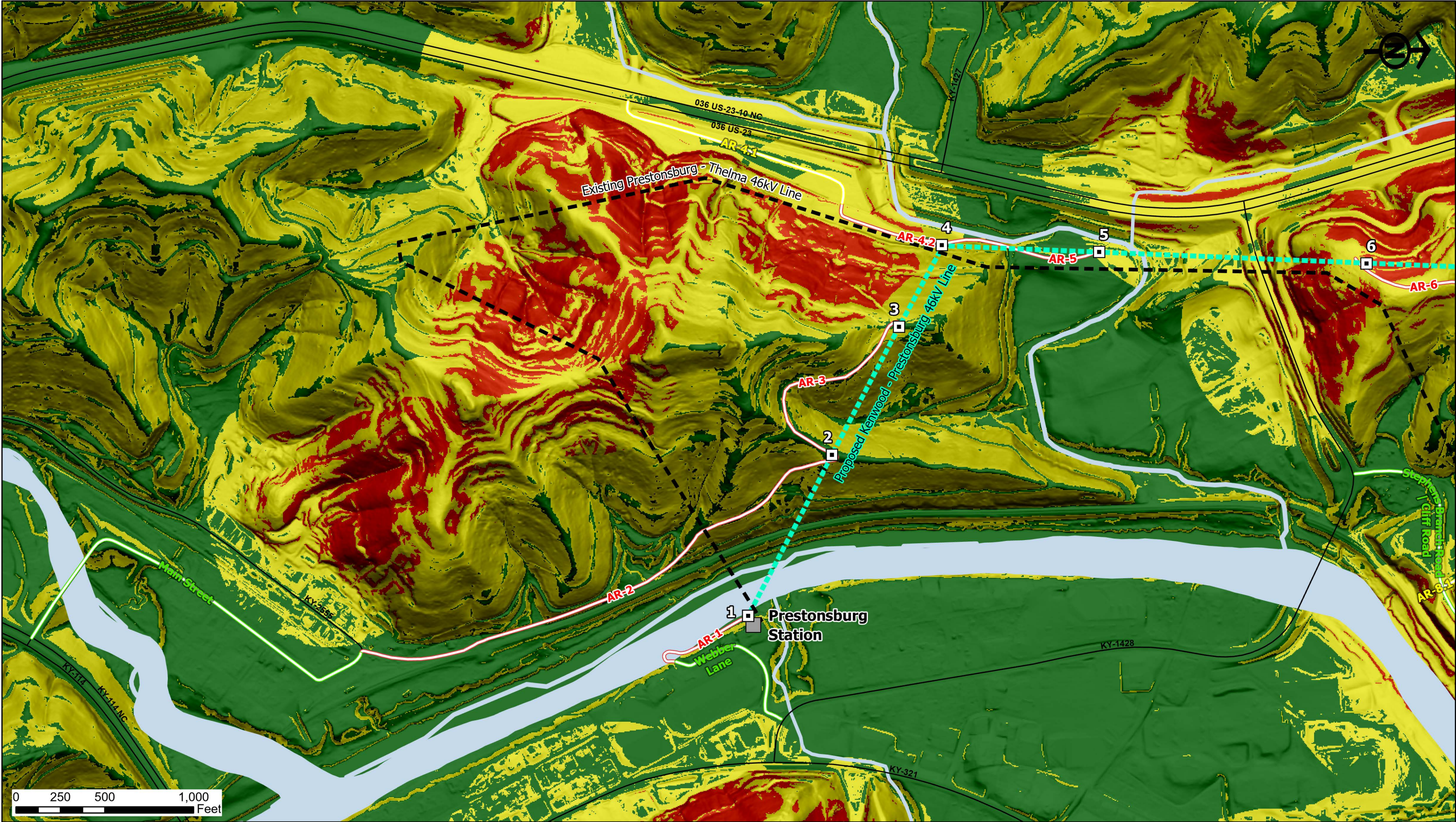


**EXHIBIT 12**

**Part 4 of 4**





Proposed Structure

Substation

Proposed Transmission Line

Existing Prestonsburg - Thelma 46kV Line

New Access Road

Existing Road (to be improved)

Existing Road (no improvement)

Road

Water

Risk

Low

Moderate

High

REFERENCES:

- Centerline data sent by AEP Siting via e-mail on August 3, 2021; Structures preliminary spotted by DiGioia Gray.

- Access roads and associated features preliminary spotted by DiGioia Gray, September 2021.

- Risk raster developed in ArcGIS Pro 2.x using Raster Calculator tool.

- Hillshade Basemap - Ky\_DEM\_KYAPED\_5FT\_Phase2\_MultiDirectionalHillshadeImage Service

- Coordinate System: NAD 1983 2011 StatePlane Kentucky South FIPS 1602 FT US

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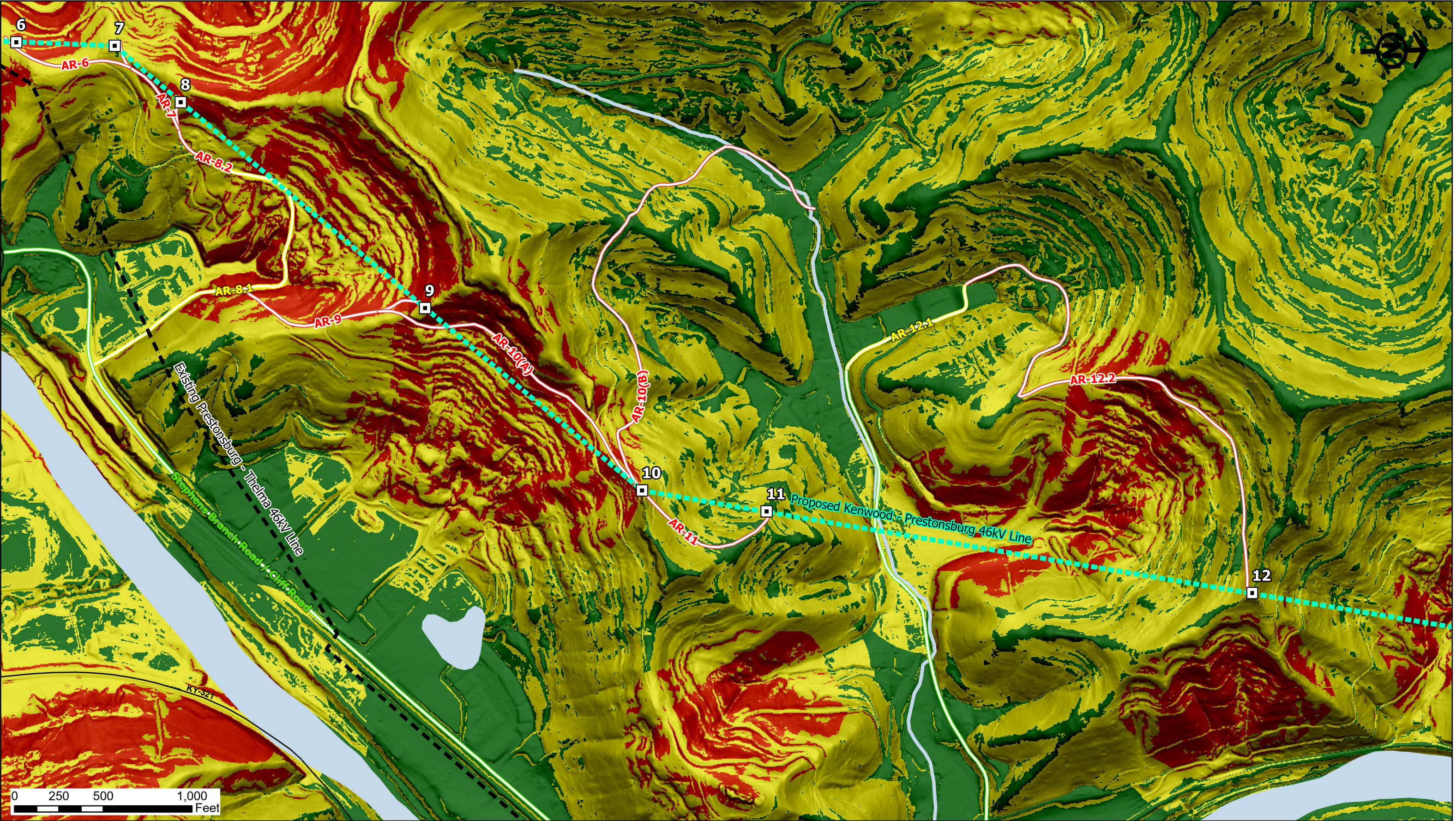
Prestonsburg - Thelma 46kV Rebuild  
Geohazard Risk Assessment

Relative Risk

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Name: 2021-147\_AEP\_PrestonsburgThelma46kV



**Legend**

Proposed Structure

Proposed Transmission Line

Existing Prestonsburg - Thelma 46kV Line Risk

New Access Road

Existing Road (to be improved)

Existing Road (no improvement)

Road

Water

Low

Moderate

High

**REFERENCES:**

- Centerline data sent by AEP Siting via e-mail on August 3, 2021; Structures preliminary spotted by DiGioia Gray.
- Access roads and associated features preliminary spotted by DiGioia Gray, September 2021.
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- Coordinate System: NAD 1983 2011 StatePlane Kentucky South FIPS 1602 FT US

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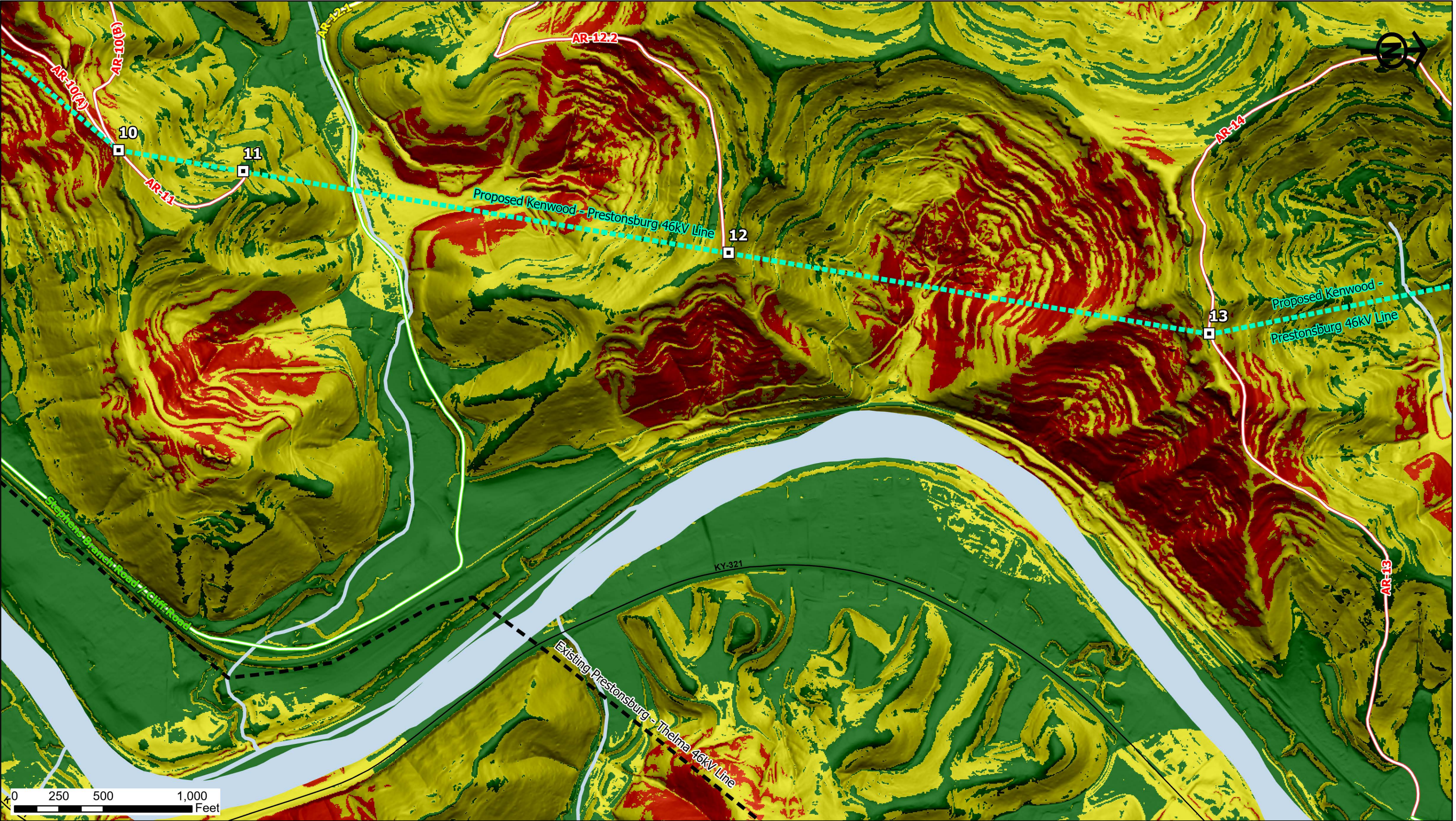
Prestonsburg - Thelma 46kV Rebuild  
Geohazard Risk Assessment

**Relative Risk**

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Name: 2021-147\_AEP\_PrestonsburgThelma46kV



Legend

■

Proposed Structure

■

Proposed Transmission Line

■

Existing Prestonsburg - Thelma 46kV Line Risk

■

New Access Road

■

Existing Road (to be improved)

■

Existing Road (no improvement)

—

Road

—

Water

—

Low

—

Moderate

—

High

REFERENCES:

- Centerline data sent by AEP Siting via e-mail on August 3, 2021; Structures preliminary spotted by DiGioia Gray.

- Access roads and associated features preliminary spotted by DiGioia Gray, September 2021.

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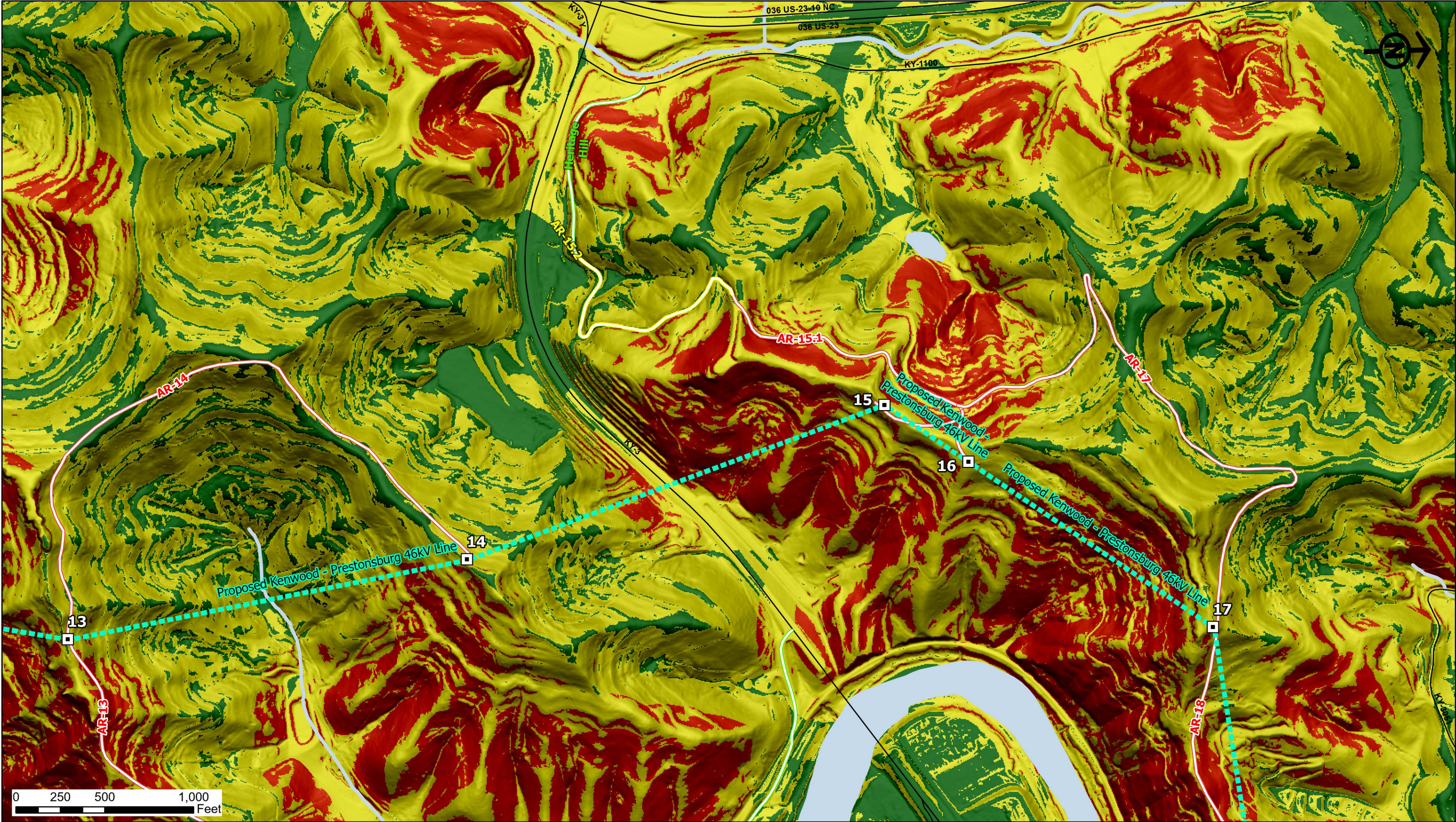
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Geohazard Risk Assessment

Relative Risk

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Name: 2021-147\_AEP\_PrestonsburgThelma46kV



Legend

Proposed Structure

Proposed Transmission Line

Existing Prestonsburg - Thelma 46kV Line Risk

New Access Road

Existing Road (to be improved)

Existing Road (no improvement)

Road

Water

Low

Moderate

High

REFERENCES:

- Centerline data sent by AEP Siting via e-mail on August 3, 2021; Structures preliminary spotted by DiGioia Gray.

- Access roads and associated features preliminary spotted by DiGioia Gray, September 2021.

- Risk raster developed in ArcGIS Pro 2.x using Raster Calculator tool.

- Hillshade Basemap - Ky\_DEM\_KYAPED\_5FT\_Phase2\_MultiDirectionalHillshadeImage Service

- Coordinate System: NAD 1983 2011 StatePlane Kentucky South FIPS 1602 FT US

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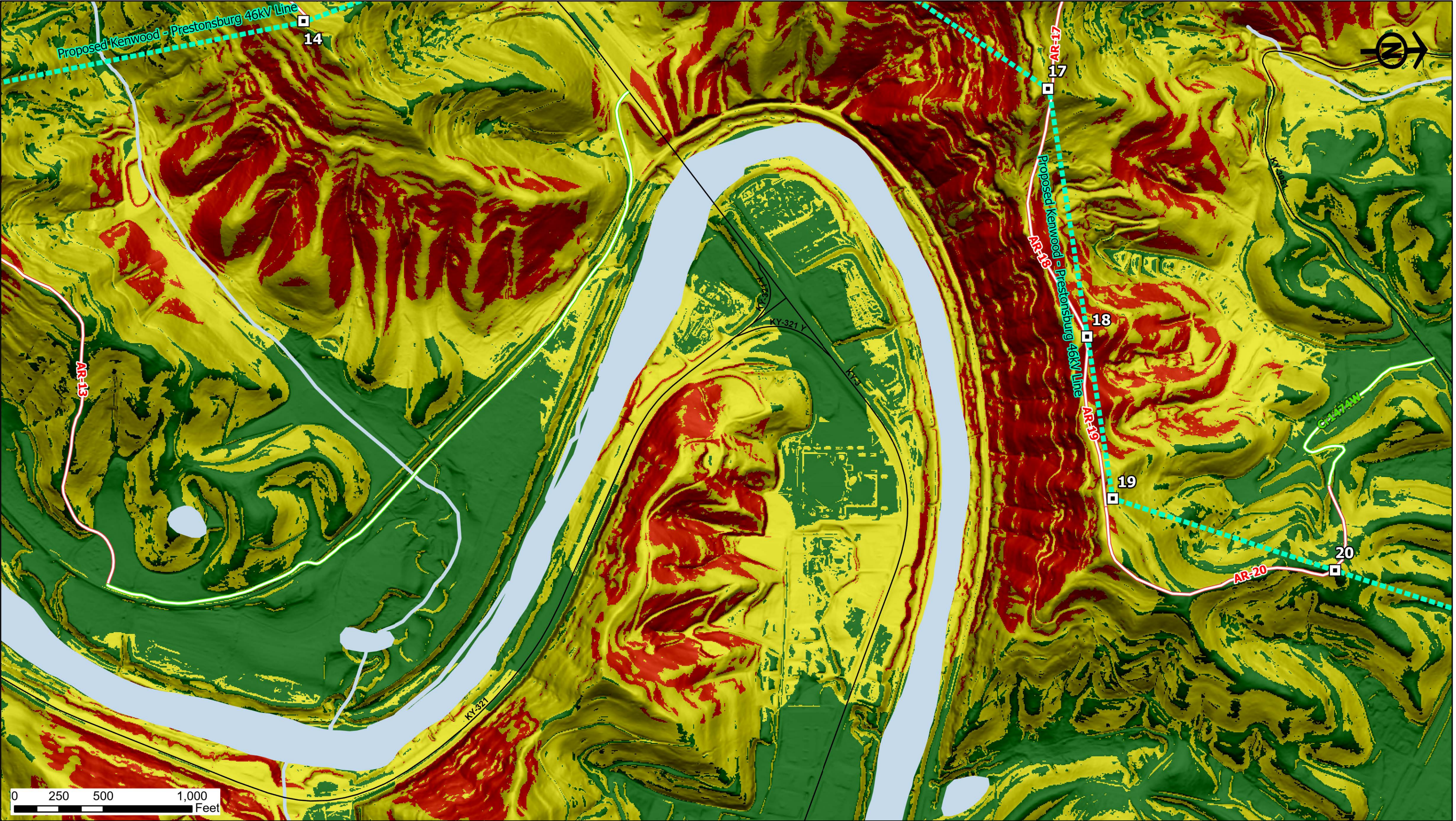
Prestonsburg - Thelma 46kV Rebuild  
Geohazard Risk Assessment

Relative Risk

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Name: 2021-147\_AEP\_PrestonsburgThelma46kV



Legend

■

Proposed Structure

■

Proposed Transmission Line

■

Existing Prestonsburg - Thelma 46kV Line Risk

■

New Access Road

■

Existing Road (to be improved)

■

Existing Road (no improvement)

—

Road

—

Water

—

Low

—

Moderate

—

High

REFERENCES:

- Centerline data sent by AEP Siting via e-mail on August 3, 2021; Structures preliminary spotted by DiGioia Gray.

