COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

Electronic Application Of Kentucky Power	)	
Company For A Certificate Of Public Convenience	)	
And Necessity To Construct 69 kV	)	
Transmission Lines And Associated Facilities	)	Case No. 2022-00236
In Pike County, Kentucky	)	
("Belfry Area Transmission Line Project")	)	

Application

Kentucky Power Company ("Kentucky Power" or the "Company") moves the Public Service Commission of Kentucky (the "Commission") pursuant to KRS 278.020(2), 807 KAR 5:001, Section 15, and all other applicable statutes and regulations for a Certificate of Public Convenience and Necessity authorizing Kentucky Power to:

(a) retire the Kentucky portion of the existing 8.2 mile 46 kV transmission line between the existing Stone Substation in Pike County, Kentucky and the Sprigg Substation in Mingo County, West Virginia. Kentucky Power will only perform the work related to the 6.5 mile portion of the transmission line located in the Commonwealth;

(b) retire the existing Belfry 46 kV Substation in Pike County, Kentucky;

(c) retire the 0.75 mile Turkey Creek Turkey Creek 69 kV Tap;

(d) construct Orinoco 69 kV Substation in Pike County, Kentucky; and

(e) construct approximately 6.5 miles of 69 kV transmission line in Pike County, Kentucky between the existing New Camp 69 kV Substation and the existing Stone 69 kV Substation via the new Orinoco 69 kV Substation;

(f) perform related work, including certain substation equipment retirements and replacements, at the Stone 69 kV Substation, the New Camp 69 kV Substation, and the Hatfield 69 kV Substation;

(g) perform reconfiguration work at the New Camp 69 kV Tap; and

(h) perform related distribution line work to connect the Orinoco 69 kV Substation and the existing distribution line system.

(Collectively, the "Belfry Area Transmission Project" or the "Project").

The Project is required to address PJM Baseline voltage drop violations at the New Camp 69 kV Substation, to address the need for asset renewal and aging infrastructure on the existing Sprigg-Stone 46 kV circuit, and to strengthen the reliability of the local transmission system by upgrading the existing system from 46 kV to 69 kV. The Project addresses five PJM Baseline components and seven PJM Supplemental components.

Kentucky Power states in support of its application:

Applicant

1. Kentucky Power is a corporation organized on July 21, 1919 under the laws of the Commonwealth of Kentucky. The Company currently is in good standing in Kentucky.[1]

2. The post office address of Kentucky Power is 1645 Winchester Avenue, Ashland, Kentucky 41101. The Company's electronic mail address is kentucky_regulatory_services@aep.com.

3. Kentucky Power is engaged in the generation, purchase, transmission, distribution and sale of electric power. Kentucky Power serves approximately 165,000 customers in the

[1] A certified copy of the Company's Articles of Incorporation and all amendments thereto was attached to the Joint Application in *In the Matter Of: The Joint Application Of Kentucky Power Company, American Electric Power Company, Inc. And Central And South West Corporation Regarding A Proposed Merger*, P.S.C. Case No. 99-149. The Company's August 15, 2022 Certificate of Existence is filed as **EXHIBIT 1** of this Application.

following 20 counties of eastern Kentucky: Boyd, Breathitt, Carter, Clay, Elliott, Floyd, Greenup, Johnson, Knott, Lawrence, Leslie, Letcher, Lewis, Magoffin, Martin, Morgan, Owsley, Perry, Pike, and Rowan. Kentucky Power also supplies electric power at wholesale to other utilities and municipalities in Kentucky for resale. Kentucky Power is a utility as that term is defined in KRS 278.010.

4. Kentucky Power is a wholly owned subsidiary of American Electric Power Company, Inc. ("AEP"). AEP is a multi-state public utility holding company that includes utilities providing electric service to customers in parts of eleven states: Arkansas, Indiana, Kentucky, Louisiana, Michigan, Ohio, Oklahoma, Tennessee, Texas, Virginia, and West Virginia.

Background

5. The Kentucky-portion of the Project area is located exclusively in Pike County, Kentucky. The remainder of the Project is located in Mingo County, West Virginia. Kentucky Power will perform only the work related to the 6.5 mile portion of the transmission line and related facilities located in the Commonwealth.

