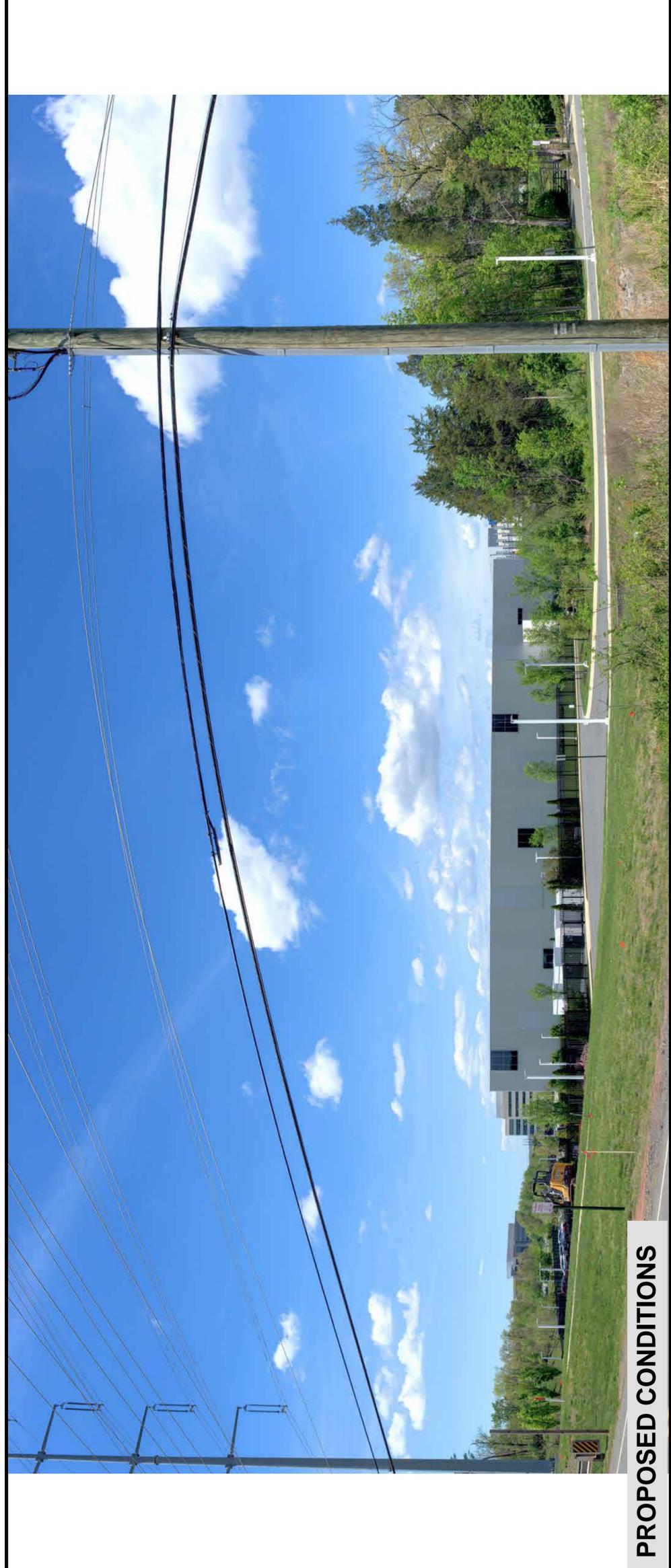
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 1
- KOP View Direction

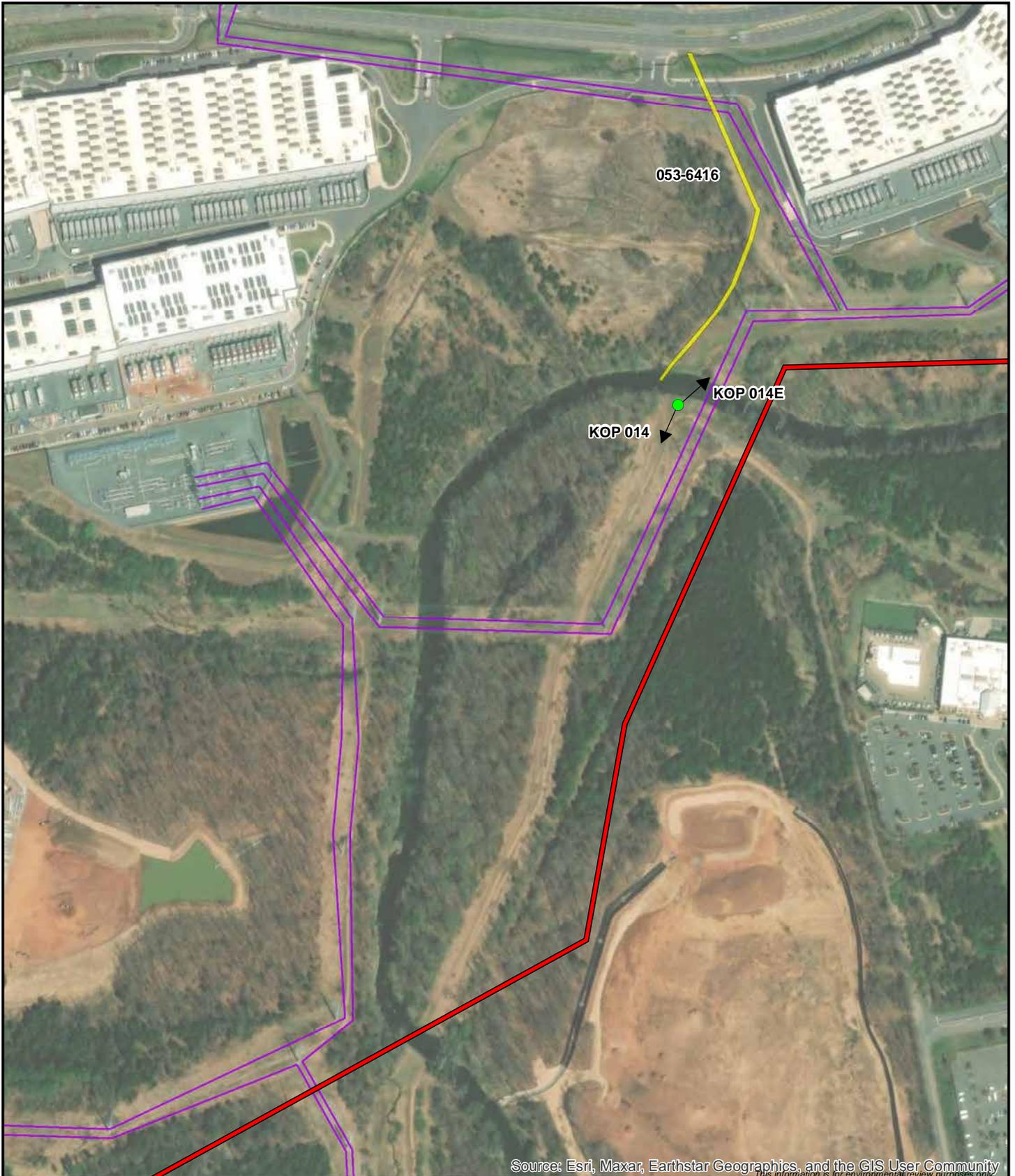
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



1:6,000

-  Golden-Mars Route 1
-  Existing Dominion Transmission Lines
-  Historic Resource
-  KOP Location



Figure 10. Aerial photograph depicting land use and photo view for 053-6416.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



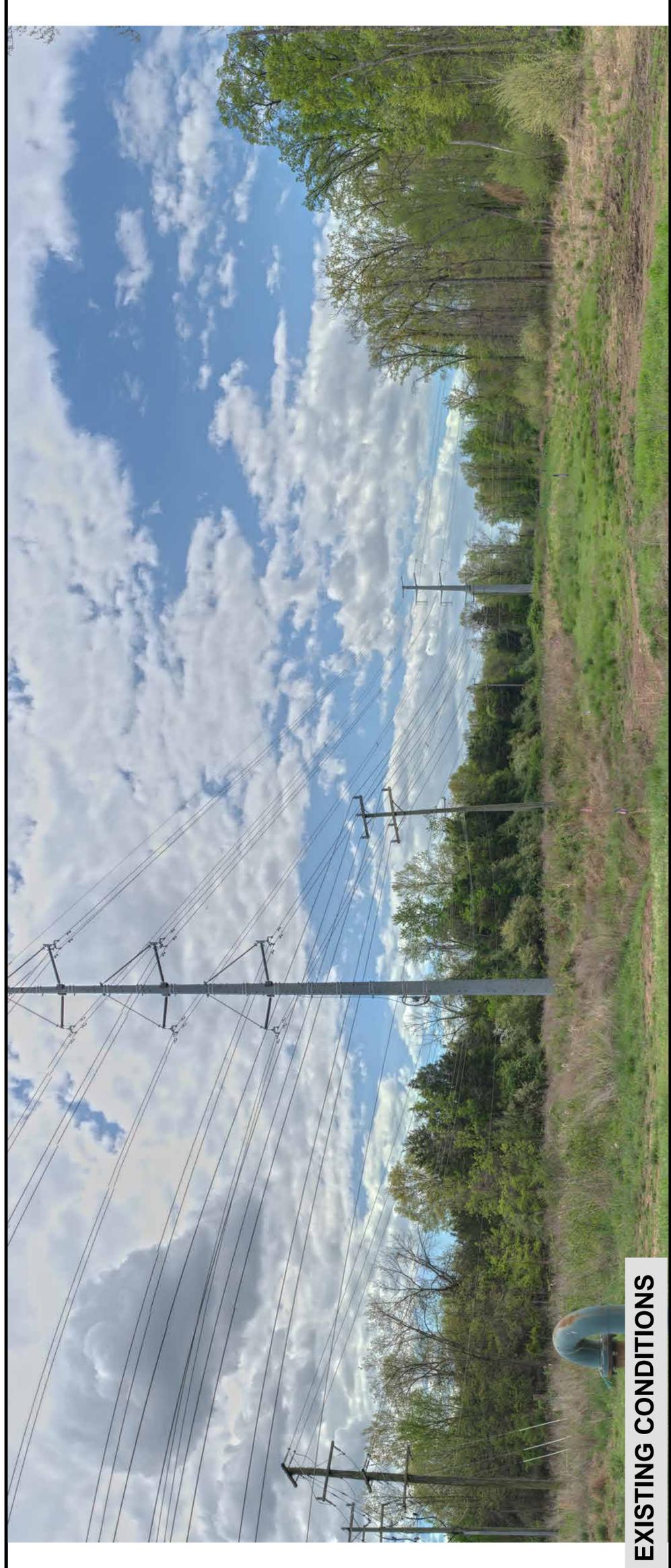
KOP 014
 Round Table Plz

Figure 11
Route: Golden-Mars Route 1
Date: 04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles

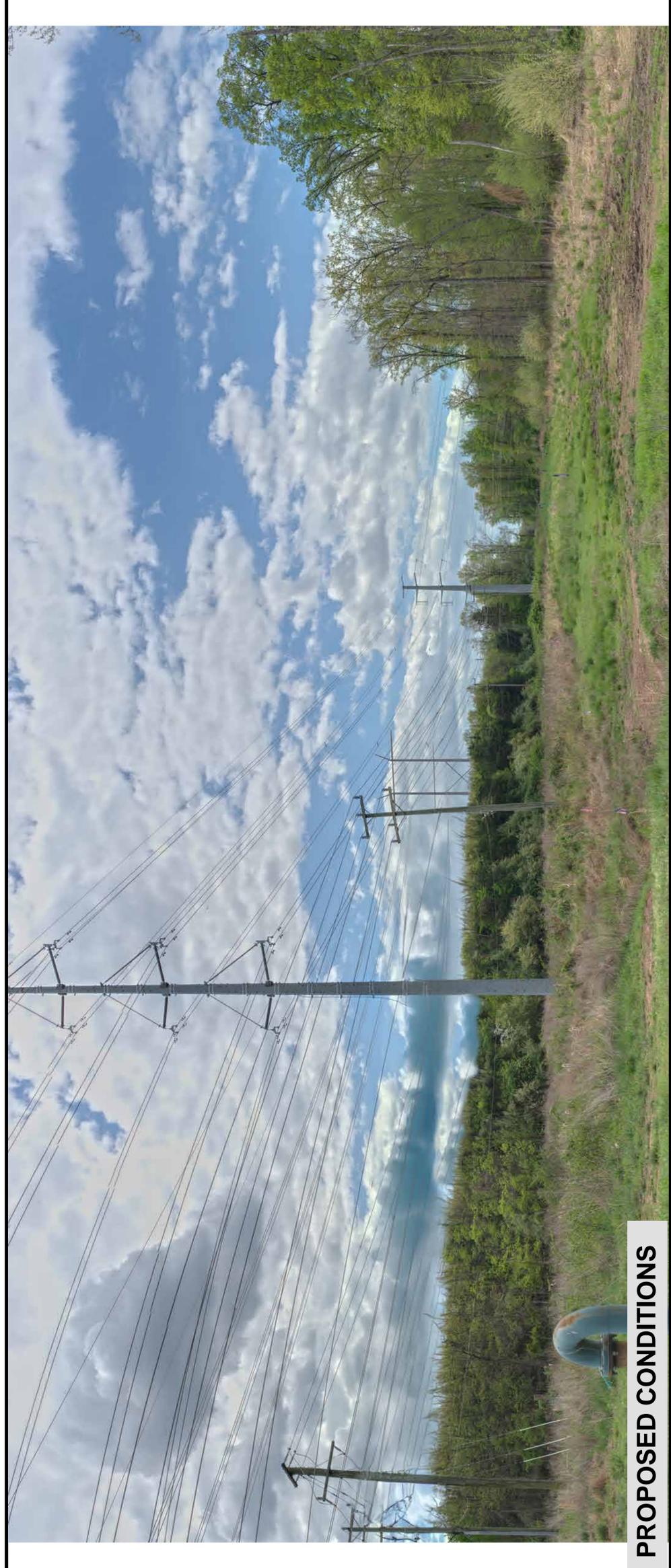


Legend
 Existing DOM Infrastructure
 Golden-Mars 500-230 kV Electric Transmission Project - Route 1
 KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 014E
 Round Table Plz

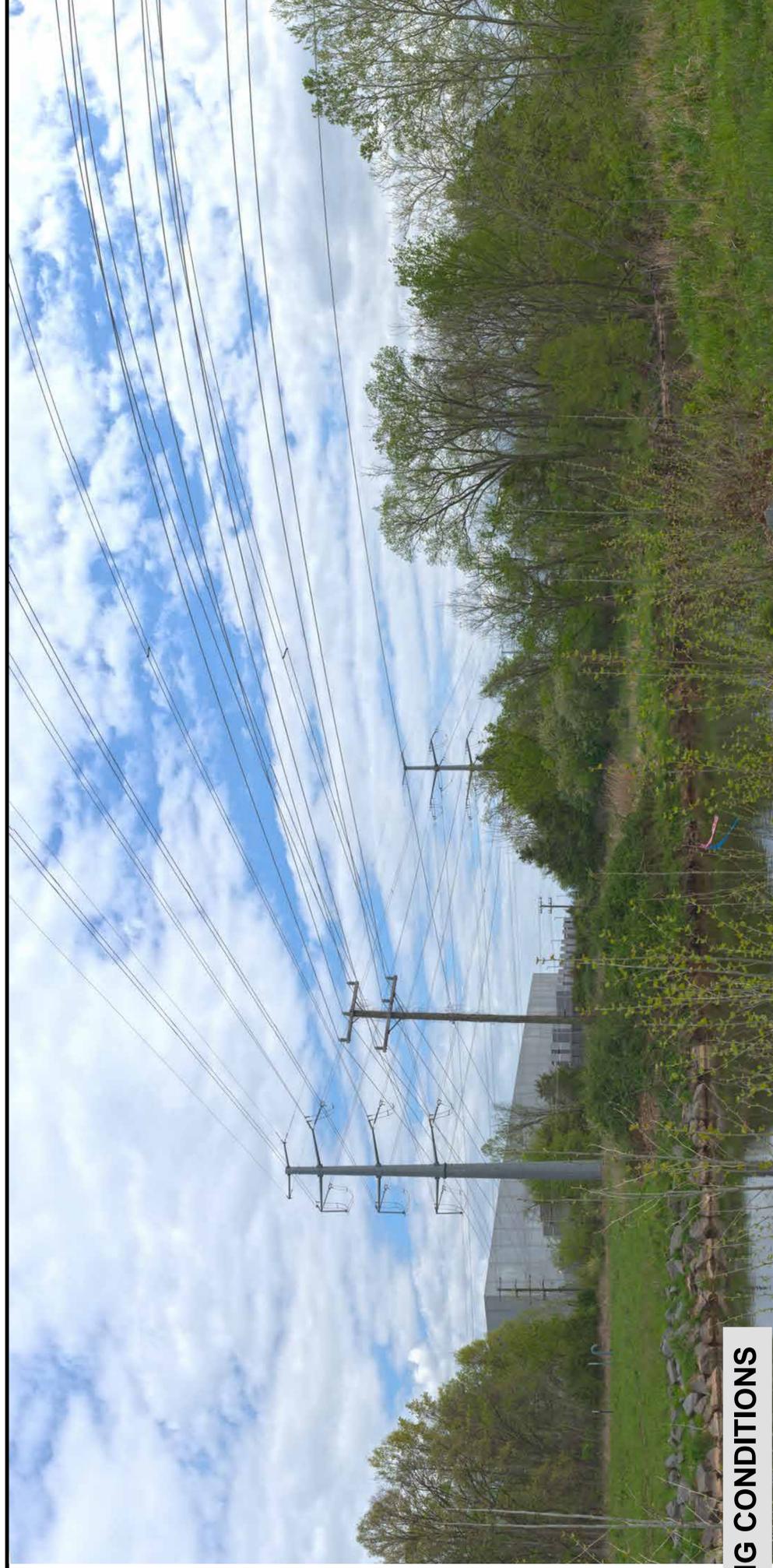
Figure 12
Route: Golden-Mars Route 1
Date: 04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles



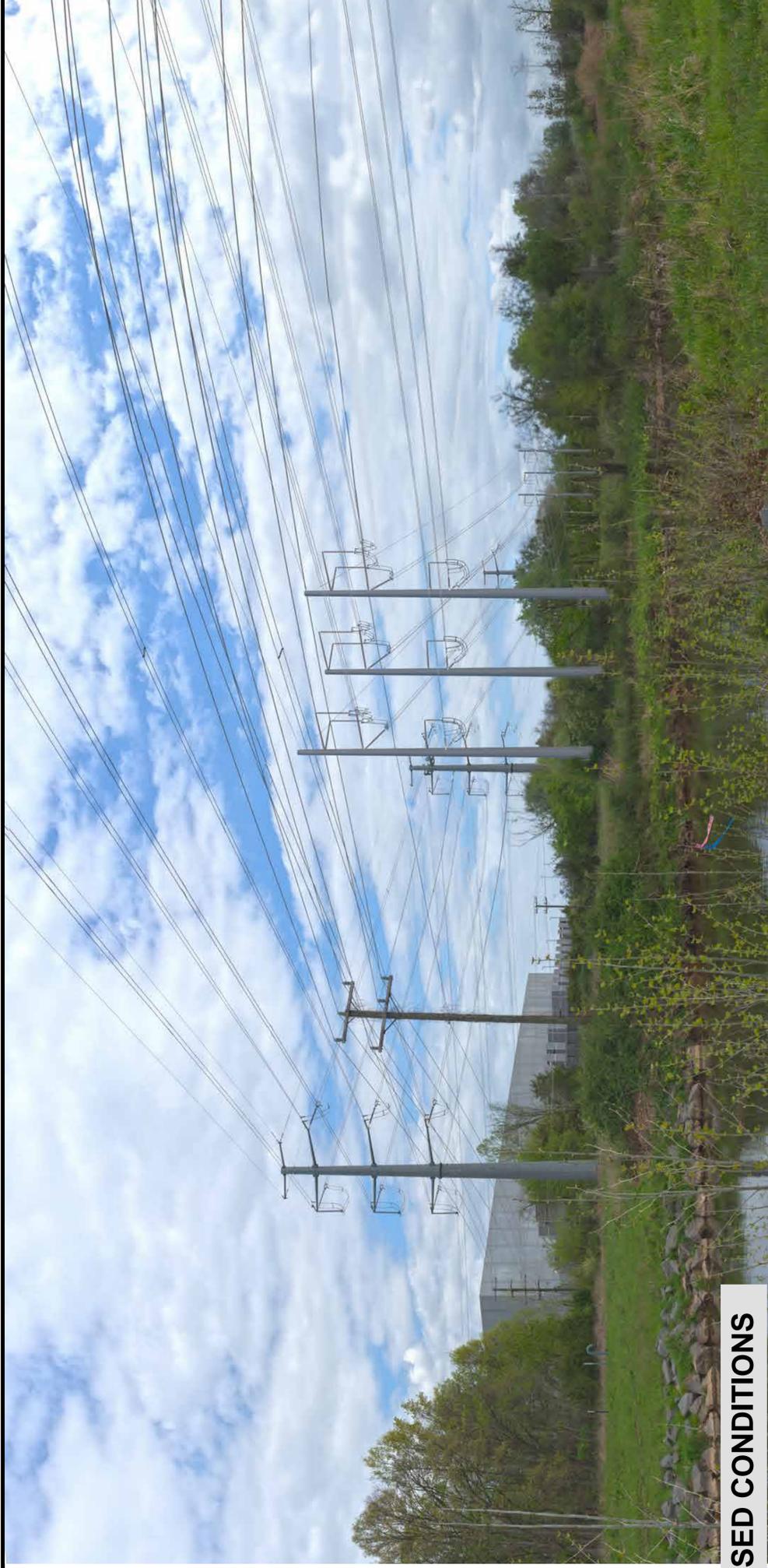
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 1
- KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



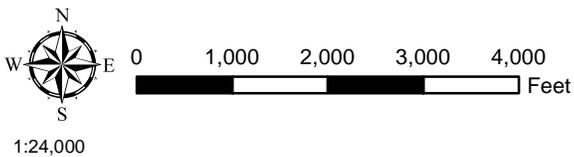
EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



-  Golden-Mars Route 2
-  Existing Dominion Transmission Lines
-  Future Substation
-  Historic Resource
-  KOP Location



Figure 13. Aerial photograph depicting land use and photo view for 053-0008.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP Airport
 Vortac Rd

Figure 14
Route: Golden-Mars Route 2
Date: 09/21/2024
Time: 10:00 am
Viewing Direction: Northwest
Distance to closest feature: 0.61 miles



Legend

- Golden-Mars 500-230 kV Electric Transmission Project - Route 2
- KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

EXISTING CONDITIONS

YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



0 490 980 1,470 1,960 Feet

1:12,000

-  Golden-Mars Route 2
-  Existing Dominion Transmission Lines
-  Future Substation
-  Historic Resource
-  KOP Location



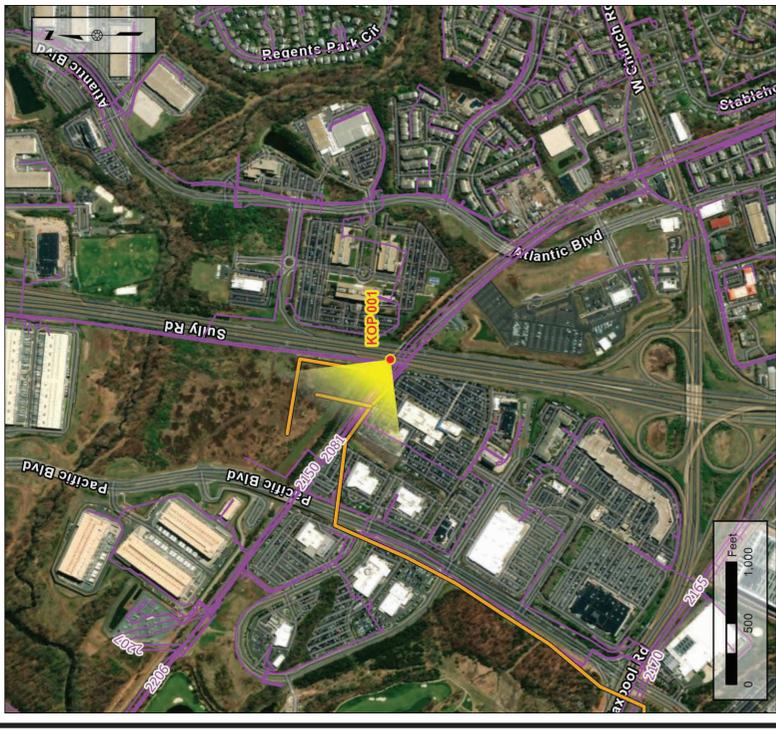
Figure 15. Aerial photograph depicting land use and photo view for 053-0276.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 001
 Sully Rd

Figure 16
Route: Golden-Mars Route 2
Date: 04/17/2024
Time: 11:22 am
Viewing Direction: Northwest
Distance to closest feature: 0.04 miles



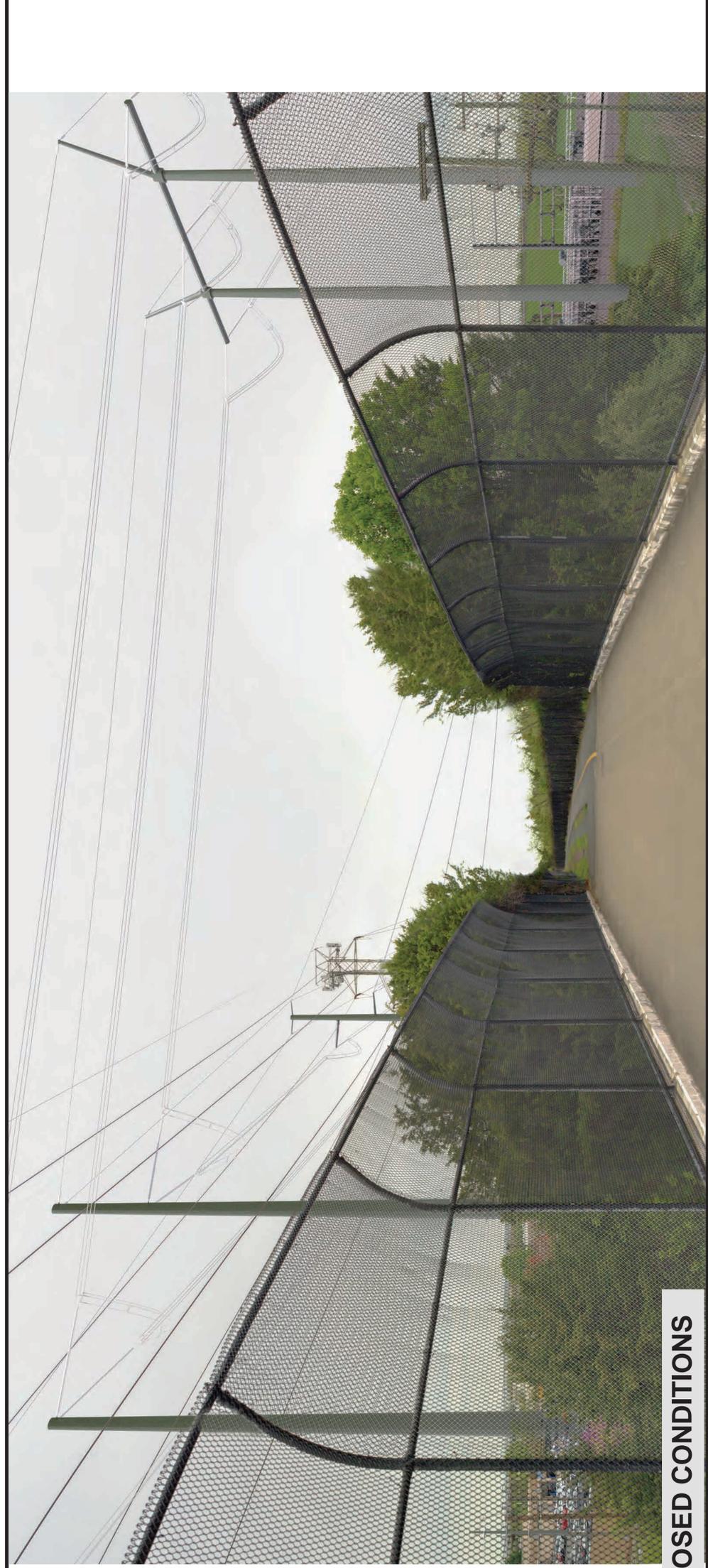
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 2
- KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



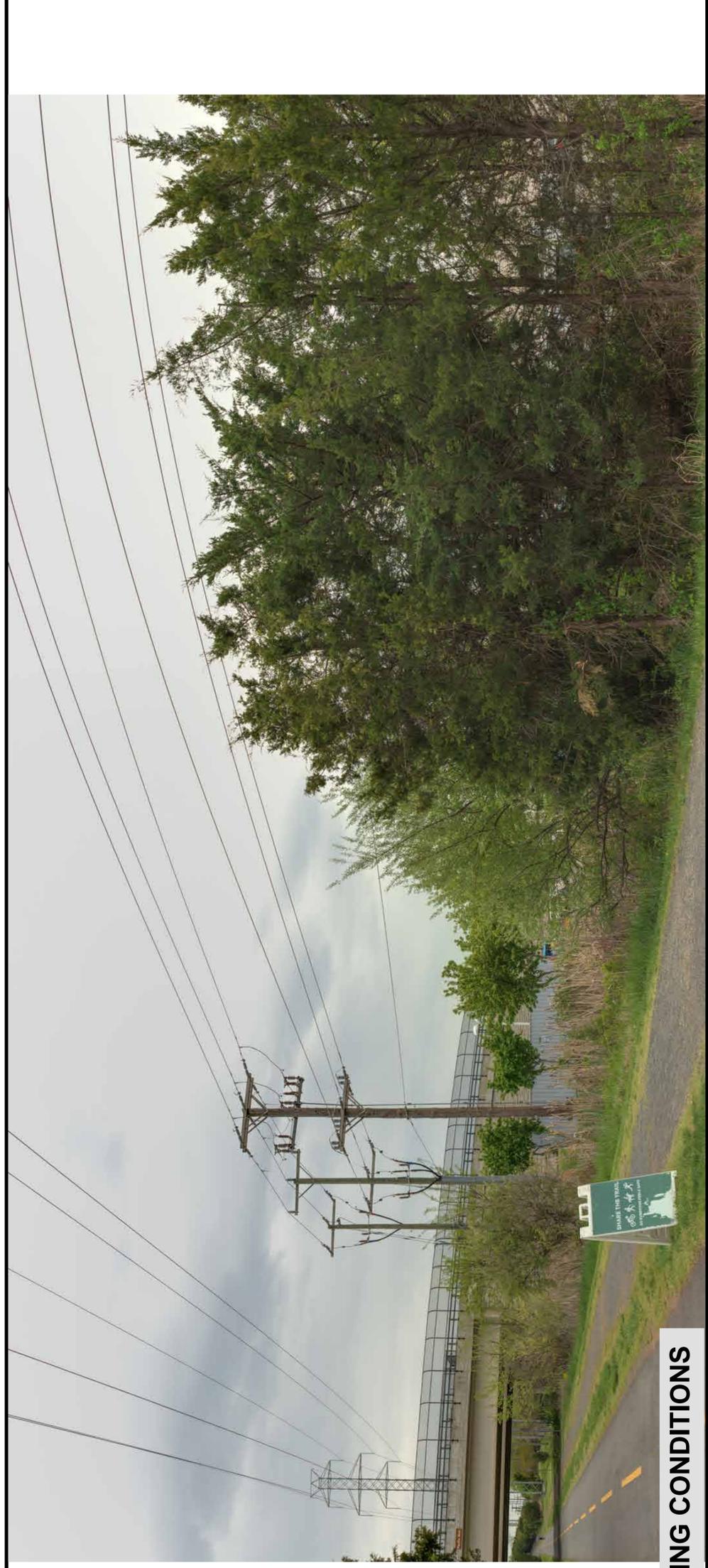
KOP 002
 Pacific Blvd

Figure 17
Route: Golden-Mars Route 2
Date: 04/17/2024
Time: 10:46 am
Viewing Direction: South
Distance to closest feature: 0.10 miles