- Access roads and associated features preliminary spotted by DiGioia Gray, September 2021.

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Geohazard Risk Assessment

Relative Risk

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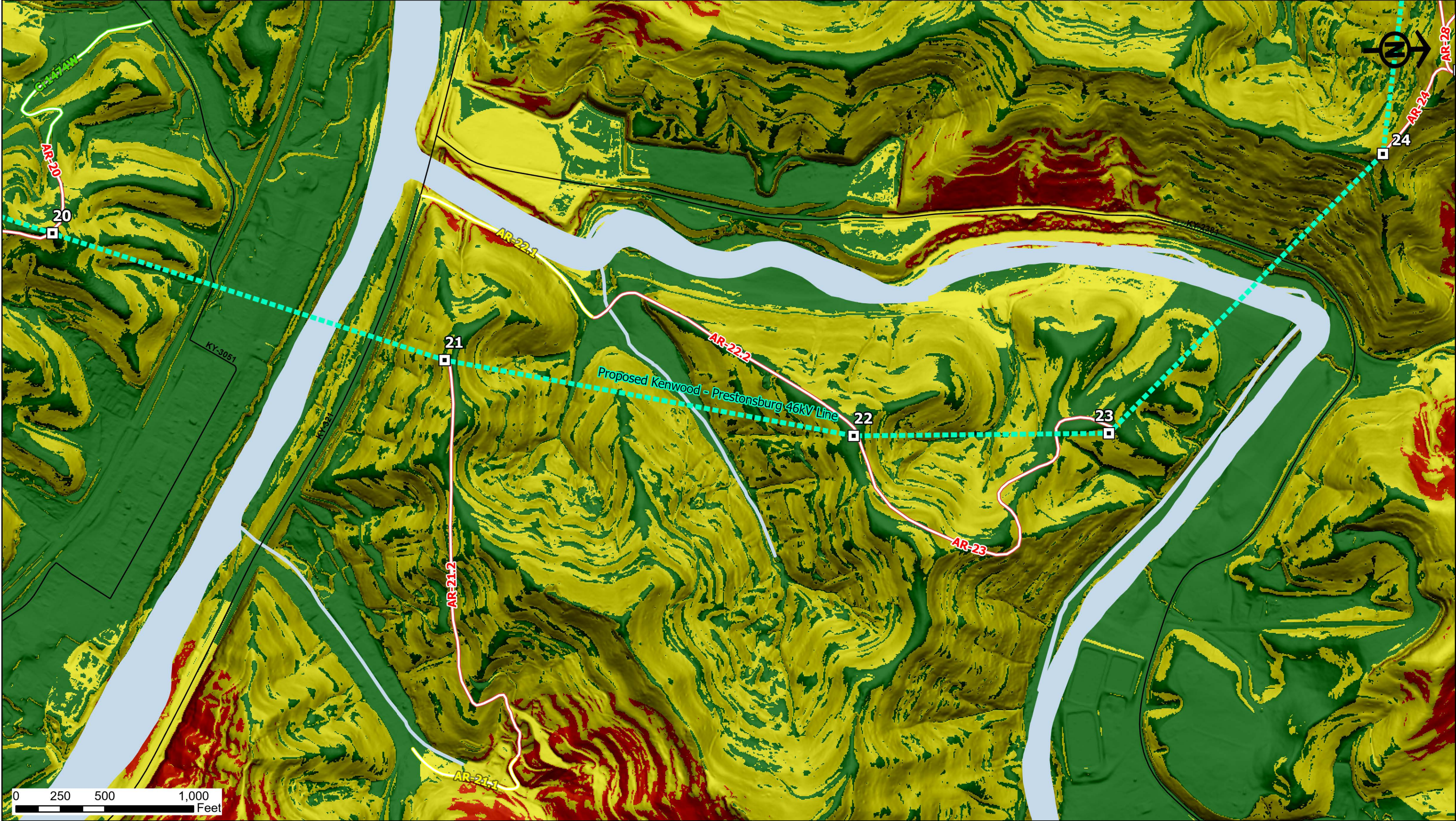
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Legend

■

Proposed Structure

■

Proposed Transmission Line

■

Existing Prestonsburg - Thelma 46kV Line Risk

■

New Access Road

■

Existing Road (to be improved)

■

Existing Road (no improvement)

—

Road

—

Water

■

Low

■

Moderate

■

High

REFERENCES:

- Centerline data sent by AEP Siting via e-mail on August 3, 2021; Structures preliminary spotted by DiGioia Gray.

- Access roads and associated features preliminary spotted by DiGioia Gray, September 2021.

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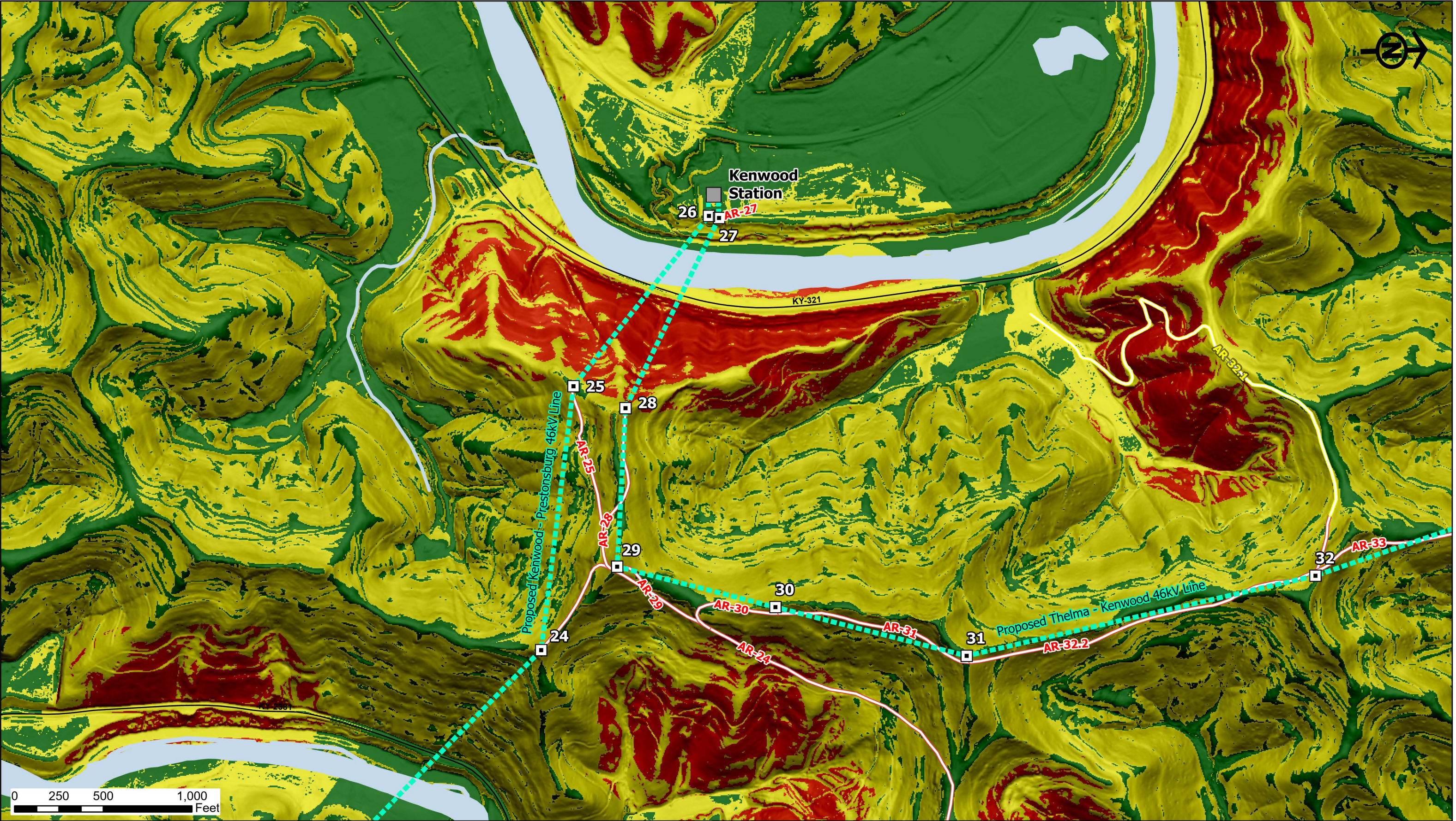
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Prestonsburg - Thelma 46kV Rebuild  
Geohazard Risk Assessment

Relative Risk

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Legend

□

Proposed Structure

■

Substation

---

Proposed Transmission Line

---

Existing Prestonsburg - Thelma 46kV Line

---

New Access Road

---

Existing Road (to be improved)

---

Existing Road (no improvement)

---

Road

---

Water

Risk

---

Low

---

Moderate

---

High

REFERENCES:

- Centerline data sent by AEP Siting via e-mail on August 3, 2021; Structures preliminary spotted by DiGioia Gray.

- Access roads and associated features preliminary spotted by DiGioia Gray, September 2021.

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- Coordinate System: NAD 1983 2011 StatePlane Kentucky South FIPS 1602 FT US

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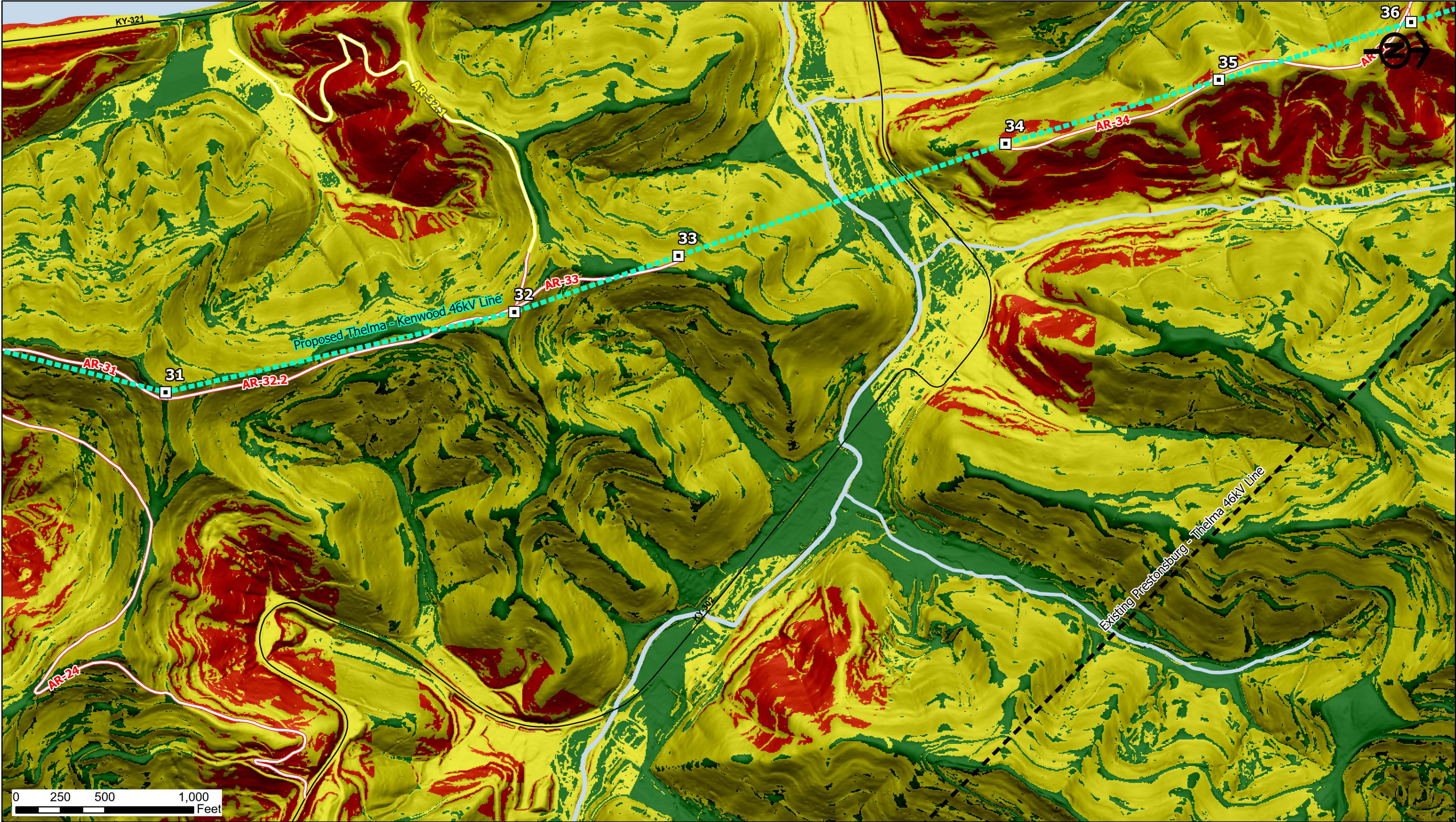
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Geohazard Risk Assessment

Relative Risk

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**Legend**

Proposed Structure

Proposed Transmission Line

Existing Prestonsburg - Thelma 46kV Line Risk

New Access Road

Existing Road (to be improved)

Existing Road (no improvement)

Road

Water

Low

Moderate

High

**REFERENCES:**

- Centerline data sent by AEP Siting via e-mail on August 3, 2021; Structures preliminary spotted by DiGioia Gray.
- Access roads and associated features preliminary spotted by DiGioia Gray, September 2021.
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- Coordinate System: NAD 1983 2011 StatePlane Kentucky South FIPS 1602 FT US

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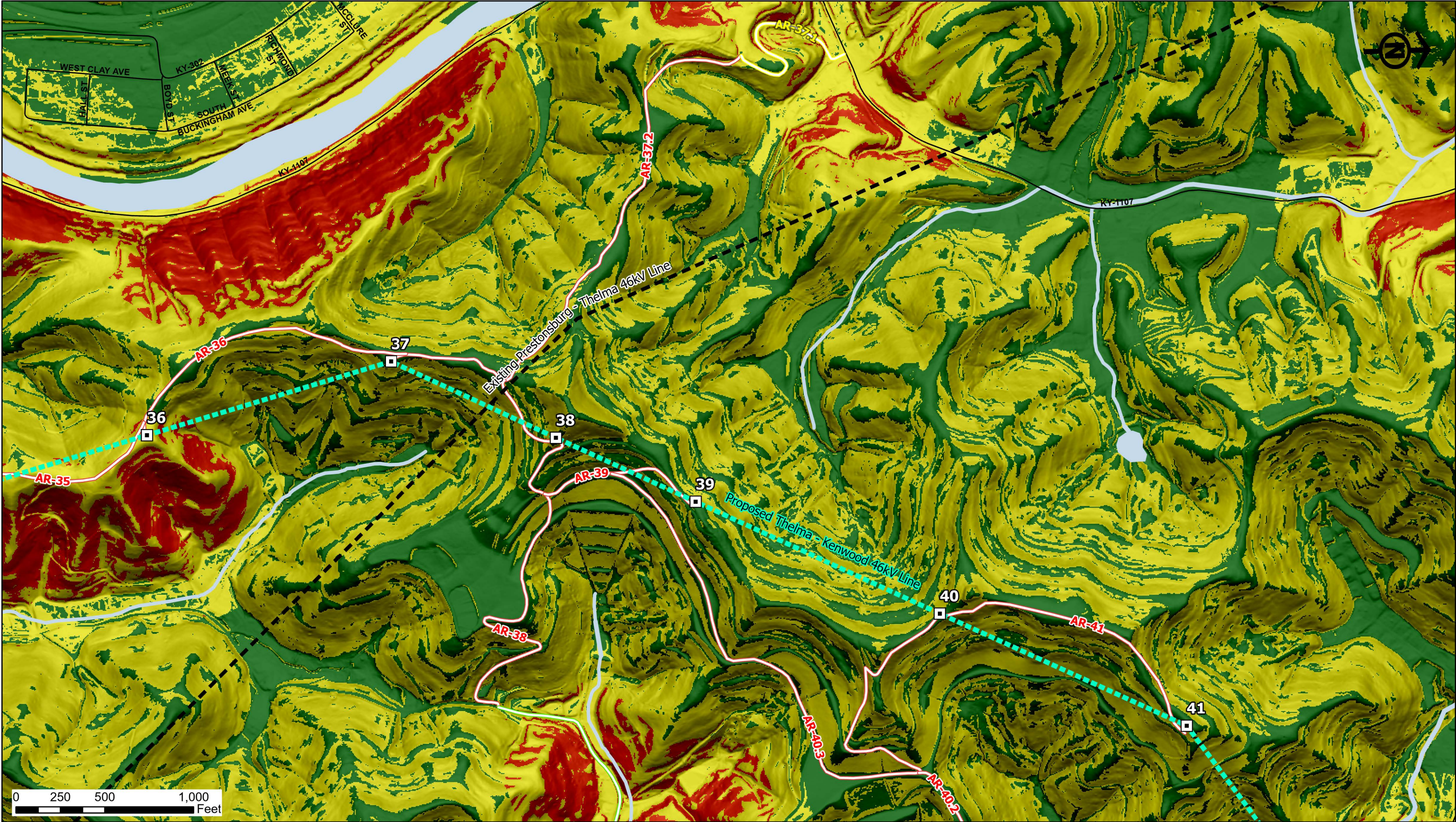
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Geohazard Risk Assessment

Relative Risk



Name: 2021-147\_AEP\_PrestonsburgThelma46kV



Legend

■

Proposed Structure

---

Proposed Transmission Line

---

Existing Prestonsburg - Thelma 46kV Line Risk

---

New Access Road

---

Existing Road (to be improved)

---

Existing Road (no improvement)

---

Road

---

Water

---

Low

---

Moderate

---

High

REFERENCES:

- Centerline data sent by AEP Siting via e-mail on August 3, 2021; Structures preliminary spotted by DiGioia Gray.

- Access roads and associated features preliminary spotted by DiGioia Gray, September 2021.

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Geohazard Risk Assessment

Relative Risk

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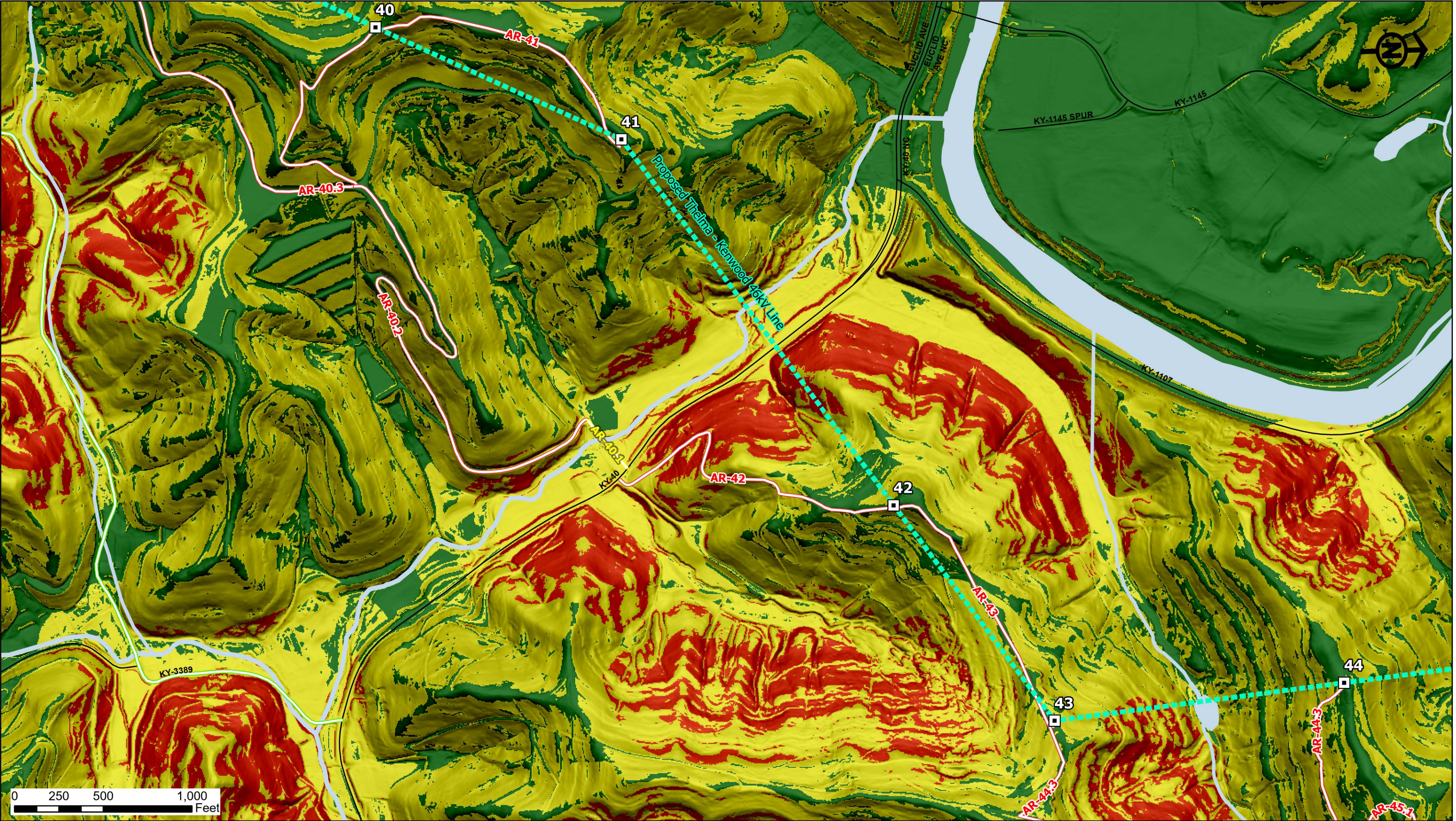
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Legend

■

Proposed Structure

■

Proposed Transmission Line

■

Existing Prestonsburg - Thelma 46kV Line Risk

■

New Access Road

■

Existing Road (to be improved)

■

Existing Road (no improvement)

—

Road

—

Water

—

Low

—

Moderate

—

High

REFERENCES:

- Centerline data sent by AEP Siting via e-mail on August 3, 2021; Structures preliminary spotted by DiGioia Gray.