6. The Project area currently is served by the following substations: the Belfry 46 kV Substation, the Hatfield 69 kV Substation, the Stone 69 kV Substation, the New Camp 69 kV Substation, and the Sprigg 138/69/46 kV Substation. The Belfry 46 kV Substation, the Hatfield 69 kV Substation, the Stone 69 kV Substation, and the New Camp 69 kV Substation are located in Pike County, Kentucky. The Sprigg 138/69/46 kV Substation is located in Mingo County, West Virginia. Kentucky Power proposes to retire the existing Belfry 46 kV Substation and construct the nearby Orinoco 69 kV Substation in connection with the Project. A map illustrating the Project area and the proposed route is attached as **EXHIBIT 2**.

7. The Project area is located in northeastern Pike County, Kentucky. The New Camp 69 kV Substation serves approximately 13.9 MVA of load and 947 customers. The New

Camp Substation also serves an Appalachian Regional Hospital facility, a water treatment plant, a waste water treatment plant, along with police and fire facilities.

8. Belfry Substation serves approximately 12.2 MVA of load and 1,547 customers.

9. The Sprigg – Stone 46 kV line is approximately 8.2 miles in length. Six and one-half miles of the Sprigg – Stone 46 kV line are located in Kentucky and owned by Kentucky Power; the remainder of the transmission line is located in Mingo County, Kentucky and owned by Appalachian Power Company.

10. The existing line comprises 55 structures; 47 of the structures are located in Kentucky. The existing 46 kV line was first built in 1940.

11. The majority of the existing structures are wood H-frame structures. Photographic examples of the existing structures are attached as **EXHIBIT 5**.

The Proposed Project

A. The Proposed Stone – New Camp 69 kV Rebuild

12. The proposed Stone – New Camp 69 kV Transmission Line Rebuild ("Transmission Line") will be constructed using single circuit configuration structures crossing approximately 6.5 miles in Pike County, Kentucky.

(a) The approximate 4.2 mile New Camp – Orinoco portion of the proposed route of the Transmission Line leaves the New Camp 69 kV Substation and proceeds generally southeast for 15,600 feet. It proceeds south for 2,600 feet using the exiting Stone – Sprigg 46 kV transmission line right-of-way. The Transmission Line then proceeds east for 600 feet before turning north for 800 feet to enter the proposed Orinoco 69 kV Substation;

(b) The approximate 2.3 mile Orinoco – Stone portion of the proposed route of the Transmission Line will leave the northeastern side of the Orinoco 69 kV Substation for a

short distance, crossing Highway 119, before turning east for approximately 2,400 feet; it turns southwest and then southeast for approximately 7,050 feet; it then proceeds in a southwesterly direction for approximately 1,700 feet before entering the northern side of the Stone 69 kV Substation.

The proposed route is illustrated on **EXHIBIT 4**.

B. Construct The Orinoco 69 kV Substation To Replace the Belfry 46 kV Substation.

13. The Company proposes to construct the proposed Orinoco 69 kV Substation at a site located approximately 1.25 miles south of the existing Belfry 46 kV Substation along U.S. 119. The facilities to be installed at the proposed Orinoco 69 kV Substation as part of the project include:

(a) A double box 69 kV bay;

(b) A 12 kV rural bay;

(c) A 69 kV/12 kV 20 MVA transformer; and

(d) Three 12 kV breakers.

See **EXHIBIT 13D**.

C. Upgrade Work At The Stone 69 kV Substation.

14. Kentucky Power proposes to upgrade the existing Stone 69 kV Substation. The substation upgrades will include:

(a) Addition of a new 69 kV Circuit Breaker E for the Coleman line exit;

(b) Utilizing the existing Circuit Breaker A as the T1 low-side breaker;

(c) Utilizing Circuit Breaker B, which will remain in place, as the new Hatfield (via Orinoco and New Camp substations) 69 kV line breaker.