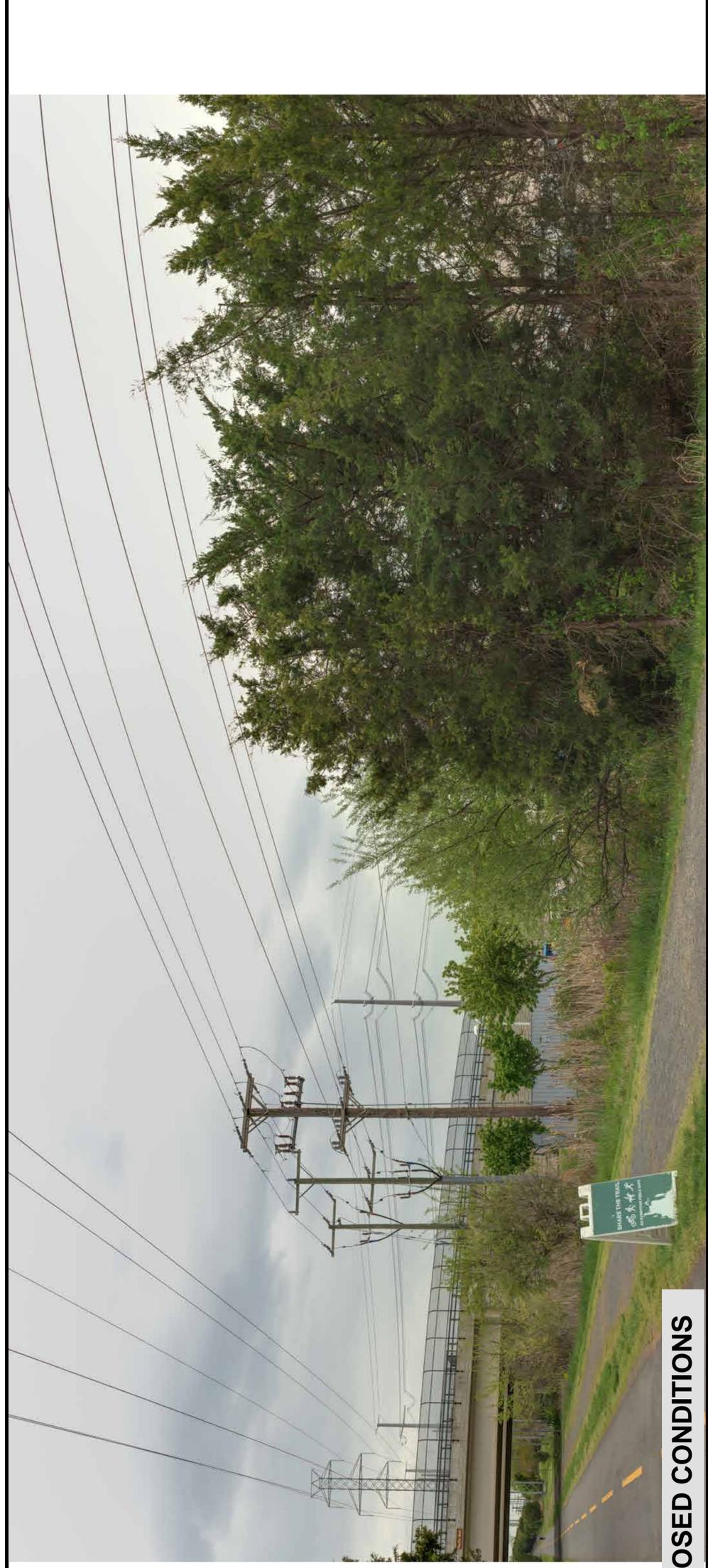


- Legend**
- Existing DOM Infrastructure
 - Golden-Mars 500-230 kV Electric Transmission Project - Route 2
 - KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



1:12,000

-  Golden-Mars Route 2
-  Existing Dominion Transmission Lines
-  Future Substation
-  Historic Resource
-  KOP Location



Figure 18. Aerial photograph depicting land use and photo view for 053-0968.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 005
 W Church Rd

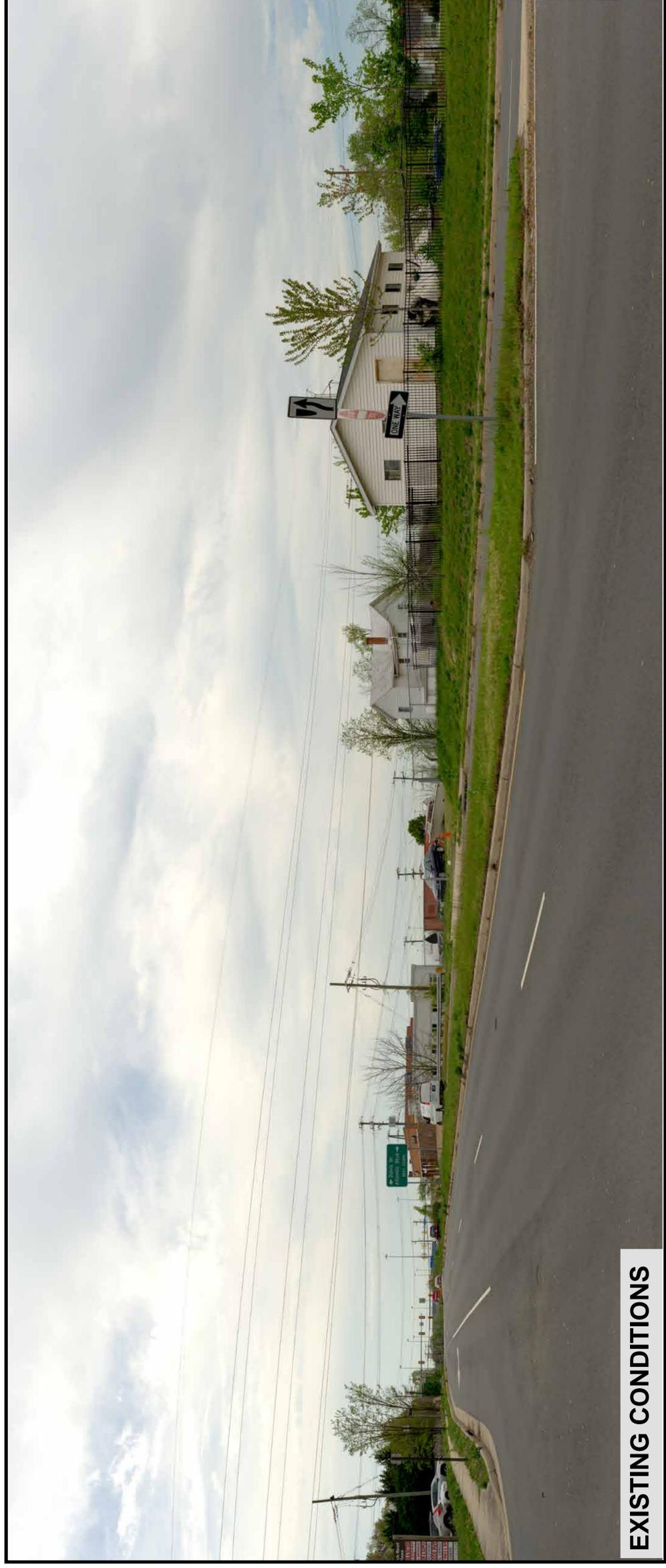
Figure 19
Route: Golden-Mars Route 2
Date: 04/17/2024
Time: 12:49 pm
Viewing Direction: Southeast
Distance to closest feature: 0.58 miles



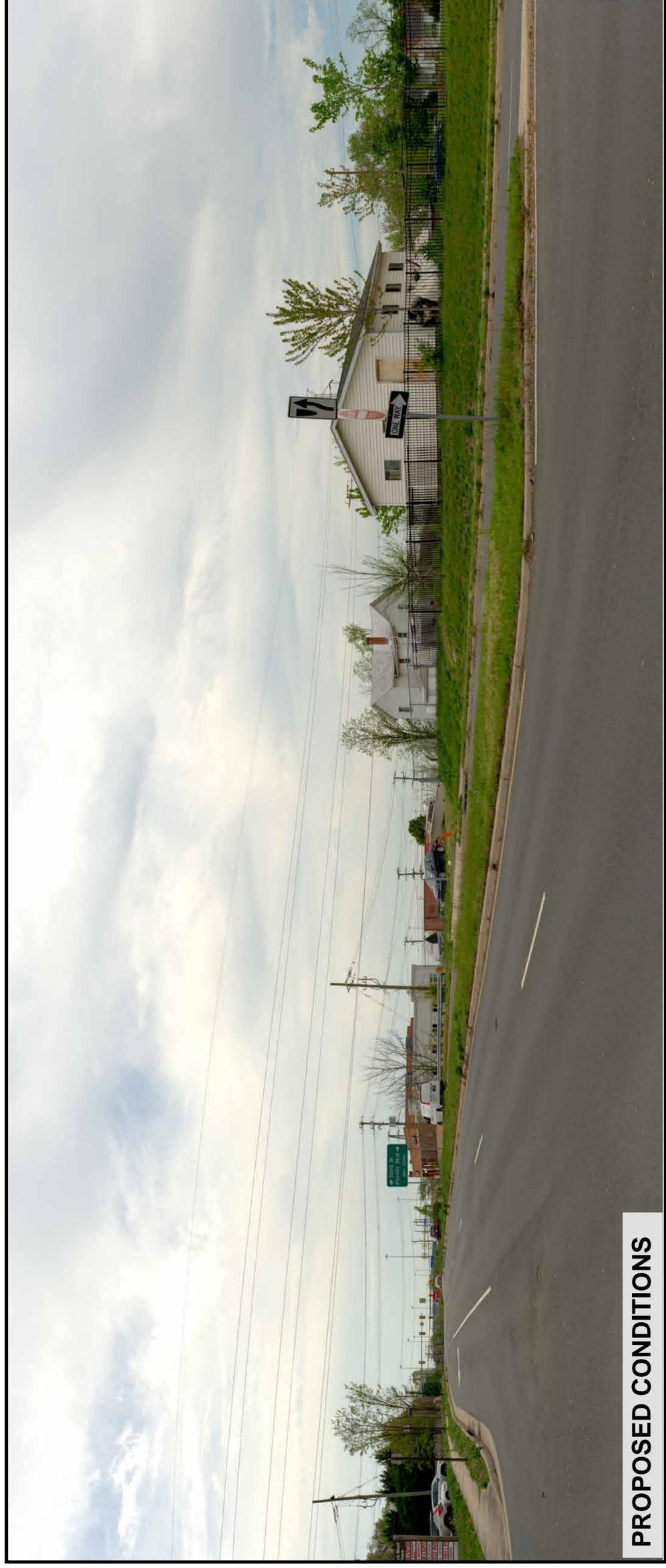
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 2
- KOP View Direction

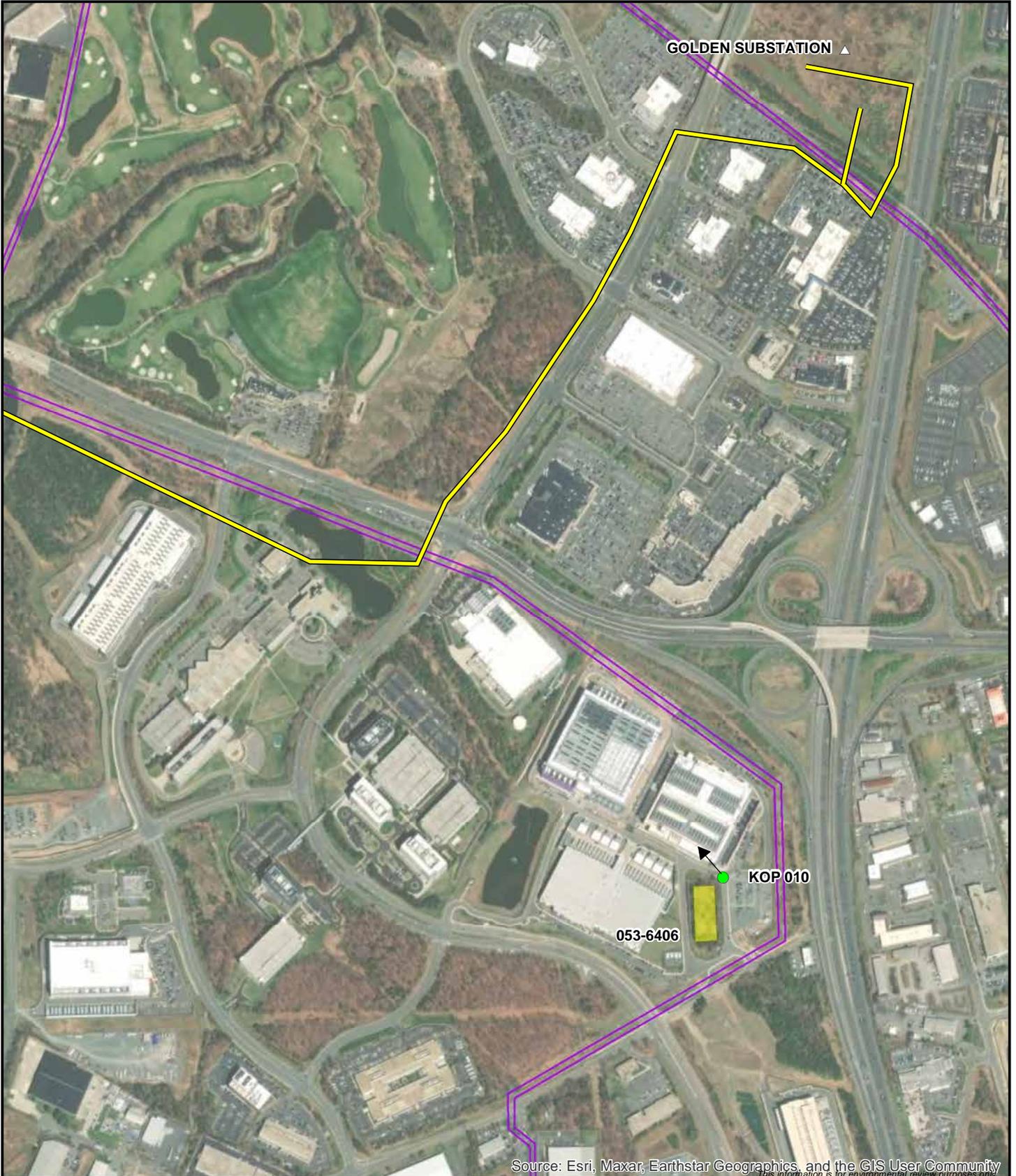
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



1:12,000

-  Golden-Mars Route 2
-  Existing Dominion Transmission Lines
-  Future Substation
-  Historic Resource
-  KOP Location



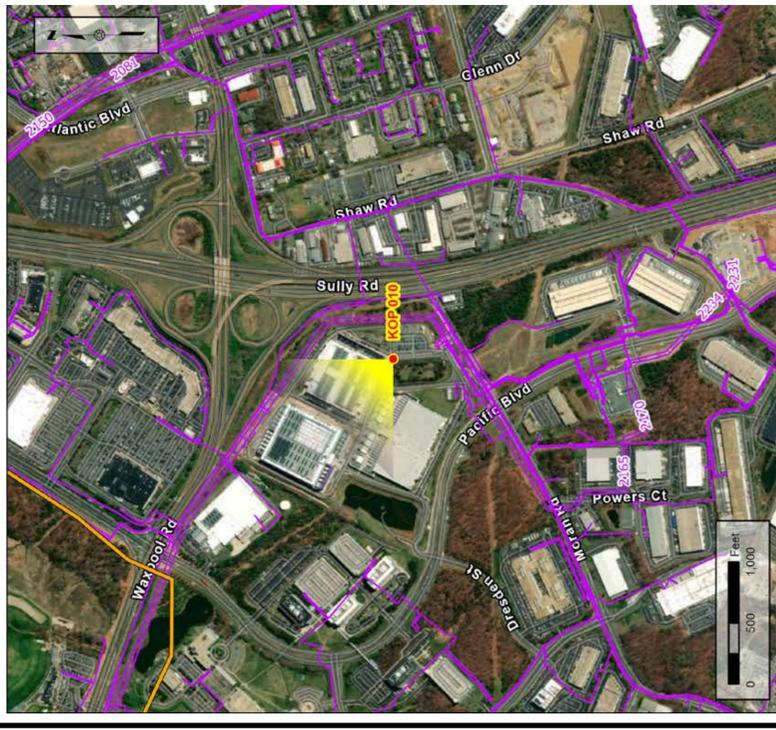
Figure 20. Aerial photograph depicting land use and photo view for 053-6406.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 010
 Vantage Data Plz

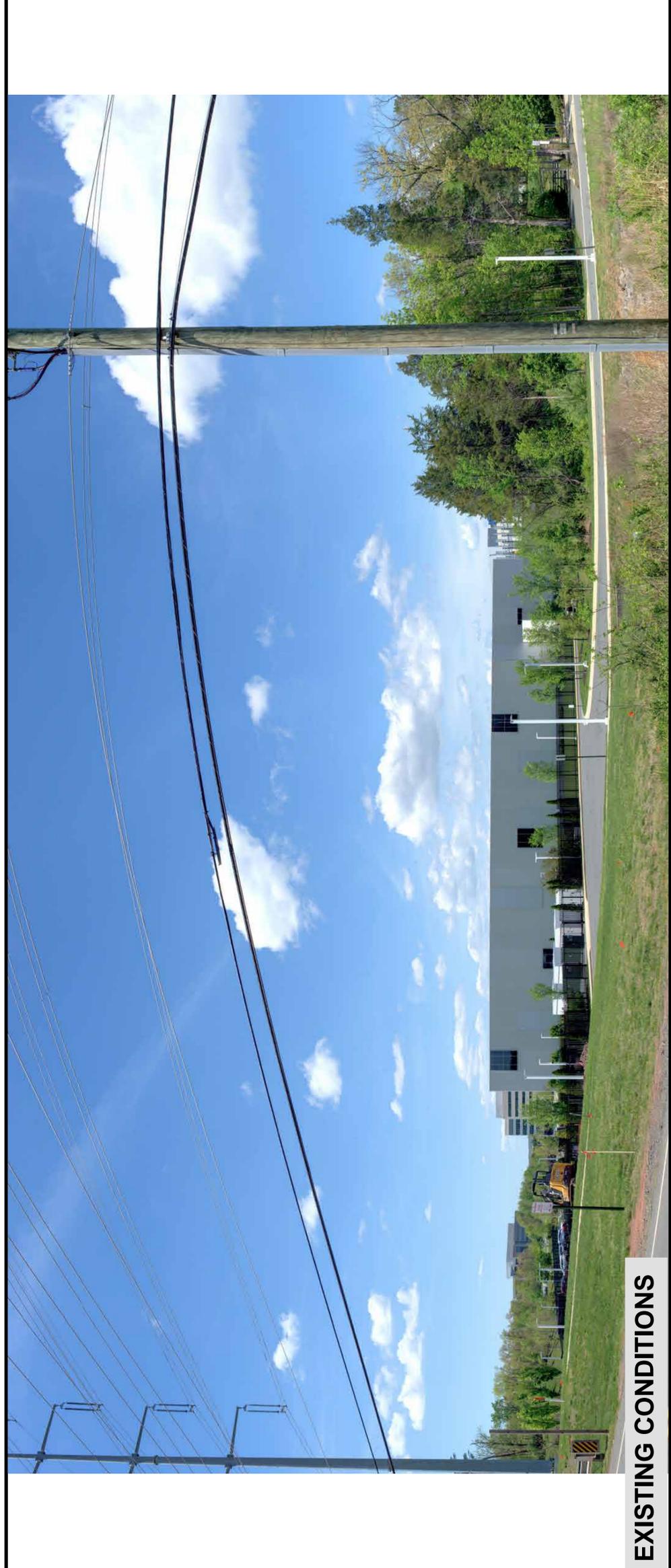
Figure 21
Route: Golden-Mars Route 2
Date: 04/18/2024
Time: 12:10 pm
Viewing Direction: Northwest
Distance to closest feature: 0.48 miles



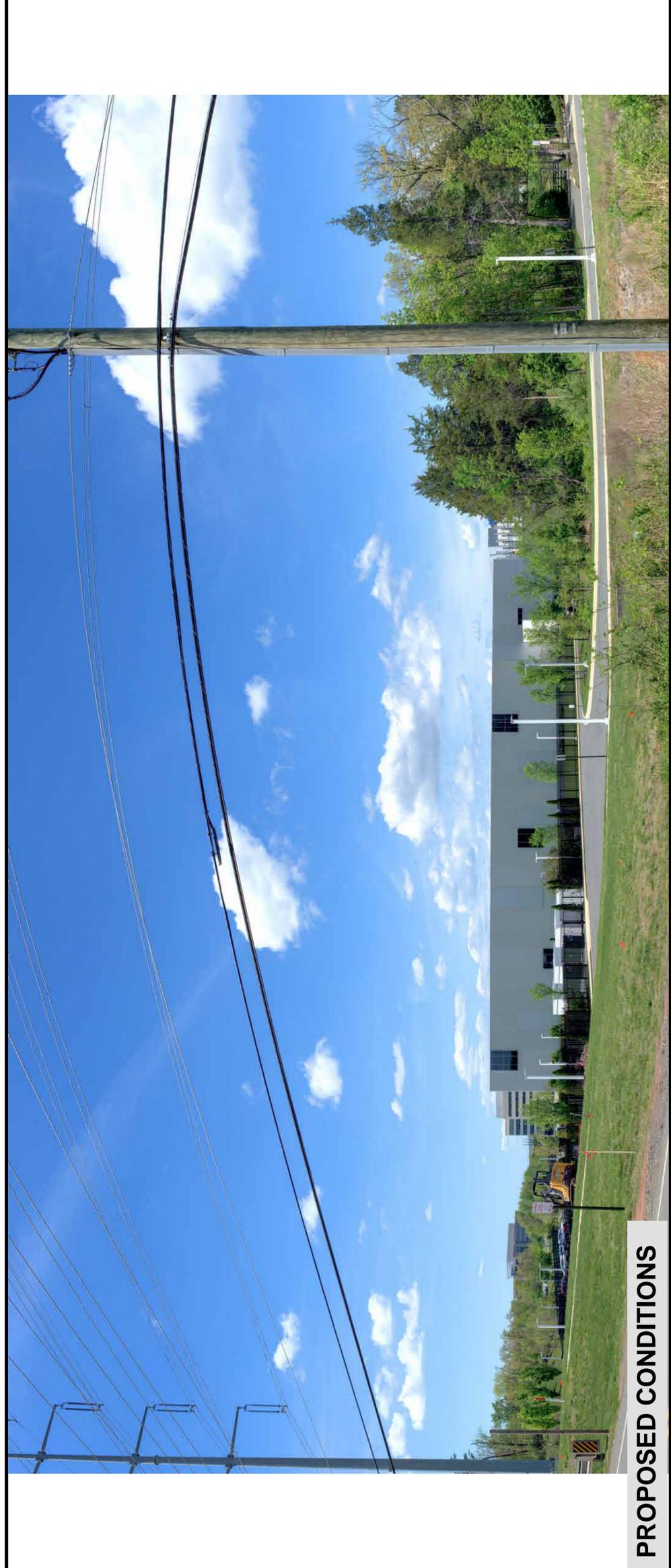
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 2
- KOP View Direction

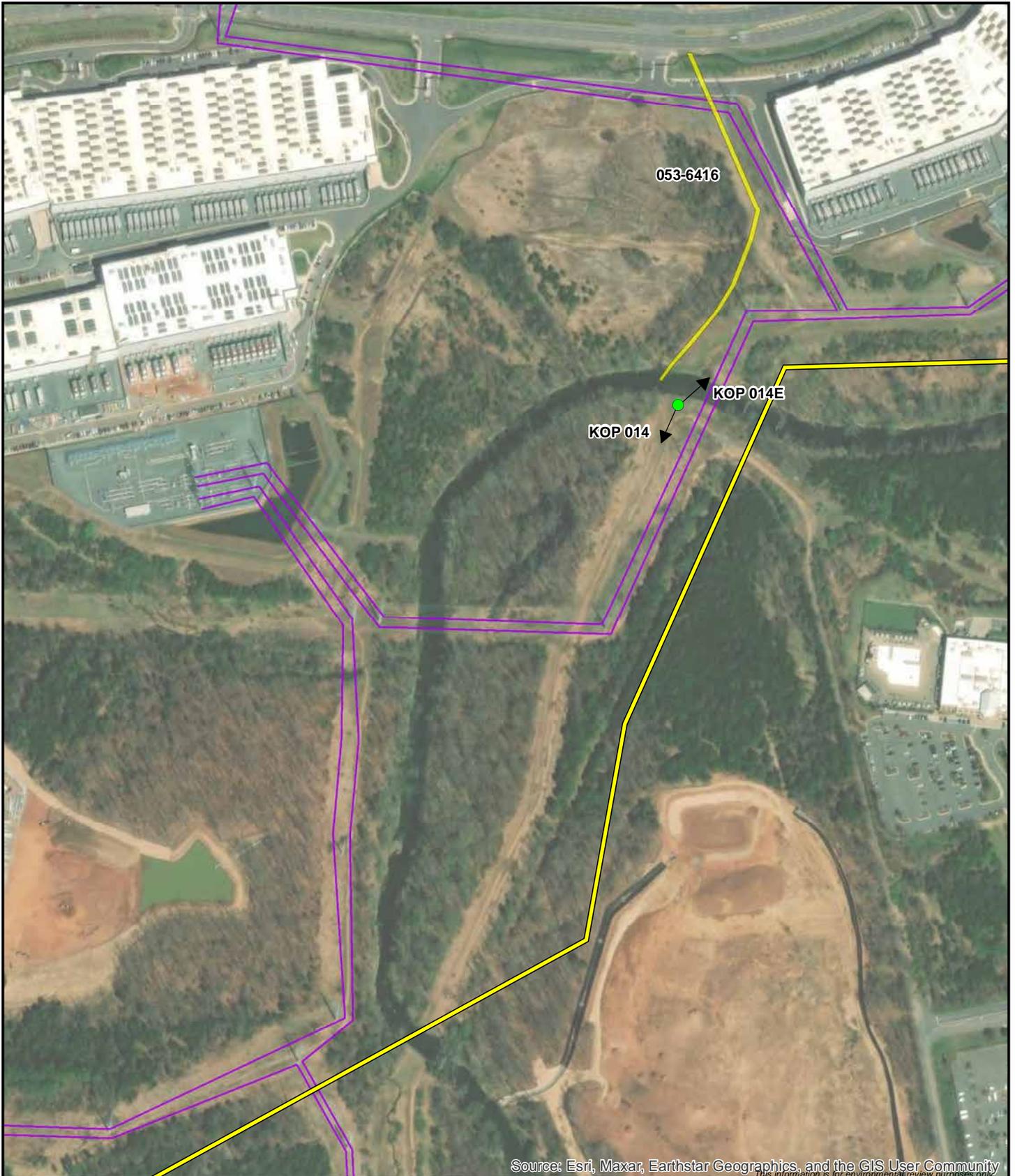
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



1:6,000

-  Golden-Mars Route 2
-  Existing Dominion Transmission Lines
-  Historic Resource
-  KOP Location



Figure 22. Aerial photograph depicting land use and photo view for 053-6416.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 014
 Round Table Plz

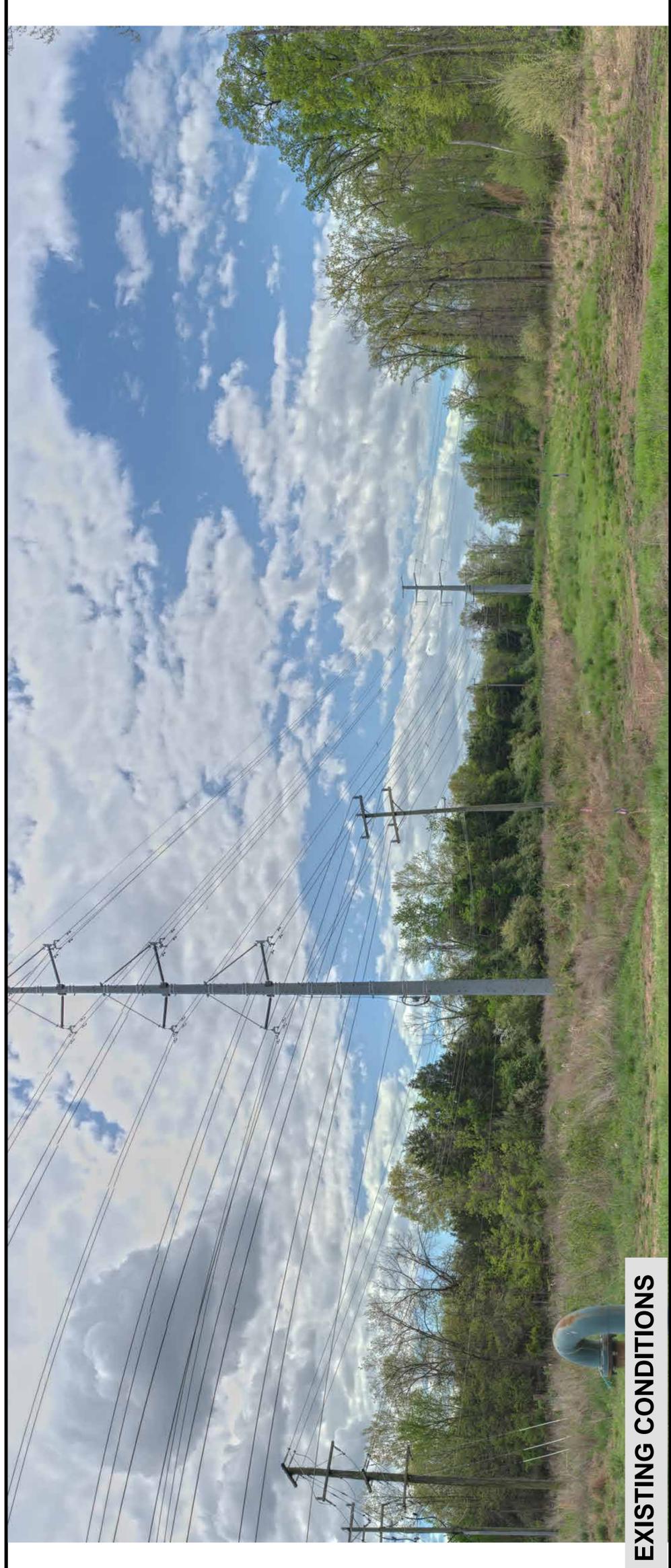
Figure 23
Route: Golden-Mars Route 2
Date: 04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles



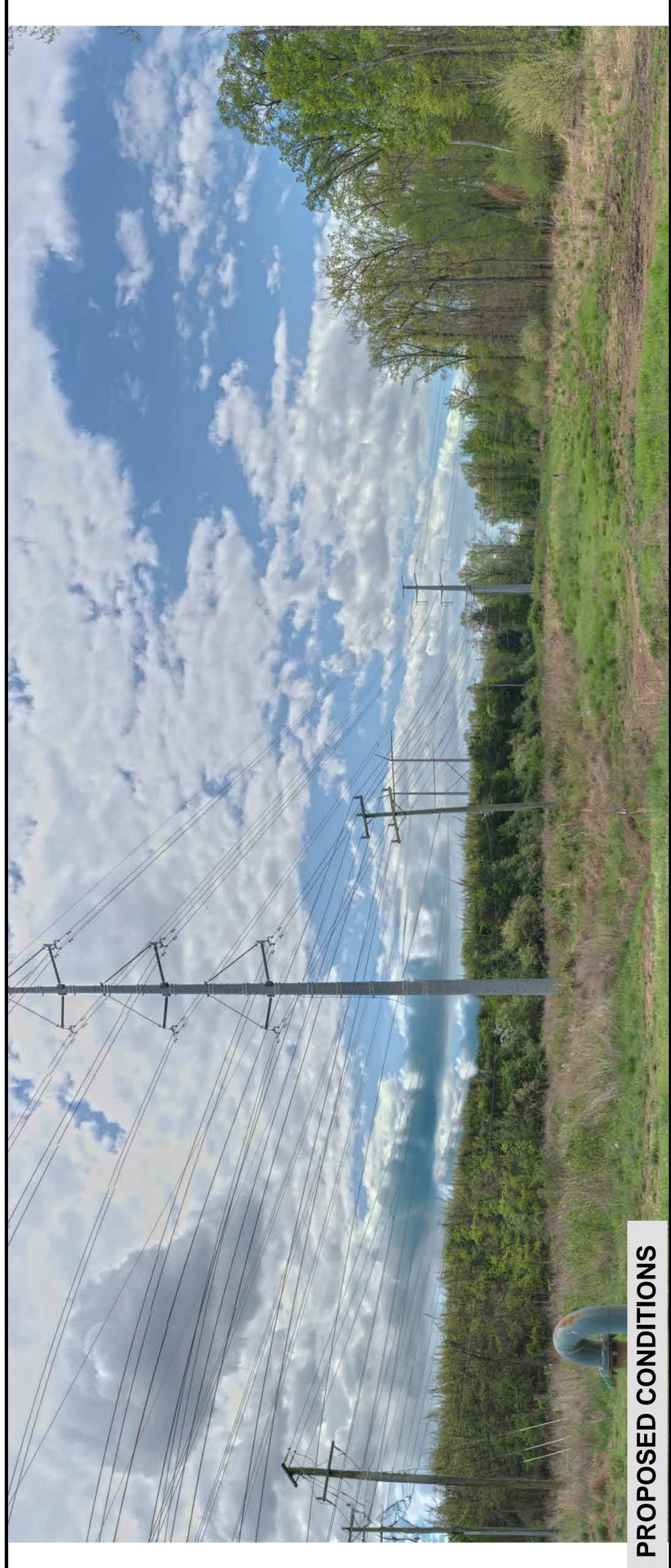
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 2
- KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 014E
 Round Table Plz

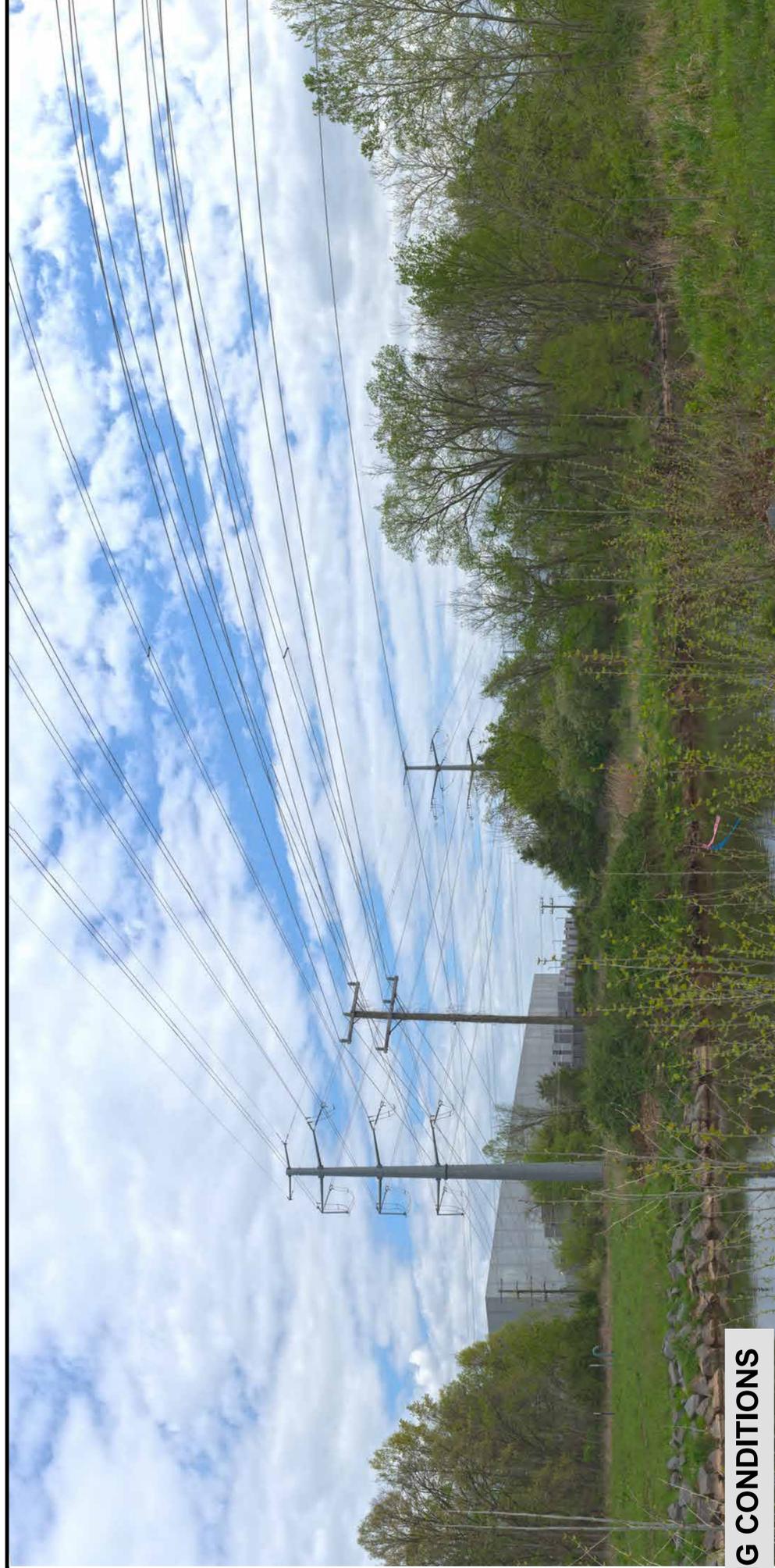
Figure 24
Route: Golden-Mars Route 2
Date: 04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles



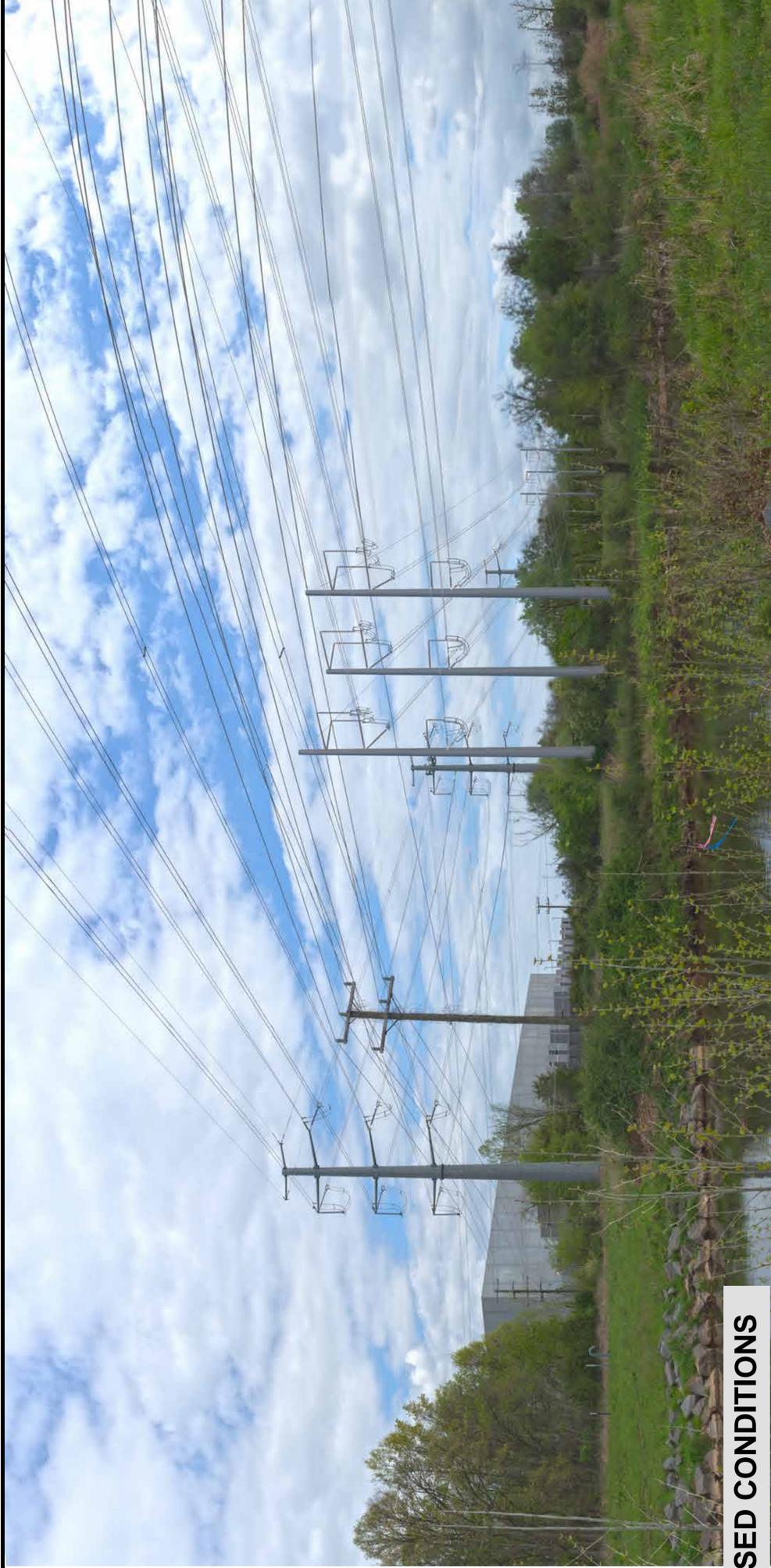
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 2
- KOP View Direction

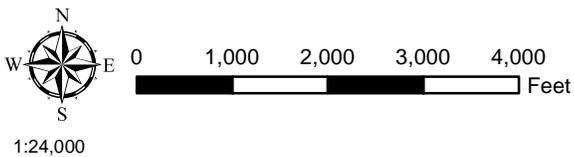
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



- Golden-Mars Route 3
- Existing Dominion Transmission Lines
- ▲ Future Substation
- Historic Resource
- KOP Location



Figure 25. Aerial photograph depicting land use and photo view for 053-0008.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP Airport
 Vortac Rd

Figure 26
Route: Golden-Mars Route 3
Date: 09/21/2024
Time: 10:00 am
Viewing Direction: Northwest
Distance to closest feature: 0.61 miles

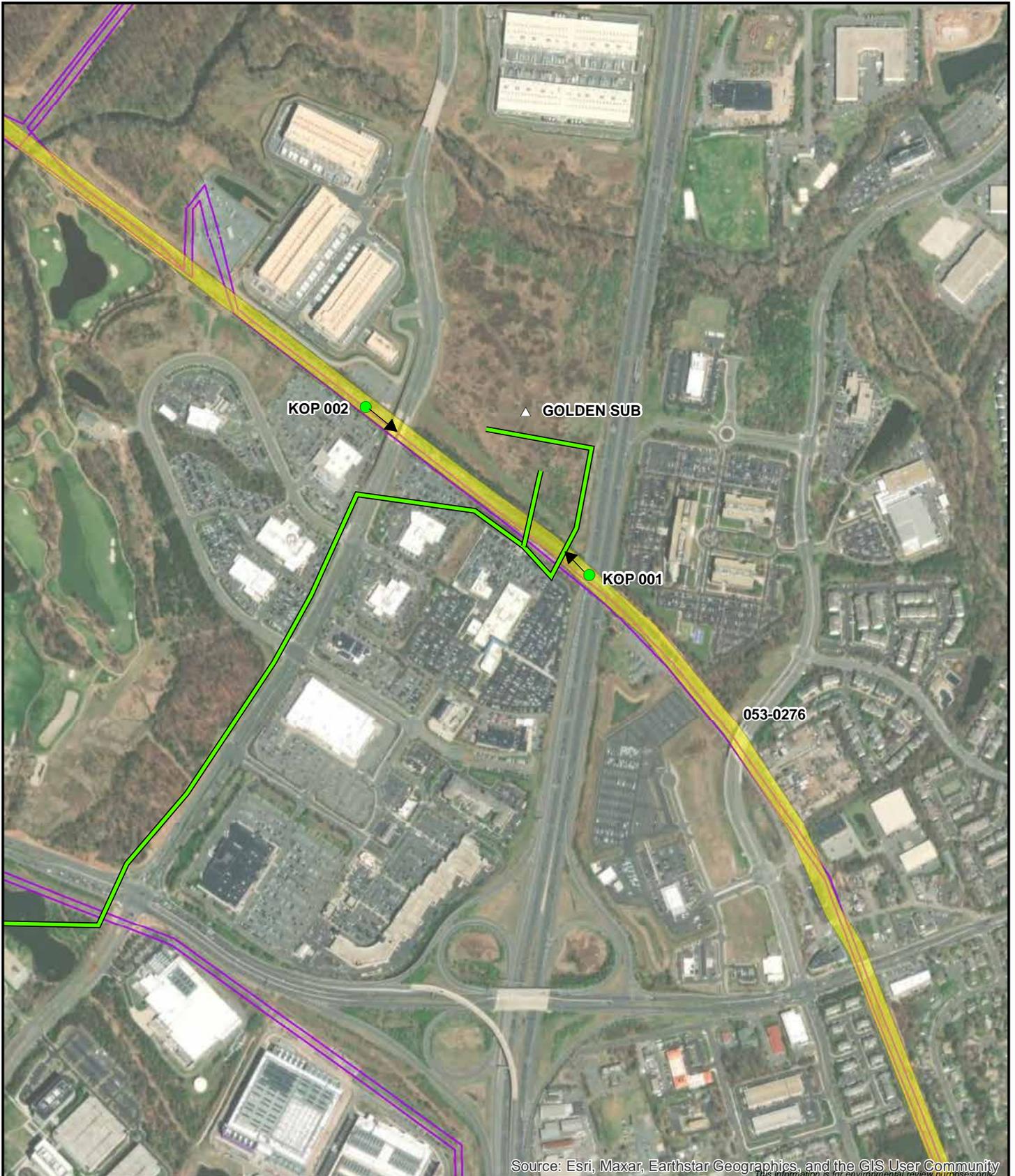


Legend
 Golden-Mars 500-230 kV Electric Transmission Project - Route 3
 KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

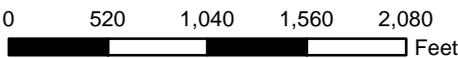
EXISTING CONDITIONS

YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

This information is for environmental review purposes only.



1:12,000

-  Golden-Mars Route 3
-  Existing Dominion Transmission Lines
-  Future Substation
-  Historic Resource
-  KOP Location



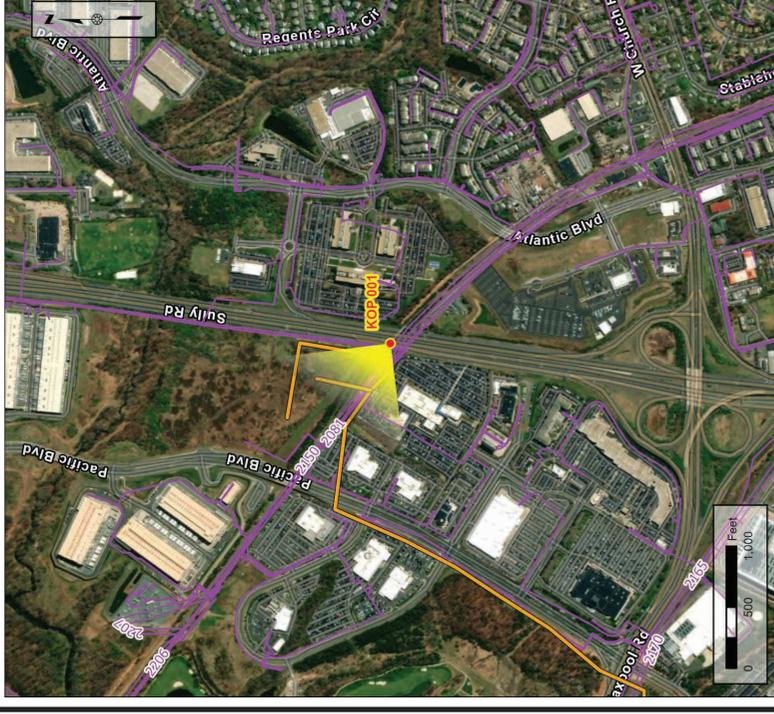
Figure 27. Aerial photograph depicting land use and photo view for 053-0276.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 001
 Sully Rd

Figure 28
Route: Golden-Mars Route 3
Date: 04/17/2024
Time: 11:22 am
Viewing Direction: Northwest
Distance to closest feature: 0.04 miles



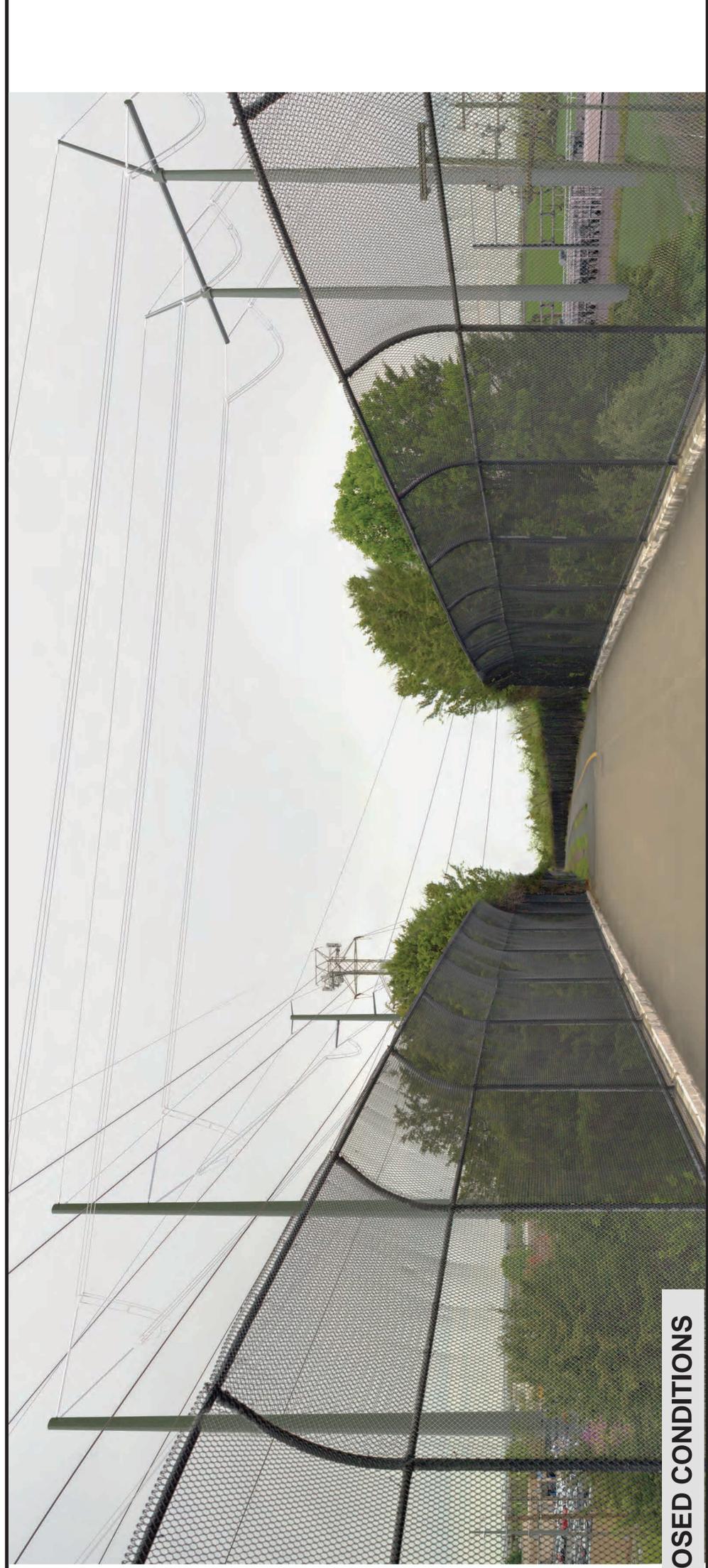
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 3
- KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



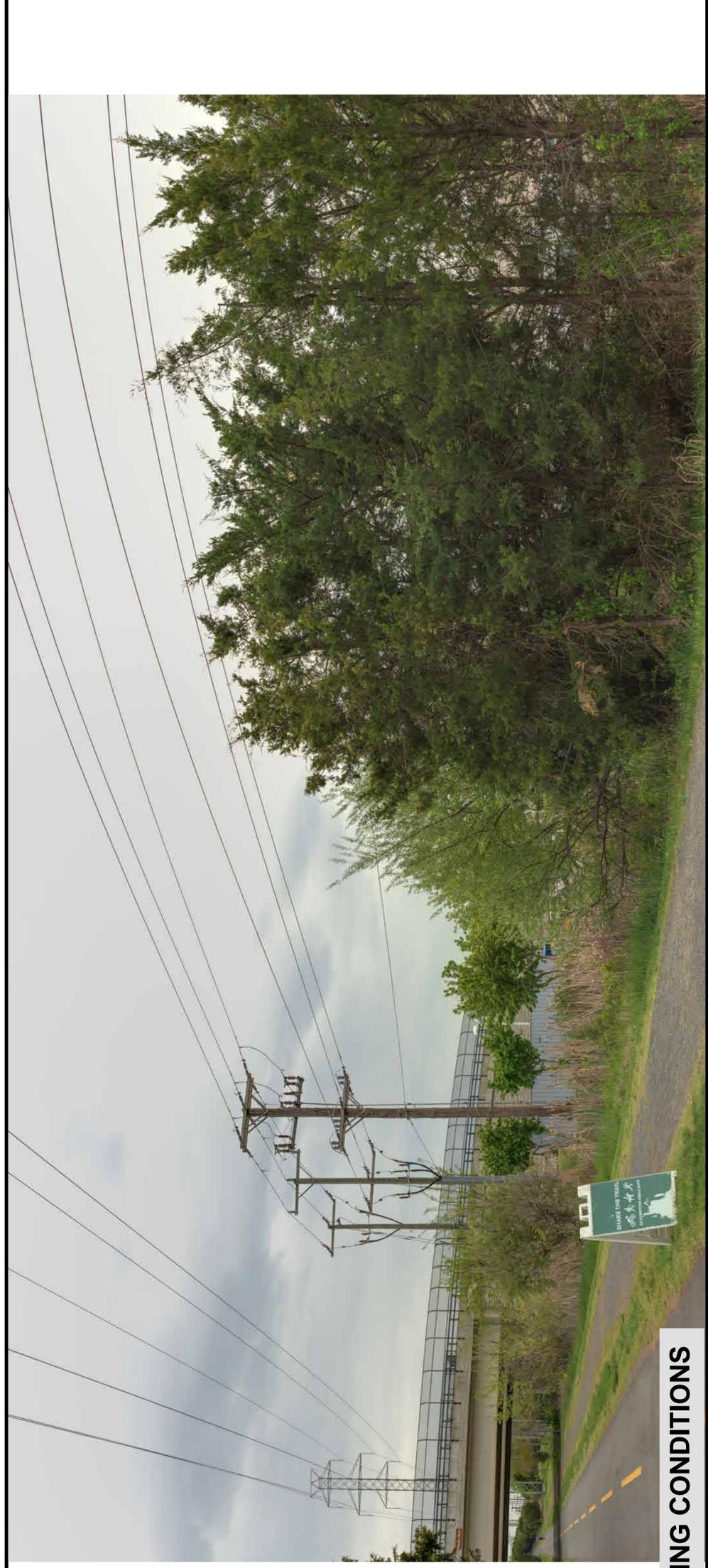
KOP 002
 Pacific Blvd

Figure 29
Route: Golden-Mars Route 3
Date: 04/17/2024
Time: 10:46 am
Viewing Direction: South
Distance to closest feature: 0.10 miles

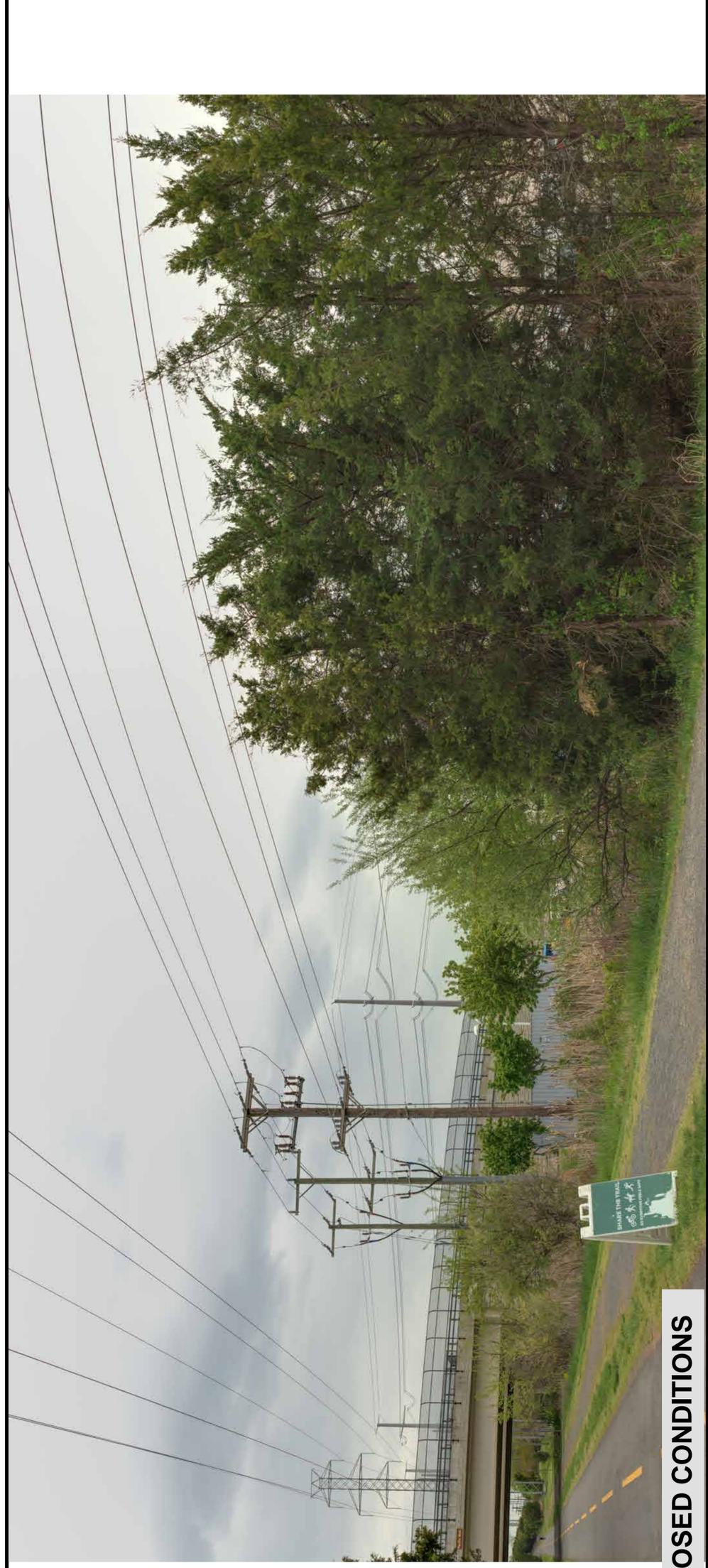


- Legend**
- Existing DOM Infrastructure
 - Golden-Mars 500-230 kV Electric Transmission Project - Route 3
 - KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



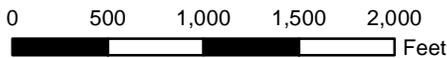
EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



1:12,000

-  Golden-Mars Route 3
-  Existing Dominion Transmission Lines
-  Future Substation
-  Historic Resource
-  KOP Location



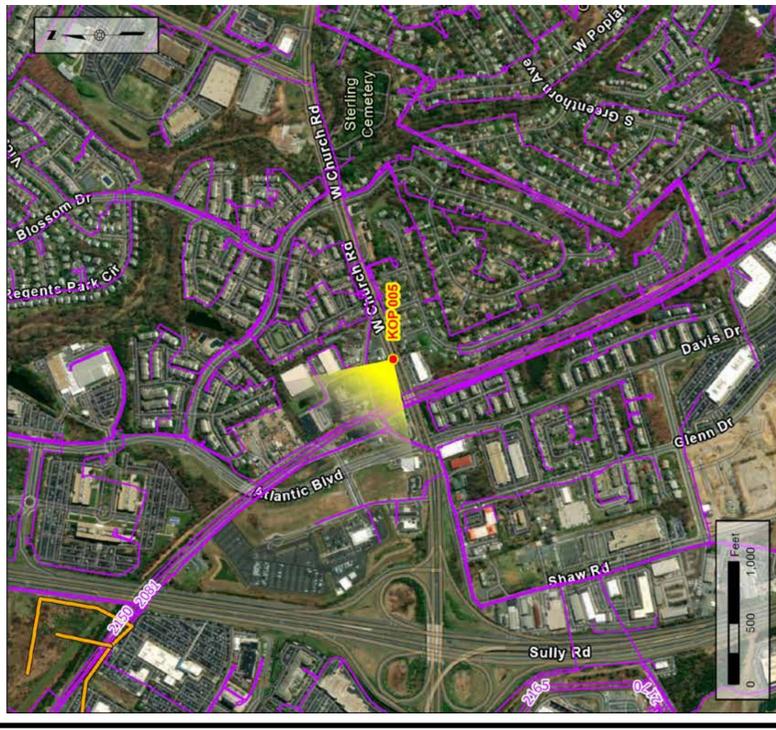
Figure 30. Aerial photograph depicting land use and photo view for 053-0968.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 005
 W Church Rd

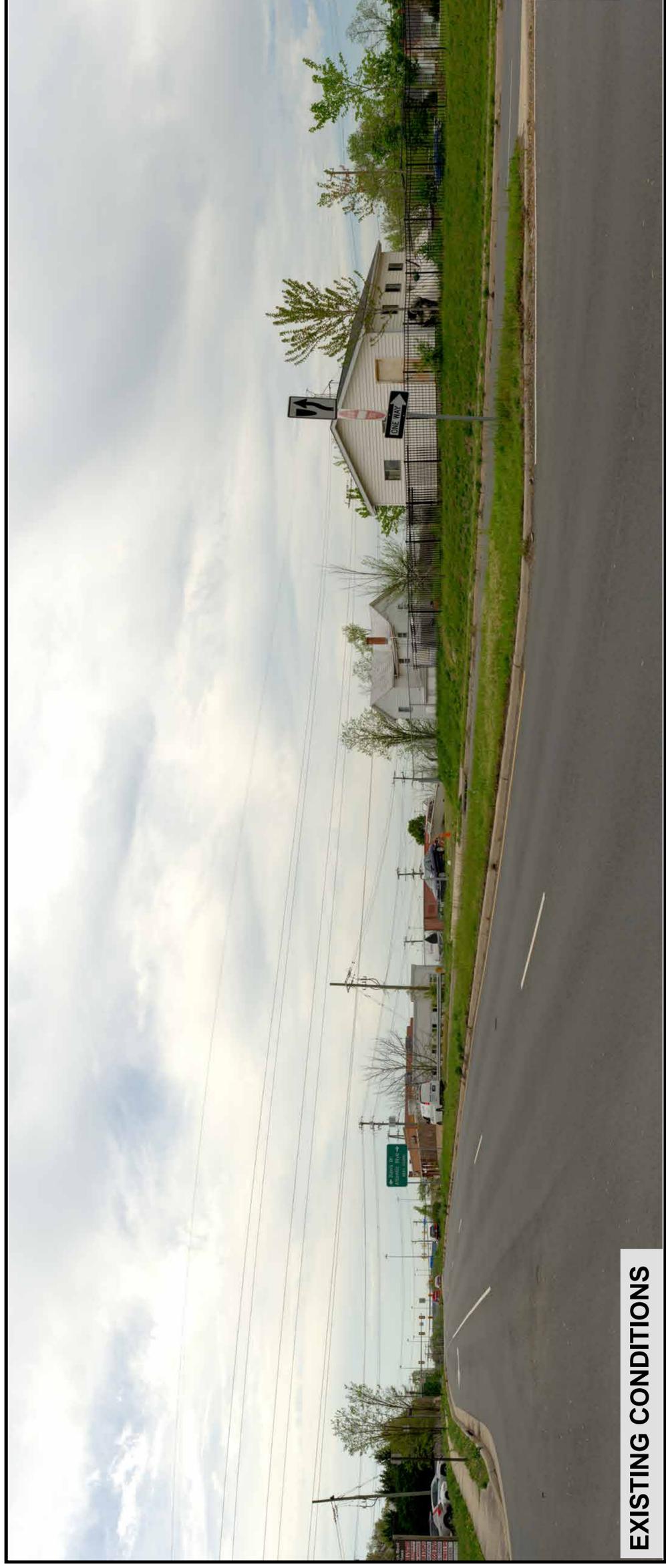
Figure 31
Route: Golden-Mars Route 3
Date: 04/17/2024
Time: 12:49 pm
Viewing Direction: Southeast
Distance to closest feature: 0.58 miles