- Access roads and associated features preliminary spotted by DiGioia Gray, September 2021.

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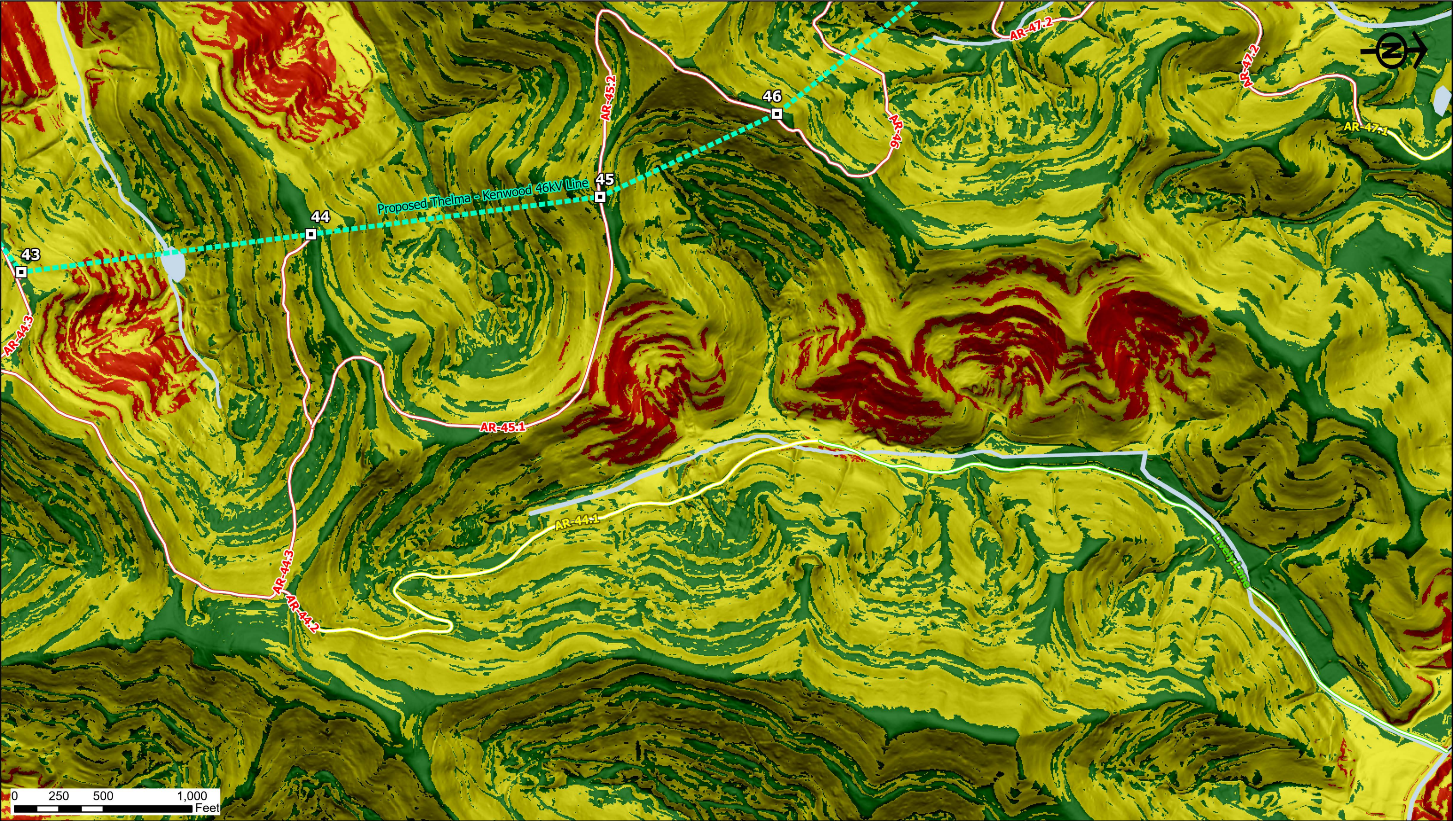
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Relative Risk

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Legend

Proposed Structure

Proposed Transmission Line

Existing Prestonsburg - Thelma 46kV Line Risk

New Access Road

Existing Road (to be improved)

Existing Road (no improvement)

Road

Water

Low

Moderate

High

REFERENCES:

- Centerline data sent by AEP Siting via e-mail on August 3, 2021; Structures preliminary spotted by DiGioia Gray.

- Access roads and associated features preliminary spotted by DiGioia Gray, September 2021.

- Risk raster developed in ArcGIS Pro 2.x using Raster Calculator tool.

- Hillshade Basemap - Ky\_DEM\_KYAPED\_5FT\_Phase2\_MultiDirectionalHillshadeImage Service

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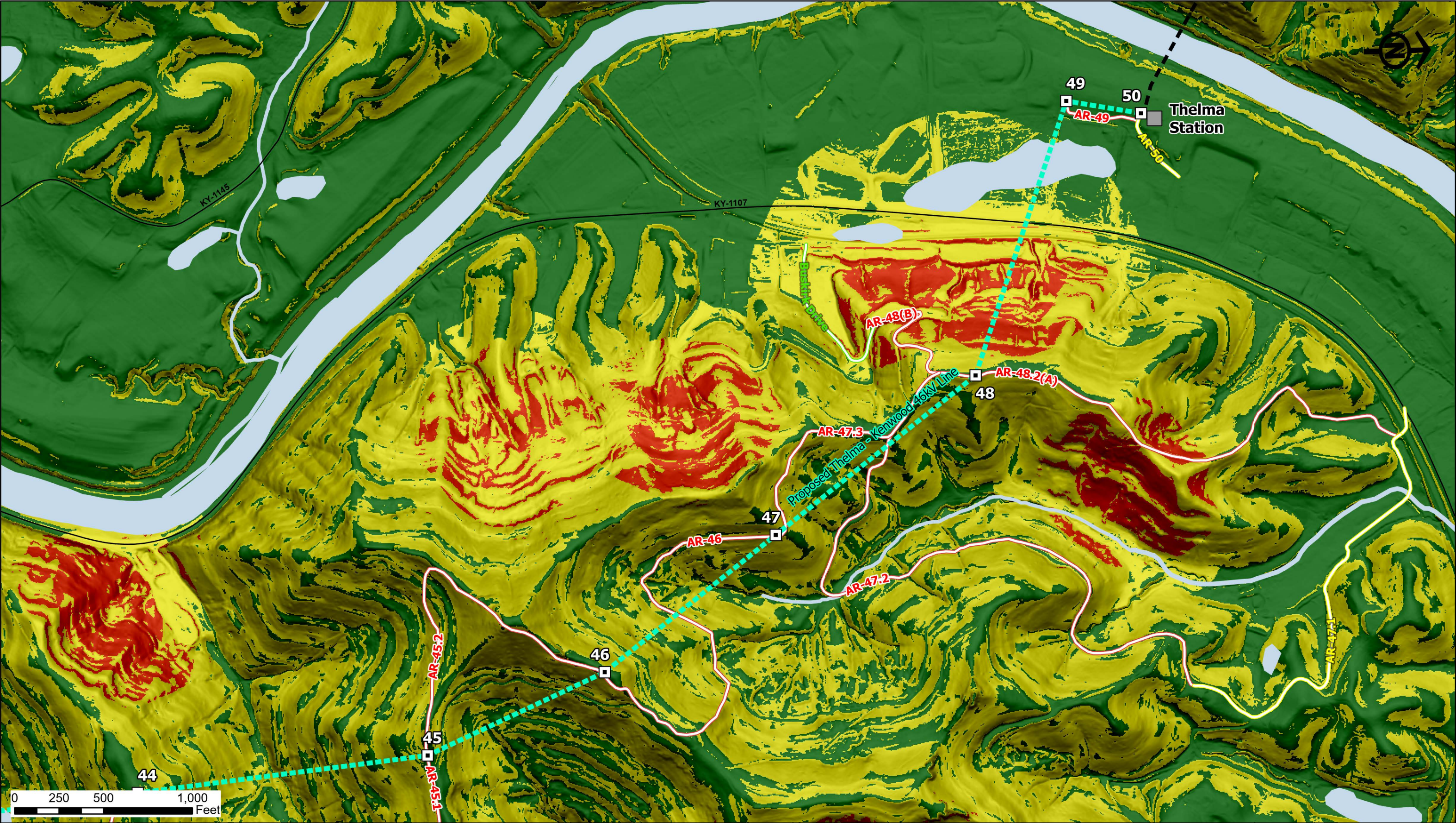
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Geohazard Risk Assessment

Relative Risk

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**Legend**

Proposed Structure

Substation

Proposed Transmission Line

Existing Prestonsburg - Thelma 46kV Line

New Access Road

Existing Road (to be improved)

Existing Road (no improvement)

Road

Water

Risk

Low

Moderate

High

**REFERENCES:**

- Centerline data sent by AEP Siting via e-mail on August 3, 2021; Structures preliminary spotted by DiGioia Gray.
- Access roads and associated features preliminary spotted by DiGioia Gray, September 2021.
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## Addendum A





April 24, 2025  
MP1960835

*Geo-Hazard Risk Assessment  
Supplemental Desktop Study and Site Visit  
Prestonsburg – Thelma 46kV Rebuild  
Prestonsburg, Kentucky*

**Objective**

AEP's Civil and Geotechnical Engineering (CGE) group performed a supplemental desktop geotechnical hazard (geo-hazard) study for the Prestonsburg – Thelma 46kV rebuild in the Prestonsburg, Kentucky area. Gannett Fleming (formerly DiGioia Gray) provided a desktop geo-hazard study report dated September 23, 2021. This memo supplements Gannett Fleming's report by:

- Reviewing and comparing different alignments being considered
- Updating the geo-hazard mapping for the revised alignment and adds landslide and mining features observed by CGE within aerial imagery and hillshade topography
- Summarizing observations from a site visit on January 28, 2025

**Alignment Comparison**

In July 2024 AEP's Siting team asked CGE to compare two alignments being considered along a portion along the Prestonsburg – Kenwood transmission line. AEP's siting team was considering an "eastern" and "western" alignment. The geo-hazard mapping comparing the two alignments is shown in Appendix A. The structure numbering at the time of the review has since been updated to what is presently Structures 1493-13 to 1493-21.

The western alignment appears to present less geo-hazard risk from a desktop study based on more developed access and less landslide activity. The landslide activity between the Structures 8-10 on the eastern alignment was particularly concerning. The access to get to structures along the eastern alignment required crossing more and larger reported landslides. Please note, the site visit described later in this addendum confirms the presence of the significant landslide activity in this area, which supports that the western route is preferred from a geo-hazard perspective.



### **Supplemental Desktop Study**

Mapping for the supplemental desktop geo-hazard study is provided in Appendix B and C. Appendix B provides information from publicly available resources for coal mining<sup>1</sup>, landslides<sup>2</sup>, and areas susceptible to debris flow<sup>2</sup> in addition to features apparent from a CGE review of aerial photography and hillshade topography including potential drainage ravines, mine portals, and landslides. Appendix C shows reported coal seams<sup>1</sup> and potential mine portals determined from a CGE desktop study, which may indicate historical coal mining activity for which mine maps are unavailable.

Coal seams present a moderate risk to site civil grading, such as for access roads or structure pads, because coal seams are more porous than surrounding formations and may drain water onto side slopes, increasing the risk of a landslide. The presence of these coal seams should be considered when selecting access routes. The Contractor should avoid placing fill materials in front of coal seams, if possible. If this cannot be avoided, chimney drains or other engineering methods should be implemented to drain water emanating from coal seams to prevent hydrostatic pressure build-up behind fill slopes which can destabilize the fill material resulting in landslides.

DiGioia Gray's 2021 report discusses various risk considerations for historical coal mining and landslide activity throughout the alignment.

### **Site Visit**

Representatives from AEP and Gannett Fleming performed a site visit on January 28, 2025 to evaluate access to Structure 1493-21, Structures 1493-11 and -12, and Structures 1494-16 and -17. These locations were visited to evaluate features identified in the desktop geo-hazard study and to assess geotechnical boring access.

#### *Access to Structure 1493-21:*

The reasons for visiting Structure 1493-21 were to look at the reported landslides along the proposed access from the east and to verify the reported landslide at the structure.

CGE does not recommend using the proposed access from the east due to prevalence of several large landslides. An alternative access from the west as shown in Figure 1 with the white line is recommended for construction. In addition, there did not appear to be a landslide at the 1493-21 structure location. However, an apparent abandoned coal mine portal was observed along the alternate access road. Coal fragments were observed in the area downslope of the portal. CGE's opinion is the imagery for the reported landslide is offset and was intended to be mapped at the mine portal. However, there is not a mapped coal seam in this area. CGE recommends a geotechnical boring at Structure 1493-21 to further evaluate potential mining activity.



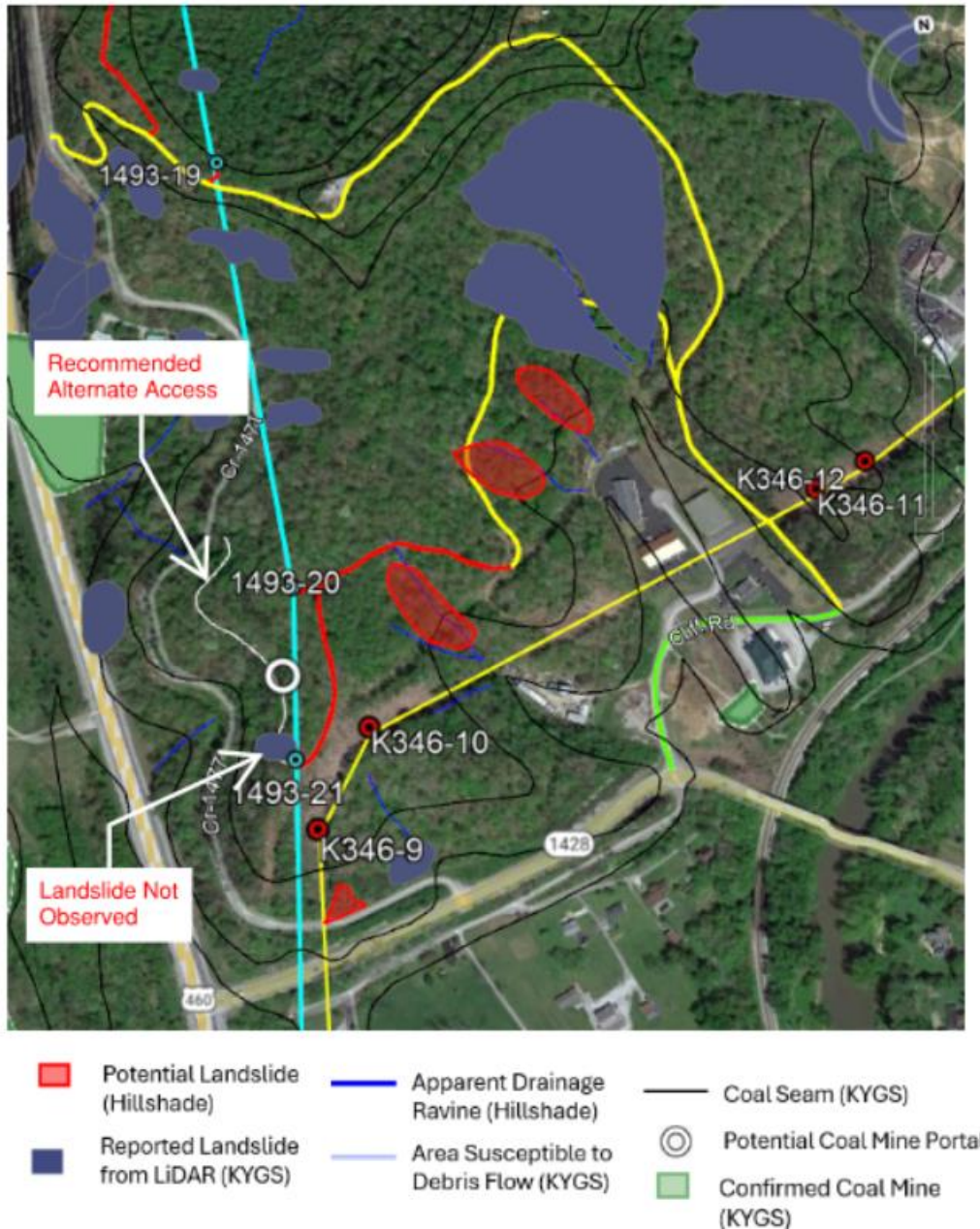


Figure 1. Access to Str 1493-21.

*Access to Structures 1493-11 and -12:*

The access road to Structures 1493-11 and -12 was visited to evaluate the landslide that CGE observed in aerial imagery (Figure 2). The presence of the landslide was verified. CGE recommends proactive landslide mitigation and considerable drainage improvement at this location to use the access road for construction. A geotechnical boring will be obtained to further evaluate.



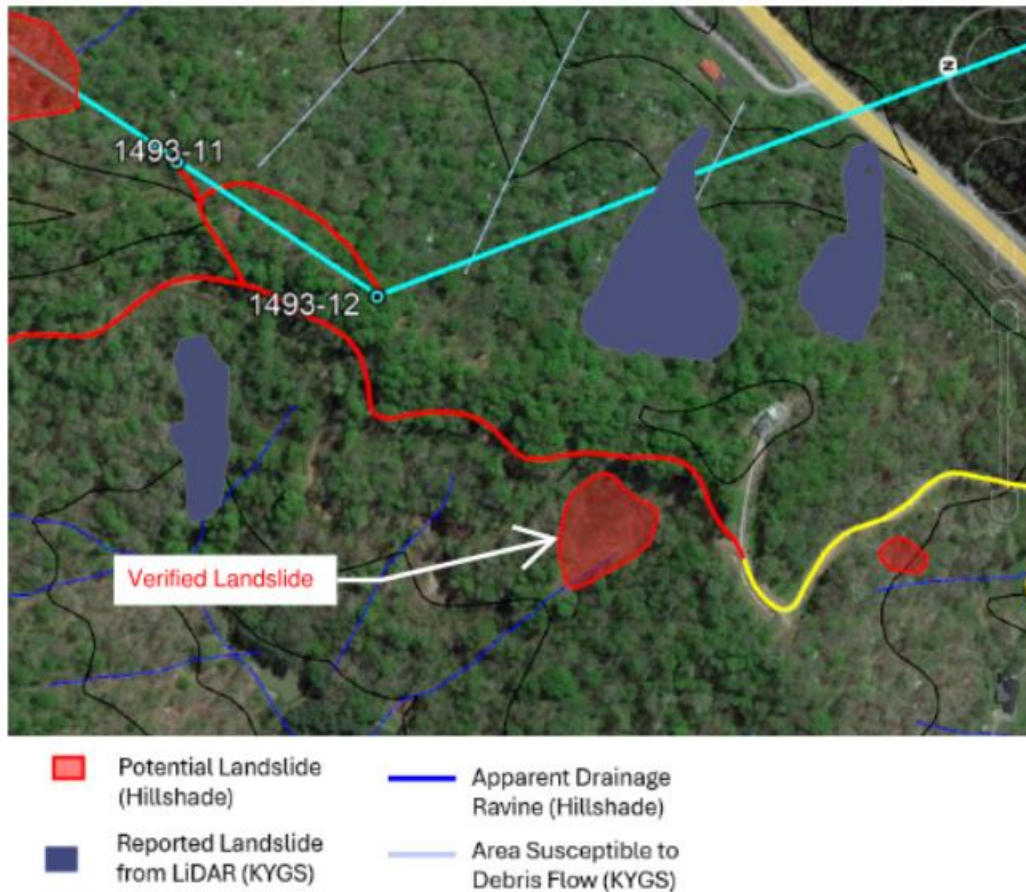


Figure 2. Verified Landslide Along Access to Structures 1493-11 and -12.

*Access to Structures 1494-16 and -17:*

The access road to Structures 1494-16 and -17 was visited to evaluate the mine portals CGE observed in hillshade imagery along the Van Lear coal seam and confirm access for geotechnical borings.