See **EXHIBIT 13F.**

D. Upgrade Work At The New Camp 69 kV Substation.

15. Kentucky Power proposes to upgrade the existing New Camp 69 kV Substation. The substation upgrades will include:

(a) Rebuild the 69 kV bus;

(b) Add 69 kV MOAB W; and

(c) Replace 69 kV Ground Switch Z1 with a 69 kV Circuit Switcher on the New Camp Transformer.

See **EXHIBIT 13C**

E. Reconfiguration of the New Camp 69 kV Tap.

16. Kentucky Power proposes to reconfigure the New Camp 69 kV Tap. Planned reconfiguration work includes installation of, and improvements to, access roads; dead end structure installation; and construction of temporary and permanent wires.

F. Hatfield 69 kV Substation Work

17. The Company proposes to replace the existing MOAB Y with a 69 kV Circuit Breaker towards the Stone 69 kV Substation via the New Camp 69 kV Substation and the planned Orinoco 69 kV Substation.

See **EXHIBIT 13B**.

G. Retirement Work

18. Kentucky Power proposes to retire the following facilities:

(a) The Belfry 46 kV Substation;

(b) The 46 kV equipment located at the existing Stone 69 kV Substation;

(c) The approximately 6.5 miles of the 8.2 mile Sprigg – Stone 46 kV circuit located in Kentucky; and

(d) The 0.75 miles of the Turkey Creek 69 kV Tap.

H. Right-Of-Way

19. The proposed 69 kV Transmission Line will be built using both existing right-of-way and right-of-way to be acquired. Approximately 0.7 miles of the 4.2 mile New Camp – Orinoco portion of the proposed route of the Transmission Line will be built in or near the existing right-of-way. The remainder of the New Camp – Orinoco portion of the proposed route of the Transmission Line will be constructed using yet-to-be-acquired right-of-way. The approximate 2.3 mile Orinoco – Stone portion of the proposed route of the Transmission Line will be constructed on a yet-to-be-acquired right-of-way. The map required by 807 KAR 5:120, Section 2(2)(a) illustrating the proposed transmission line centerline and right-of-way and the boundaries of each property crossed is attached as **EXHIBIT 4**.

20. Further details concerning the route of the proposed Transmission Line is provided by Company Witness Reese and **EXHIBIT 10**.

21. The right-of-way will generally be maintained at 100 feet in width; in areas of unusually steep terrain, or where doing so is required by the safe and efficient operation of the proposed transmission line, a wider right-of-way of up to 400 feet will be required. *See* testimony of Company Witness West at 9.

I. Distribution Line Work

22. The Company further proposes to construct distribution lines in the ordinary course of extension to connect the proposed Orinoco 69 kV Substation with the existing distribution system.

J. The Proposed Structures

23. Final structure types for the proposed line will be determined during detailed engineering design in connection with a ground survey and geotechnical studies.

24. Based on preliminary engineering design, the existing structures will be replaced primarily with single circuit steel H-frame structures 80-100 feet in height. Single circuit steel guyed 3-pole structures averaging 85 feet in height, single circuit steel tower structures averaging 85 feet in height, and single circuit steel monopole structures also may be used as necessary in limited locations.

25. The primary single circuit structure type, H-frame structures, are efficient, cost-effective, simple form, and proven structures that have functioned well over the years on transmission lines of all voltages. Additionally, these structures enable long spans, which makes them well-suited for the mountainous terrain and rural landscapes that predominate in the Project area.

26. Details of the proposed structure types are provided in **EXHIBITS 6-9**.

27. The proposed single-circuit structures generally will support three conductors and two overhead groundwires. The conductors will consist of 556.5 kcmil ACSR conductors; the overhead groundwires will consist of one Alumoweld wire and one fiber optic overhead groundwire, which will be used for relaying communications between stations.

PJM Review

28. Voltage drop violations were identified by PJM Interconnection at the New Camp 69 kV Substation in the event of an N-1-1 scenario that involves the loss of the 138/69 kV transformer at Johns Creek and the loss of the Inez - Sprigg 138 kV Line.

29. The Project need was reviewed at the PJM Interconnection April 20, 2020 meeting. The supplemental solution was presented on January 15, 2021. The baseline portion of the Project was selected on January 15, 2021. The supplemental and baseline portions of the Project were assigned identification numbers s2446 and B3288 respectively.