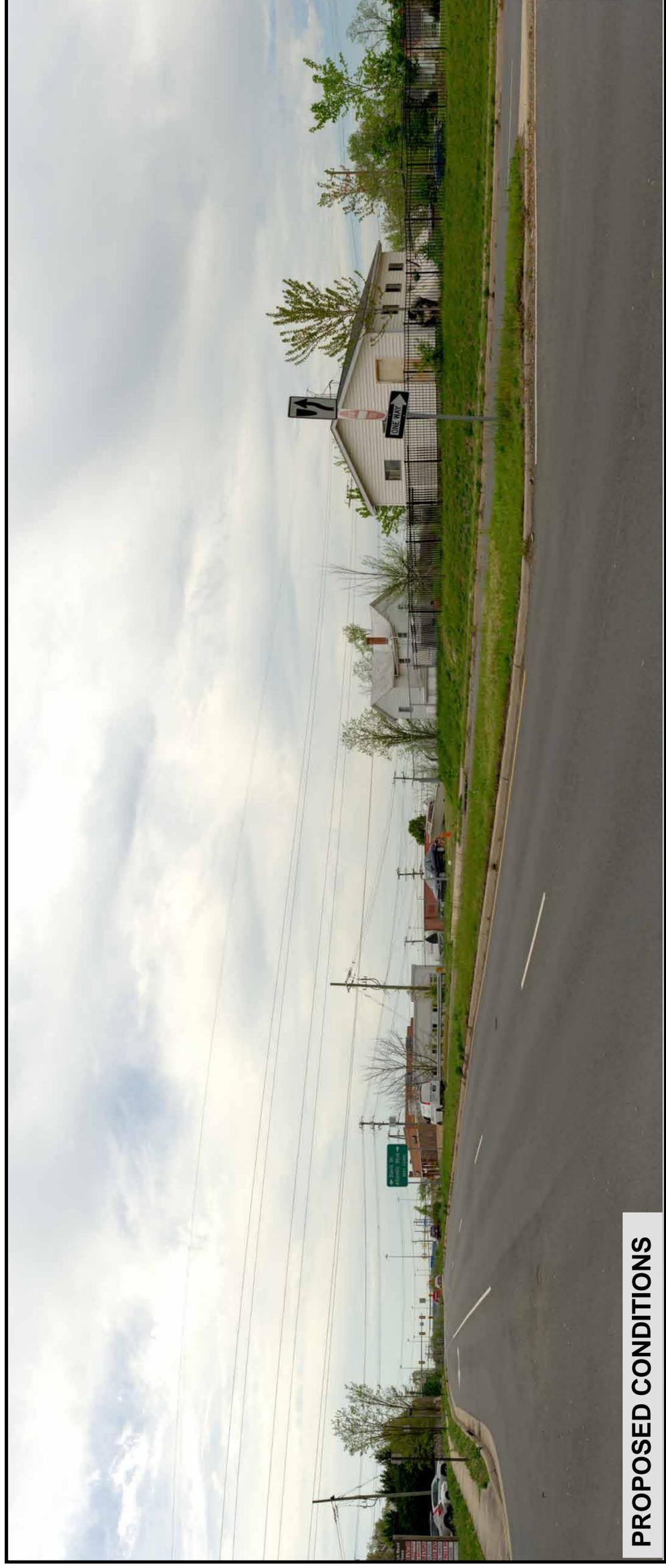
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 3
- KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



1:12,000

-  Golden-Mars Route 3
-  Existing Dominion Transmission Lines
-  Future Substation
-  Historic Resource
-  KOP Location



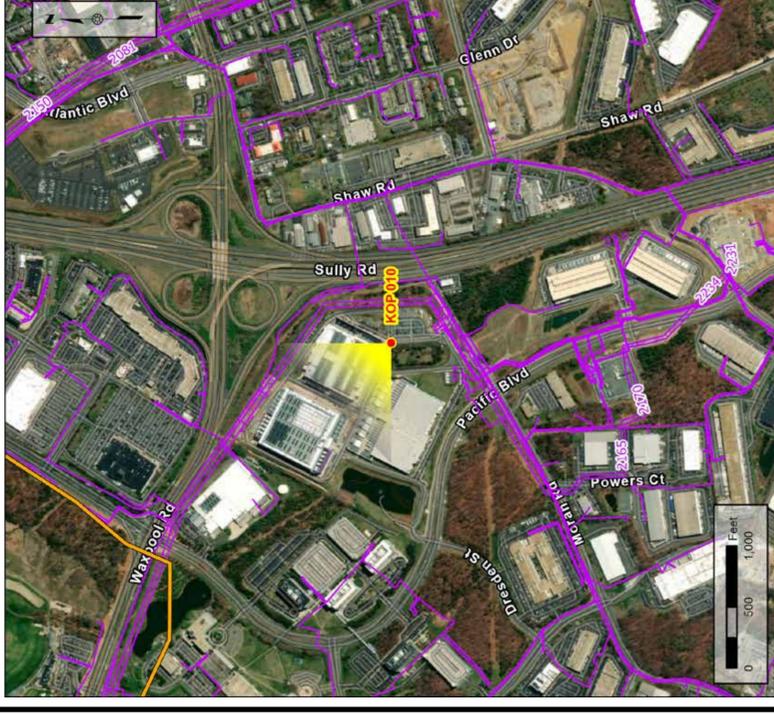
Figure 32. Aerial photograph depicting land use and photo view for 053-6406.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 010
 Vantage Data Plz

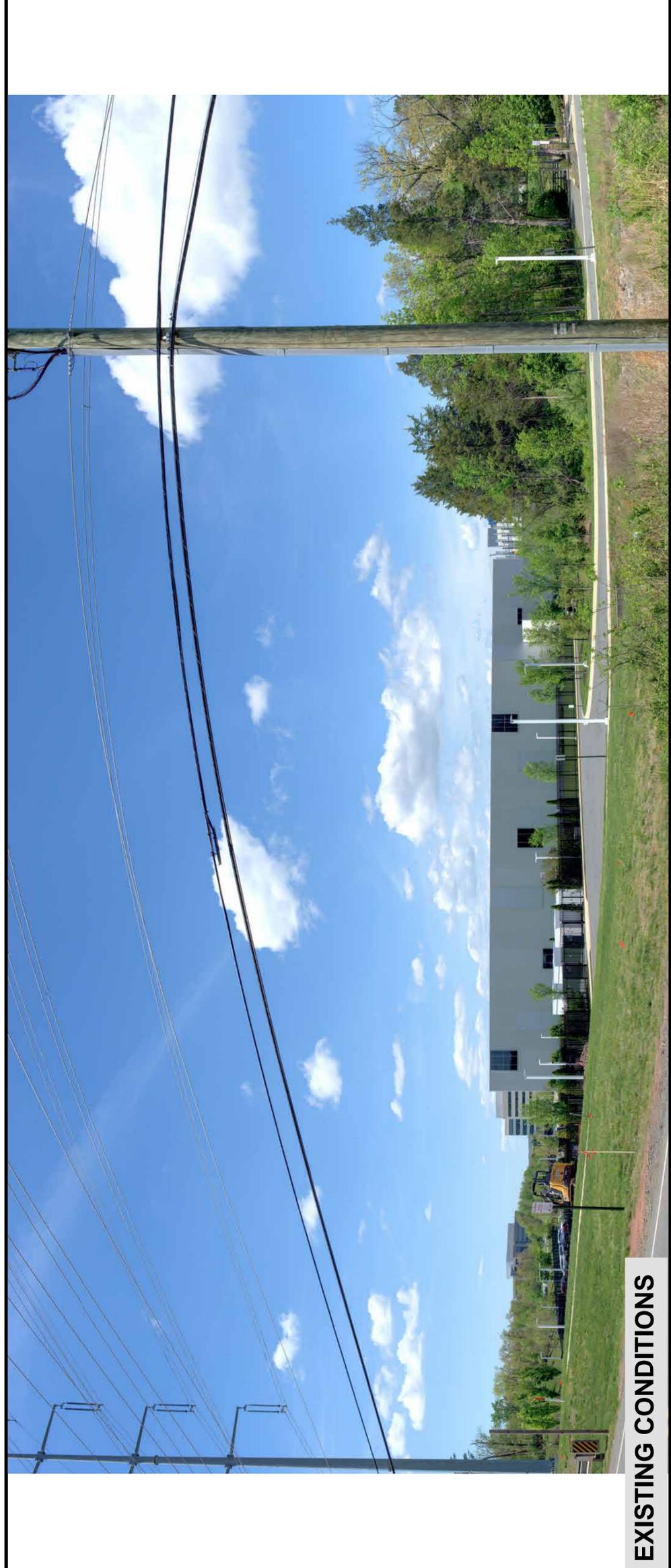
Figure 33
Route: Golden-Mars Route 3
Date: 04/18/2024
Time: 12:10 pm
Viewing Direction: Northwest
Distance to closest feature: 0.48 miles



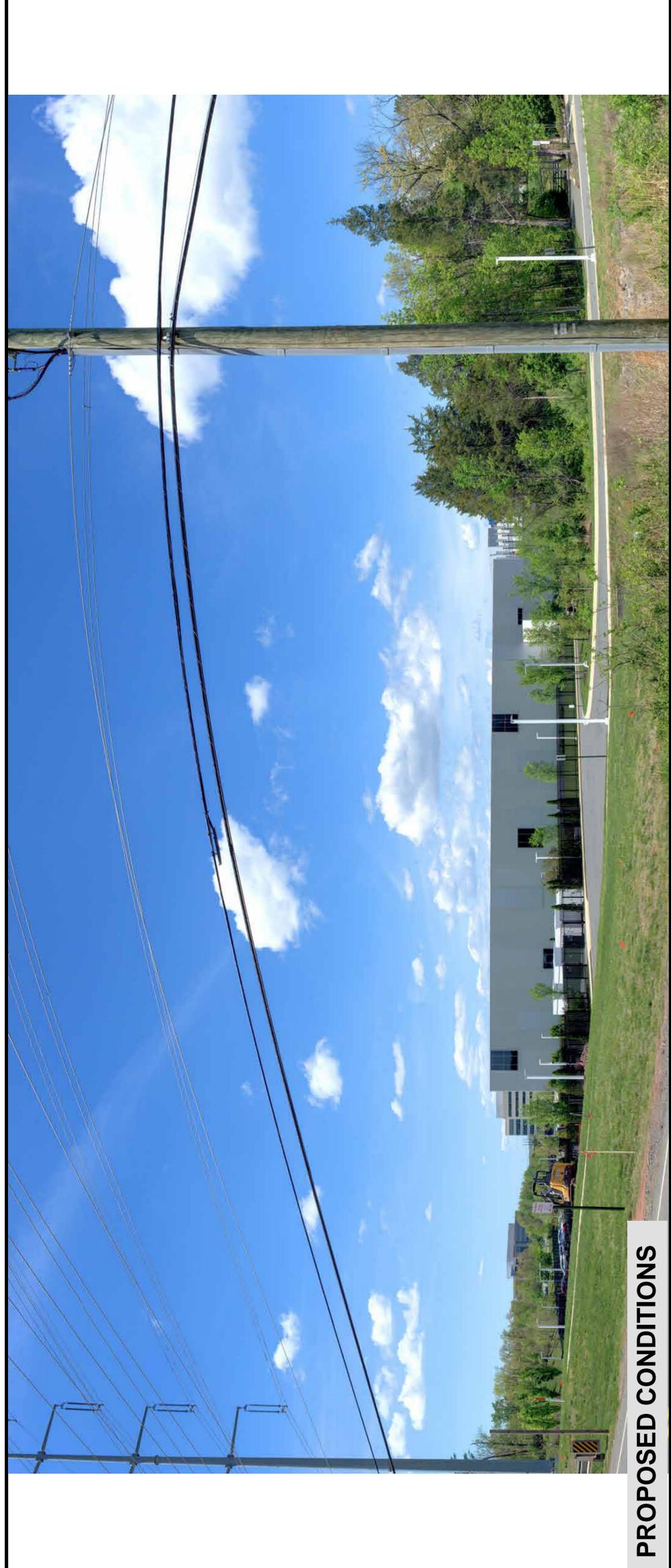
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 3
- KOP View Direction

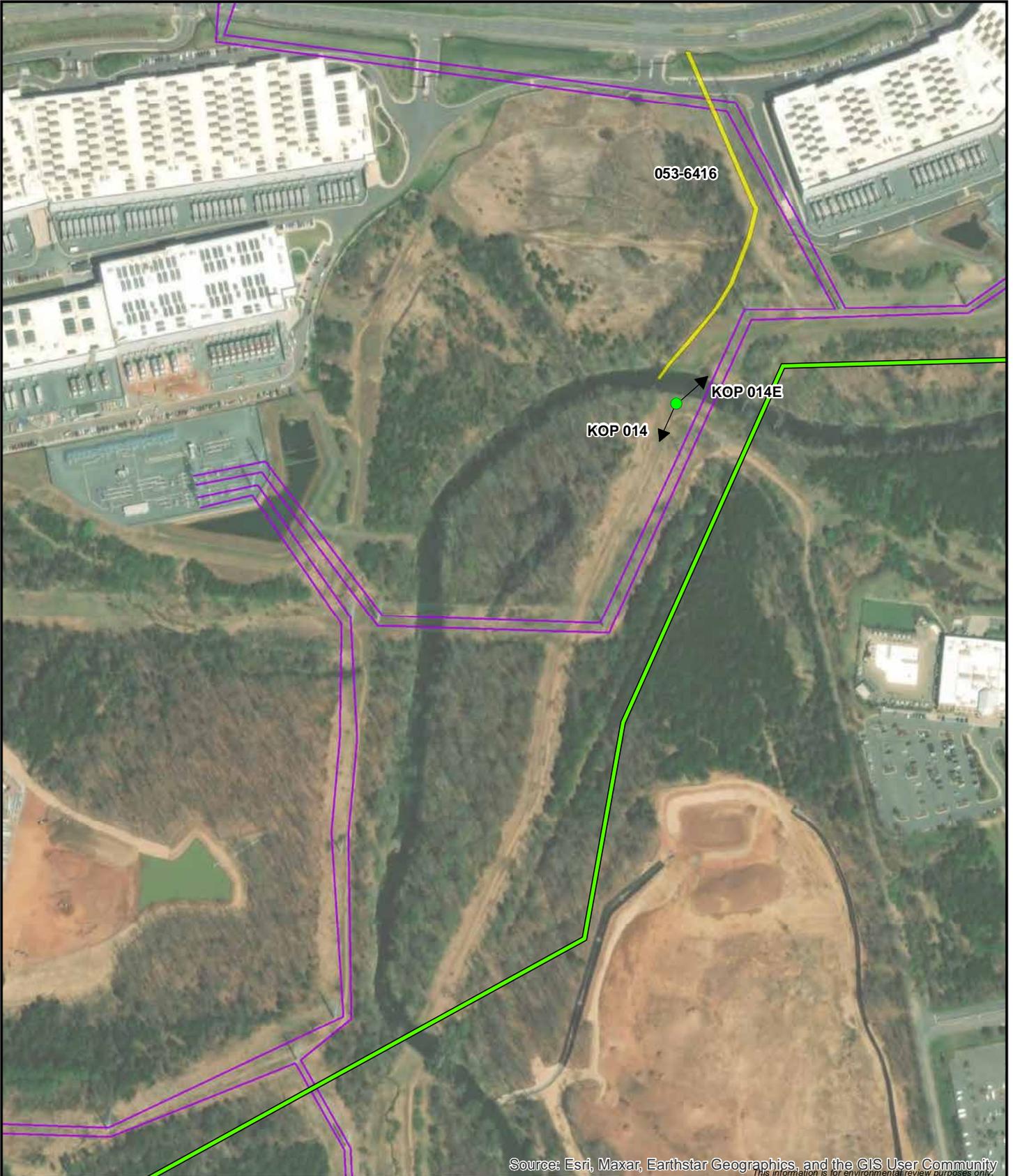
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



1:6,000

-  Golden-Mars Route 3
-  Existing Dominion Transmission Lines
-  Historic Resource
-  KOP Location



Figure 34. Aerial photograph depicting land use and photo view for 053-6416.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



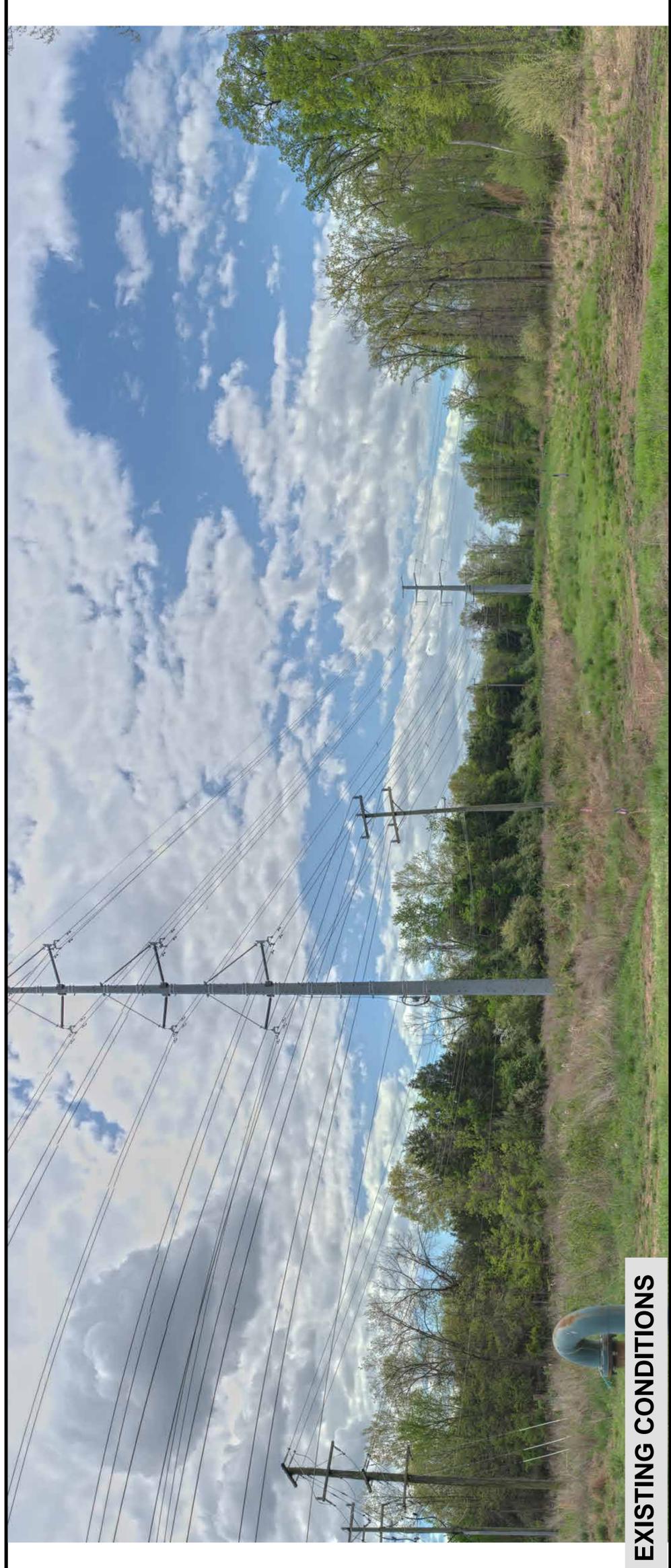
KOP 014
 Round Table Plz

Figure 35
Route: Golden-Mars Route 3
Date: 04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles

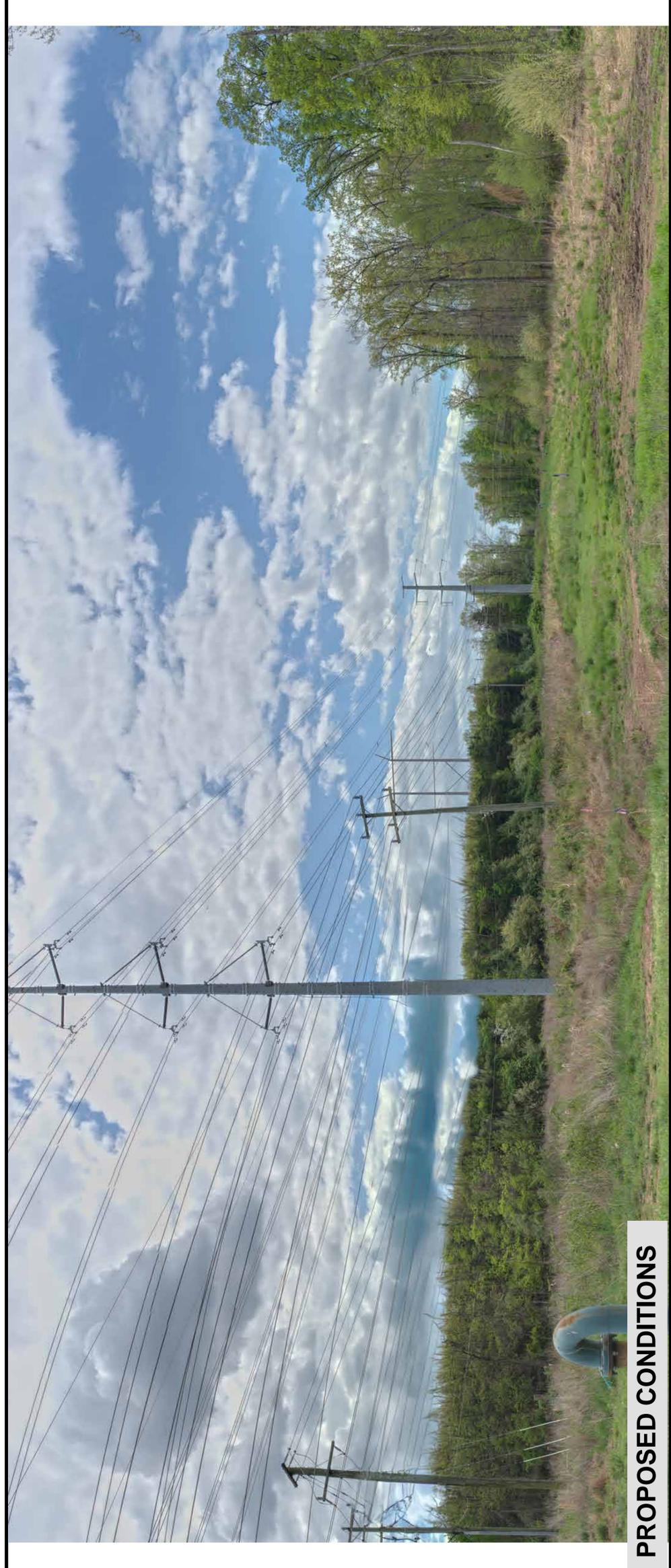


Legend
 Existing DOM Infrastructure
 Golden-Mars 500-230 kV Electric Transmission Project - Route 3
 KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 014E
 Round Table Plz

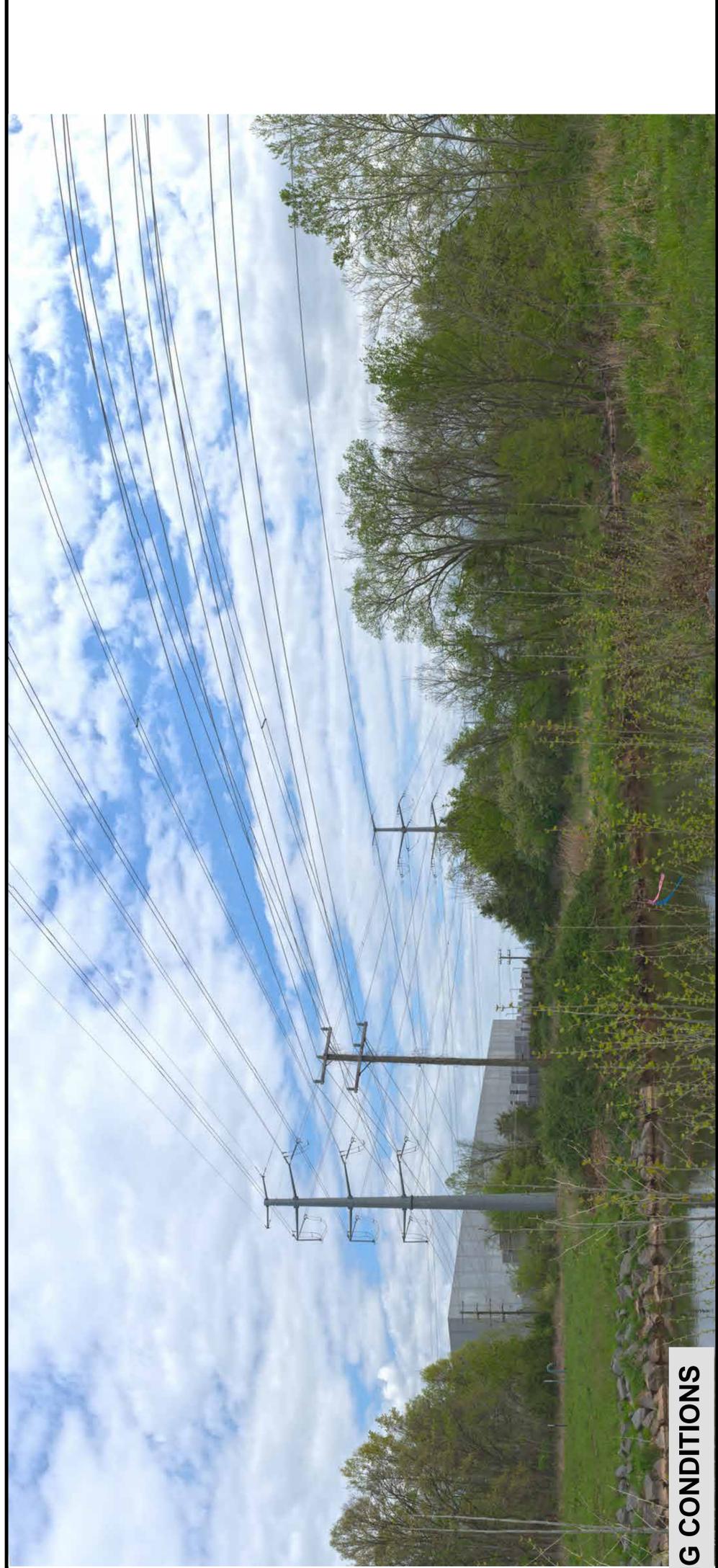
Figure 36
Route: Golden-Mars Route 3
Date: 04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles



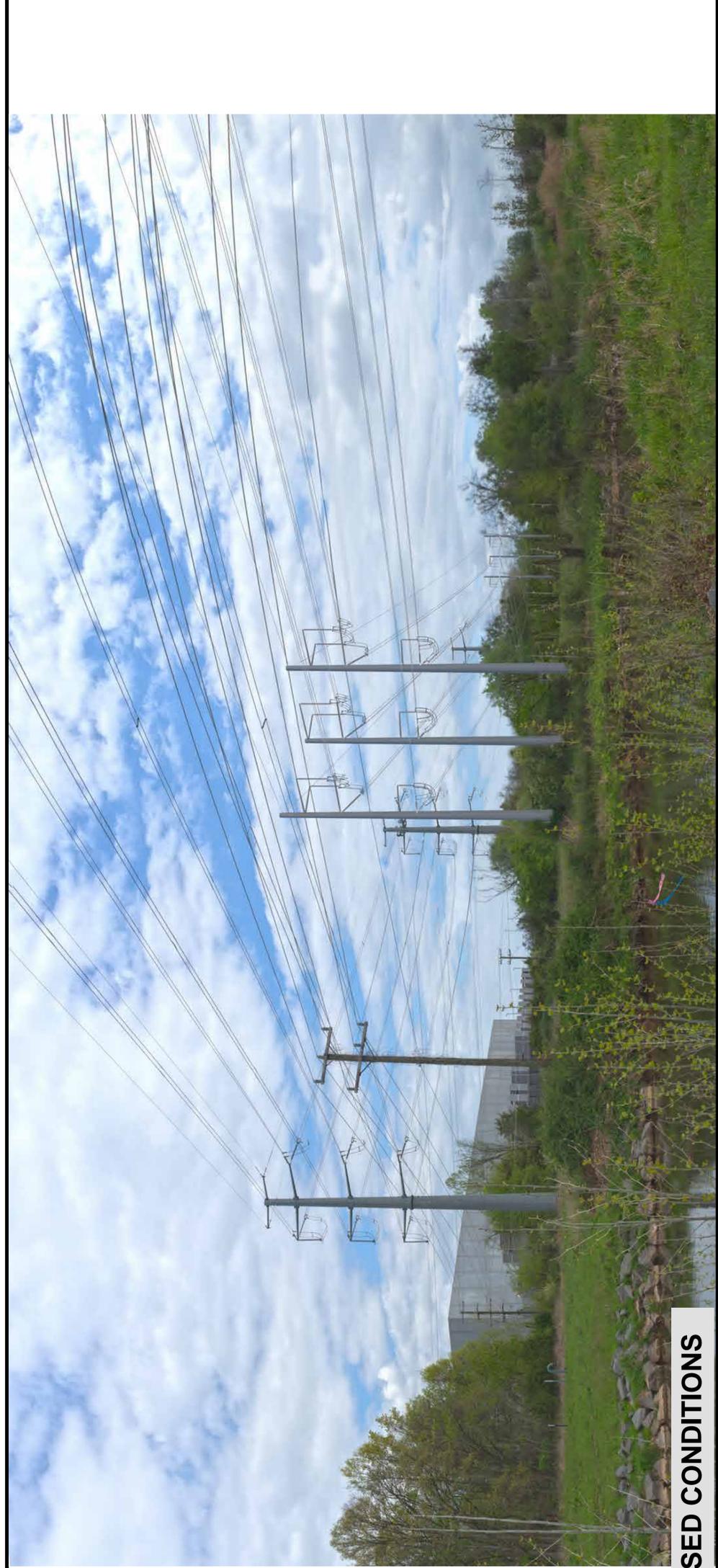
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 3
- KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



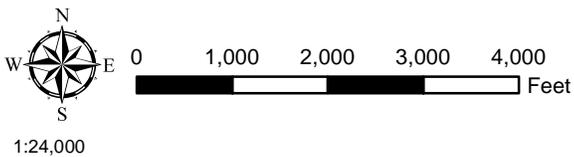
EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



-  Golden-Mars Route 4
-  Existing Dominion Transmission Lines
-  Future Substation
-  Historic Resource
-  KOP Location



Figure 37. Aerial photograph depicting land use and photo view for 053-0008.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP Airport
 Vortac Rd