The reported coal mining in Figure 3 beneath Structure 1494-17 appears to have occurred within the Van Lear coal seam. In addition, the coal mine portals noted in Figure 3 were verified during the site visit. One of the mine portals that is aligned with the Van Lear coal seam outcrop is shown in Figure 4. As such, it is probable that additional historical coal mining also occurred within the Van Lear coal seam and likely beneath Structure 1494-16 in addition to Structure 1494-17. There is about 300 ft of overburden between the Van Lear coal seam and the structures. If coal mining was only potentially performed in the Van Lear coal seam, the risk of subsidence is lower. However, the subsidence risk increases when there is more than one deep mine and/or coal mining within 100 ft of depth.

Figure 5 shows a mine portal associated with unknown mining activity at a similar elevation as Structure 1494-17. The mine portal is at a similar elevation as the mapped Upper Peach Orchard coal seam. Given the similar elevation, a geotechnical boring should be performed at Structure 1494-17 to verify potential historical coal mining activity.



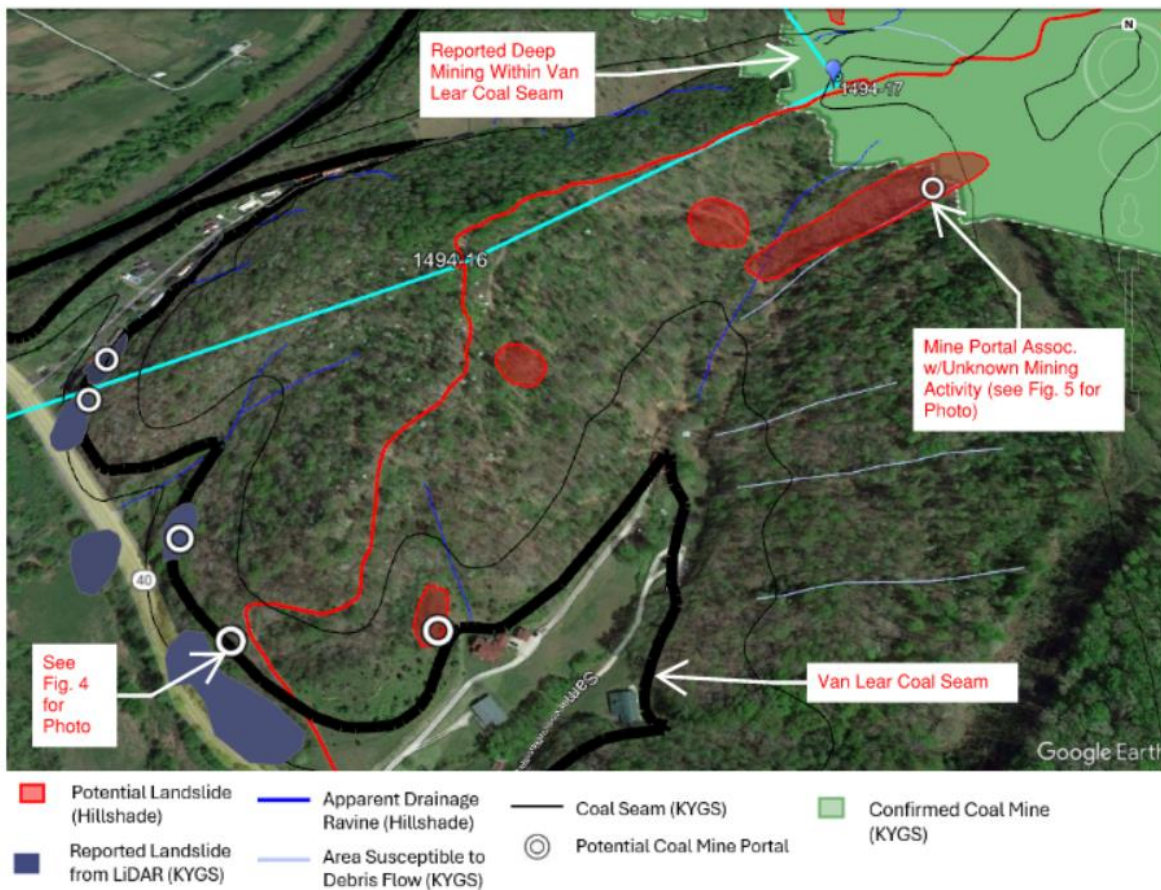


Figure 3. Location of Verified Mine Portals by Structures 1494-16 and -17.



Figure 4. Verified Mine Portal.

**BOUNDLESS ENERGY™**





Figure 5. Mine Portal Visible from Structure 1494-17.

## References

1. Kentucky Coal Mine Maps, KY Mine Mapping Information System, <https://eppcgis.ky.gov/minemapping/>, Accessed May 2024 to April 2025.
2. Landslide Information Map, Kentucky Geological Survey, <https://kgs.uky.edu/kygeode/geomap/?layoutid=25>, Accessed May 2024 to April 2025.



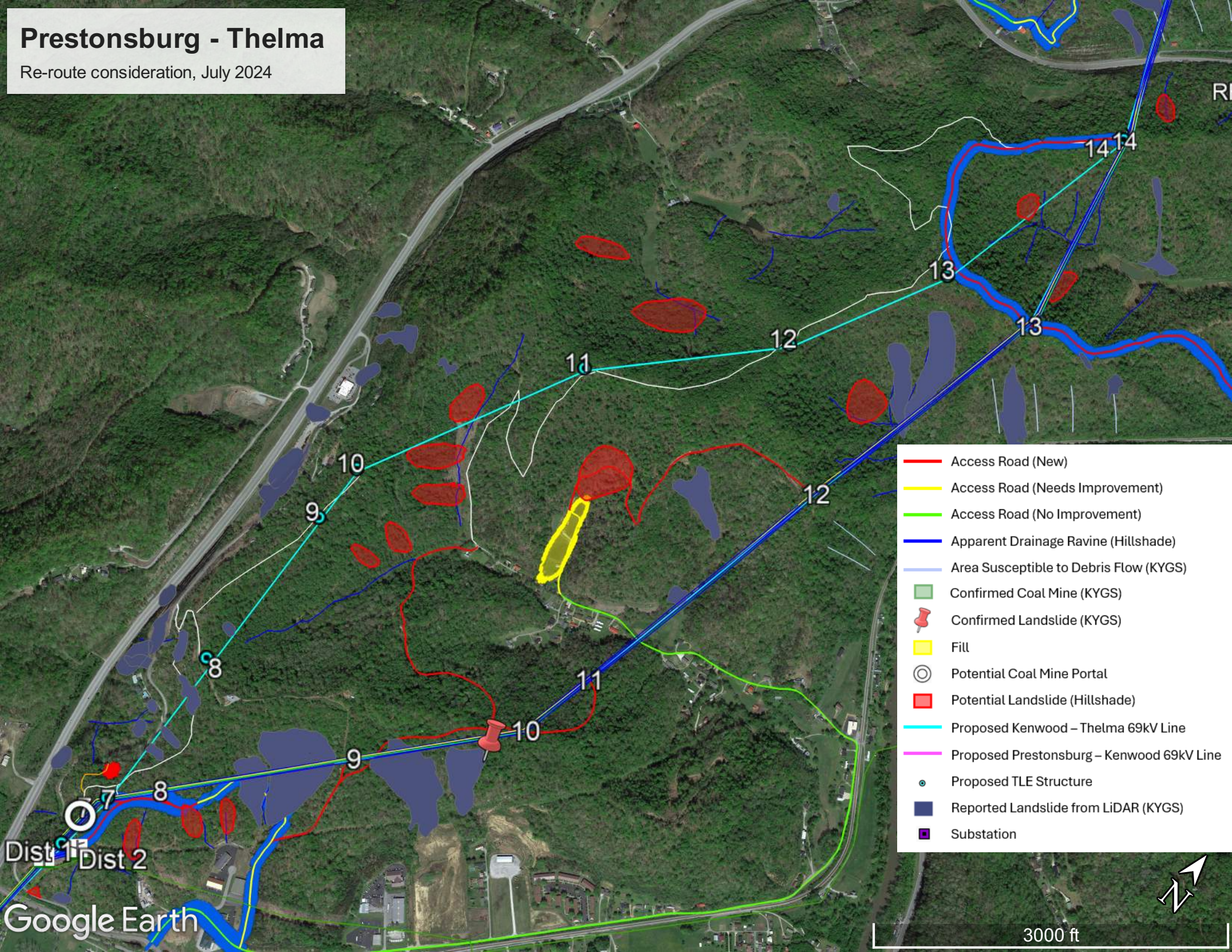
## **Appendix A**

*BOUNDLESS ENERGY™*



# Prestonsburg - Thelma

Re-route consideration, July 2024





## **Appendix B**

*BOUNDLESS ENERGY™*



# Prestonsburg - Thelma

2025 Landslides and Coal Mines

- Access Road (New)
- Access Road (Needs Improvement)
- Access Road (No Improvement)
- Apparent Drainage Ravine (Hillshade)
- Area Susceptible to Debris Flow (KYGS)
- Confirmed Coal Mine (KYGS)
- Confirmed Landslide (KYGS)
- Fill
- Potential Coal Mine Portal
- Potential Landslide (Hillshade)
- Proposed Kenwood – Thelma 69kV Line
- Proposed Prestonsburg – Kenwood 69kV Line
- Proposed TLE Structure
- Reported Landslide from LiDAR (KYGS)
- Substation

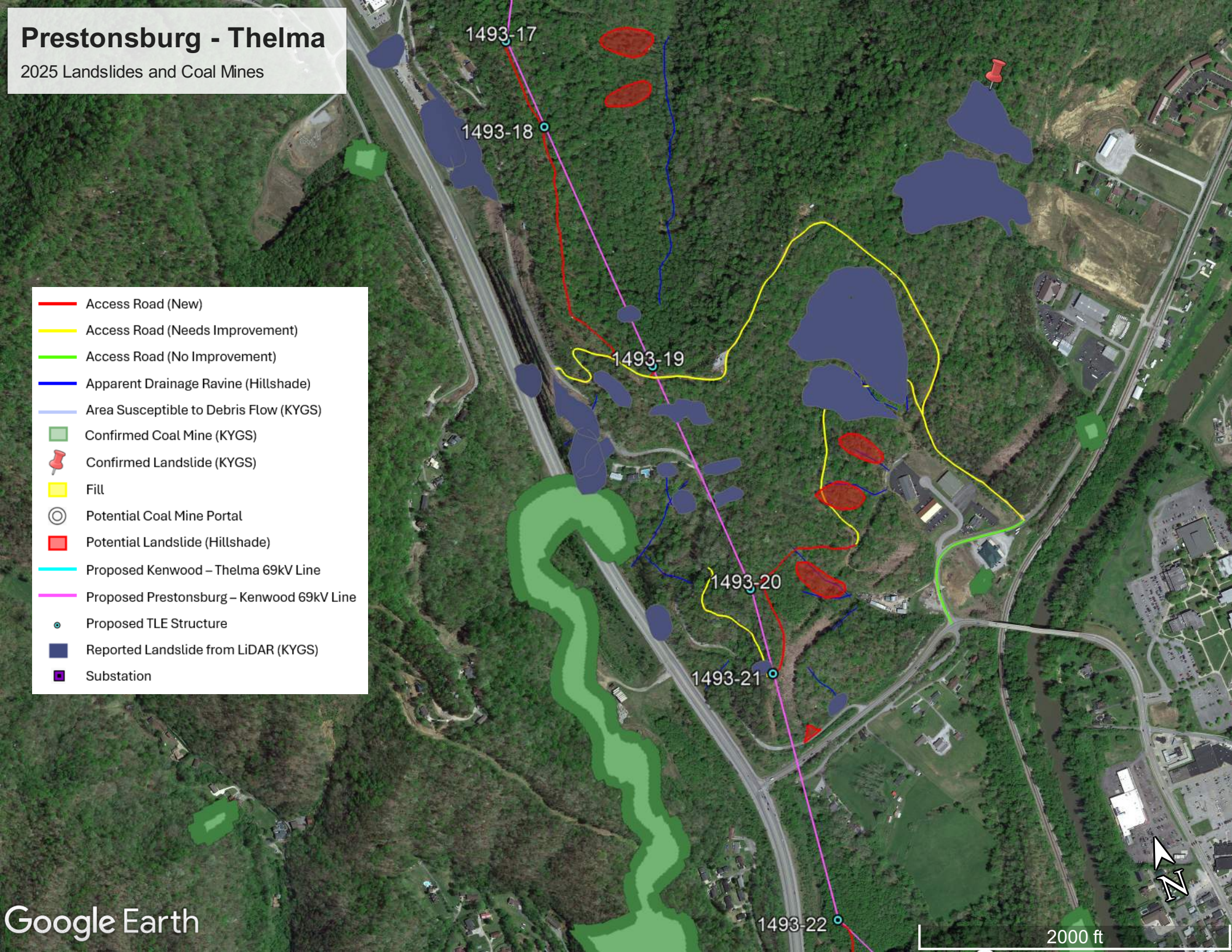




# Prestonsburg - Thelma

2025 Landslides and Coal Mines

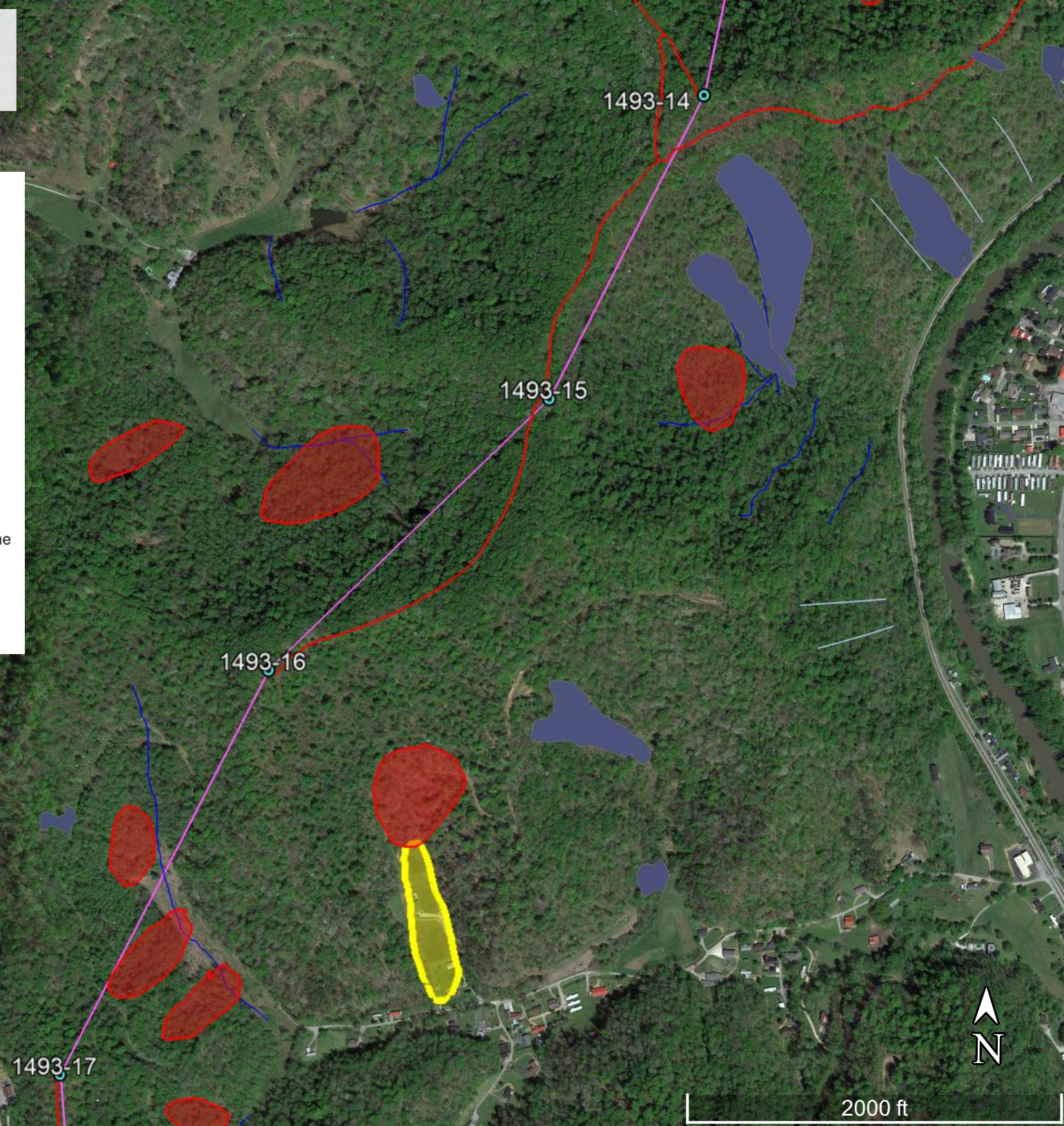
- Access Road (New)
- Access Road (Needs Improvement)
- Access Road (No Improvement)
- Apparent Drainage Ravine (Hillshade)
- Area Susceptible to Debris Flow (KYGS)
- Confirmed Coal Mine (KYGS)
- Confirmed Landslide (KYGS)
- Fill
- Potential Coal Mine Portal
- Potential Landslide (Hillshade)
- Proposed Kenwood - Thelma 69kV Line
- Proposed Prestonsburg - Kenwood 69kV Line
- Proposed TLE Structure
- Reported Landslide from LiDAR (KYGS)
- Substation