Figure 38

Route: Golden-Mars Route 4

Date: 09/21/2024

Time: 10:00 am

Viewing Direction: Northwest

Distance to closest feature: 0.61 miles



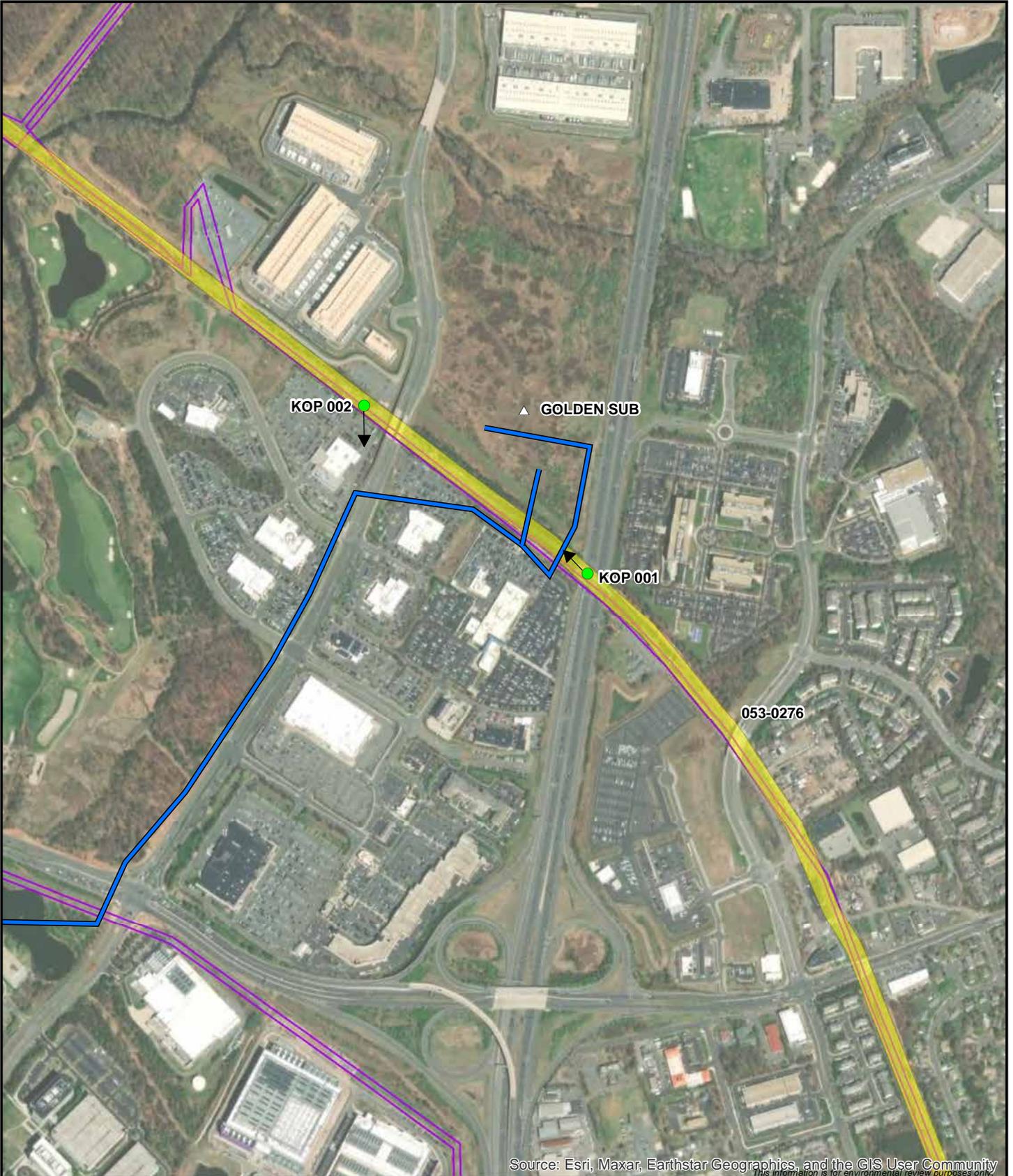
Legend

- Golden-Mars 500-230 kV Electric Transmission Project - Route 4
- KOP View Direction

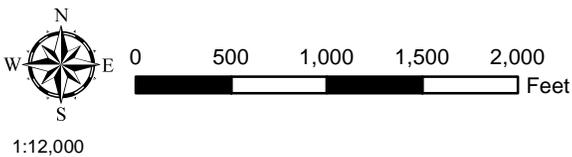
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

EXISTING CONDITIONS

YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



- Golden-Mars Route 4
- Existing Dominion Transmission Lines
- △ Future Substation
- Historic Resource
- KOP Location



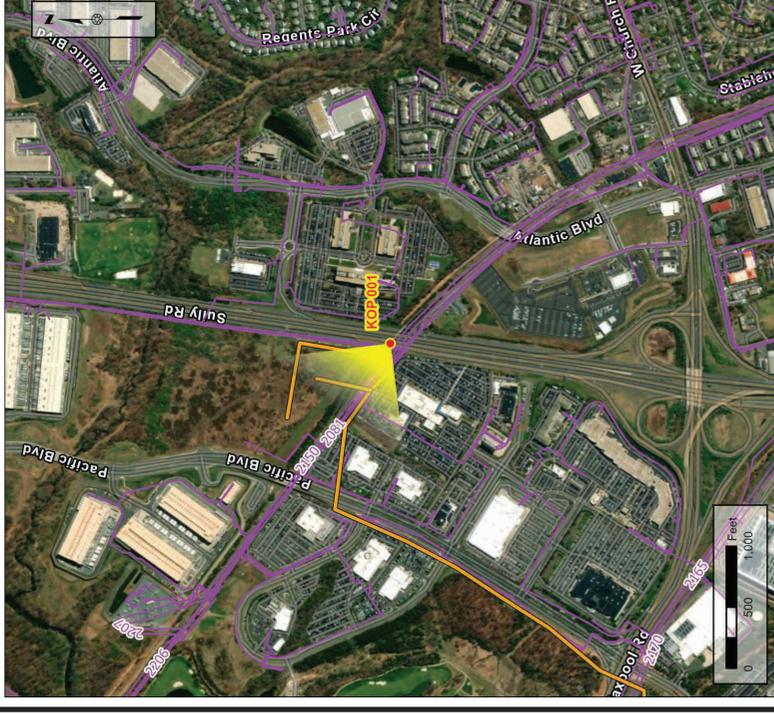
Figure 39. Aerial photograph depicting land use and photo view for 053-0276.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 001
 Sully Rd

Figure 40
Route: Golden-Mars Route 4
Date: 04/17/2024
Time: 11:22 am
Viewing Direction: Northwest
Distance to closest feature: 0.04 miles



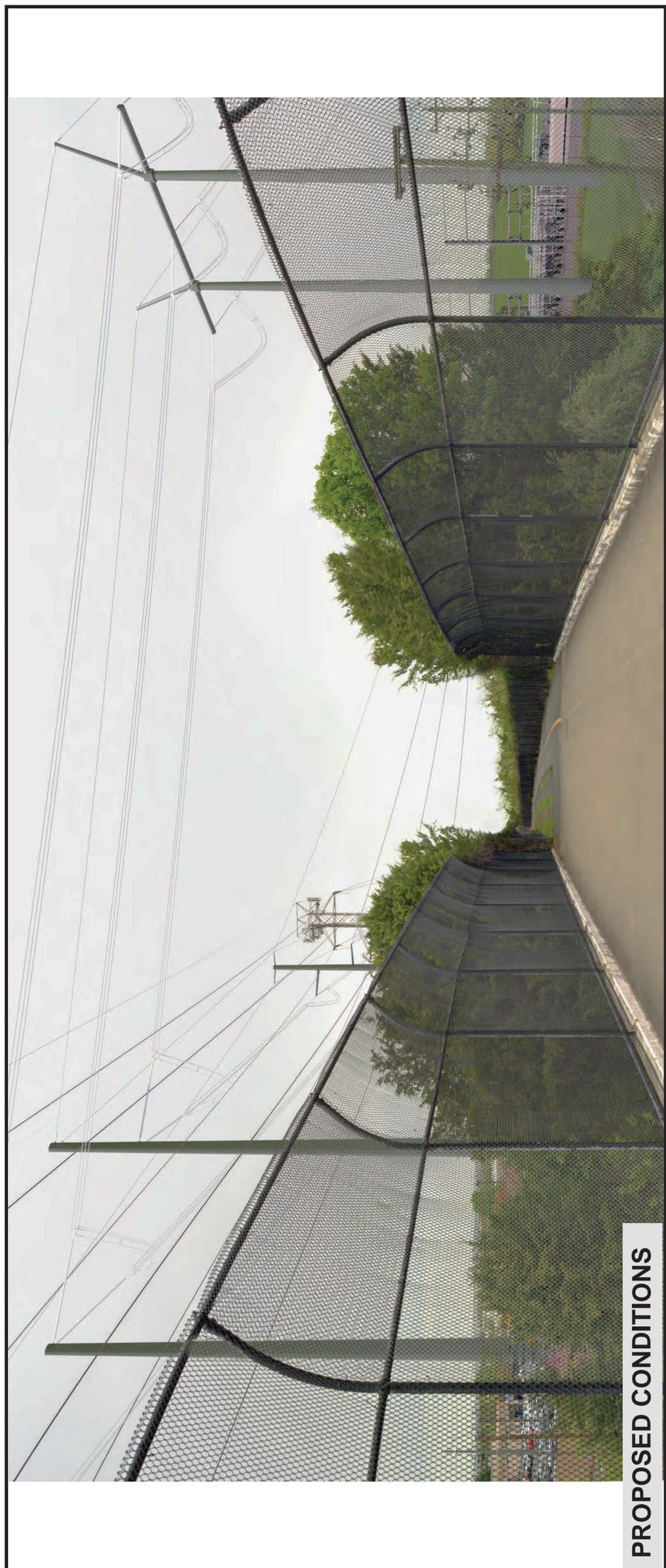
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 4
- KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



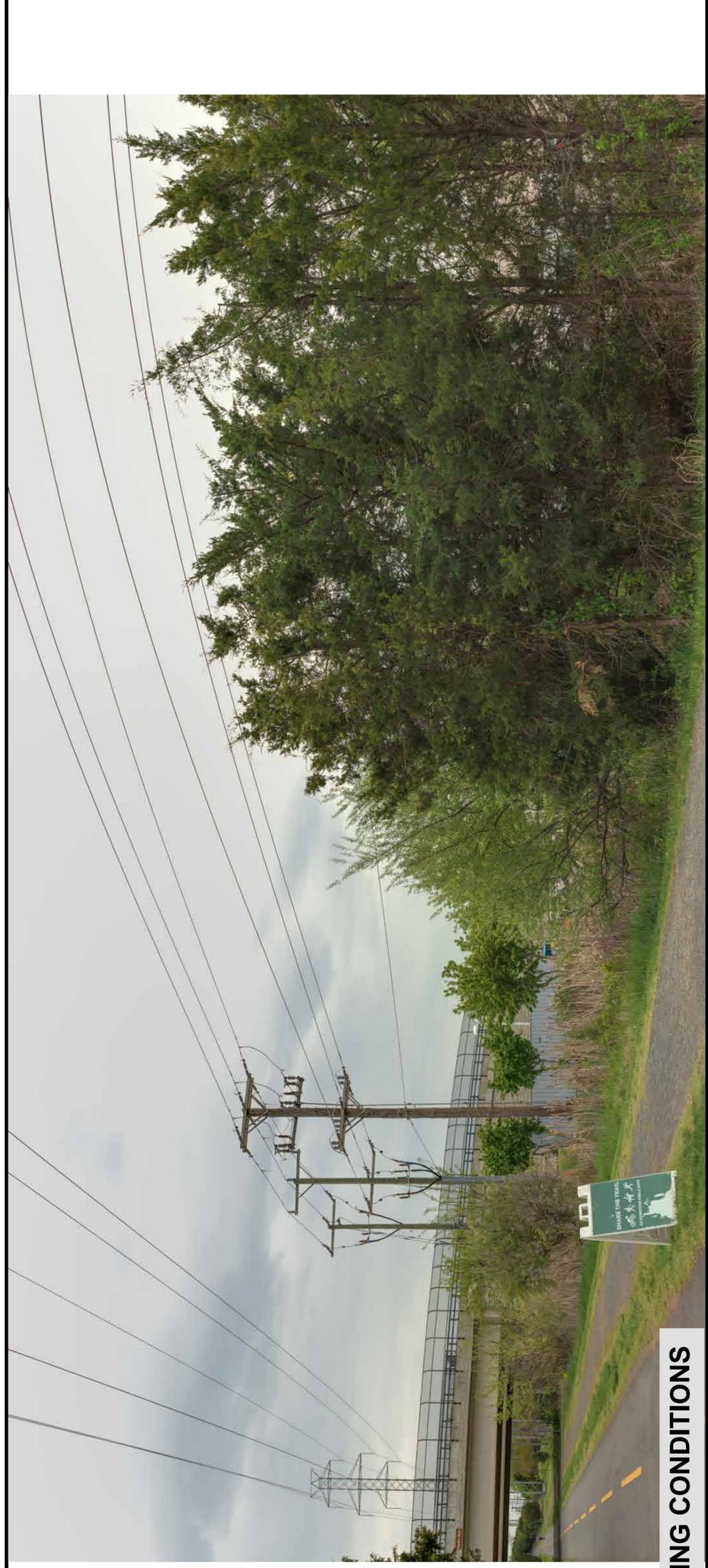
KOP 002
 Pacific Blvd

Figure 41
Route: Golden-Mars Route 4
Date: 04/17/2024
Time: 10:46 am
Viewing Direction: South
Distance to closest feature: 0.10 miles

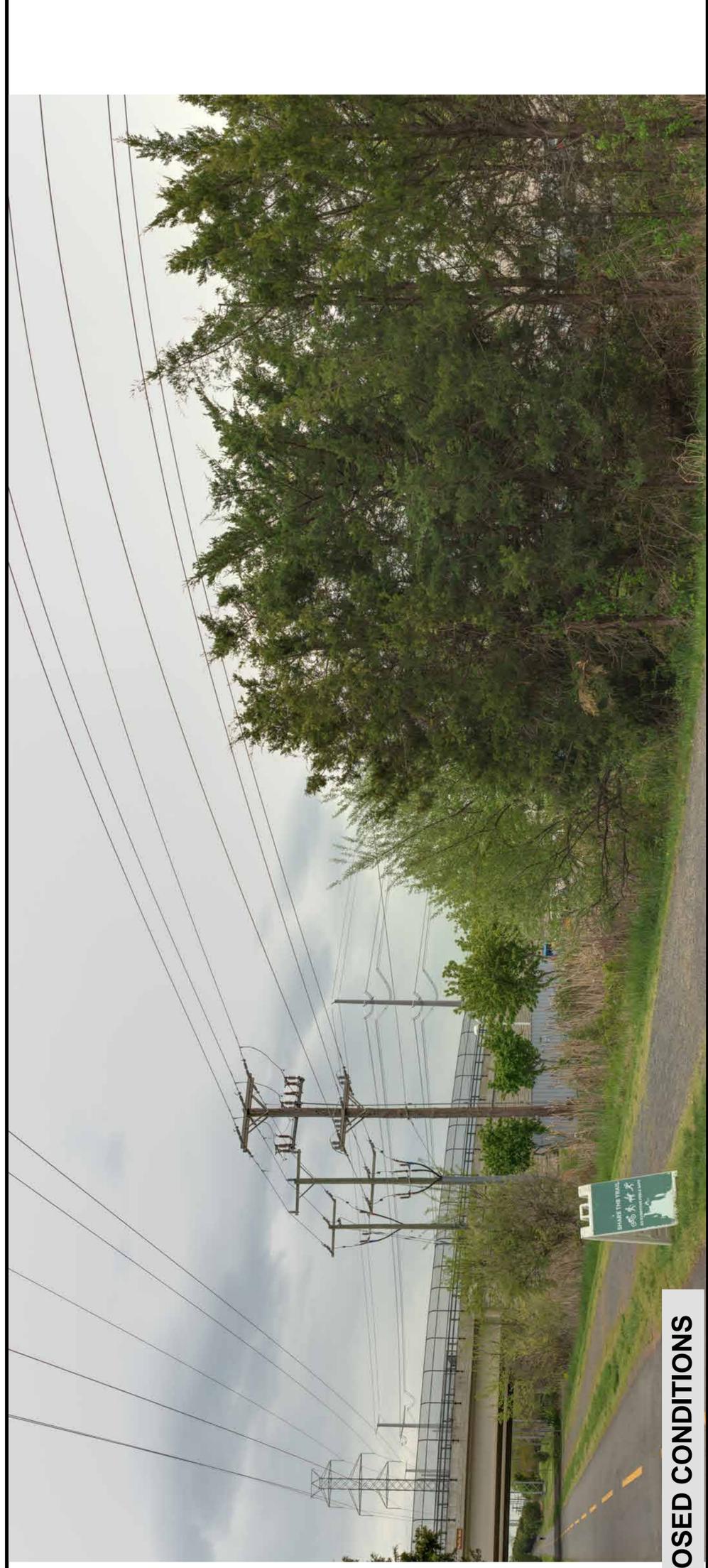


- Legend**
- Existing DOM Infrastructure
 - Golden-Mars 500-230 kV Electric Transmission Project - Route 4
 - KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



1:12,000

-  Golden-Mars Route 4
-  Existing Dominion Transmission Lines
-  Future Substation
-  Historic Resource
-  KOP Location



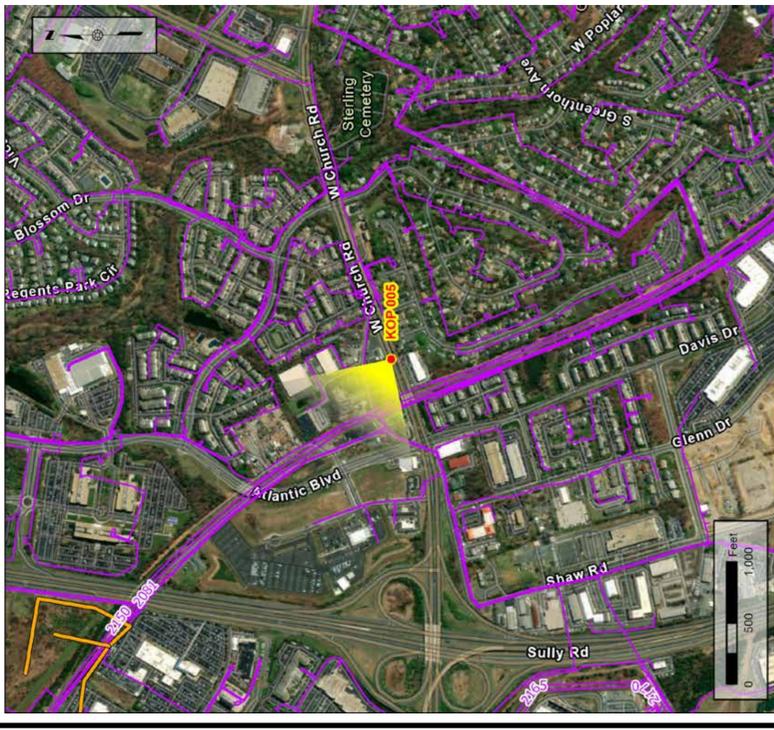
Figure 42. Aerial photograph depicting land use and photo view for 053-0968.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



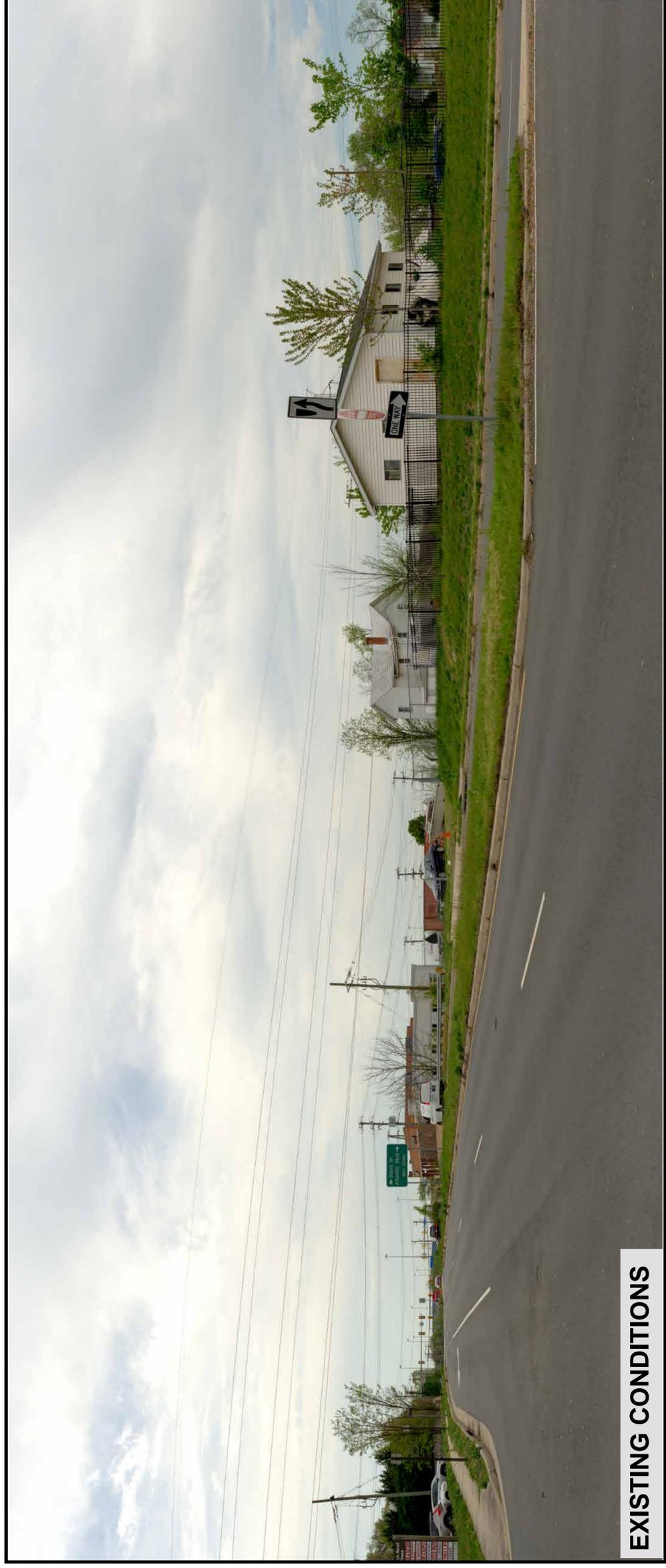
KOP 005
 W Church Rd

Figure 43
Route: Golden-Mars Route 4
Date: 04/17/2024
Time: 12:49 pm
Viewing Direction: Southeast
Distance to closest feature: 0.58 miles

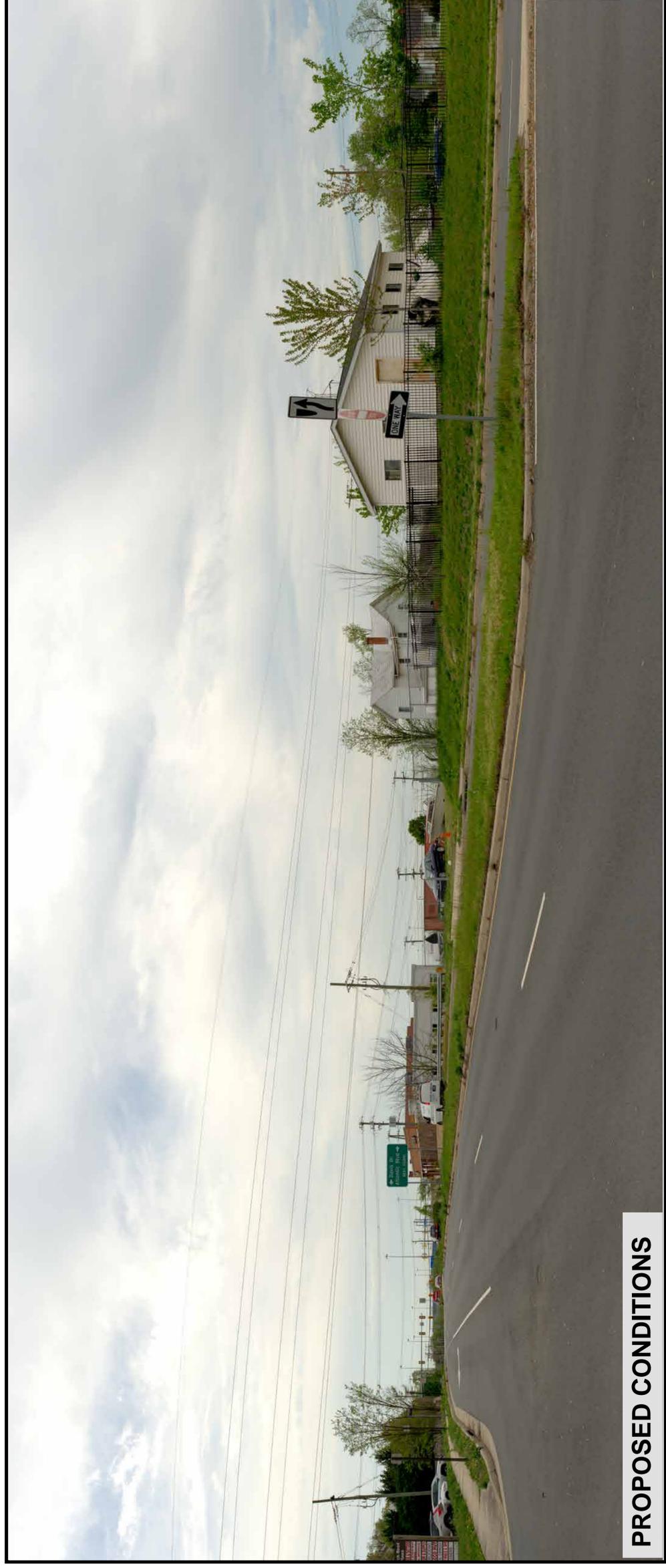


- Legend**
- Existing DOM Infrastructure
 - Golden-Mars 500-230 kV Electric Transmission Project - Route 4
 - ➔ KOP View Direction

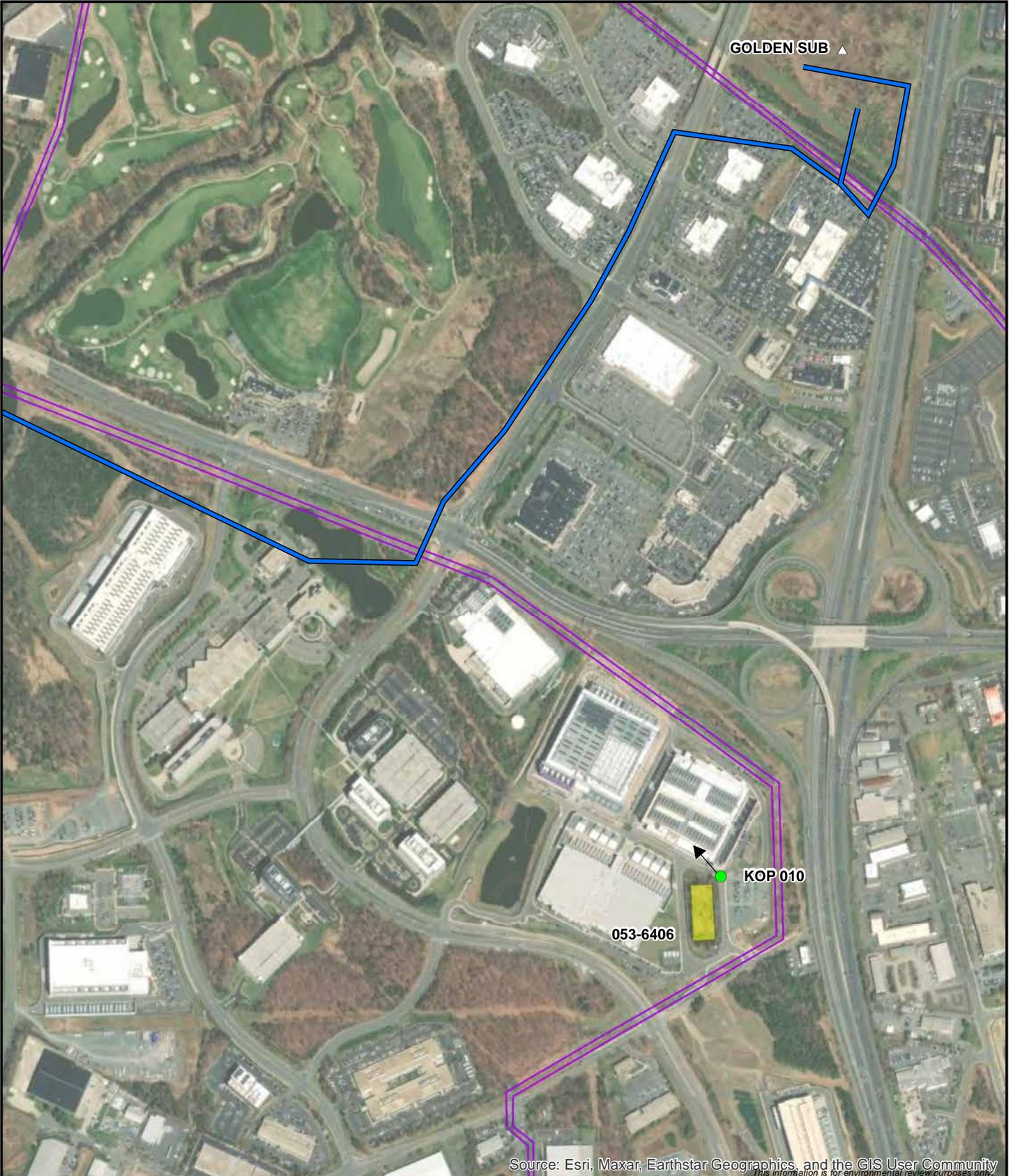
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



1:12,000

- Golden-Mars Route 4
- Existing Dominion Transmission Lines
- △ Future Substation
- Historic Resource
- KOP Location



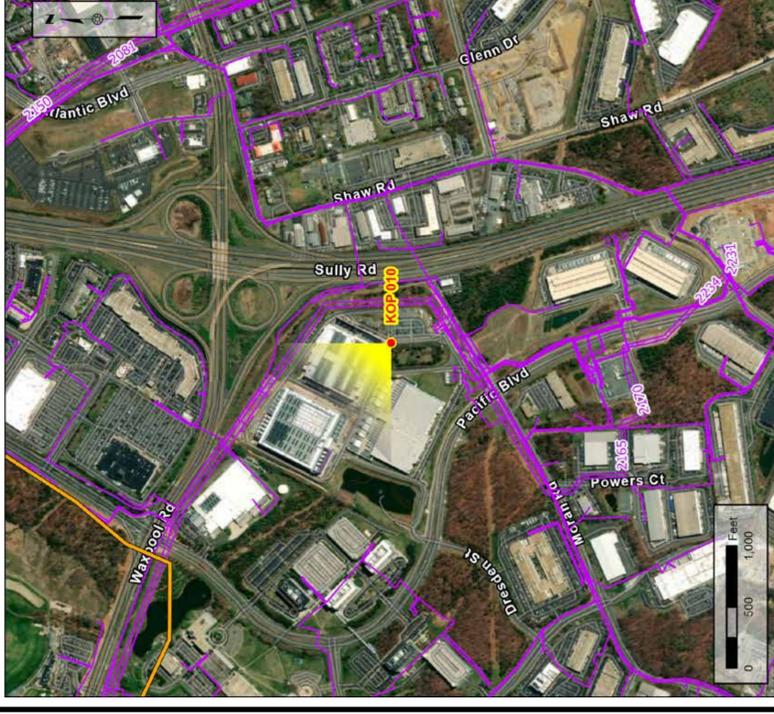
Figure 44. Aerial photograph depicting land use and photo view for 053-6406.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 010
 Vantage Data Plz