## 2025 Landslides and Coal Mines

- 
- Google Earth





# Prestonsburg - Thelma

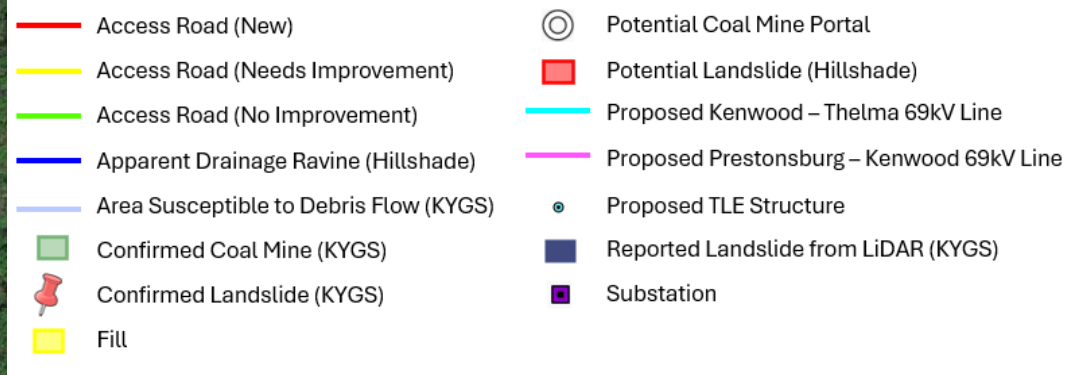
2025 Landslides and Coal Mines





# Prestonsburg - Thelma

2025 Landslides and Coal Mines



Google Earth



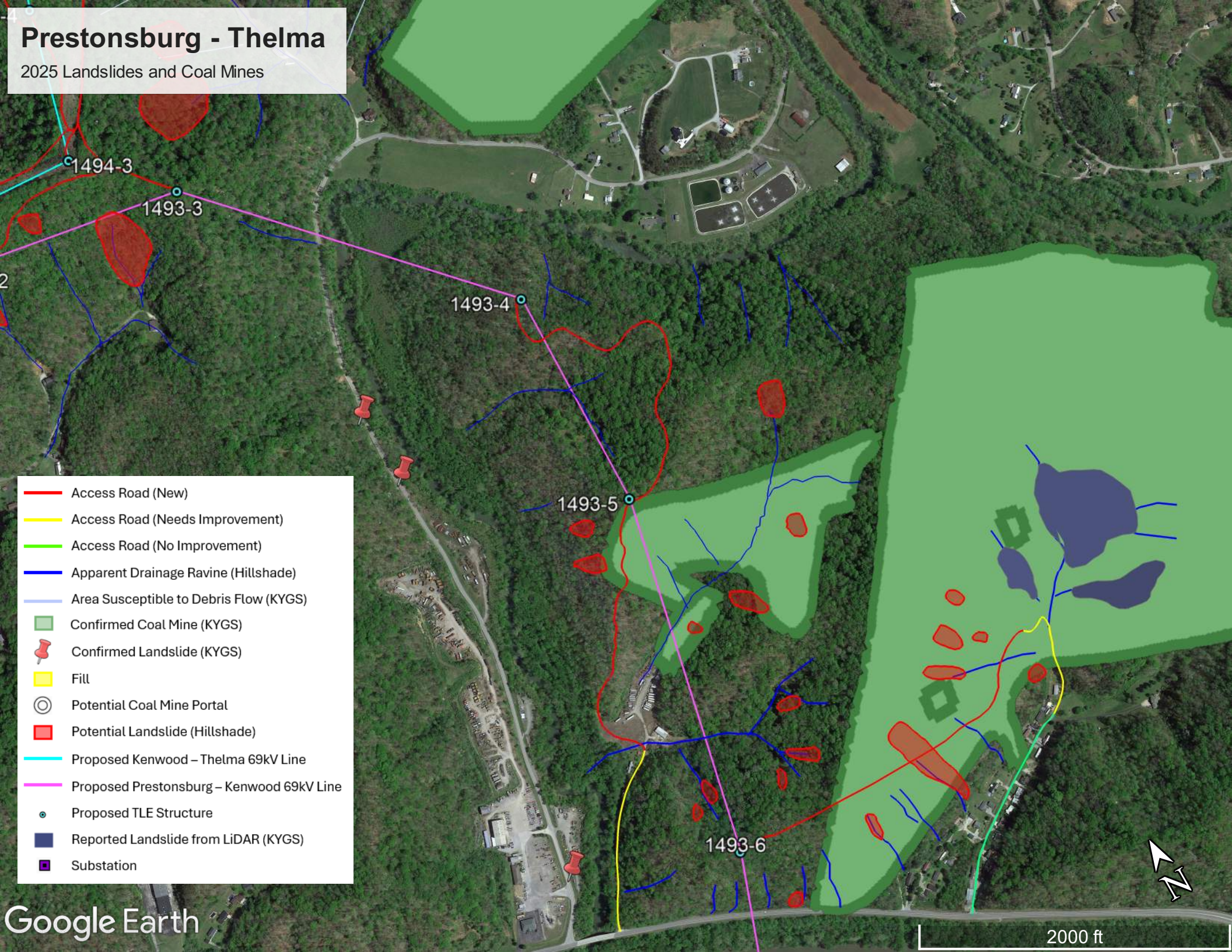
2000 ft



# Prestonsburg - Thelma

2025 Landslides and Coal Mines

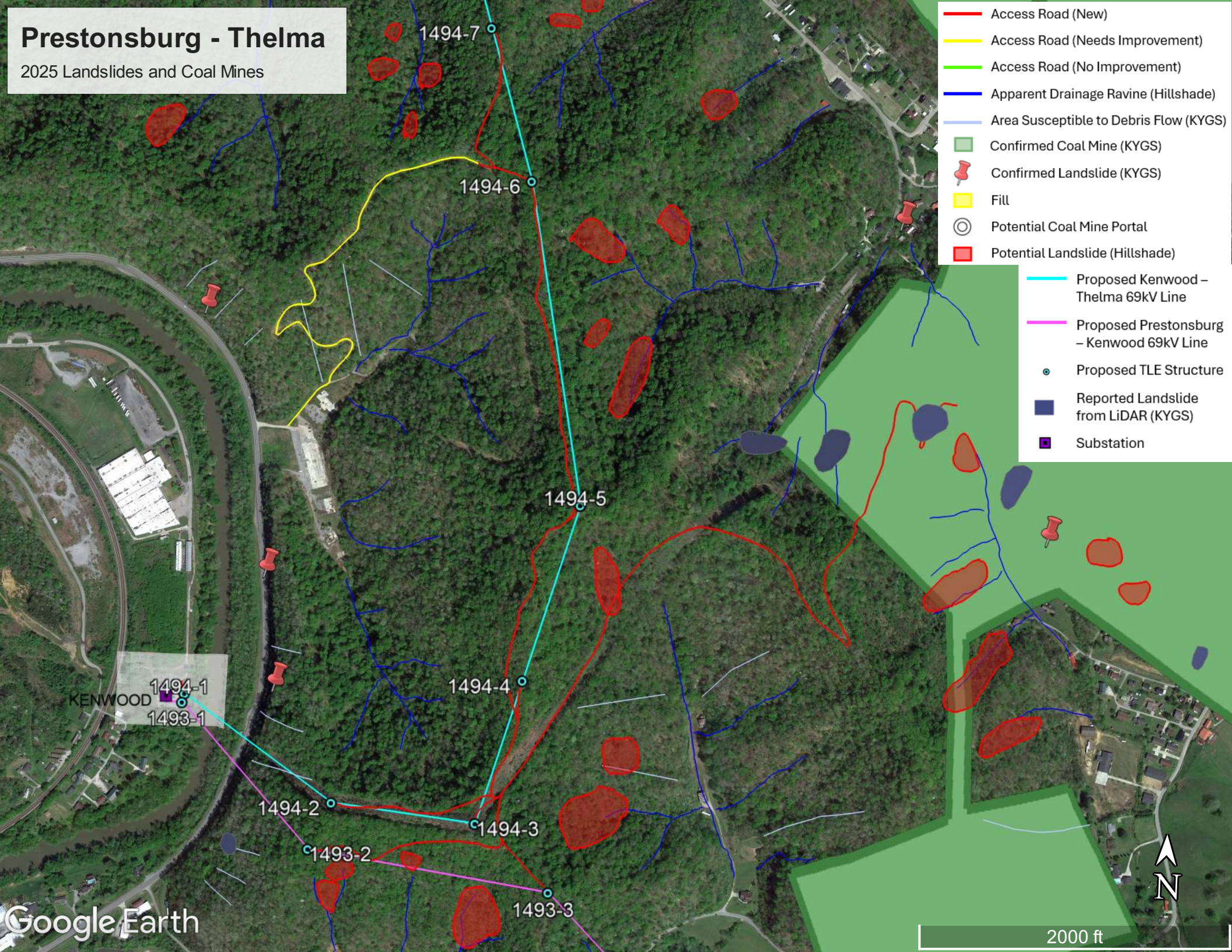
- Access Road (New)
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- Proposed TLE Structure
- Reported Landslide from LiDAR (KYGS)
- Substation





# Prestonsburg - Thelma

2025 Landslides and Coal Mines



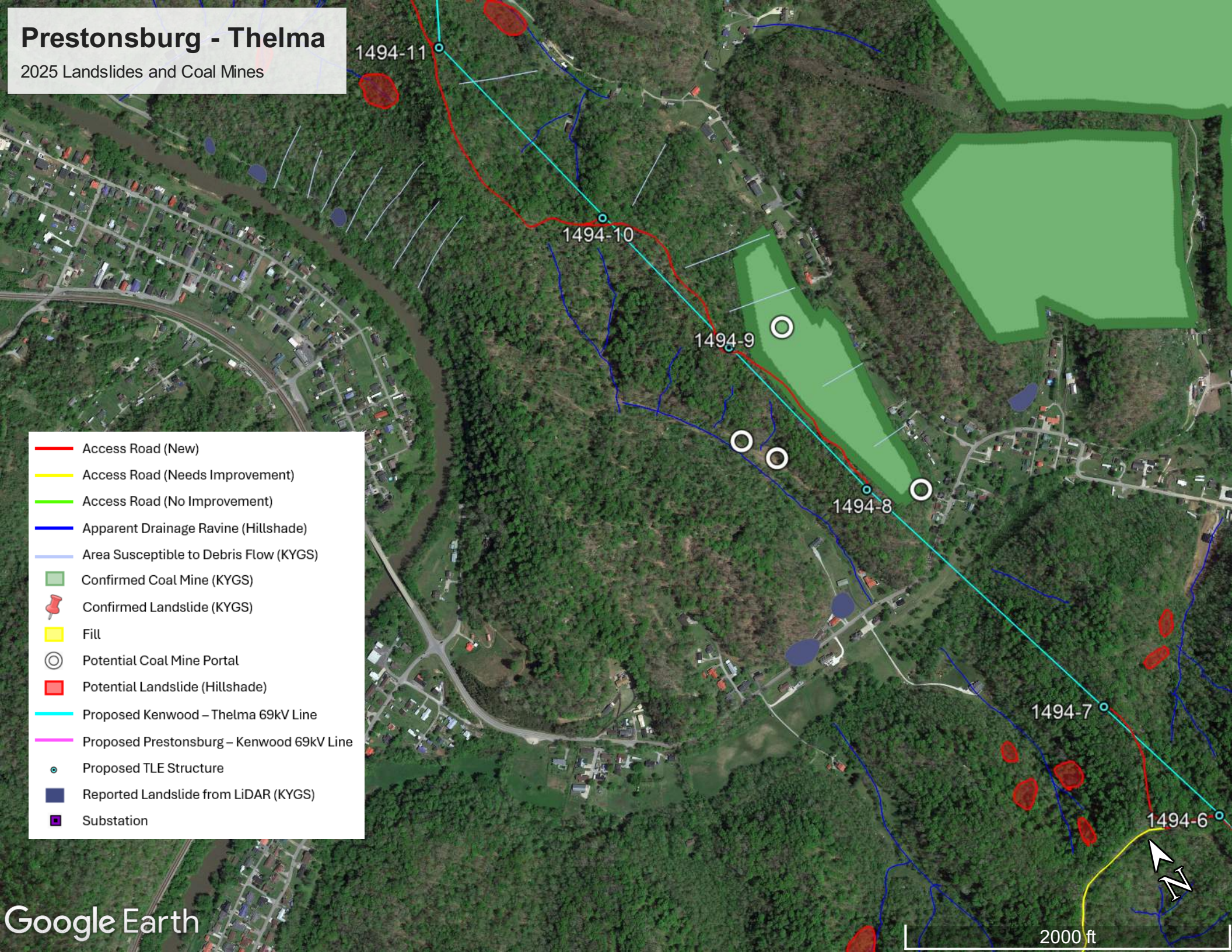


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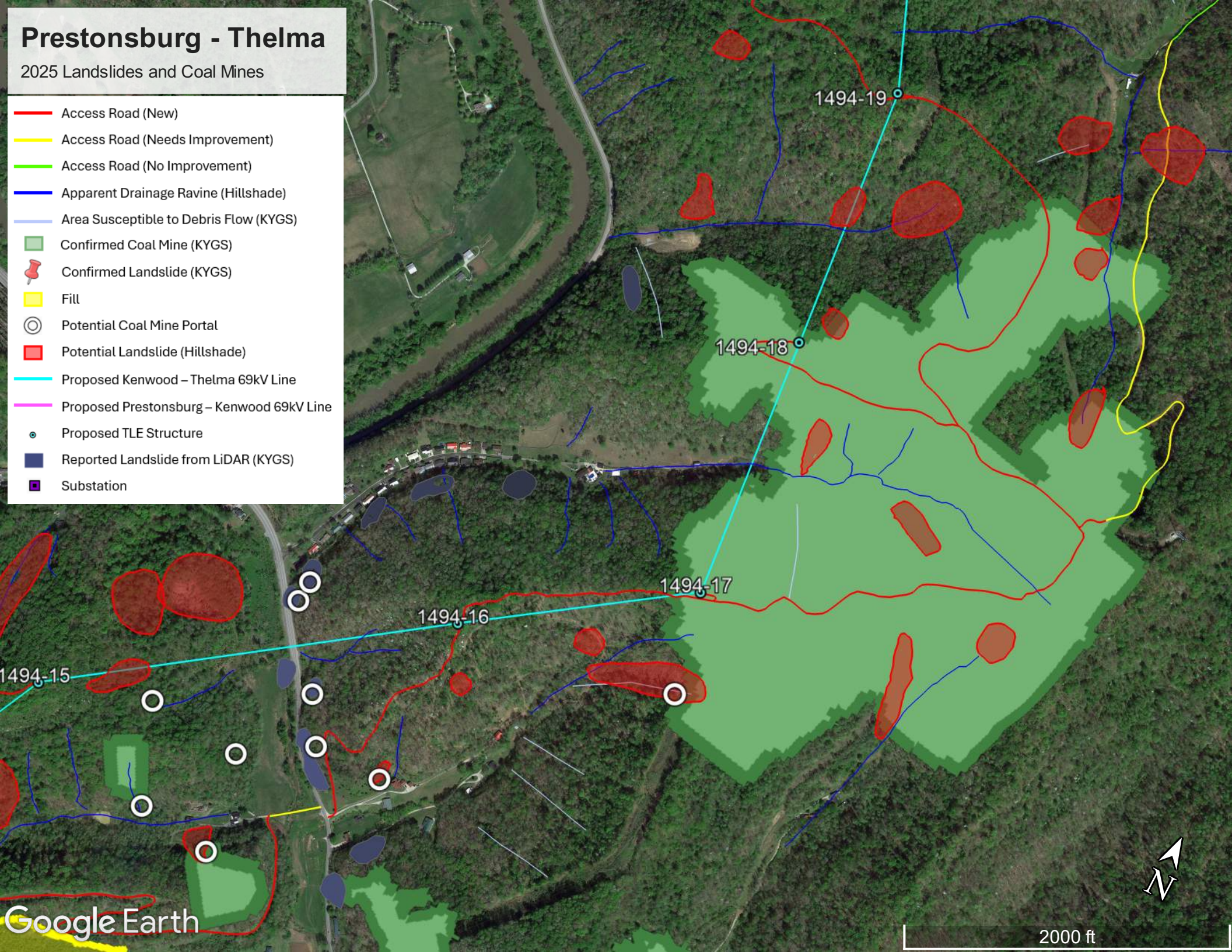
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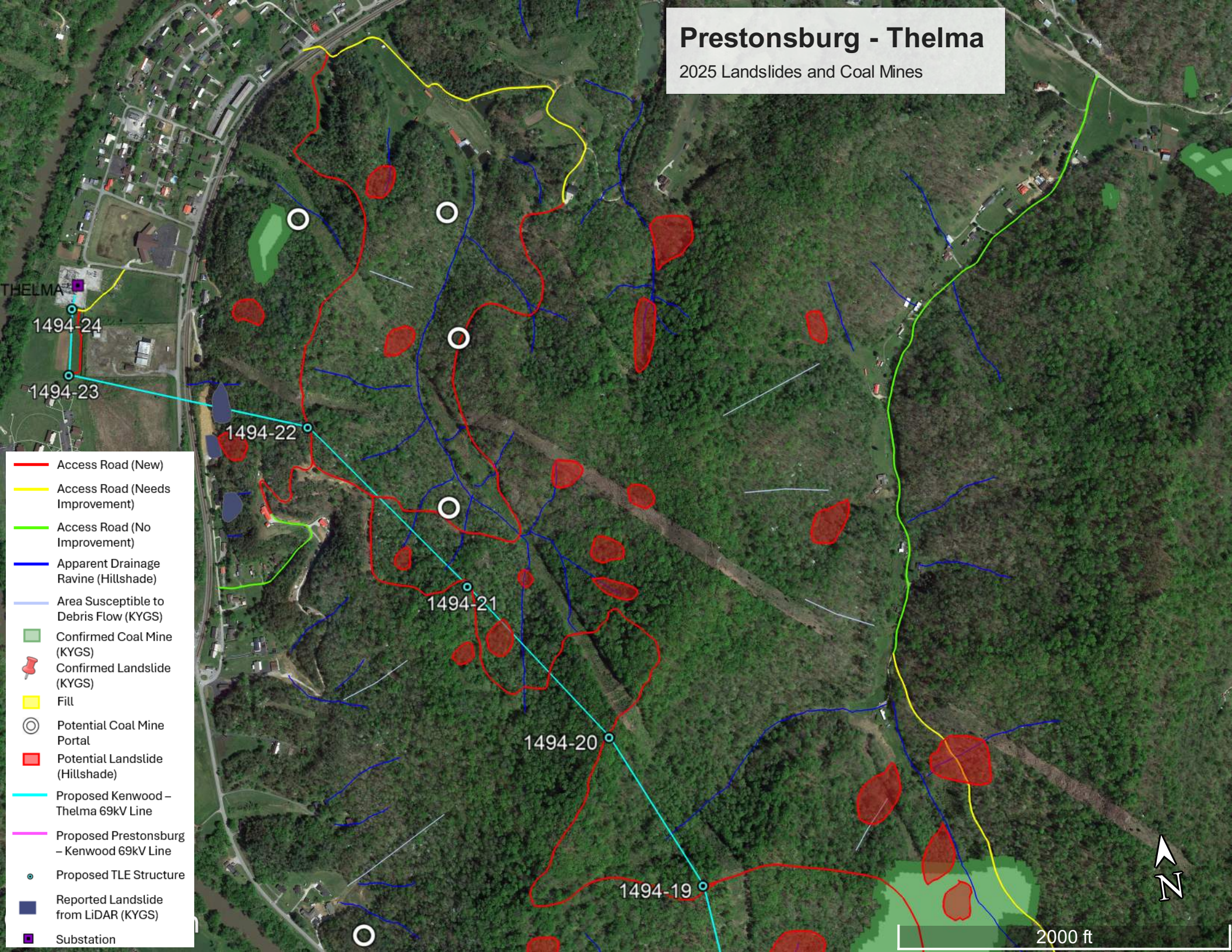
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# Prestonsburg - Thelma

2025 Landslides and Coal Mines





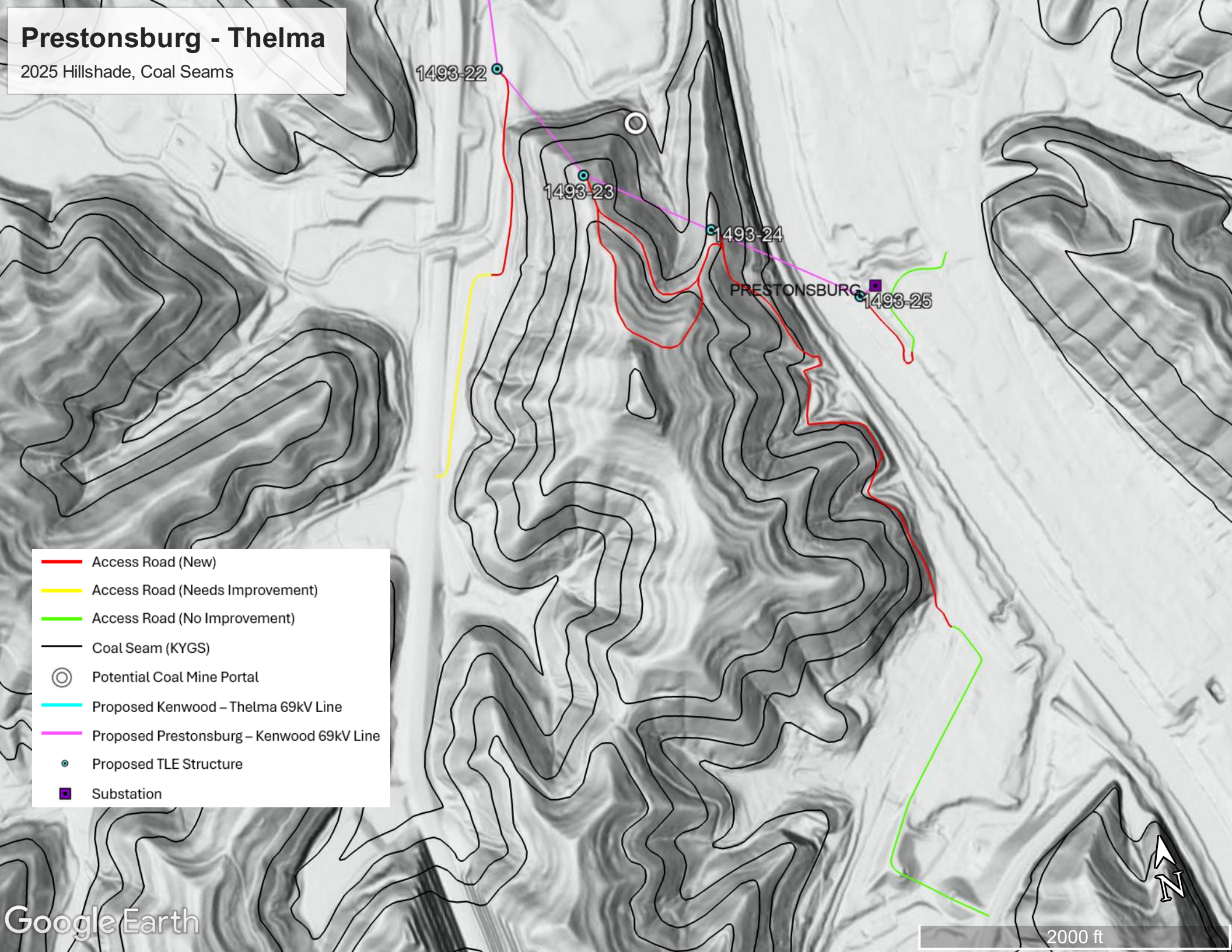
## **Appendix C**

*BOUNDLESS ENERGY™*



# Prestonsburg - Thelma

2025 Hillshade, Coal Seams



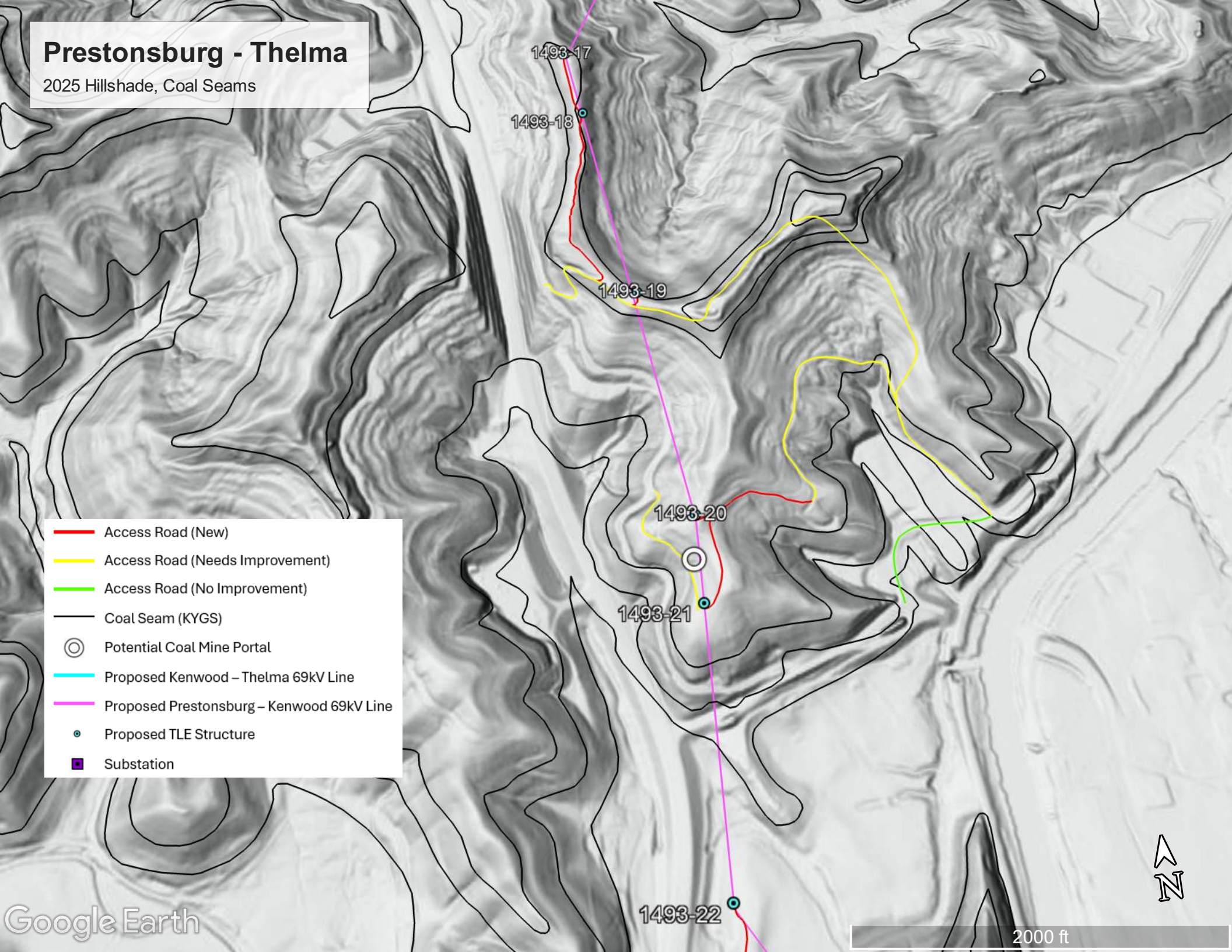
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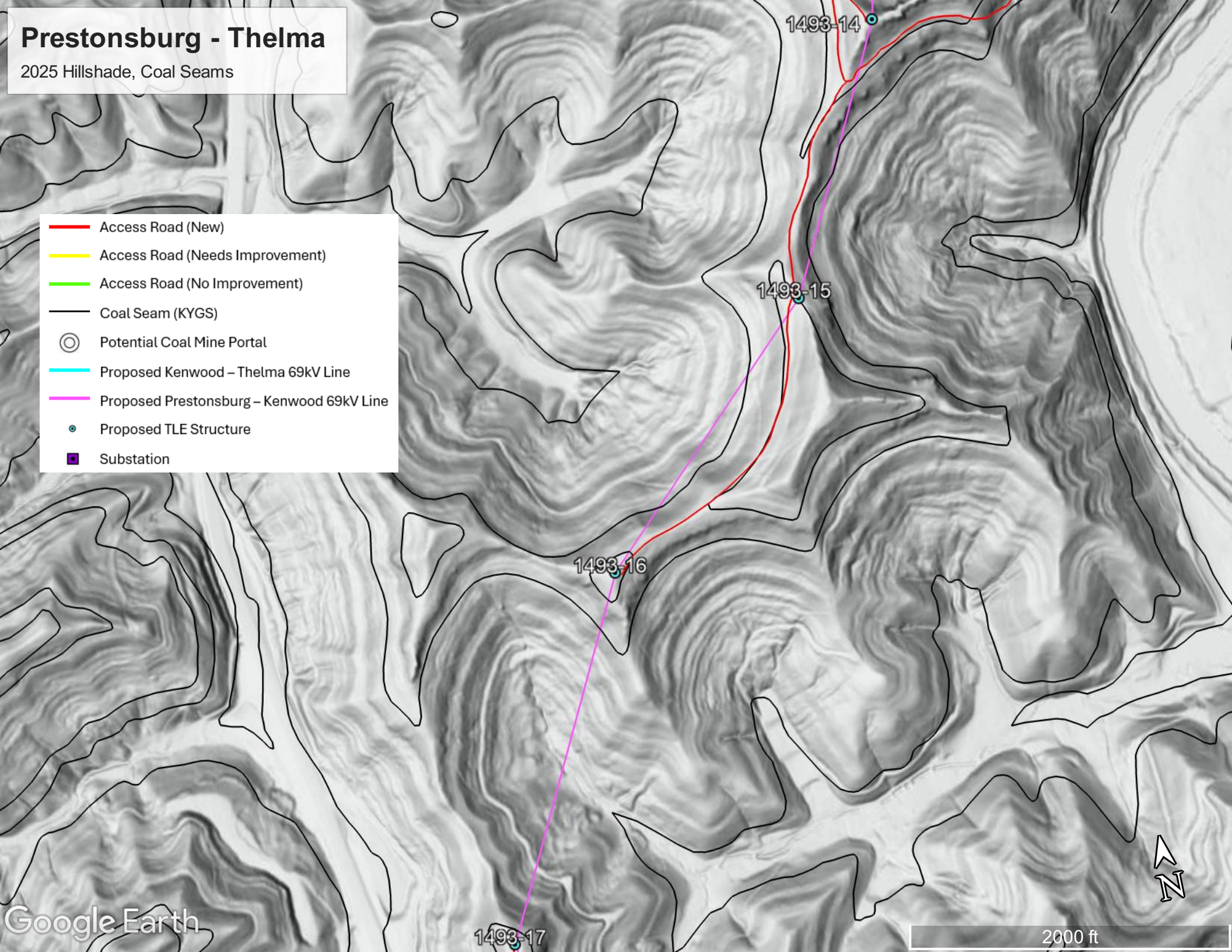




# Prestonsburg - Thelma

2025 Hillshade, Coal Seams

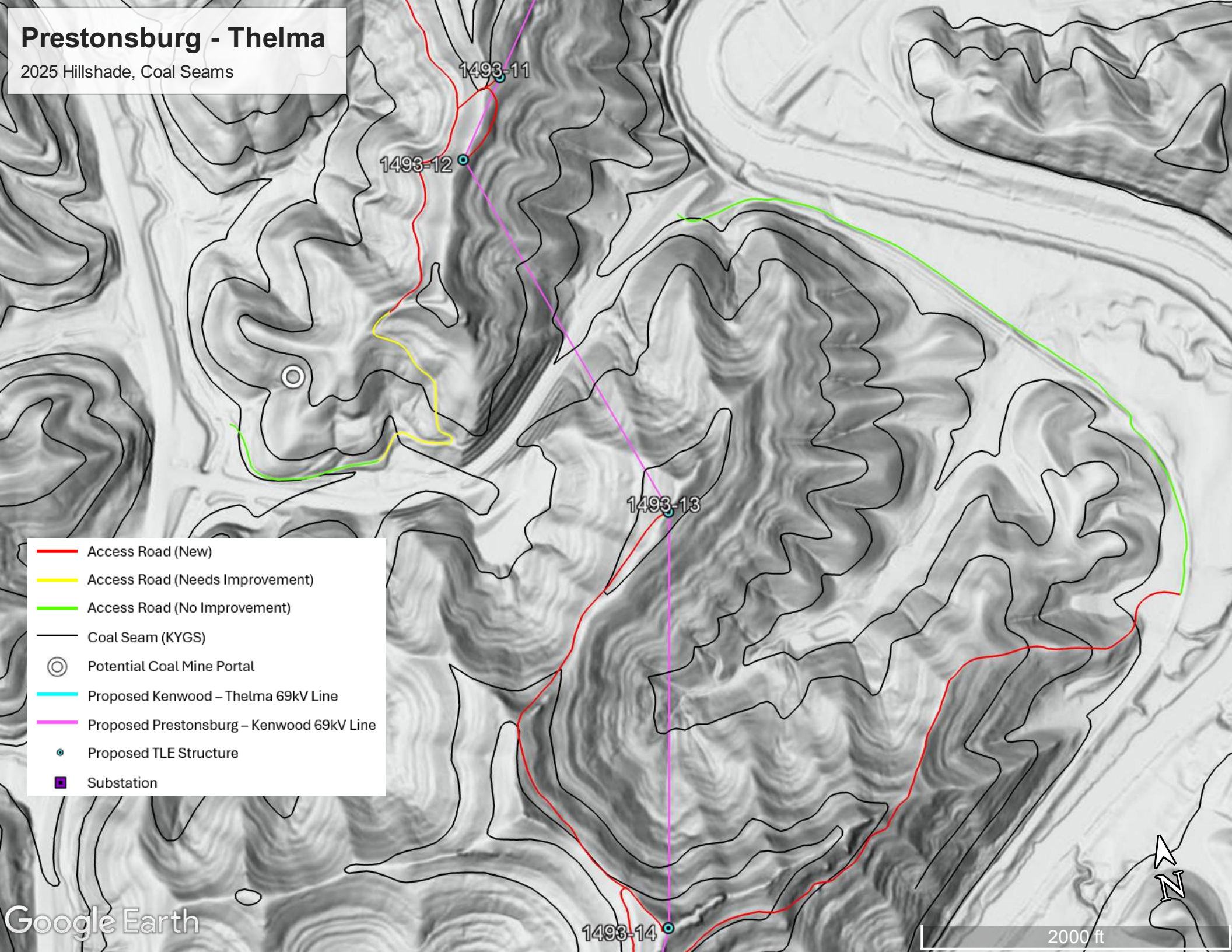
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2025 Hillshade, Coal Seams

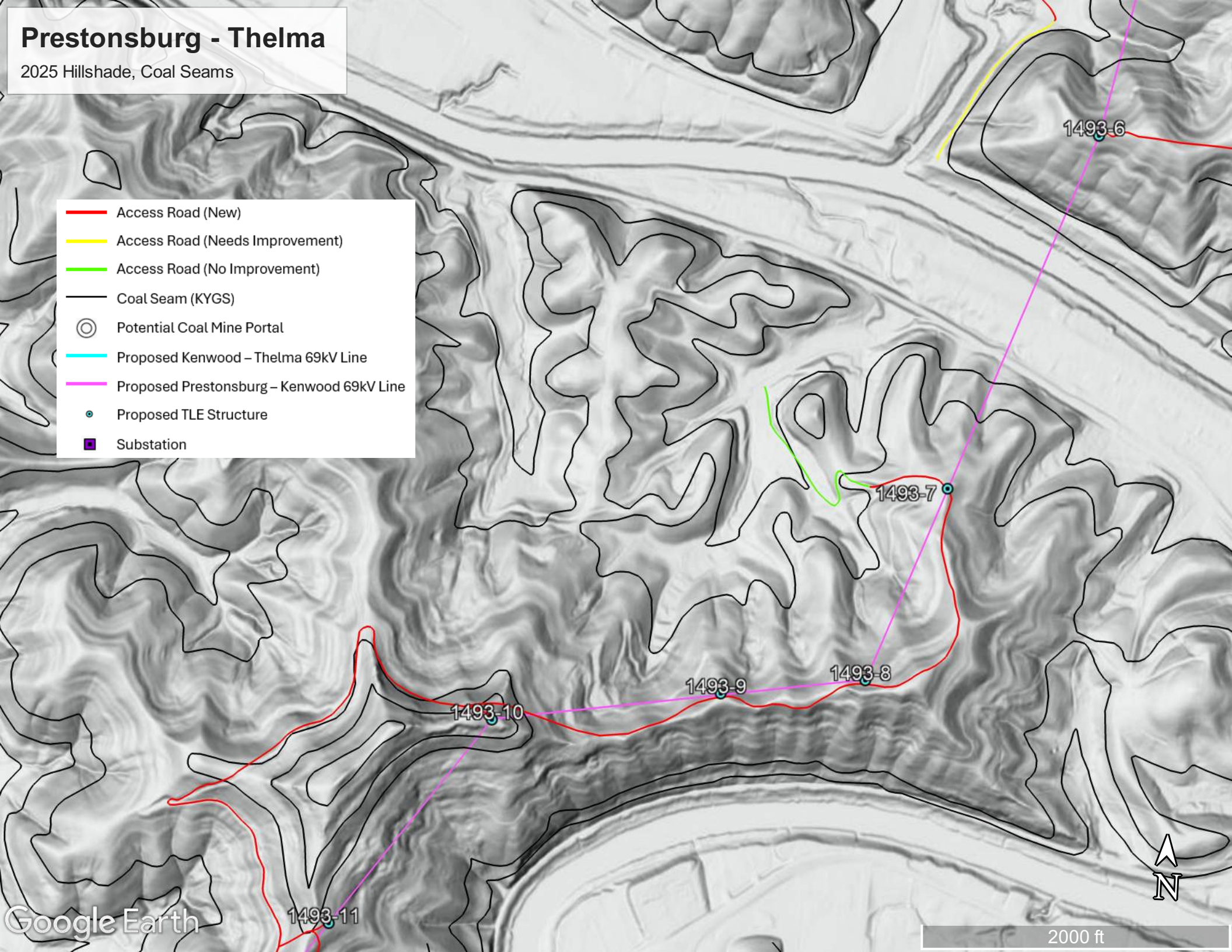




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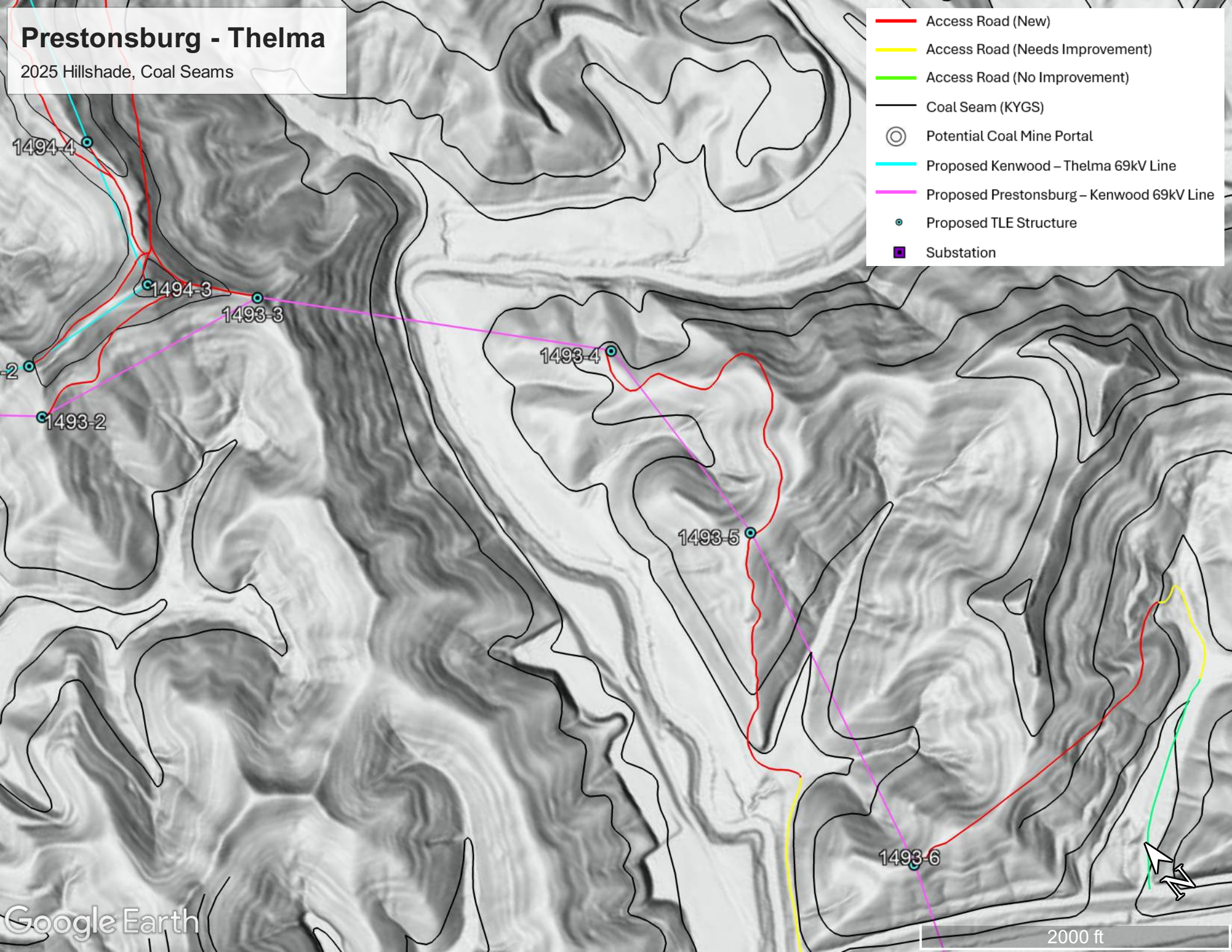




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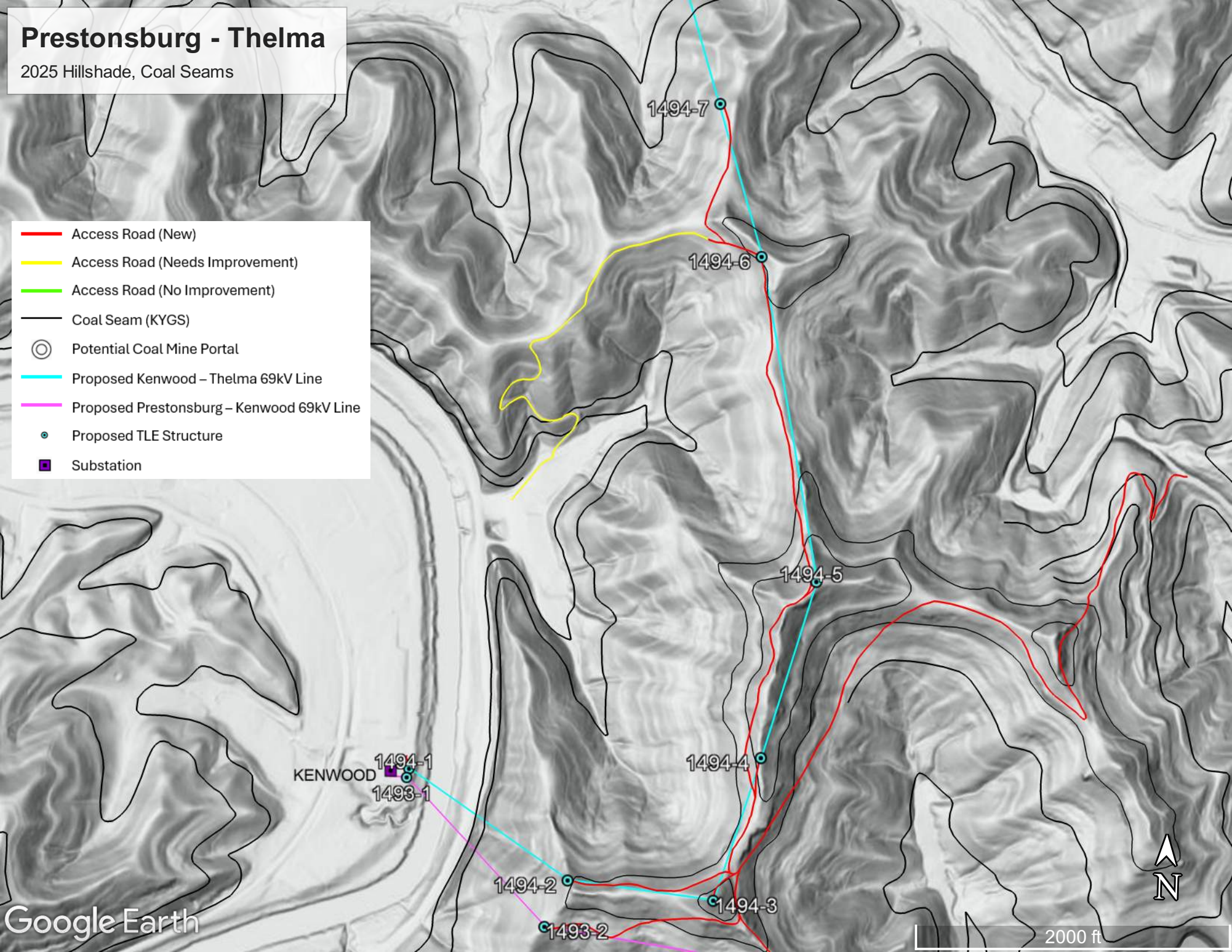




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1494-11

1494-10

1494-9

1494-8

1494-7





# Prestonsburg - Thelma

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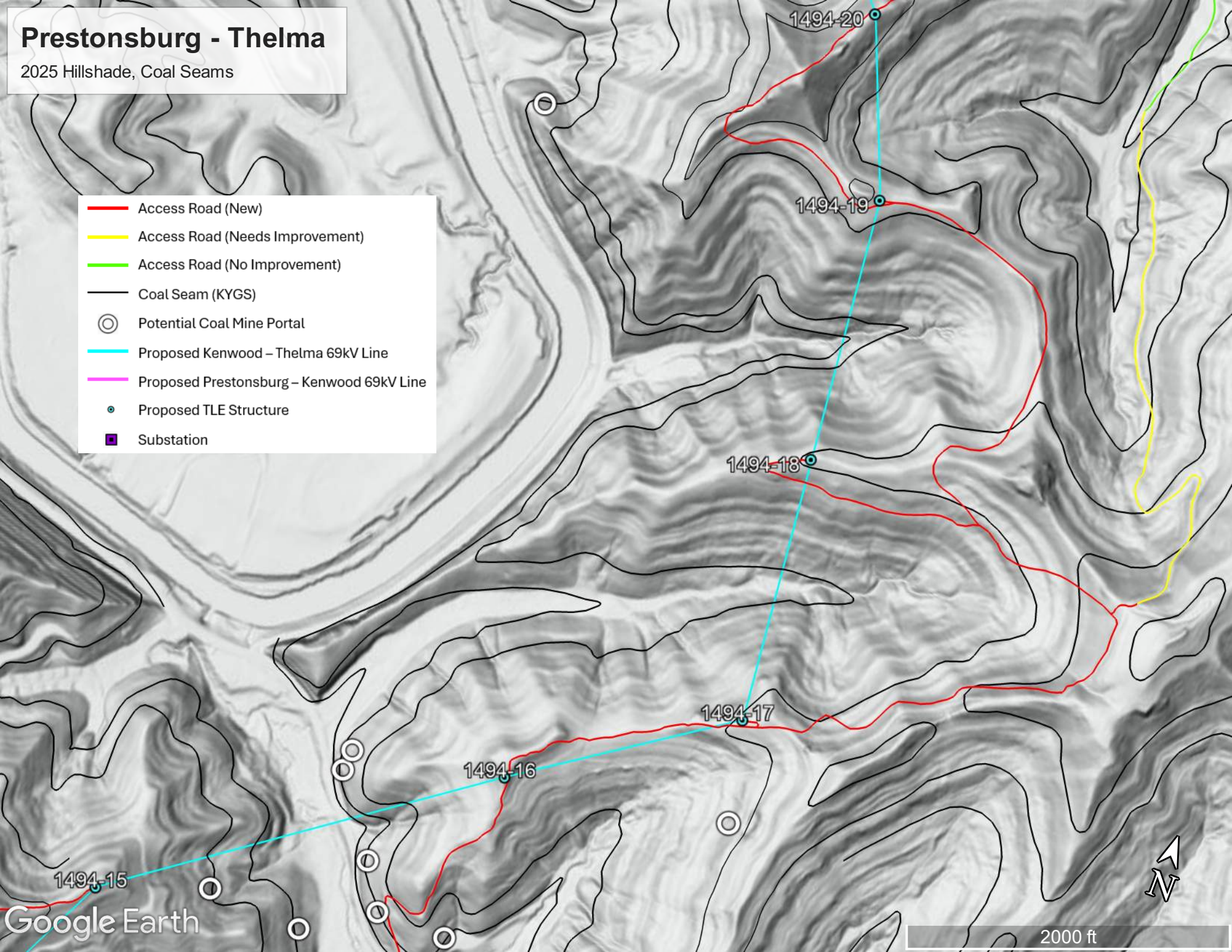