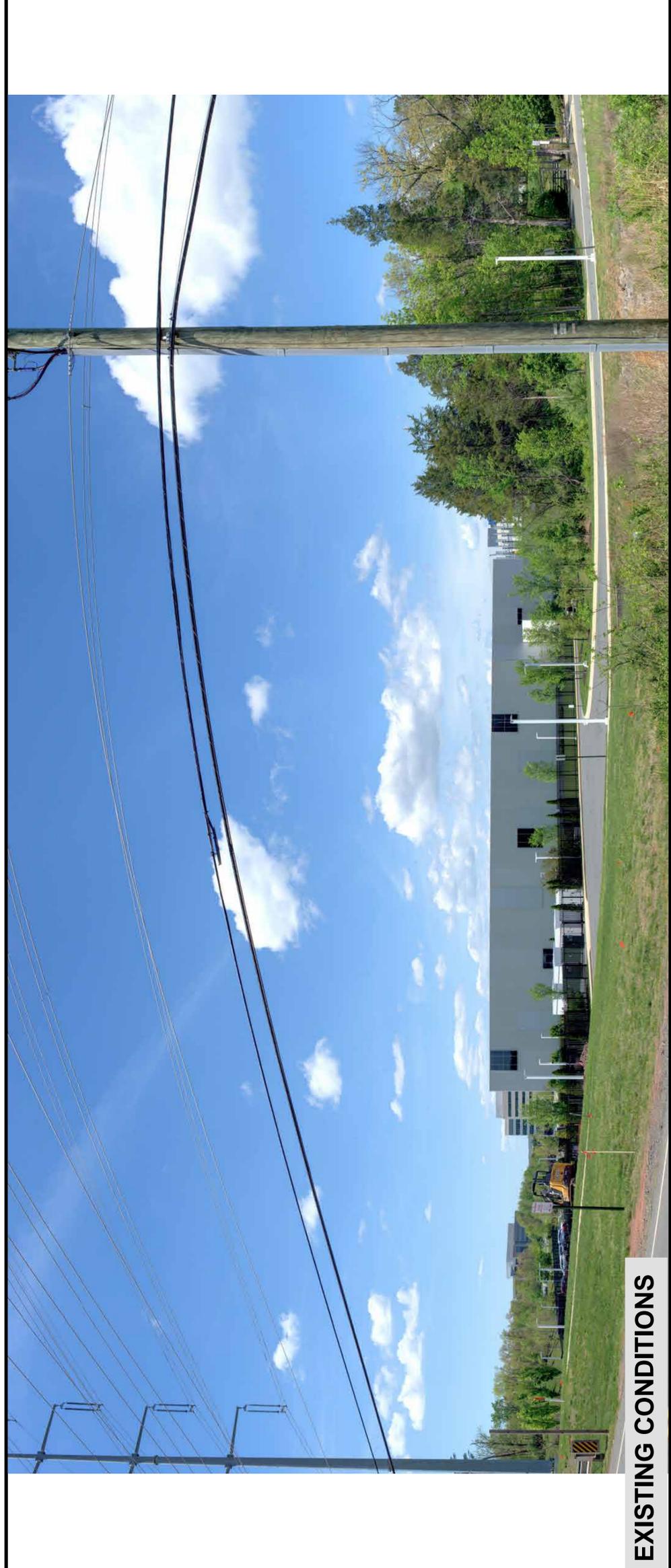
Figure 45
Route: Golden-Mars Route 4
Date: 04/18/2024
Time: 12:10 pm
Viewing Direction: Northwest
Distance to closest feature: 0.48 miles



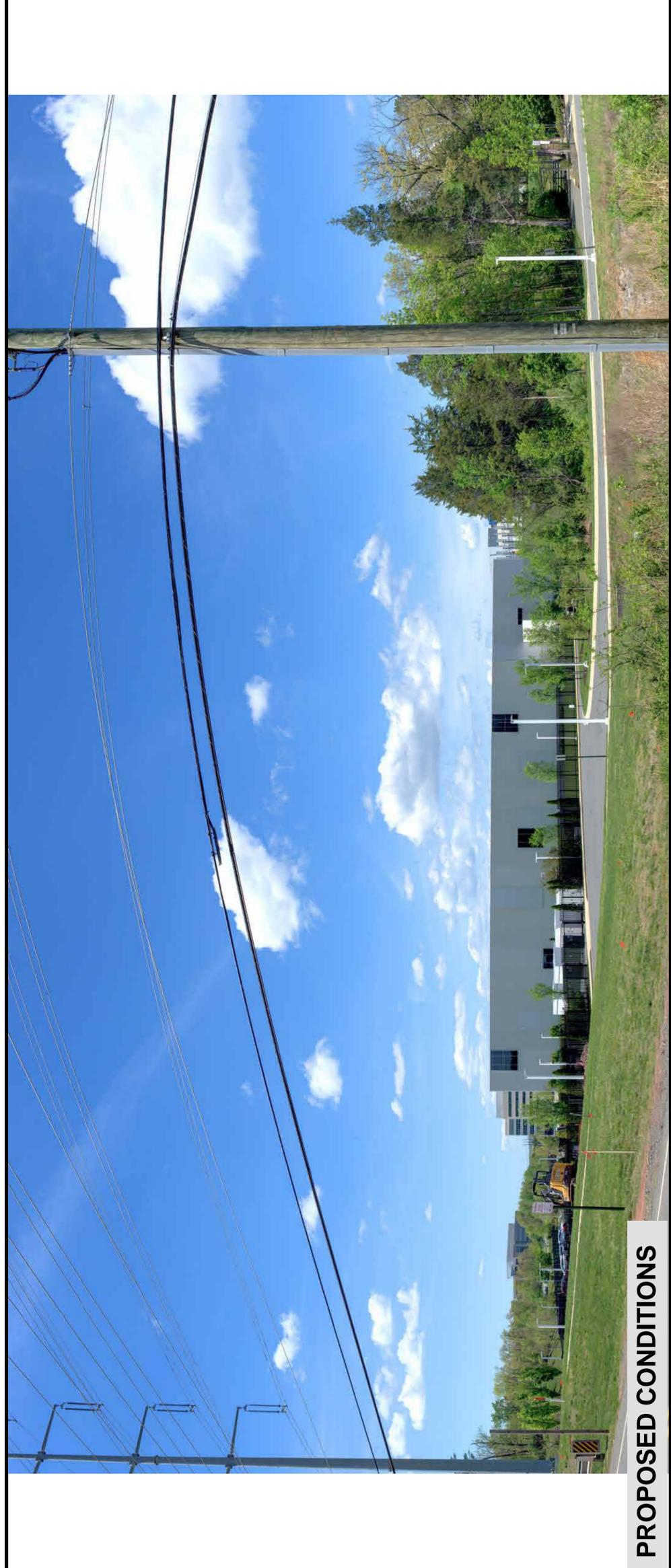
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 4
- KOP View Direction

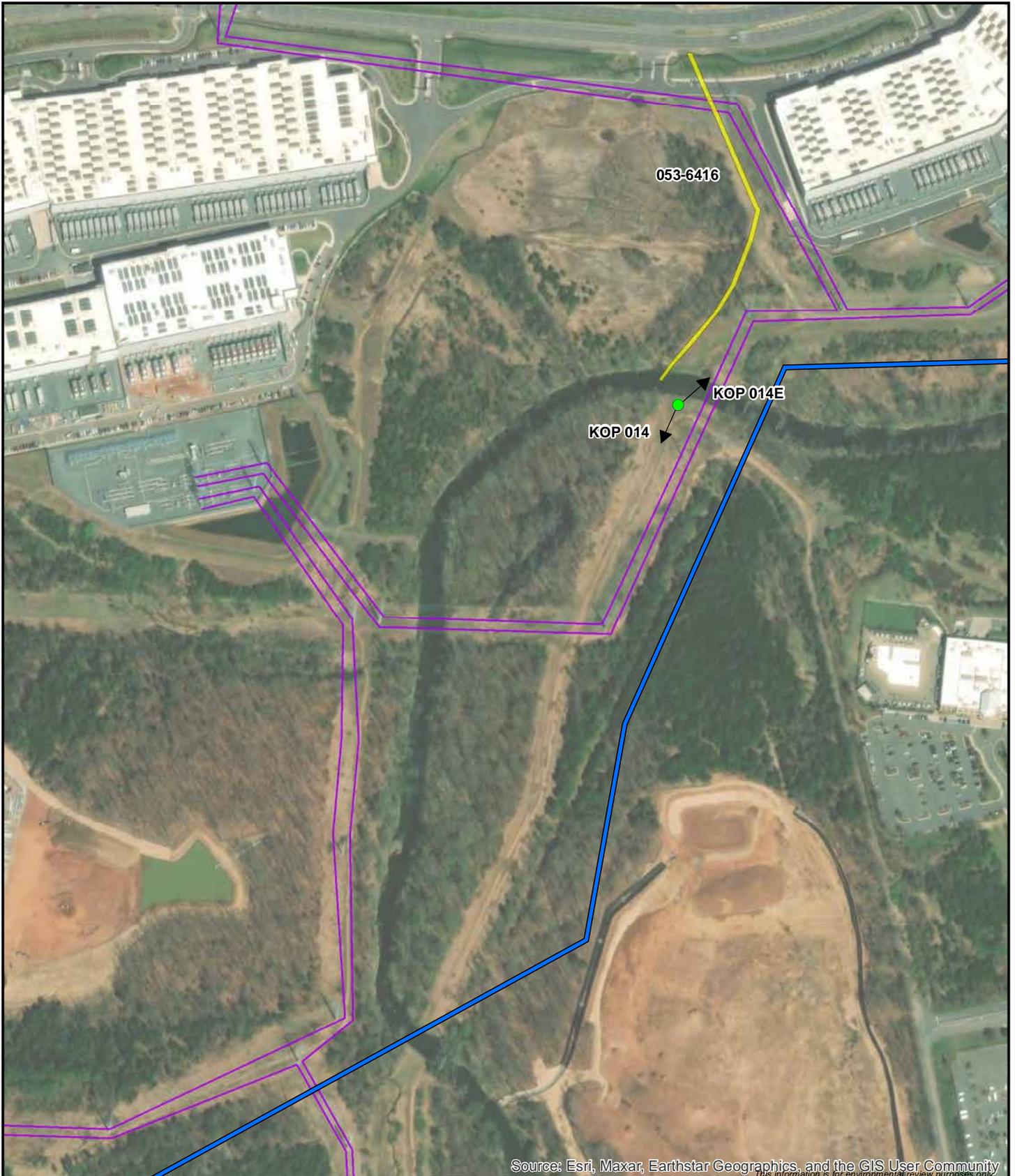
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



1:6,000

- Golden-Mars Route 4
- Existing Dominion Transmission Lines
- Historic Resource
- KOP Location



Figure 46. Aerial photograph depicting land use and photo view for 053-6416.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 014
 Round Table Plz

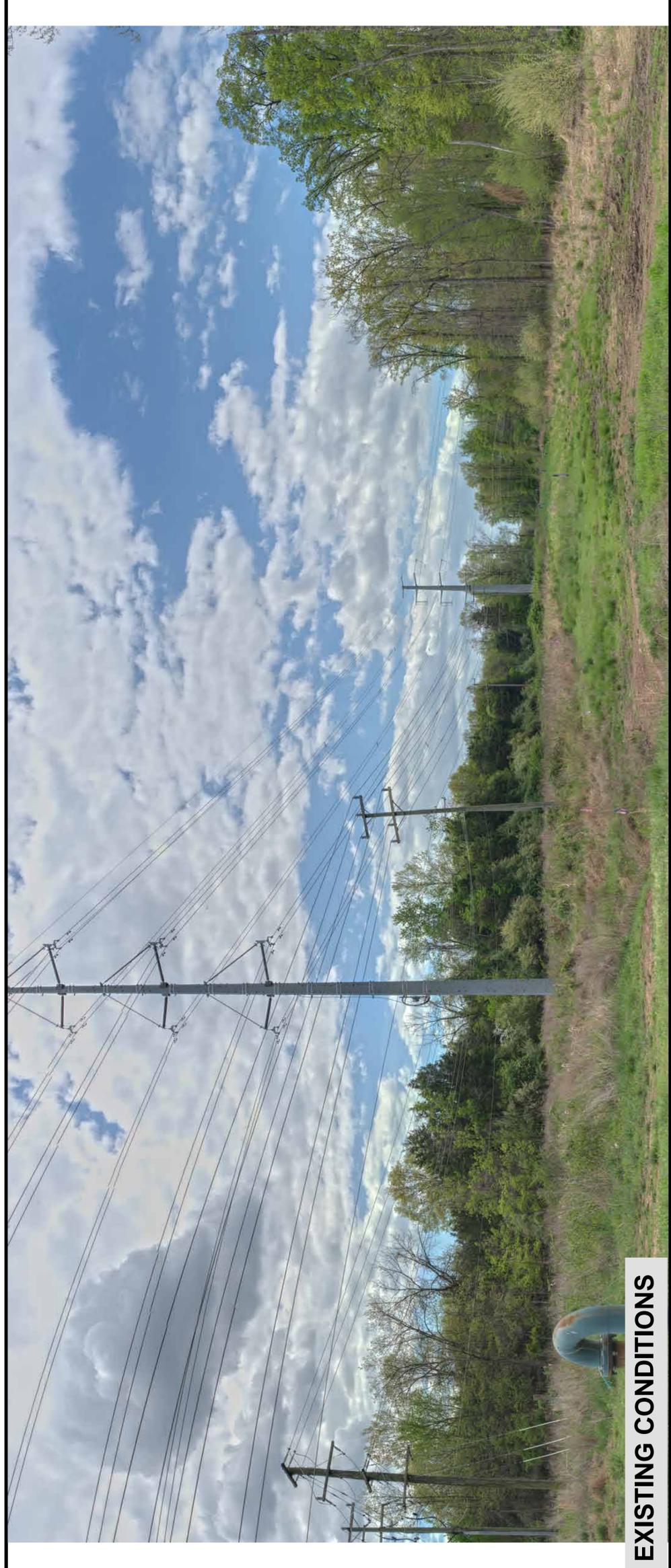
Figure 47
Route: Golden-Mars Route 4
Date: 04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles



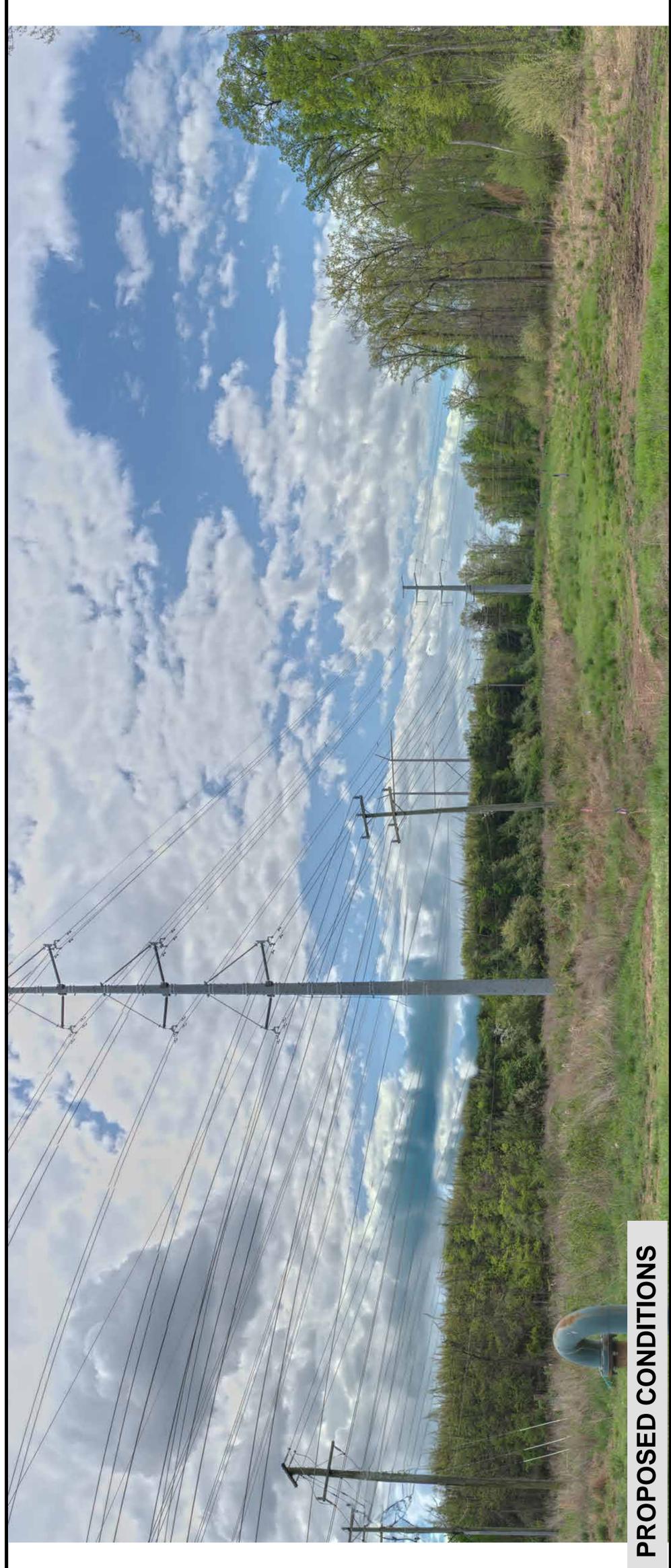
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 4
- KOP View Direction

Attachment 2.1.1
 Page 153 of 171
 Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 014E
 Round Table Plz

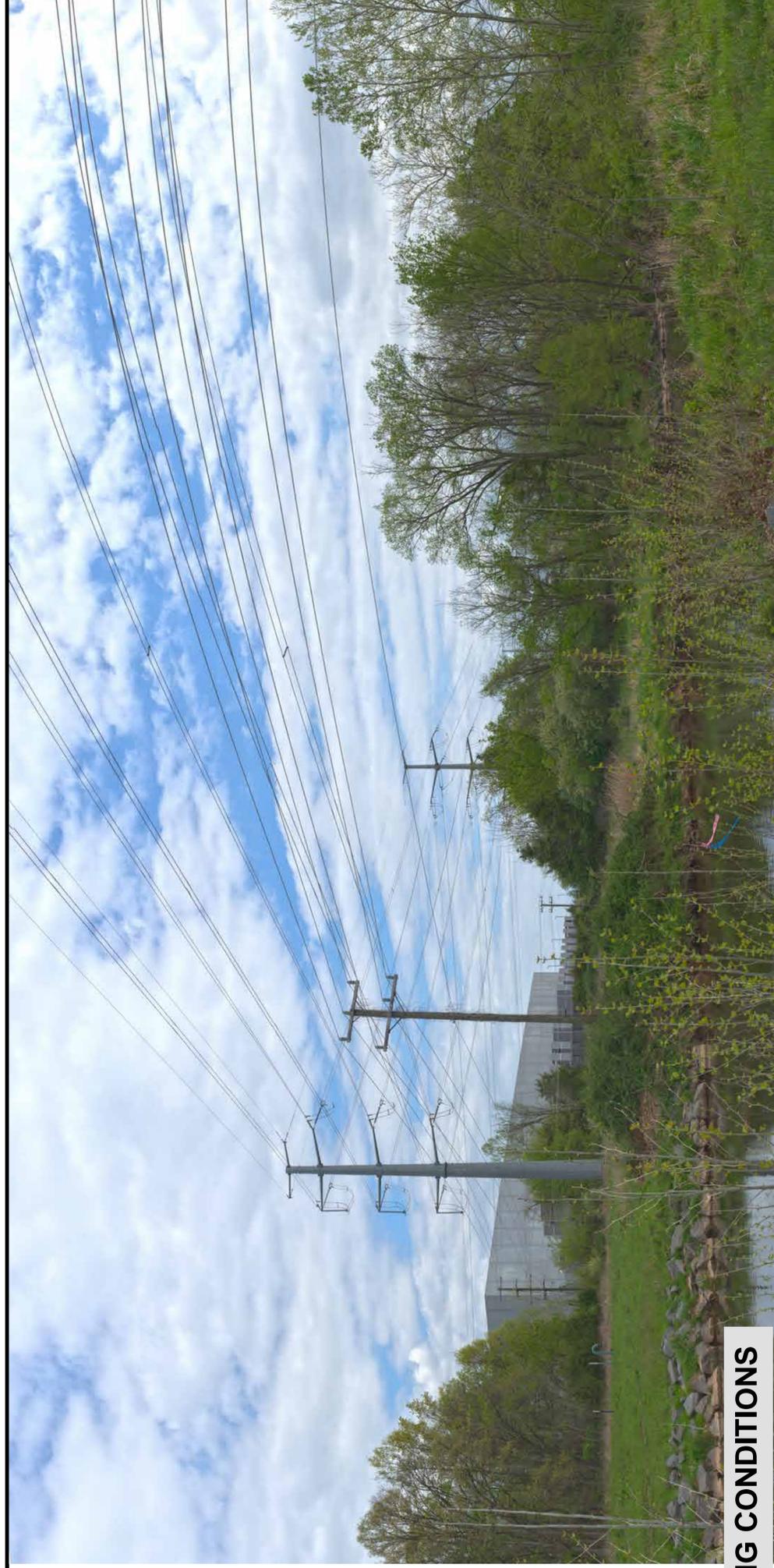
Figure 48
Route: Golden-Mars Route 4
Date: 04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles



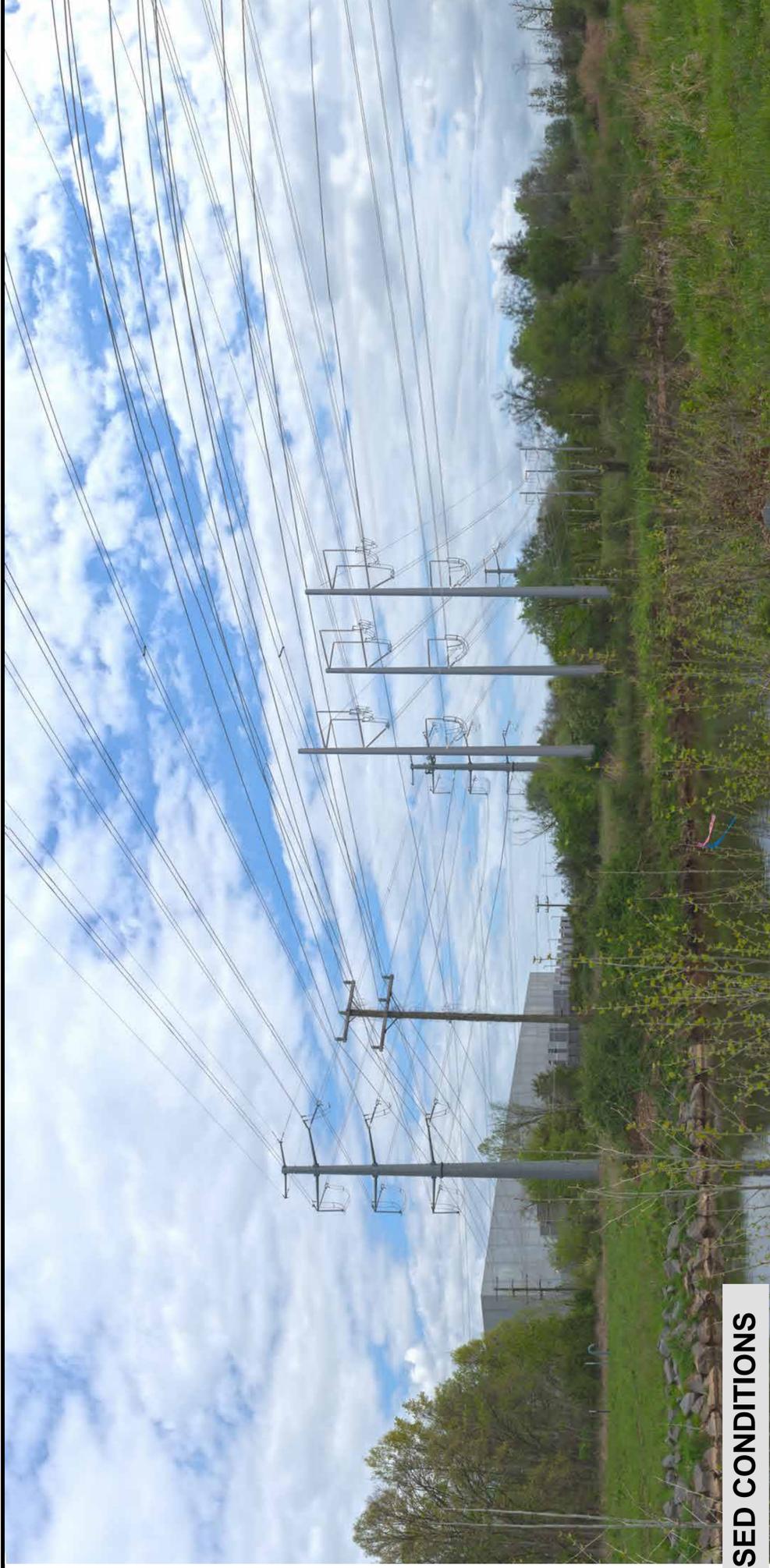
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 4
- KOP View Direction

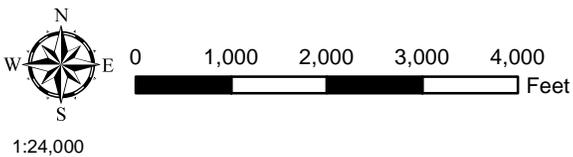
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



-  Golden-Mars Route 5
-  Existing Dominion Transmission Lines
-  Future Substation
-  Historic Resource
-  KOP Location



Figure 49. Aerial photograph depicting land use and photo view for 053-0008.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP Airport
 Vortac Rd

Figure 50
Route: Golden-Mars Route 5
Date: 09/21/2024
Time: 10:00 am
Viewing Direction: Northwest
Distance to closest feature: 0.61 miles



Legend
 Golden-Mars 500-230 kV Electric Transmission Project - Route 5
 KOP View Direction

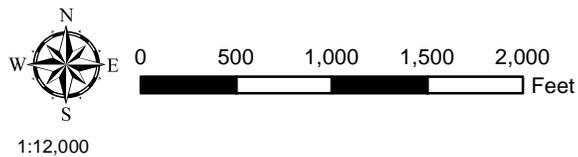
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.

EXISTING CONDITIONS

YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



-  Golden-Mars Route 5
-  Existing Dominion Transmission Lines
-  Future Substation
-  Historic Resource
-  KOP Location



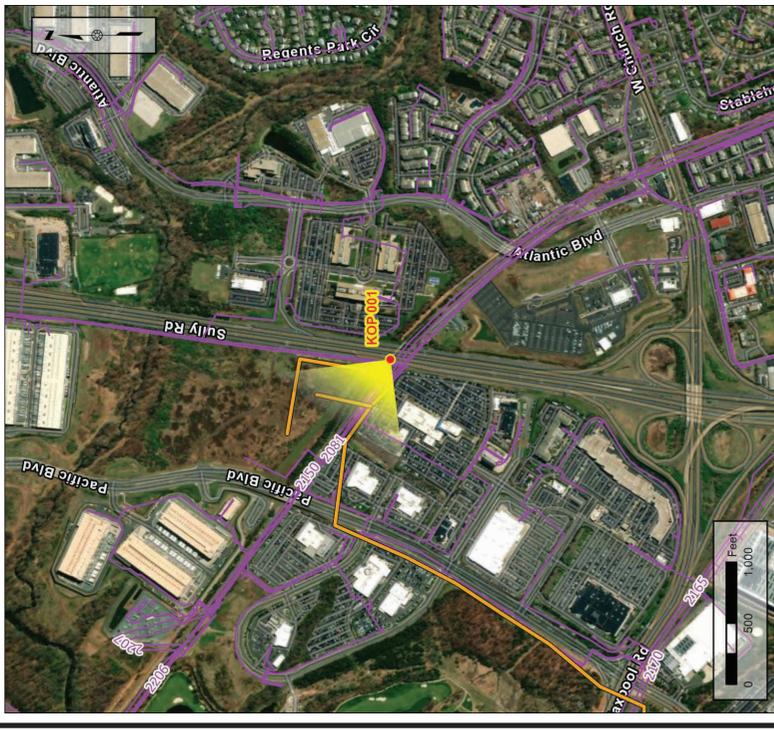
Figure 51. Aerial photograph depicting land use and photo view for 053-0276.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 001
 Sully Rd

Figure 52
Route: Golden-Mars Route 5
Date: 04/17/2024
Time: 11:22 am
Viewing Direction: Northwest
Distance to closest feature: 0.04 miles

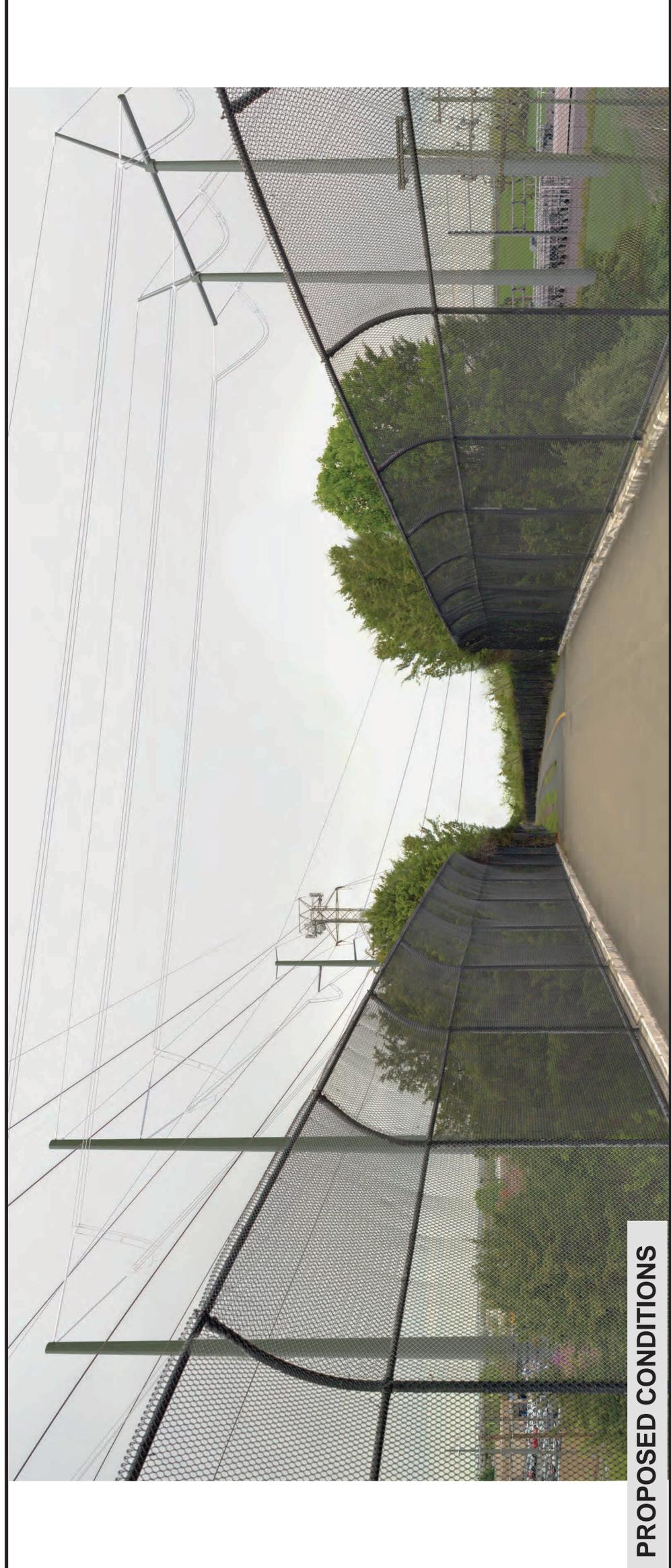


- Legend**
- Existing DOM Infrastructure
 - Golden-Mars 500-230 kV Electric Transmission Project - Route 5
 - KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