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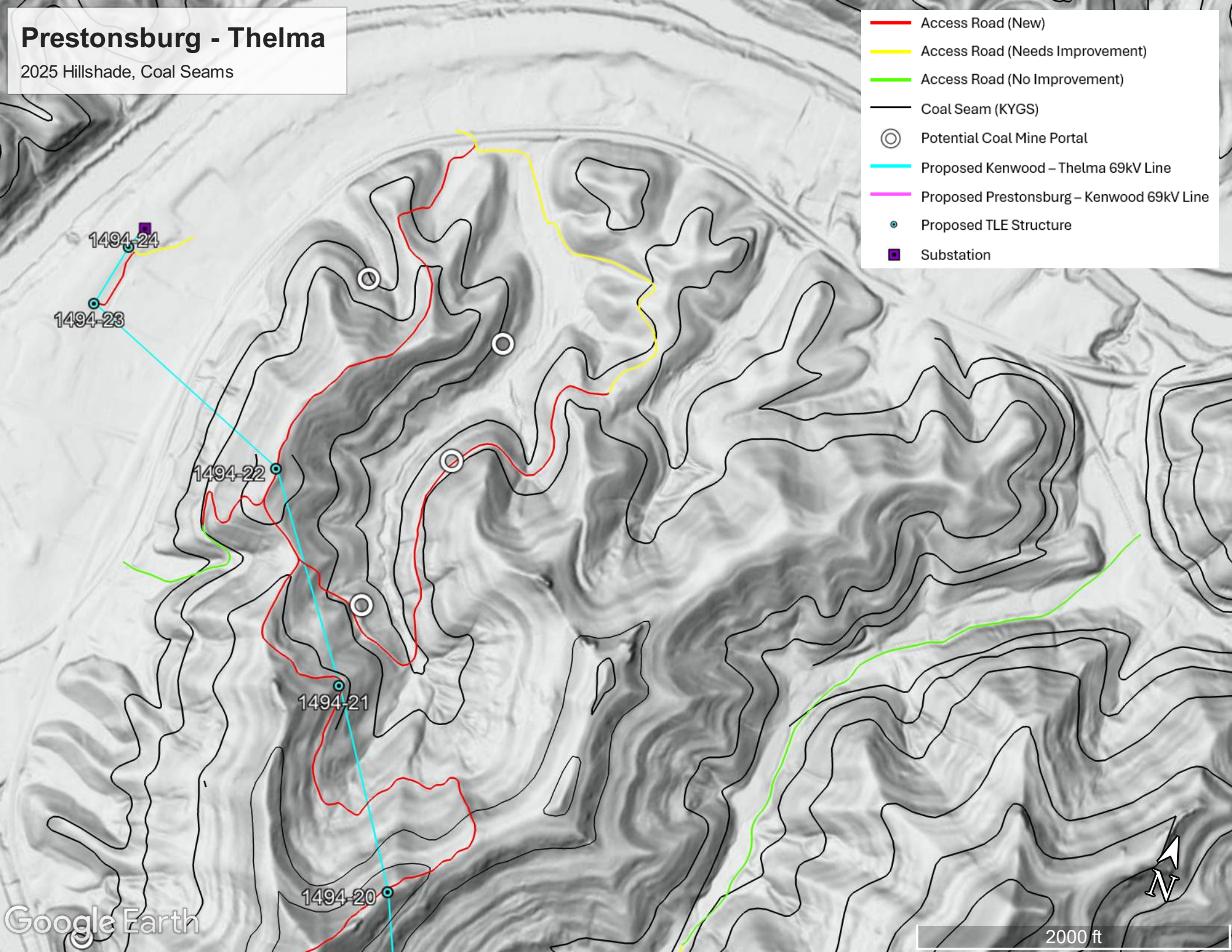




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## Addendum B





October 17, 2025  
MP1960835

*Geo-Hazard Risk Assessment Memo  
Supplemental Desktop Study and Site Visits  
Prestonsburg – Thelma 46kV Rebuild: Kenwood Station Exit  
Prestonsburg, Kentucky*

**Objective**

AEP's Civil and Geotechnical Engineering (CGE) group performed an additional supplemental geotechnical hazard (geo-hazard) study for the Prestonsburg – Thelma 46kV rebuild in the Prestonsburg, Kentucky area. This memo supplements the previous reports:

- Desktop Study and Geologic Risk Assessment, GFT (formerly DiGioia Gray), September 23, 2021.
- Geo-Hazard Risk Assessment Memo Addendum, CGE, April 24, 2025.

This additional geo-hazard study is to review alternative exits from the Kenwood Station, which became necessary due to Right-of-Way and Siting constraints including the presence of numerous marked and unmarked graves.

This memo summarizes:

- Reviewing and comparing different alignments being considered
- Updating the geo-hazard mapping for the potential alignments
- Summarizes observations from site visits by CGE

**Alignment Comparison**

While scouting access for geotechnical borings, a grave site was discovered at the original proposed location of Str 1494-8. Multiple re-routes were considered to divert around the grave site. However, more grave sites were discovered when field verifying offset structure locations. Efforts to thread the needle between grave sites and residences without impact were not successful despite multiple site visits, including a site visit on May 15, 2025. Figure 1 shows the various challenges identified around Str 1494-8 and potential offset locations.



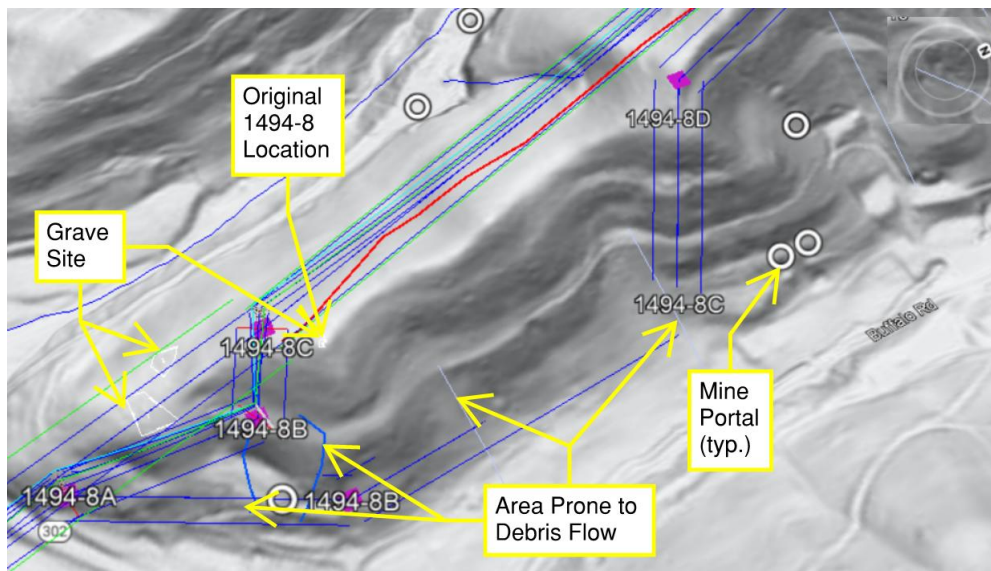


Figure 1. Challenging Conditions around 1494-8.

In consideration of the field data collected at 1494-8, AEP decided to bypass the area altogether. CGE was asked to compare 4 potential alignments (Option 1, 3, 4, and 6) to bypass the area of concern at 1494-8 (Figure 2).

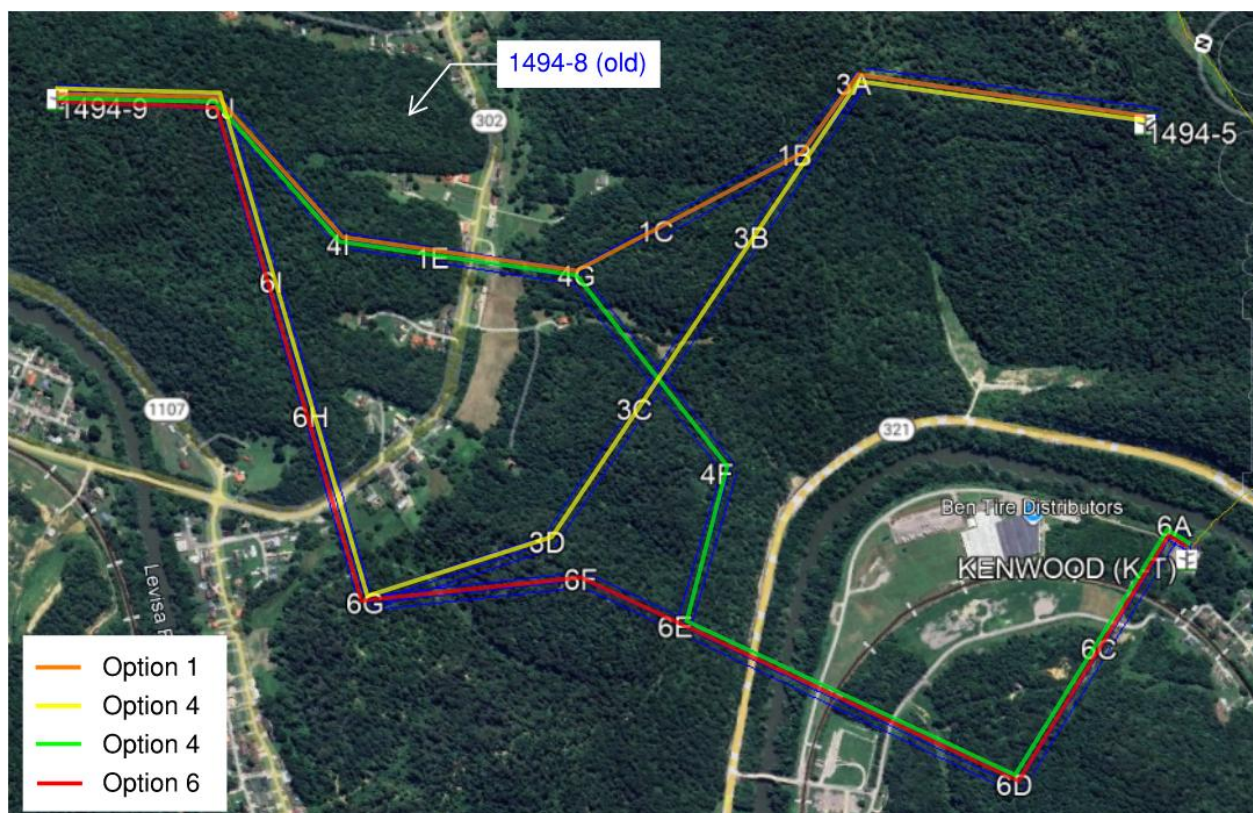


Figure 2. Alternative Alignments to Bypass 1494-8 Area.



CGE performed a desktop geo-hazard study of the potential new alignments. Figure 3 shows identified landslides within the study area (Reference 1). Option 6 appears to avoid the most landslides. Figure 4 shows apparent coal mining activity. More detailed desktop geo-hazard mapping is provided in Appendices A and B. Although coal seams are present throughout, the State of Kentucky does not report mining activity along the alignments (Reference 2). Based on the appearance of potential mine portals along coal seams, indicating possible historical mining activity, the geo-hazard risk related to mining activity appears roughly equivalent across the four options.

GFT performed a site visit on September 16, 2025 to evaluate Option 6. Due to weather and permission to survey constraints, GFT was only able to look at access to and locations of Structures 6A, 6B, 6C, 6D, 6F, 6G, and 6H. GFT did not observe landslides features or hummocky terrain along the access leading up to and at the proposed structure locations.

### **Conclusion**

Based on the geo-hazard desktop study and GFT's site visit, CGE's opinion is that Option 6 has the least geo-hazard risk and is recommended for the final line route.

### **References**

1. Landslide Information Map, Kentucky Geological Survey,  
<https://kgs.uky.edu/kygeode/geomap/?layoutid=25>, Accessed May 2024 to April 2025.
2. Kentucky Coal Mine Maps, KY Mine Mapping Information System,  
<https://eppcgis.ky.gov/minemapping/>, Accessed May 2024 to April 2025.



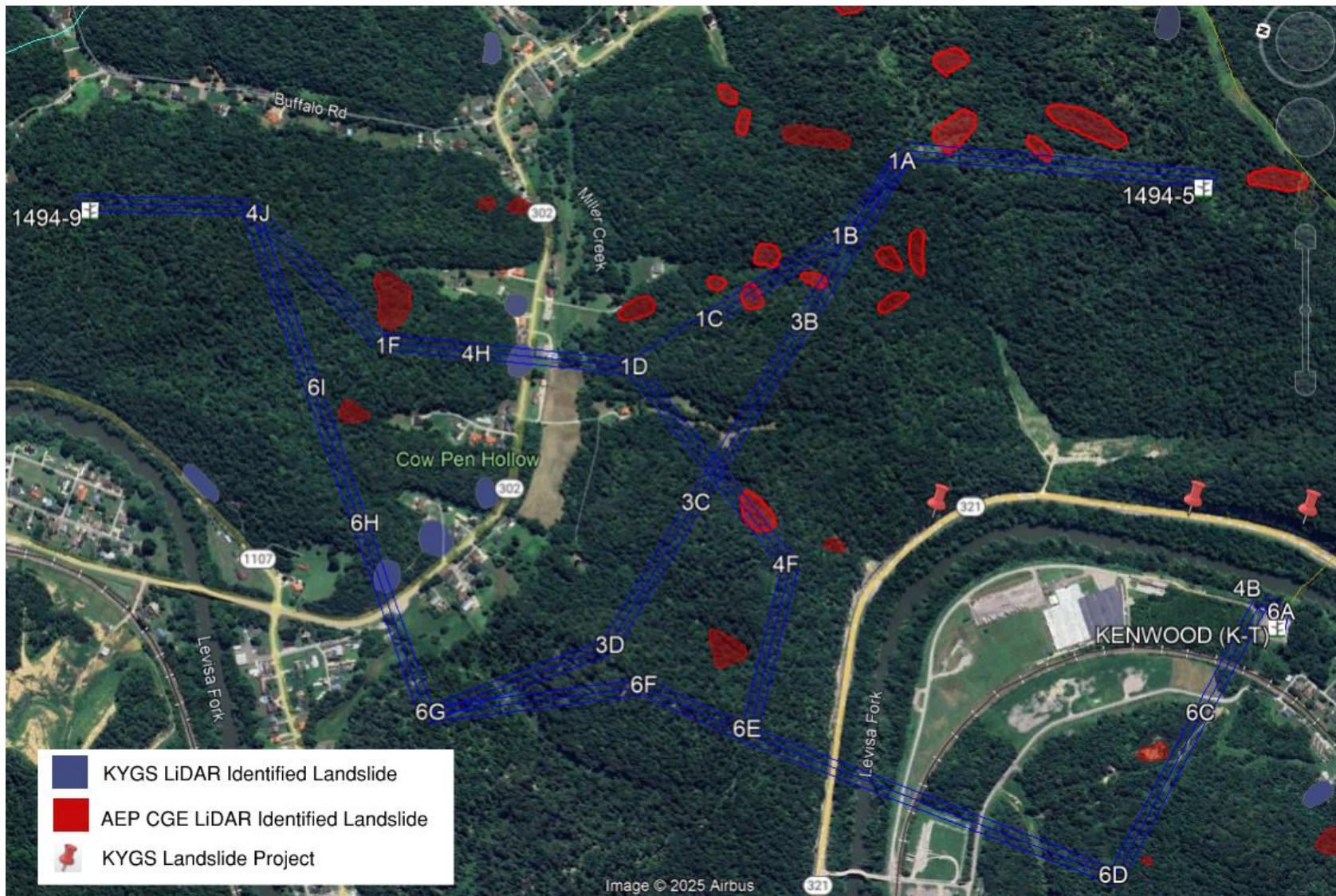


Figure 3. Landslide Risk.



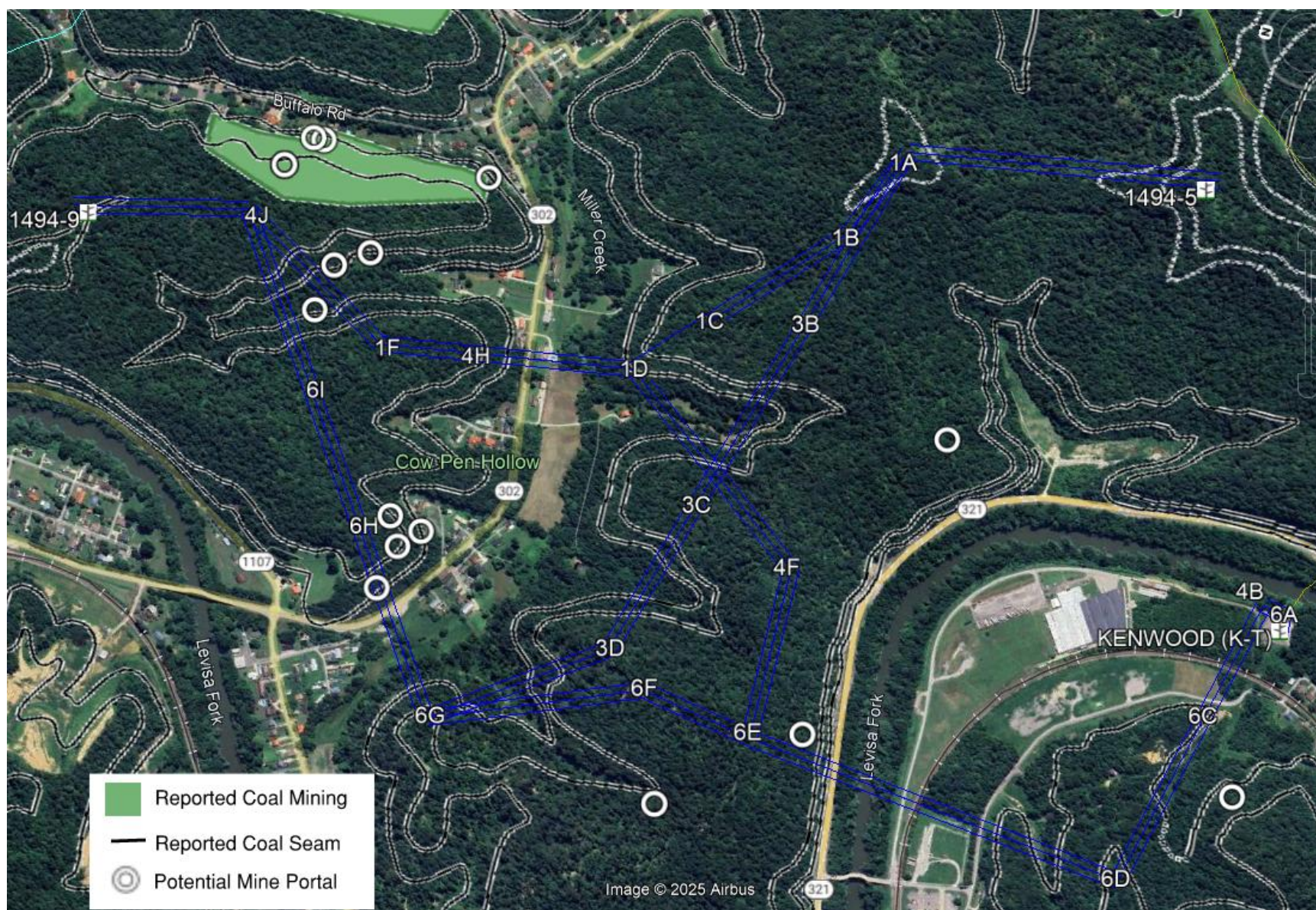


Figure 4. Mining Activity Risk

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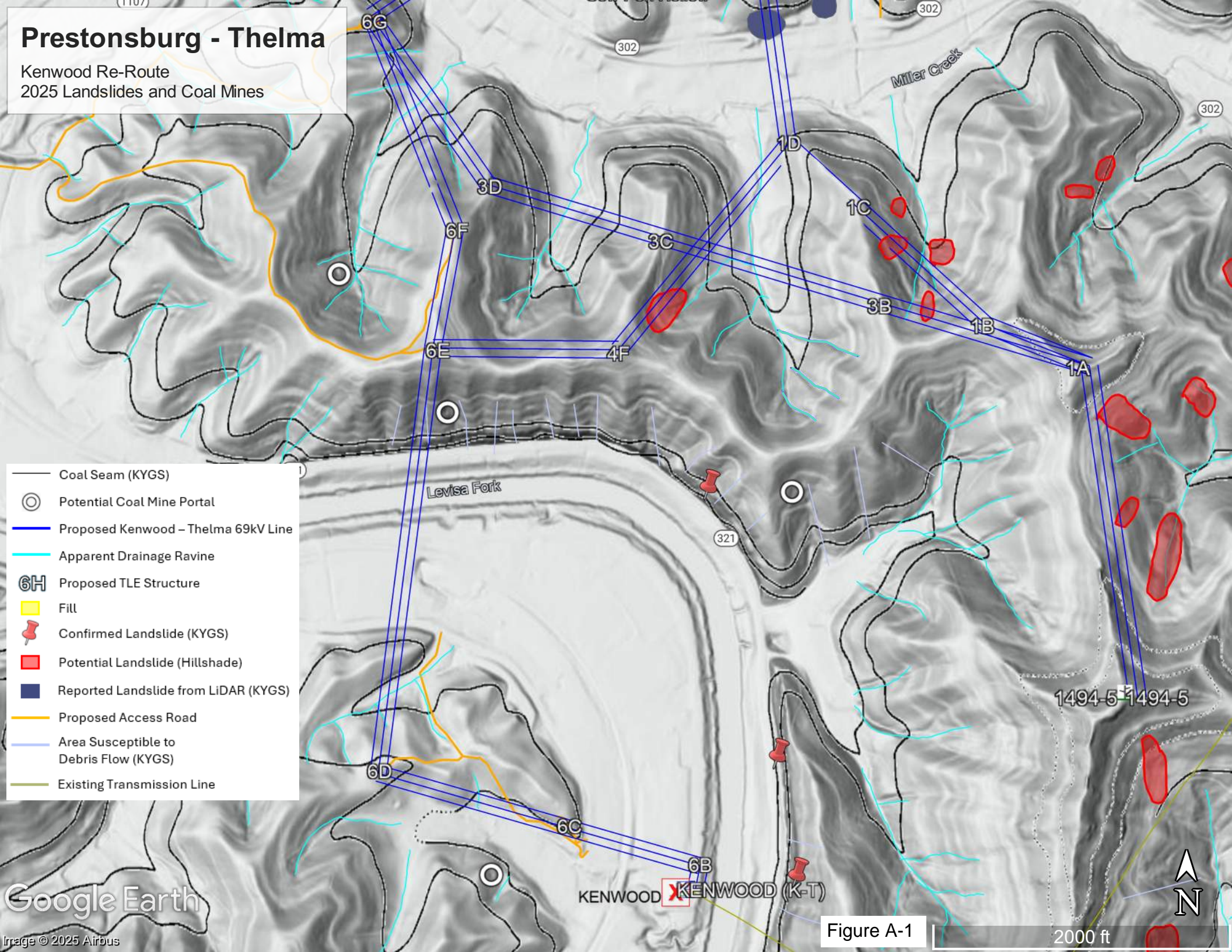


## **Appendix A – Hillshade Figures**



# Prestonsburg - Thelma

Kenwood Re-Route  
2025 Landslides and Coal Mines





# Prestonsburg - Thelma

Kenwood Re-Route  
2025 Landslides and Coal Mines

- Coal Seam (KYGS)
- Potential Coal Mine Portal
- Proposed Kenwood - Thelma 69kV Line
- Apparent Drainage Ravine
- 6H Proposed TLE Structure
- Fill
- Confirmed Landslide (KYGS)
- Potential Landslide (Hillshade)
- Reported Landslide from LiDAR (KYGS)
- Proposed Access Road
- Area Susceptible to Debris Flow (KYGS)

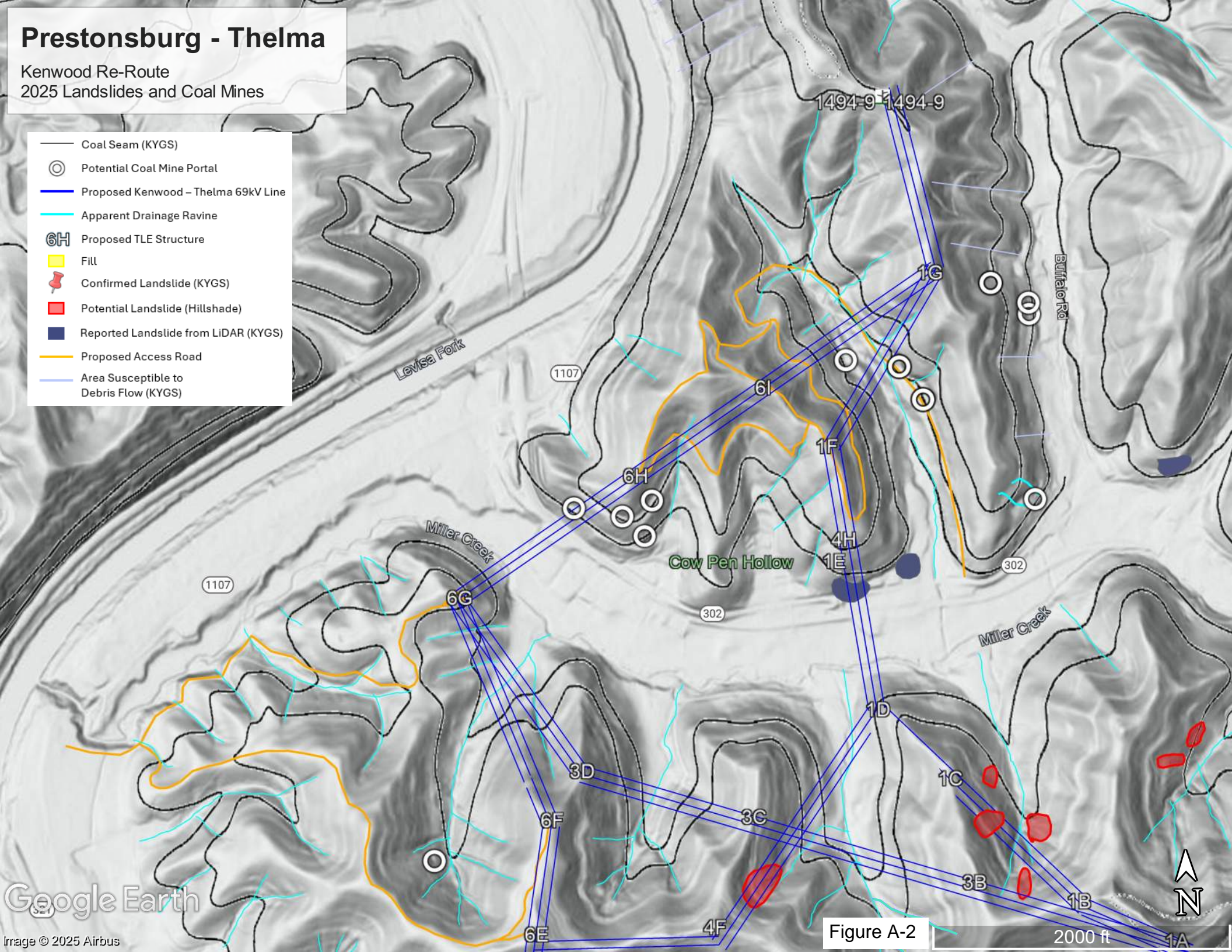


Figure A-2

2000 ft



## **Appendix B – Aerial Figures**



# Prestonsburg - Thelma

Kenwood Re-Route  
2025 Landslides and Coal Mines

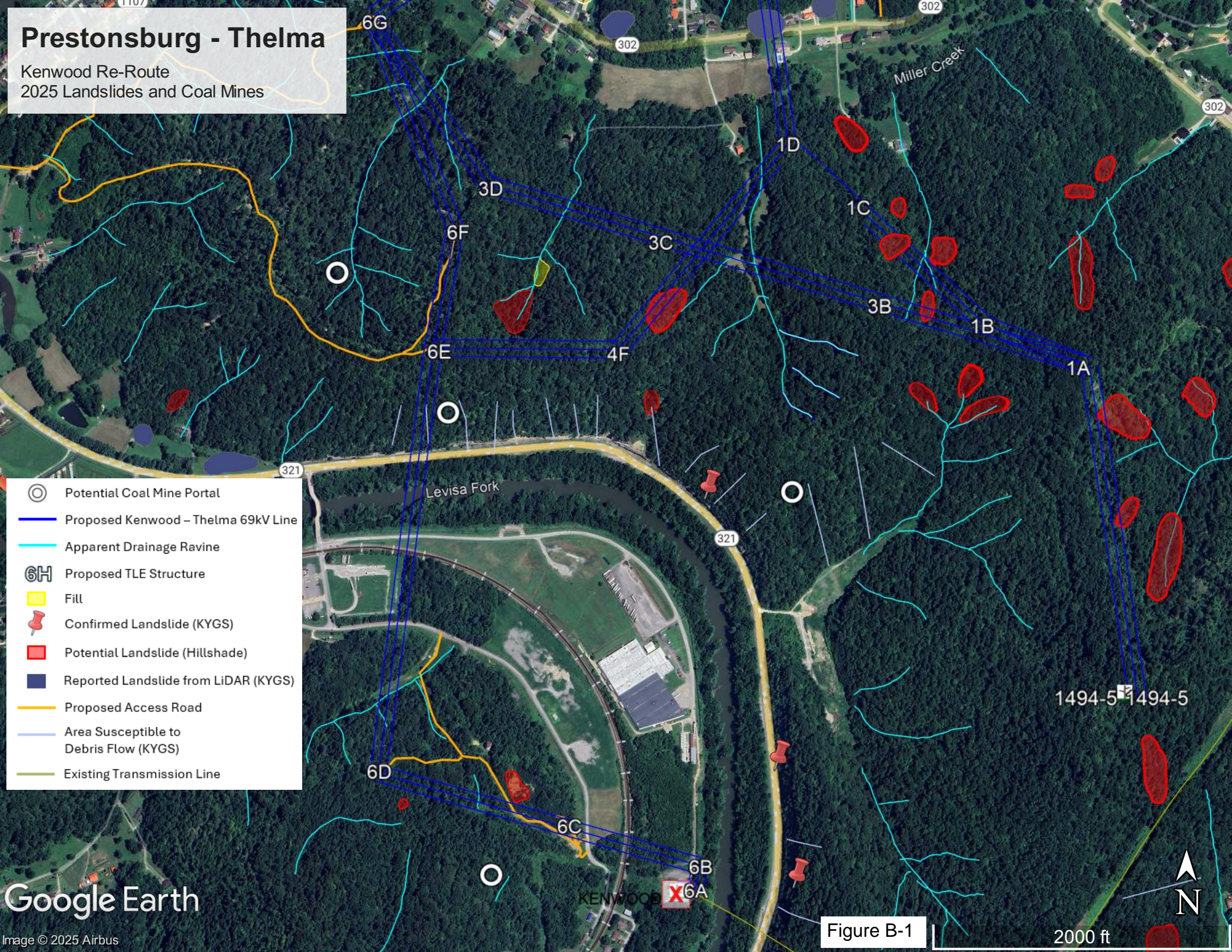


Figure B-1



# Prestonsburg - Thelma

Kenwood Re-Route  
2025 Landslides and Coal Mines

- Potential Coal Mine Portal
- Proposed Kenwood - Thelma 69kV Line
- Apparent Drainage Ravine
- Proposed TLE Structure
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- Proposed Access Road
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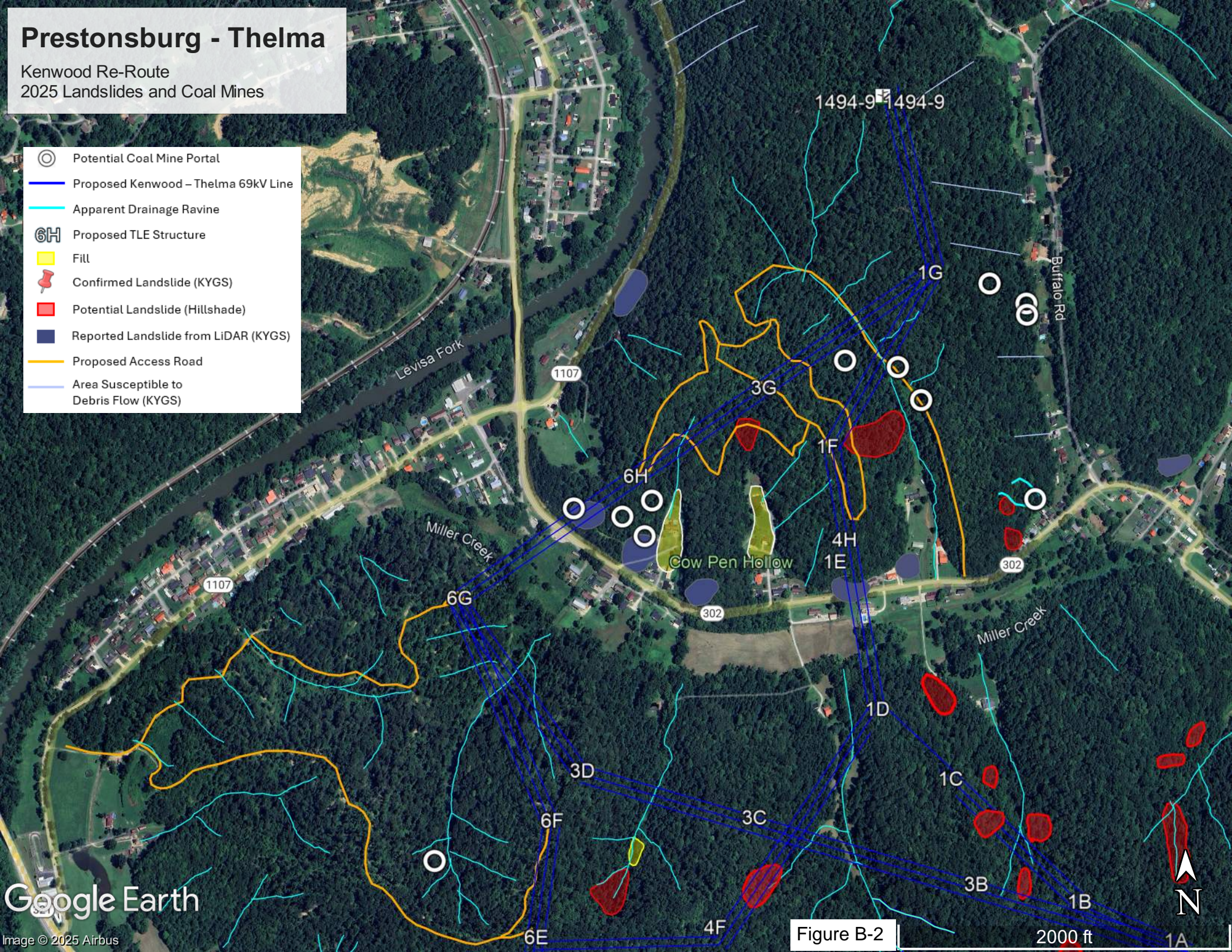


Figure B-2

2000 ft



**EXHIBIT 13**



Proposed Solution	Alternative 1
<ul style="list-style-type: none"> <li>- Replace Thelma Transformer #1 with a 138/69/46kV 130/130/90 MVA transformer and replace 46kV risers and relaying towards Kenwood Substation</li> <li>- Retire the Prestonsburg – Thelma 46kV circuit at approximately 16 miles.</li> <li>- Build approximately 13 miles of 46kV lines between Prestonsburg Substation and Thelma Substation via Kenwood Substation utilizing new, shorter, right of way.</li> <li>- Retire Van Lear Switch and the Van Lear to Kenwood line (included in the 16 miles).</li> <li>- Replace the motor-operated air-breaker (MOAB) switches at Kenwood Substation and install a circuit switcher on the high side of the distribution bank</li> </ul> <p>The cost of this proposal is \$71.2 million.</p>	<ul style="list-style-type: none"> <li>- Install a new 4 mile 46kV line from Morgan Fork Substation to McKinney Substation.</li> <li>- At Morgan Fork Substation, install a new 138/69/46kV transformer with circuit breaker protection.</li> <li>- Install a new 5.5 mile long double- circuit 138kV line from Dewey Substation to Kenwood Substation.</li> <li>- Convert Kenwood Substation to 138kV and install a new distribution bank.</li> <li>- Expand Dewey Station and install 2 new 138kV circuit breakers.</li> <li>- Retire the Prestonsburg – Thelma 46kV circuit at approximately 16 miles.</li> </ul> <p>The cost of this proposal is \$77 million.</p>



**EXHIBIT 14**

**This Exhibit is a placeholder and is not required for this  
Application.**

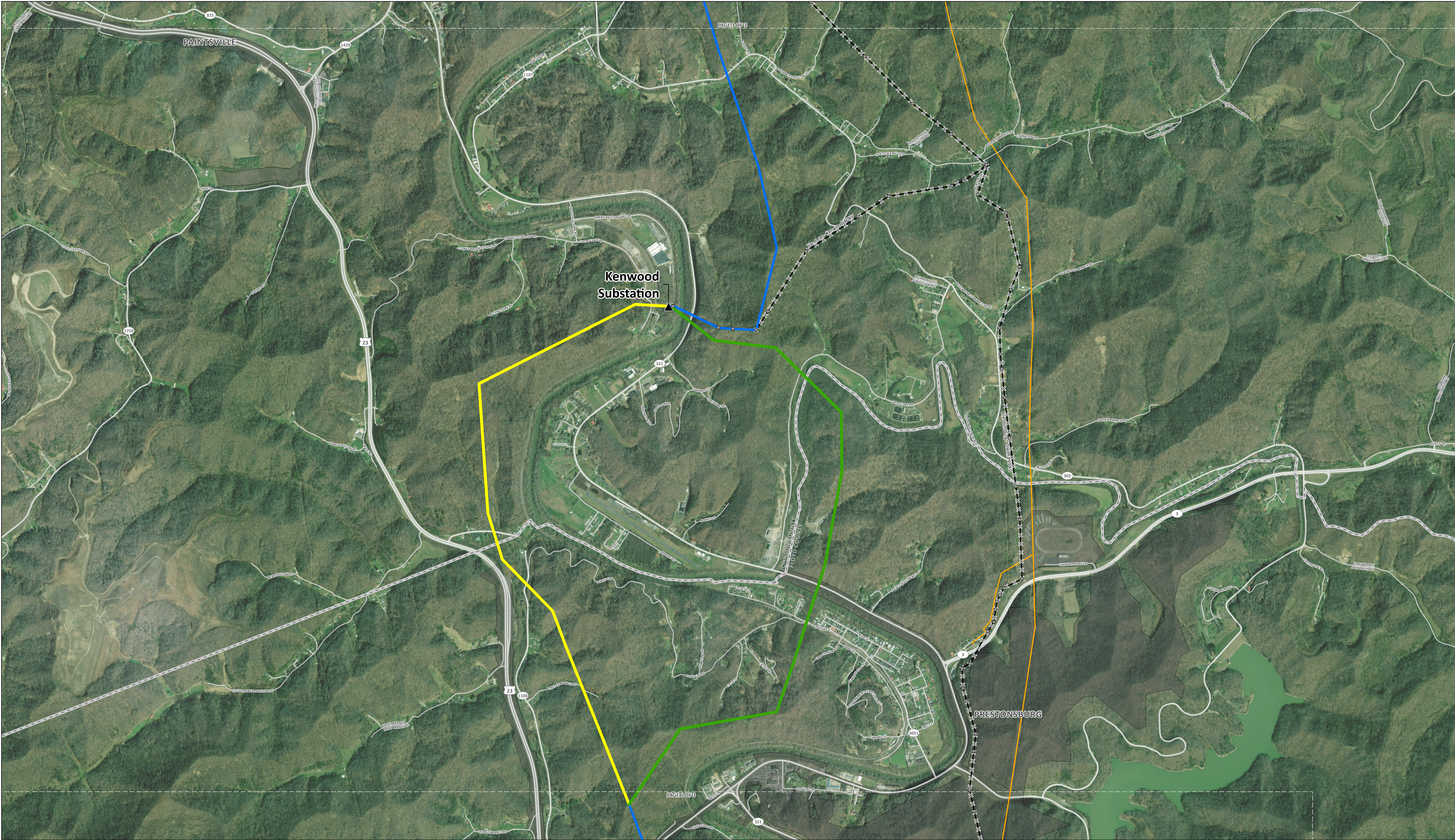






**EXHIBIT 15**









<ul style="list-style-type: none"><li>Existing AEP Structure to be Removed</li><li>Existing AEP Substation</li><li>Focus Area 1 - Comparison A</li><li>Focus Area 1 - Comparison B</li><li>Initial Route</li><li>Existing Transmission Line to be Removed</li></ul>	<ul style="list-style-type: none"><li>Non-AEP Transmission Line</li><li>Highway</li><li>Local Road</li><li>Map Tile</li><li>City/Municipal Limit</li></ul>	<div><p><b>KENTUCKY POWER</b></p><p>An <b>AEP</b> Company</p></div>	<div>Johnson and Floyd Counties, Kentucky</div> <div>1 inch = 1000 feet when printed at 24x36</div> <div></div> <div>November 06, 2025</div>		<div><b>Exhibit 15: Alternative Routes</b></div> <div><b>Prestonsburg - Thelma Transmission Line Rebuild Project</b></div>
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