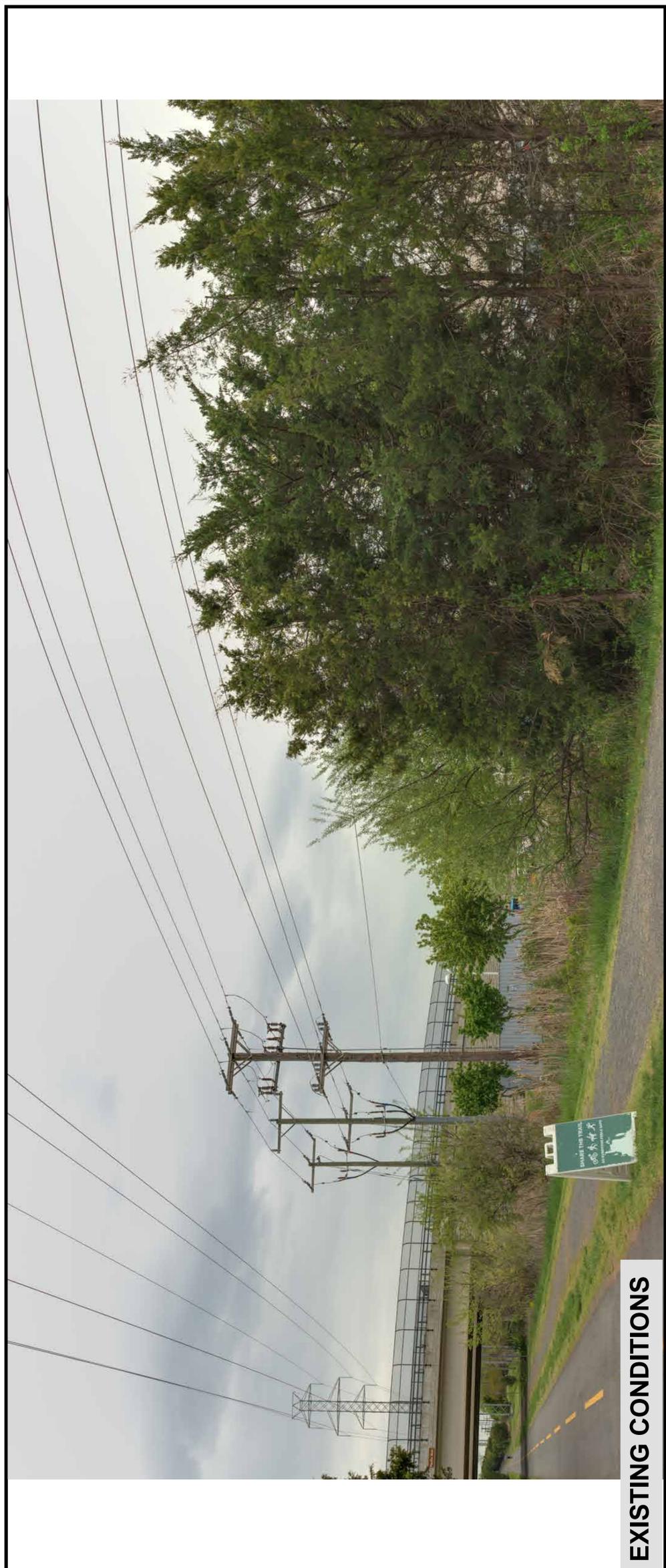
KOP 002
 Pacific Blvd

Figure 53
Route: Golden-Mars Route 5
Date: 04/17/2024
Time: 10:46 am
Viewing Direction: South
Distance to closest feature: 0.10 miles

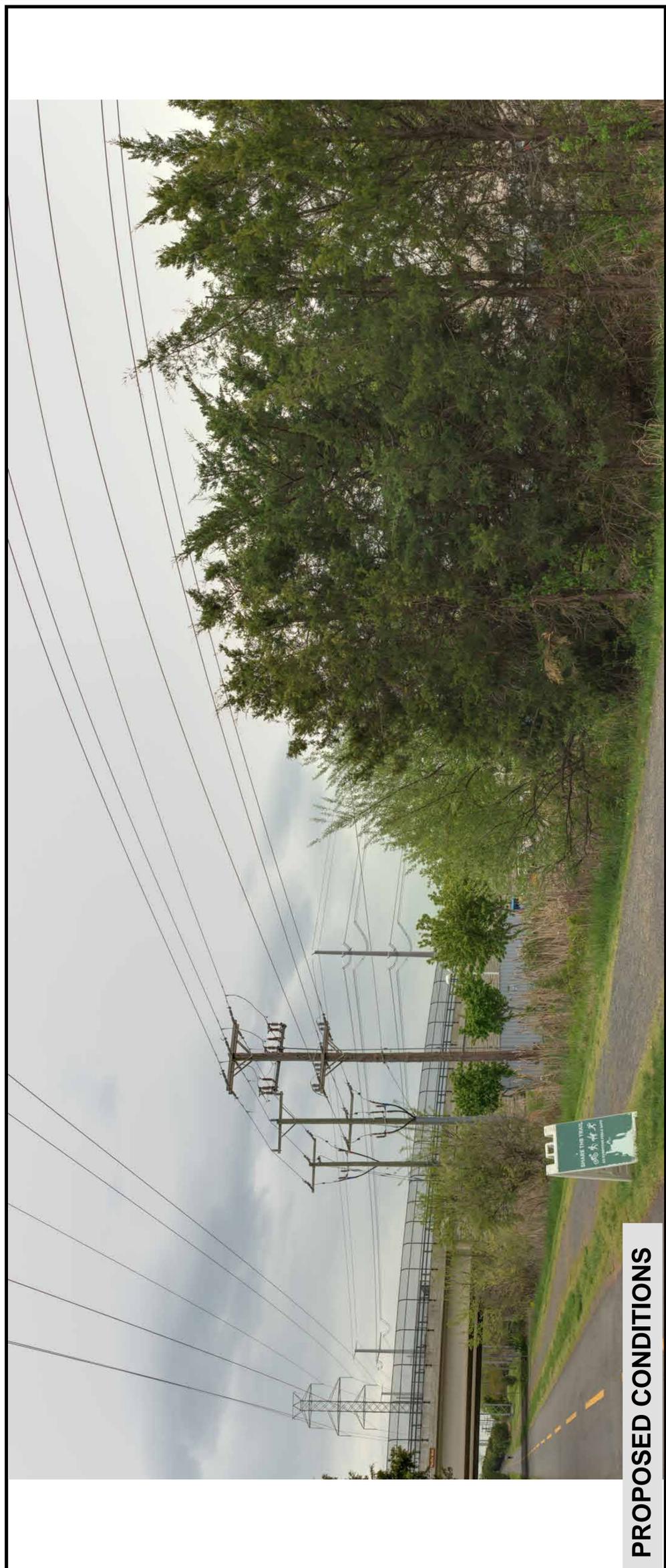


- Legend**
- Existing DOM Infrastructure
 - Golden-Mars 500-230 kV Electric Transmission Project - Route 5
 - KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



1:12,000

0 500 1,000 1,500 2,000 Feet

- Golden-Mars Route 5
- Existing Dominion Transmission Lines
- Future Substation
- Historic Resource
- KOP Location



C:\Users\Vincent.macek\OneDrive - ERM\Dominion Golden-Mars\Attachment 5\Figures to revise 1-28\Dom Golden Mars Attachmt 5 Fig 54 REV.mxd | REVISED: 01/28/2025 | SCALE: 1:12,000

Figure 54. Aerial photograph depicting land use and photo view for 053-0968.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



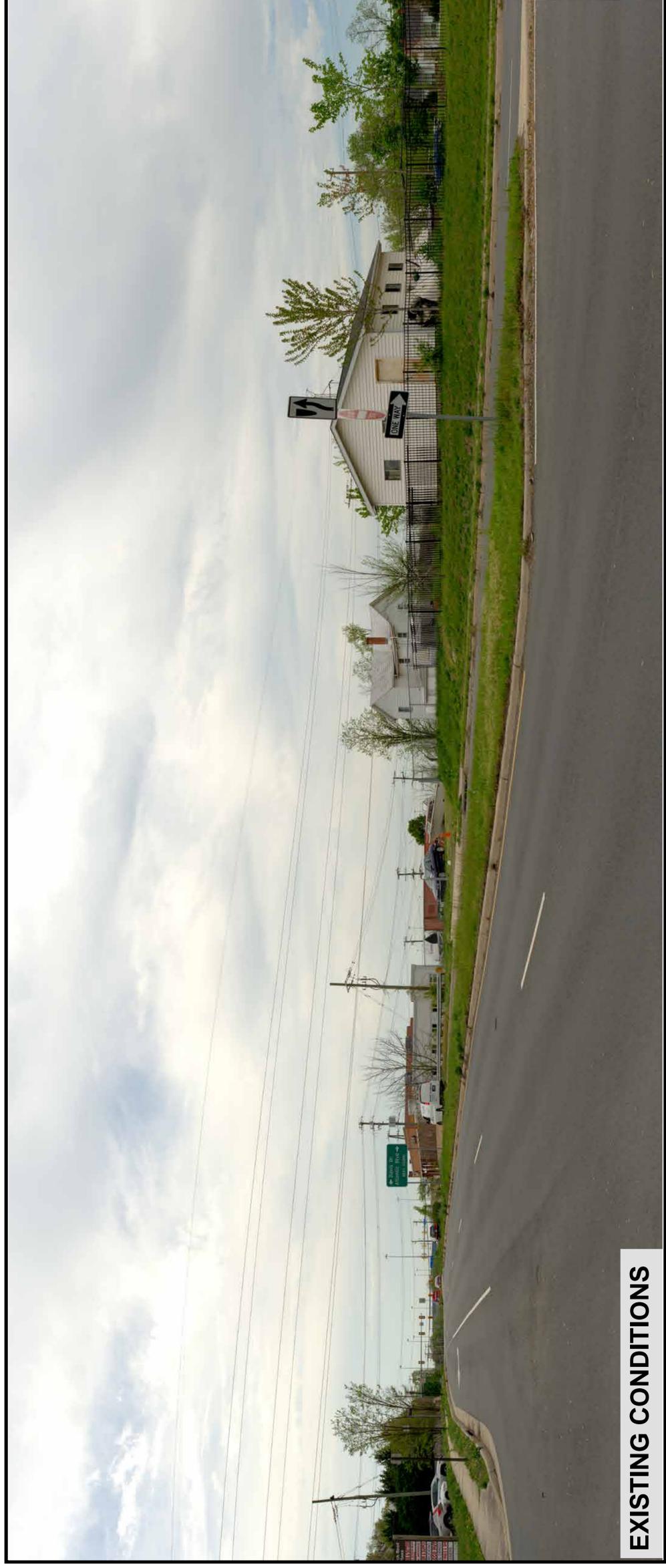
KOP 005
 W Church Rd

Figure 55
Route: Golden-Mars Route 5
Date: 04/17/2024
Time: 12:49 pm
Viewing Direction: Southeast
Distance to closest feature: 0.58 miles

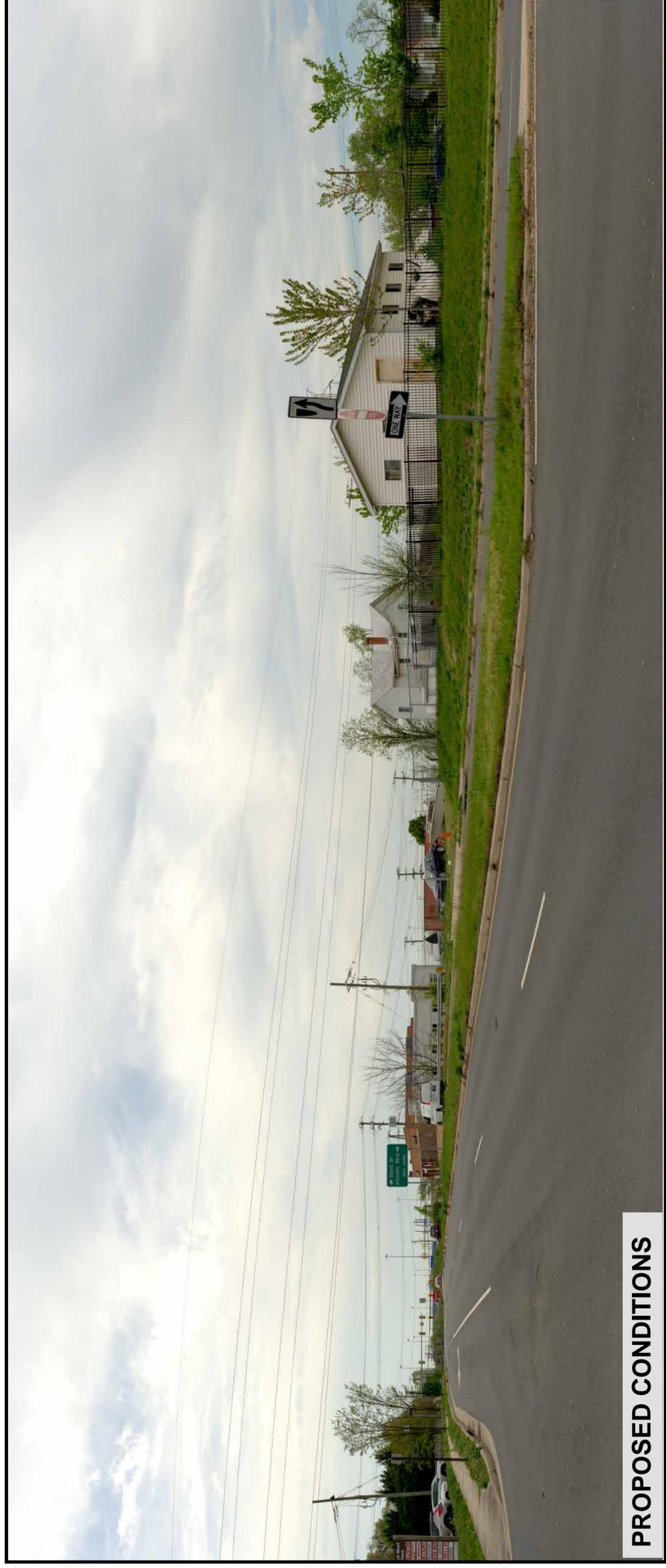


Legend
 - Existing DOM Infrastructure
 - Golden-Mars 500-230 kV Electric Transmission Project - Route 5
 - KOP View Direction

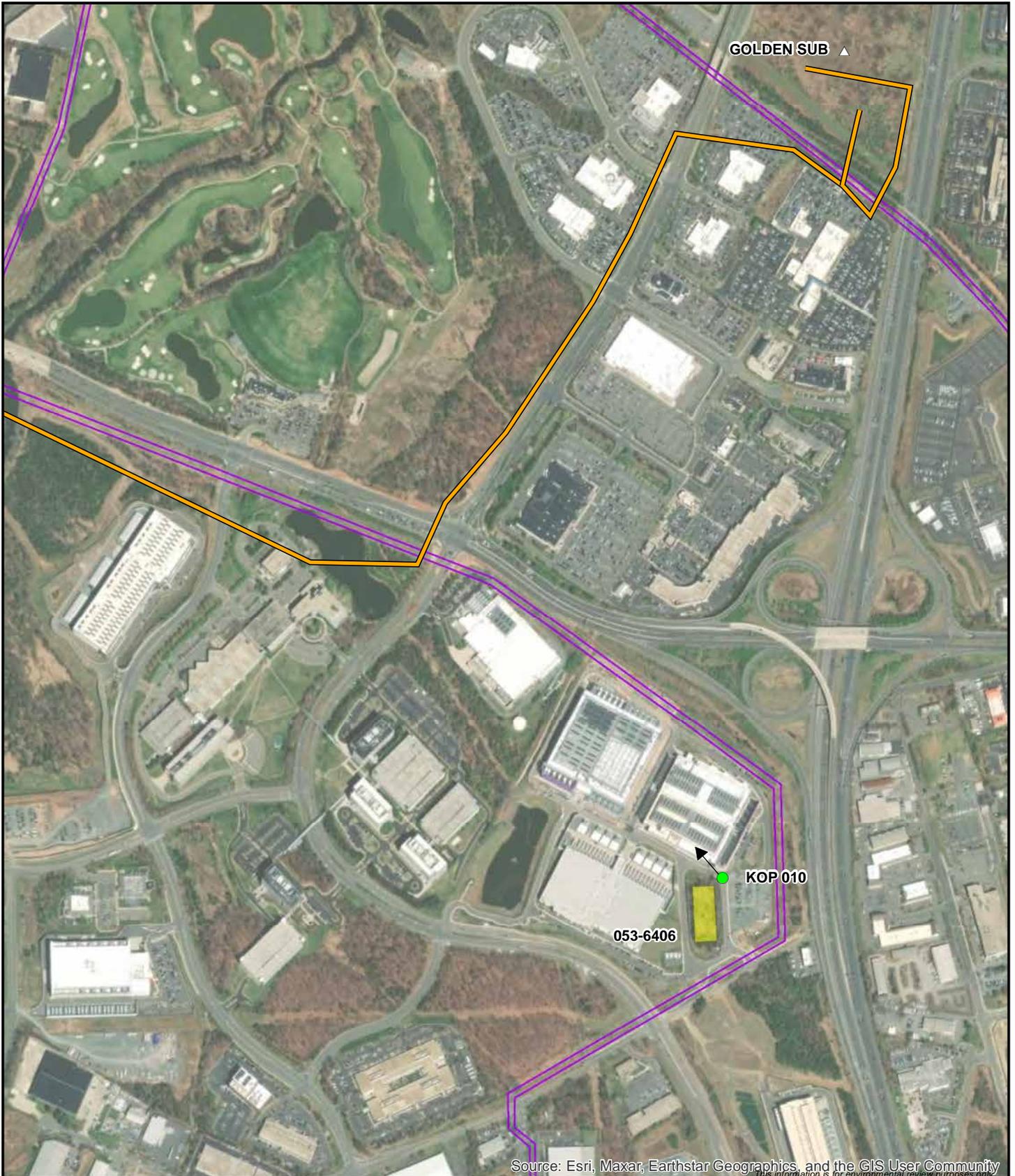
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



1:12,000

-  Golden-Mars Route 5
-  Existing Dominion Transmission Lines
-  Future Substation
-  Historic Resource
-  KOP Location



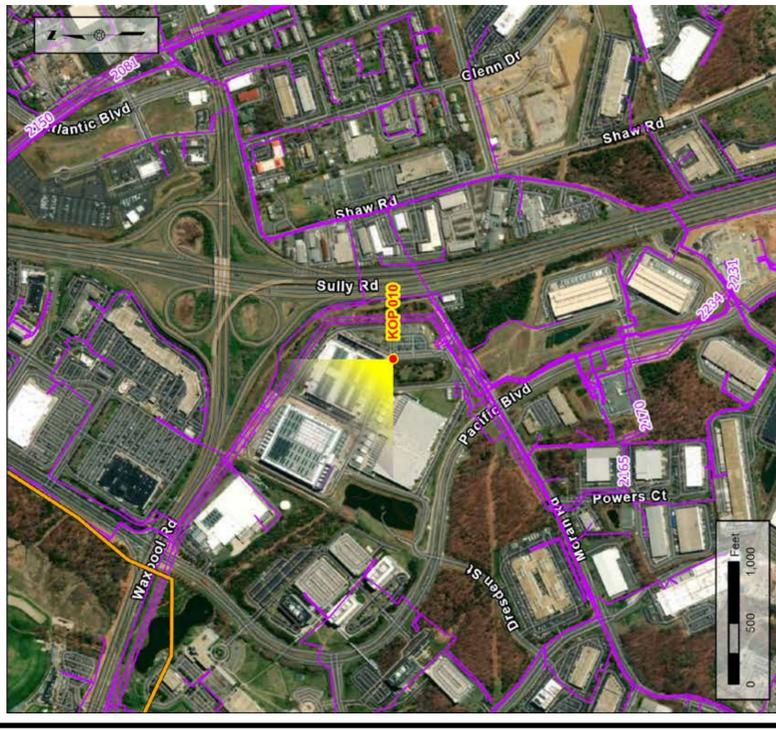
Figure 56. Aerial photograph depicting land use and photo view for 053-6406.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 010
 Vantage Data Plz

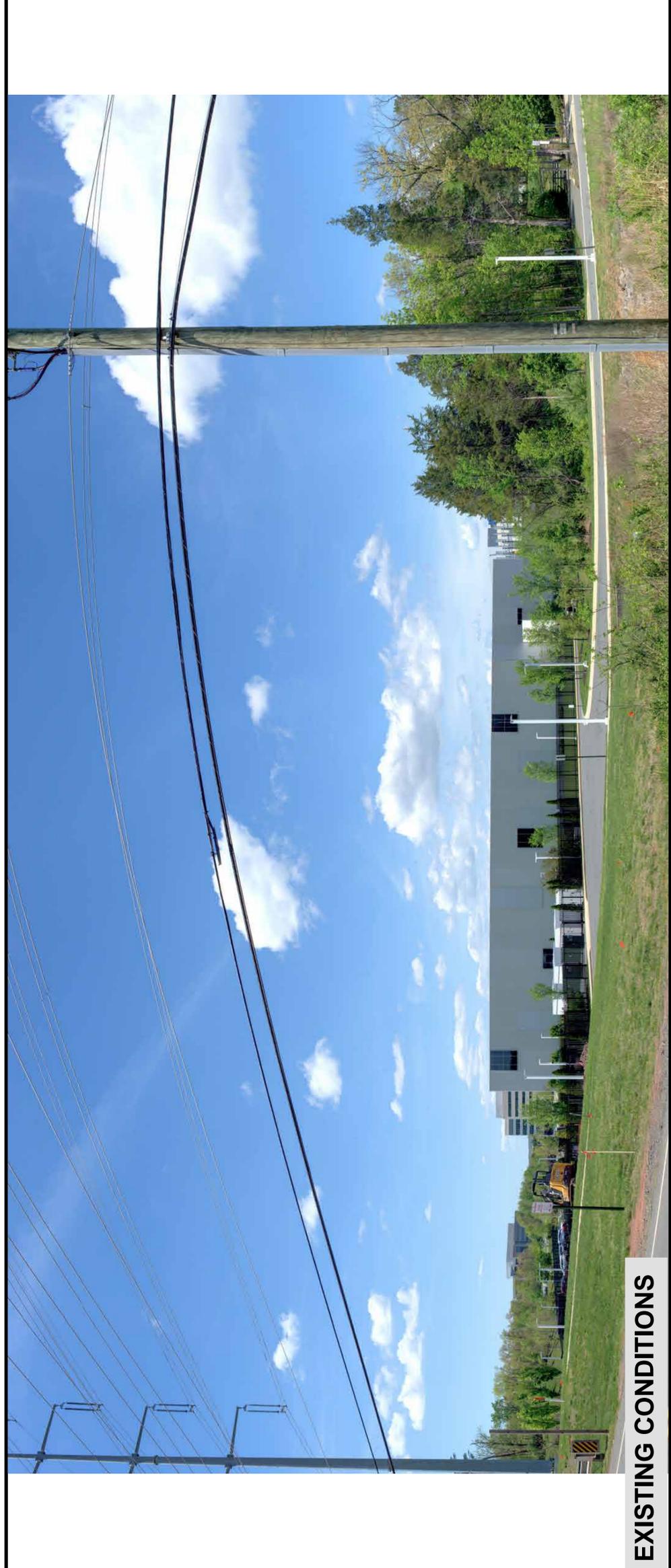
Figure 57
Route: Golden-Mars Route 5
Date: 04/18/2024
Time: 12:10 pm
Viewing Direction: Northwest
Distance to closest feature: 0.48 miles



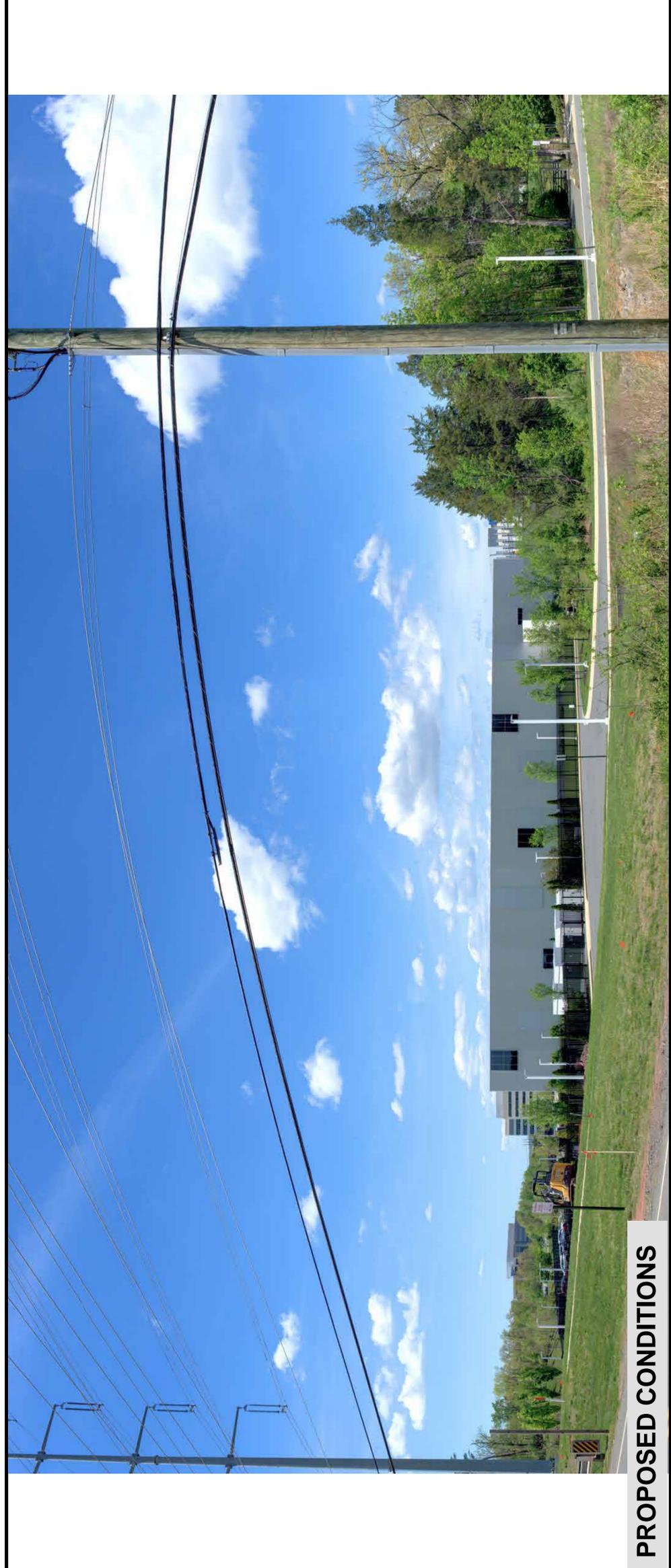
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 5
- KOP View Direction

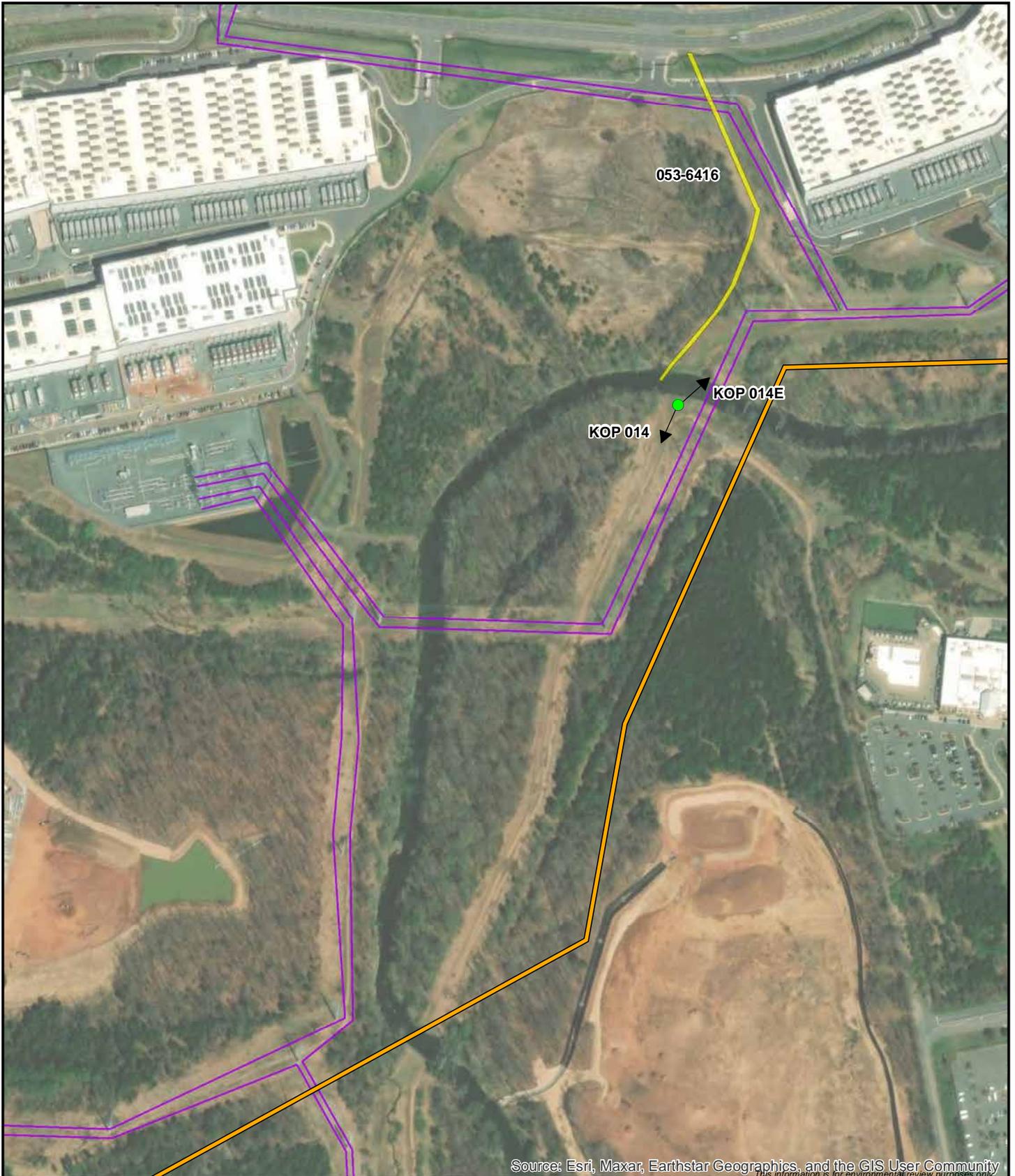
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.



1:6,000

- Golden-Mars Route 5
- Existing Dominion Transmission Lines
- Historic Resource
- KOP Location



Figure 58. Aerial photograph depicting land use and photo view for 053-6416.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 014
 Round Table Plz

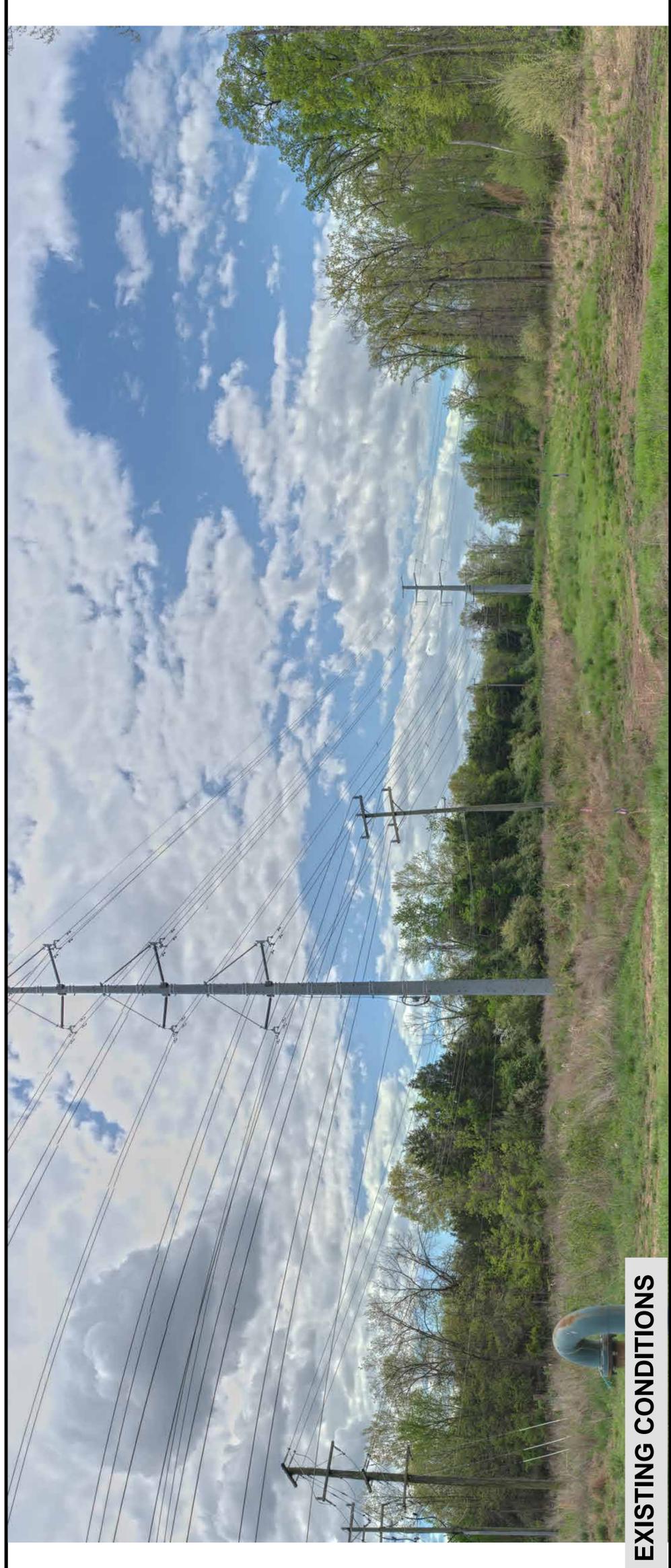
Figure 59
Route: Golden-Mars Route 5
Date: 04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles



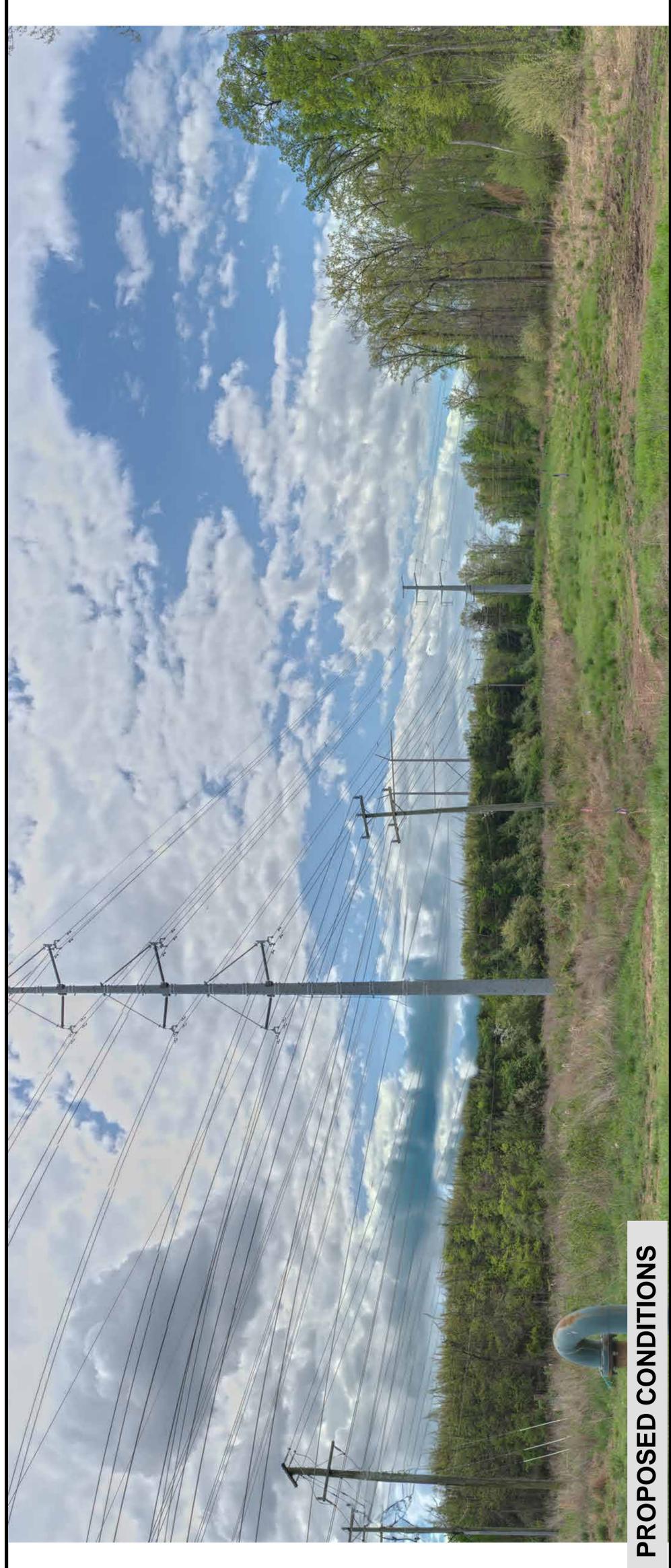
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 5
- KOP View Direction

Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



PROPOSED CONDITIONS

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



KOP 014E
 Round Table Plz

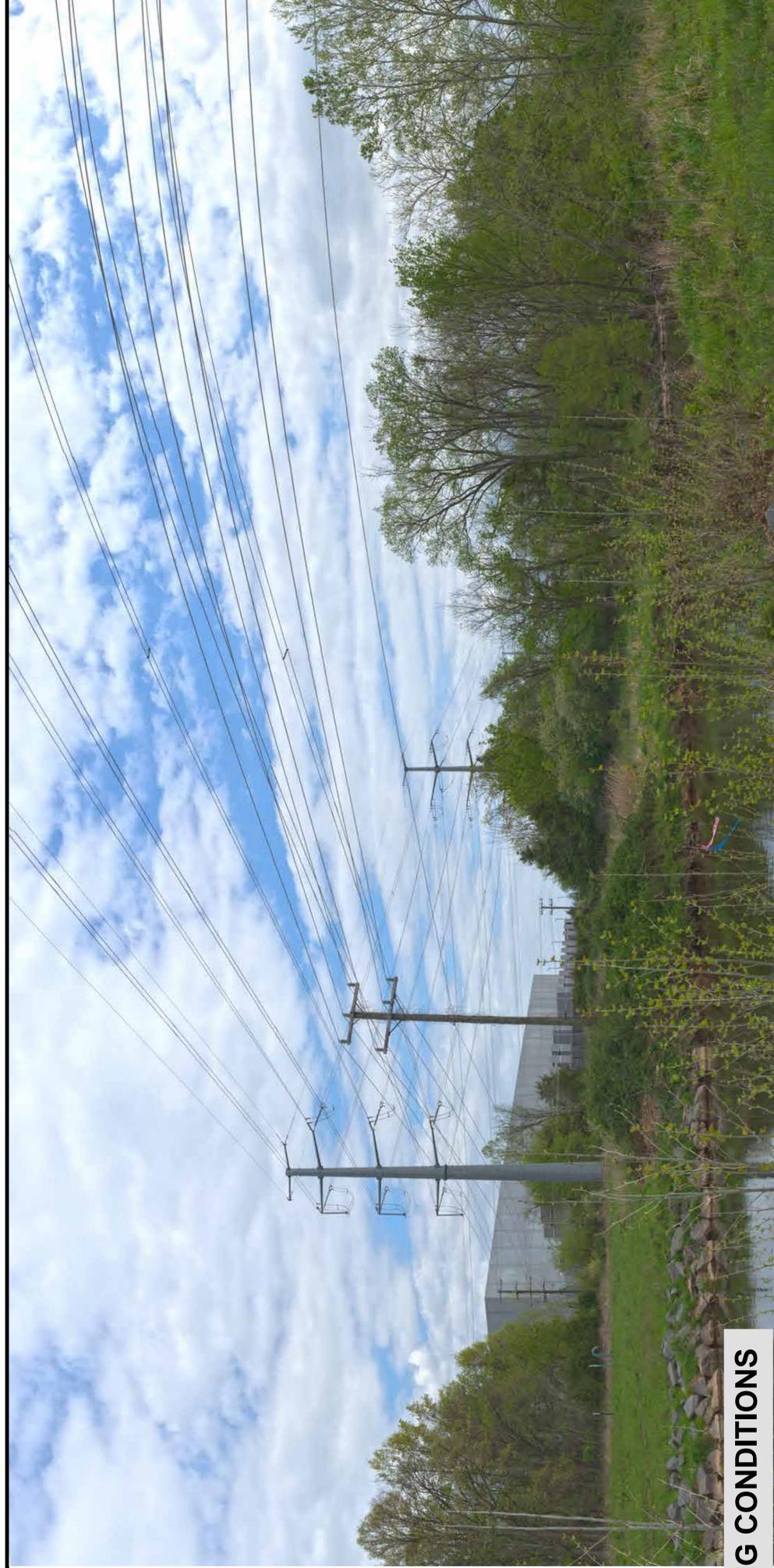
Figure 60
Route: Golden-Mars Route 5
Date: 04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.05 miles



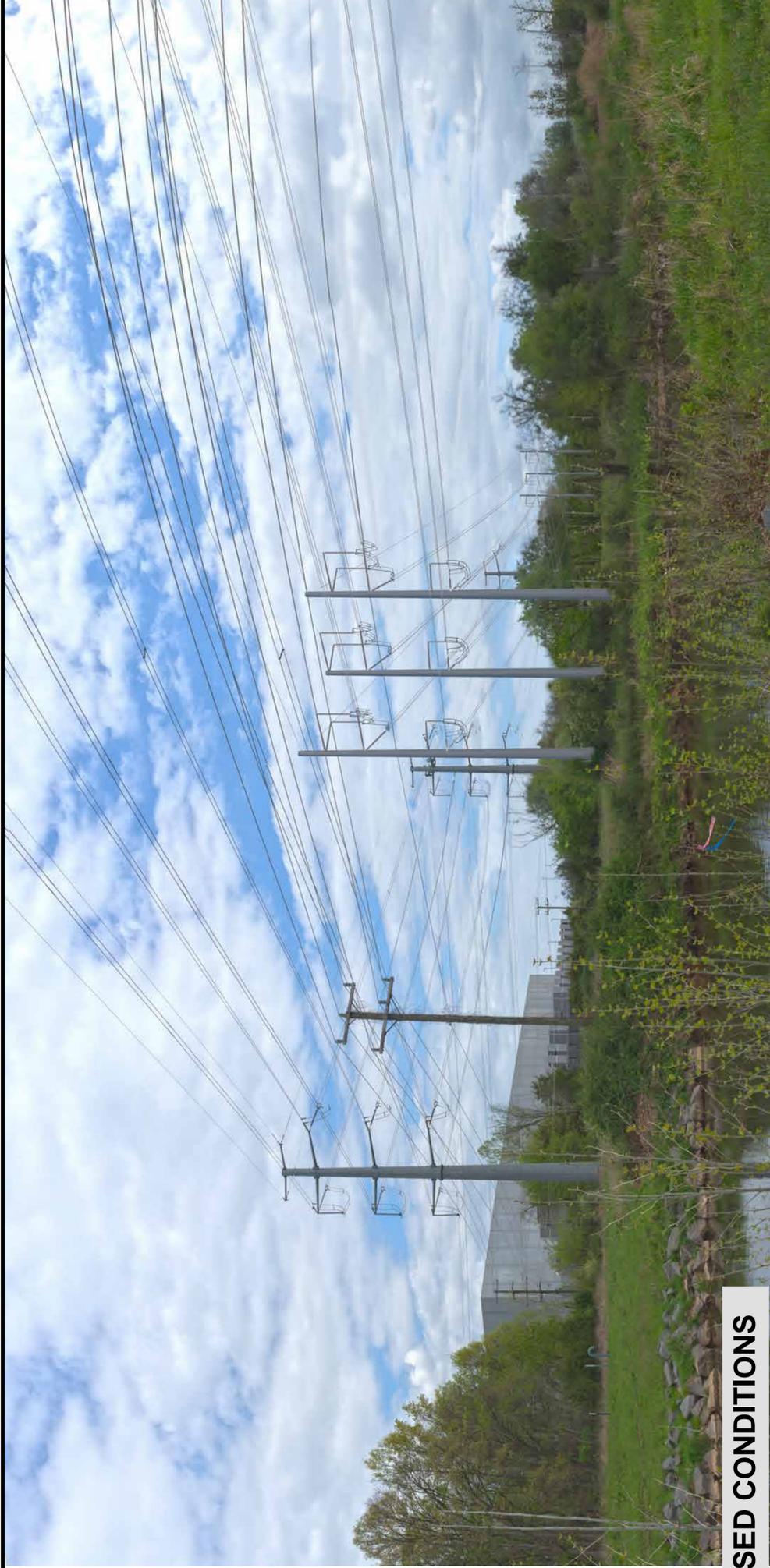
Legend

- Existing DOM Infrastructure
- Golden-Mars 500-230 kV Electric Transmission Project - Route 5
- KOP View Direction

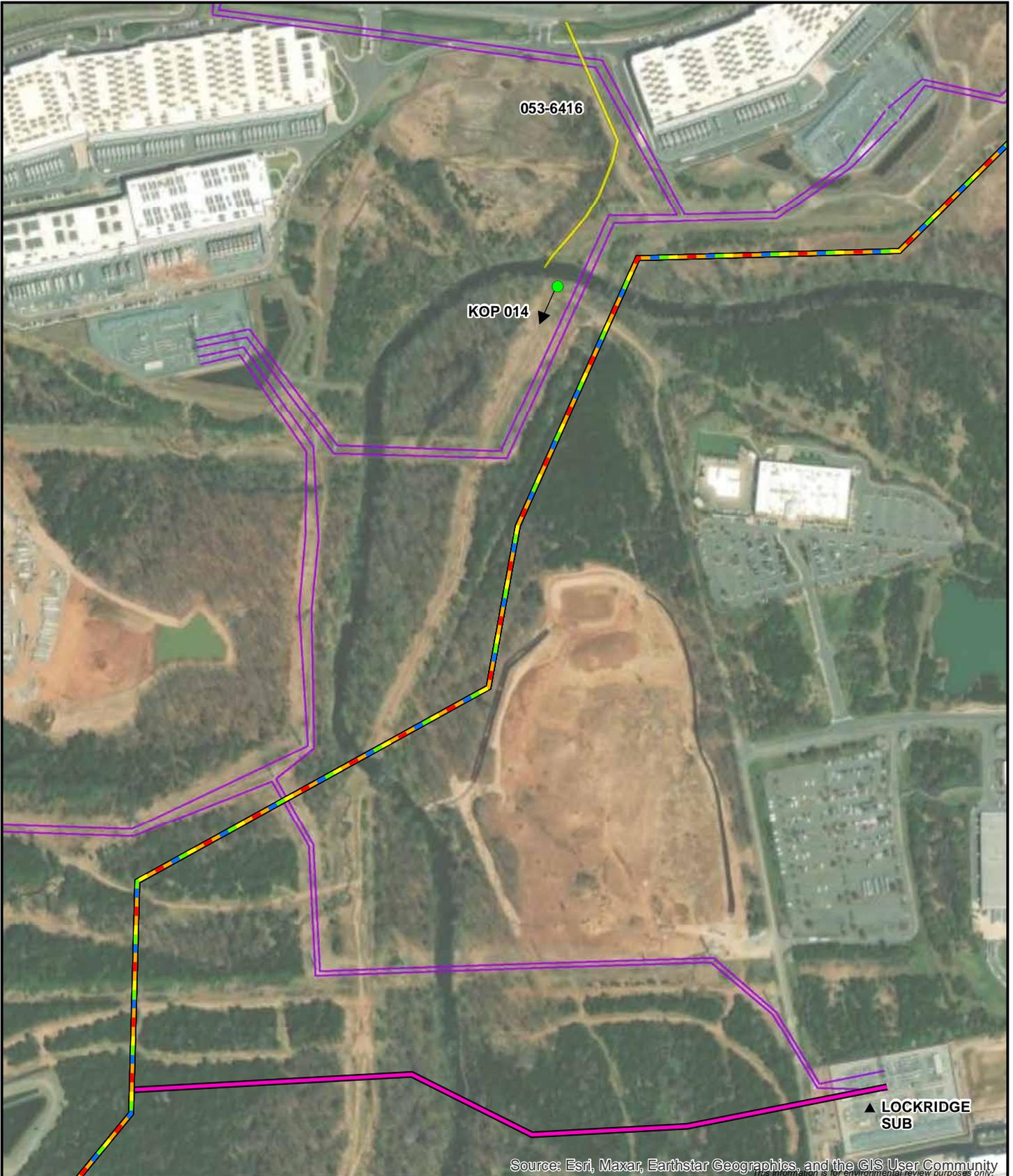
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



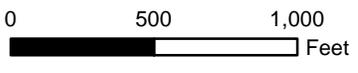
EXISTING CONDITIONS



PROPOSED CONDITIONS



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



1:8,000

- Lockridge 230 kV Loop
- Golden-Mars Route 1
- Golden-Mars Route 2
- Golden-Mars Route 3
- Golden-Mars Route 4
- Golden-Mars Route 5
- Existing Dominion Transmission Lines
- ▲ Existing Substation
- Historic Resource
- KOP Location



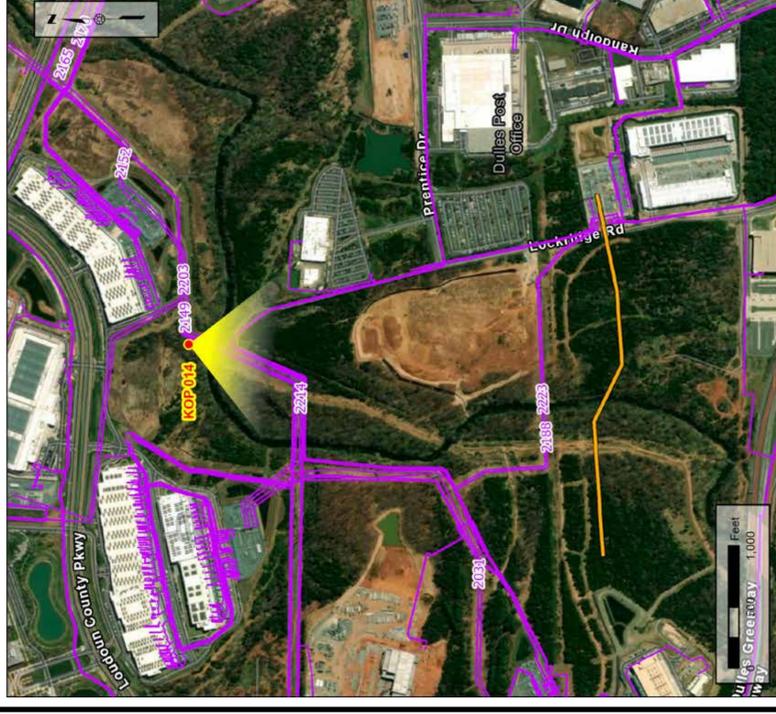
Figure 61. Aerial photograph depicting land use and photo view for 053-6416.

Golden - Mars
500-230 kV
Electric Transmission Project
 Loudoun County, Virginia



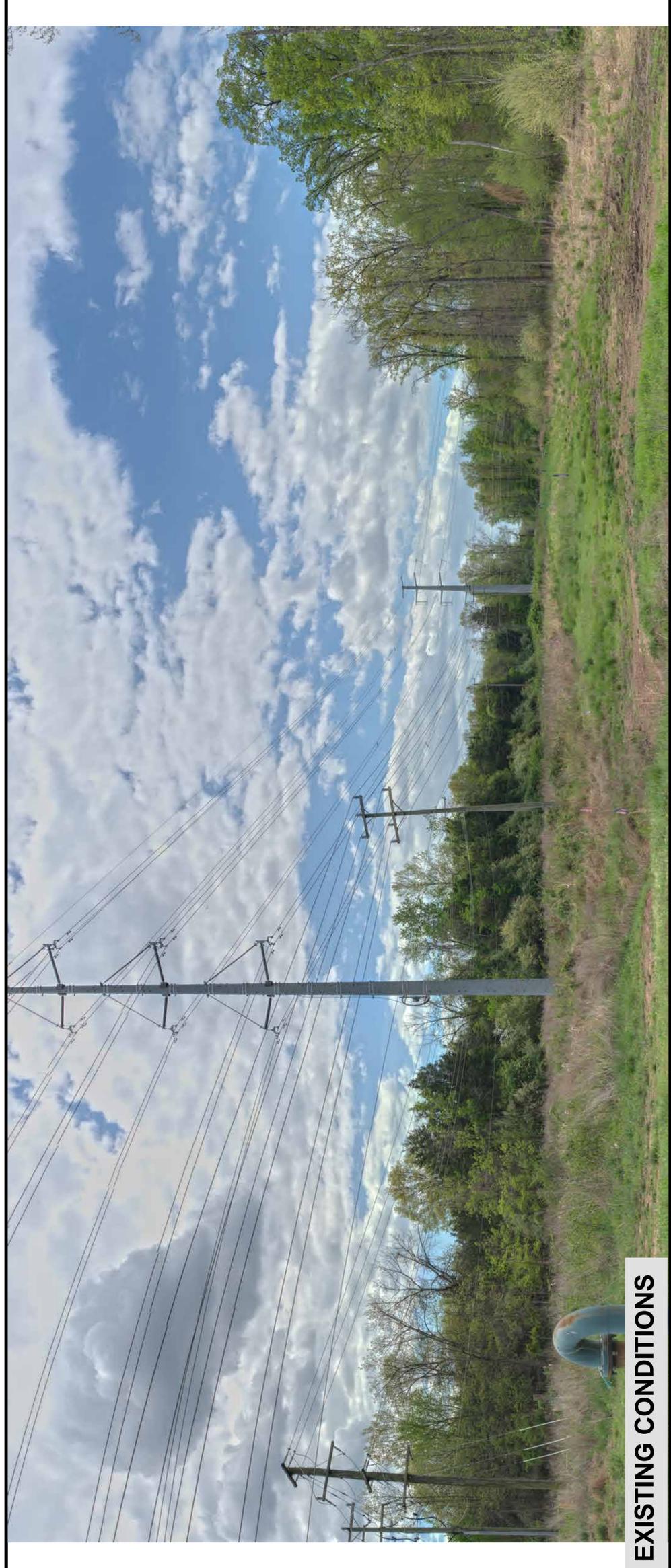
KOP 014
 Round Table Plz

Figure 62
Route: Lockridge 230 kV Loop
Date: 04/18/2024
Time: 9:53 am
Viewing Direction: South
Distance to closest feature: 0.64 miles

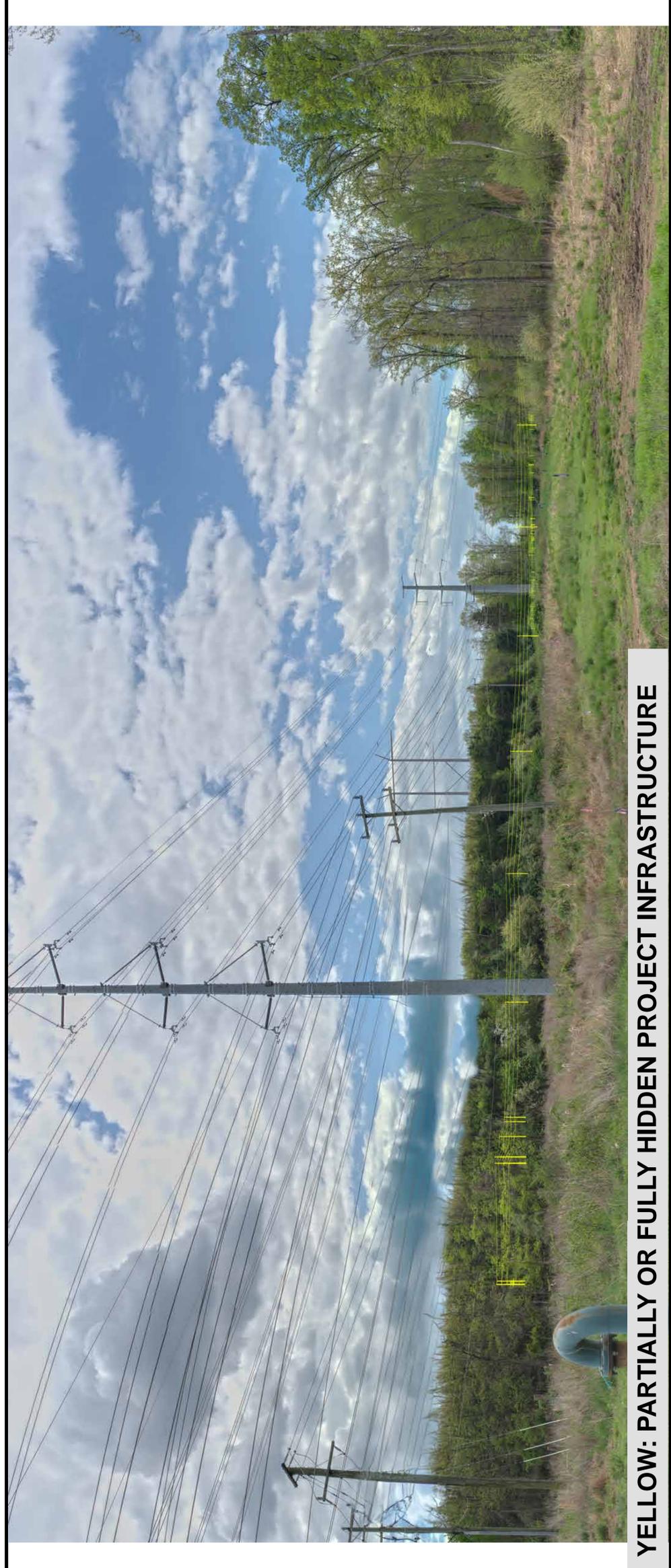


- Legend**
- Existing DOM Infrastructure
 - Lockridge 230 kV Loop
 - ➔ KOP View Direction

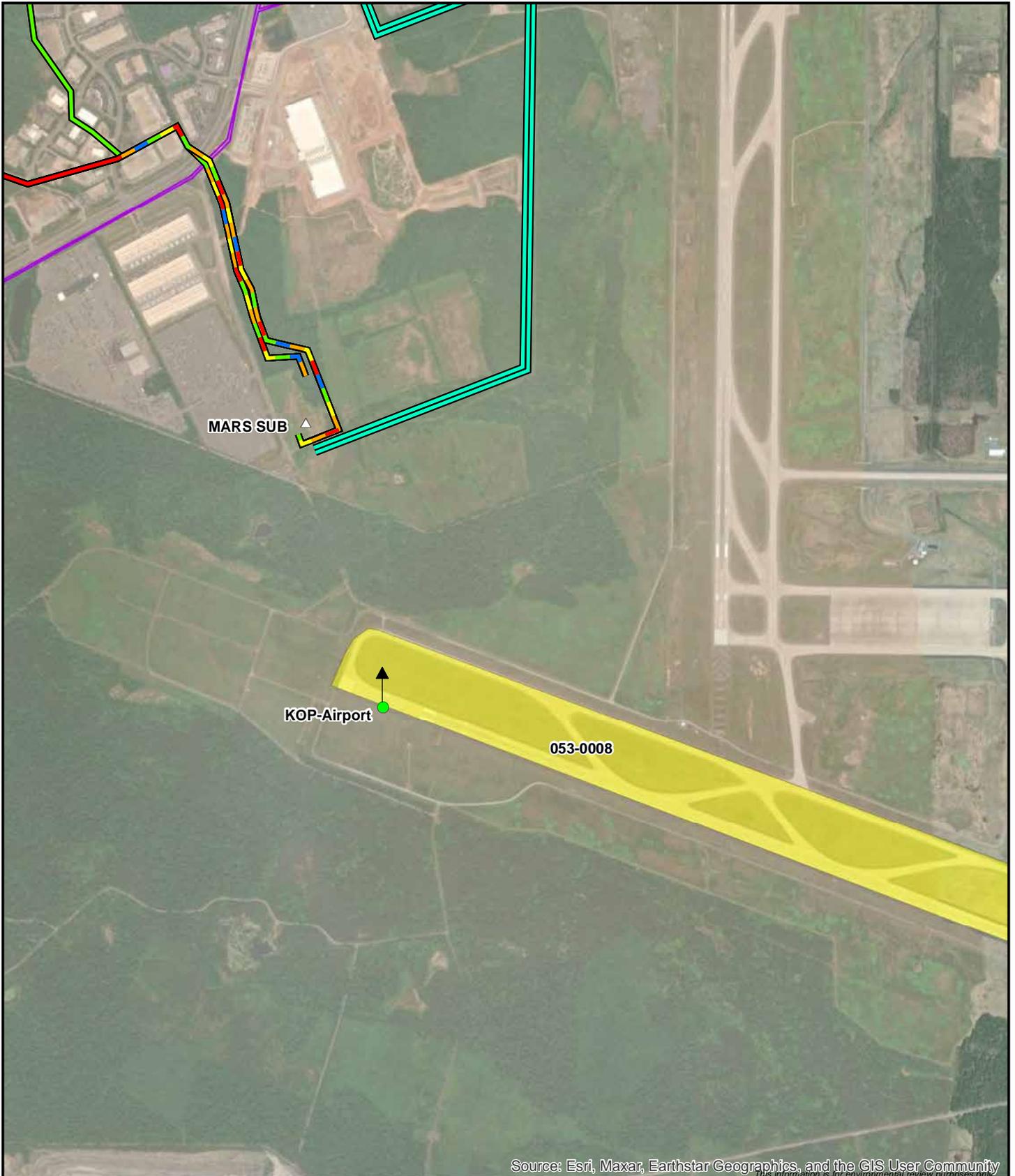
Note: Project components illustrated are based on proposed preliminary designs. The images contained on this page show the proposed project within a wider landscape context and are not representative of scale and distance when viewed from the actual view point.



EXISTING CONDITIONS



YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
This information is for environmental review purposes only.

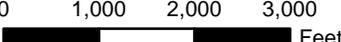
 1:24,000	 0 1,000 2,000 3,000 Feet	 Golden-Mars Route 1	 Sojourner 230 kV Loop
		 Golden-Mars Route 2	 Existing Dominion Transmission Lines
		 Golden-Mars Route 3	 Future Substation
		 Golden-Mars Route 4	 Historic Resource
		 Golden-Mars Route 5	 KOP Location

Figure 63. Aerial photograph depicting land use and photo view for 053-0008.

Golden - Mars
500-230 kV
Electric Transmission Project
Loudoun County, Virginia



KOP Airport
Vortac Rd

Figure 64

Route: Sojourner 230 kV Loop

Date: 09/21/2024

Time: 10:00 am

Viewing Direction: Northwest

Distance to closest feature: 0.59 miles



Legend

- Sojourner 230 kV Loop
- KOP View Direction

EXISTING CONDITIONS

YELLOW: PARTIALLY OR FULLY HIDDEN PROJECT INFRASTRUCTURE

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Guyana	South Korea
Hong Kong	Spain
India	Switzerland
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Malaysia	Vietnam
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From: Warren, Arlene <arlene.warren@vdh.virginia.gov>
Sent: Tuesday, June 22, 2021 7:53 AM
To: Rachel.M.Studebaker@dominionenergy.com
Subject: [EXTERNAL] Re: FW: SCC Case No. PUR-2021-00010/DEQ21-013S

This is an EXTERNAL email that was NOT sent from Dominion Energy. Are you expecting this message? Are you expecting a link or attachment? DO NOT click links or open attachments until you verify them

The proposal from Dominion is reasonable and we consider it acceptable.

Best Regards,

Arlene Fields Warren

GIS Program Support Technician

Office of Drinking Water

Virginia Department of Health

109 Governor Street

Richmond, VA 23219

(804) 864-7781

On Thu, Jun 17, 2021 at 4:33 PM Rachel.M.Studebaker@dominionenergy.com
<Rachel.M.Studebaker@dominionenergy.com> wrote:

Hello Ms. Warren,

I am reaching out in regard to the DEQ Report for SCC Case No. PUR-2021-00010/DEQ21-013S (230 kV lines #2113 and #2154 Transmission Line Rebuilds and Related Projects). As part of the VDH ODW review, it was recommended that all wells within a 1,000-foot radius of the project site be field marked and protected from accidental damage. It is our custom construction process to not conduct any work outside of the existing right-of-way (ROW), with the exception of entry using existing access roads, and use DEQ approved erosion and sediment controls. These well are located outside of the project area ROW on private land and Dominion Energy does not have permission to enter private property to field mark the wells.

Therefore, we are proposing to plot and call out the wells on the Erosion and Sediment control plans as a way of flagging them for the construction team for protection from accidental damage. Is this a sufficient approach to comply with the ODW recommendation?

Thank you,

Rachel Studebaker

Environmental Specialist II

Dominion Energy Services

120 Tredegar Street, Richmond, VA 23219

Office: (804) 273-4086

Cell: (804) 217-1847

#



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