30. The following Project elements constitute Baseline work:

(a) The construction of the proposed 6.5 mile Stone – New Camp 69 kV transmission line New via the proposed Orinoco 69 kV Substation (Application ¶ 12);

(b) The proposed upgrade work at the Stone 69 kV Substation (Application ¶ 14);

(c) The proposed upgrade work at the New Camp 69 kV Substation (Application ¶ 15); and

(d) Reconfiguration of the New Camp 69 kV Tap (Application ¶ 16).

31. The following Project elements constitute Supplemental work:

(a) The retirement work (Application ¶ 18);

(b) The Hatfield 69 kV Substation work (Application ¶ 17); and

(c) The construction of the Orinoco 69 kV Substation (Application ¶ 13).

Siting Study

32. GAI Consultants, Inc. ("GAI") was engaged to identify and evaluate routes on which to build the Transmission Line, to identify and evaluate sites for the proposed Orinoco 69 kV Substation, and to prepare the Siting Study for the Project. The Siting Study also provides further detail regarding the methodology employed by GAI, the alternative routes, the results and conclusions of the Siting Study, along with required permitting and environmental studies. The combined Siting Study for the Belfry Area Transmission Line Project and for the Orinoco Substation Project is attached as **EXHIBIT 10** to this Application.

A. The Orinoco 69 kV Substation Site.

33. GAI evaluated the possibility of rebuilding the existing Belfry 46 kV Substation in connection with the Project. It also identified and evaluated three alternative sites for the construction of the Orinoco 69 kV Substation.

34. GAI recommended against rebuilding the existing Belfry 46 kV Substation because doing so would require the purchase and demolition of three nearby residences.

35. GAI identified and evaluated three sites for the Orinoco 69 kV Substation: (i) Site A located approximately 0.8 miles north of the existing Belfry 46 kV Substation; (ii) Site B located approximately 0.1 miles (528 feet) south of the existing Belfry 46 kV Substation; and (iii) Site C located approximately 1.3 miles south of the existing Belfry 46 kV Substation.

36. Site C was selected because of its more favorable access to U.S. 119, and because its footprint allowed for a laydown yard and construction parking during construction of the substation. Site C also was not adjacent to residential properties (Site B) or potentially hazardous debris and former mining activity on adjacent property (Site A).

B. The Proposed 69 kV Transmission Line.

37. Six alternative routes were developed for the proposed 69 kV Transmission Line using the same methodology employed by GAI in earlier siting studies for Kentucky Power.[2] Alternative routes A, B, and C were identified for the New Camp – Orinoco segment of the Transmission Line. Alternative Routes D, E, and F were developed for the Orinoco – Stone segment of the Transmission Line.

38. Alternative Route C was selected for the New Camp – Orinoco segment of the Transmission Line because it possessed the following advantages over the other two alternative routes:

(a) It was the shortest of the three alternative routes;

(b) It utilizes existing transmission line right-of-way for approximately 0.7 miles;

[2] *See e.g.* Testimony of George T. Reese, *In the Matter of: Electronic Application Of Kentucky Power Company For A Certificate Of Public Convenience And Necessity To Construct A 138 kV Transmission Line And Associated Facilities In Breathitt, Floyd, And Knott Counties, Kentucky (Garrett Area Improvements 138 kV Transmission Project)*, Case No. 2021-00346 (Ky. P.S.C. Filed November 8, 2021).

(c) It lies in proximity to existing access roads that may be able to be used during construction and for maintenance;

(d) It requires the least amount of tree clearing;

(e) It avoids a natural gas pipeline on a narrow ridge; and

(f) It avoids crossing U.S. 119 and nearby development.

39. Alternative Route E was selected for the Orinoco – Stone segment of the Transmission Line because it possessed the following advantages over the other two alternative routes:

(a) It was the shortest of the three alternative routes;

(b) The majority of Route E can be constructed in the clear without taking an outage on the Sprigg – Stone 46 kV transmission line;

(c) It enters the Stone 69 kV Substation from the most advantageous direction; and

(d) It crosses fewer steep slopes.

40. The map of the alternative routes for the Transmission Line required by 807 KAR 5:120, Section 2(2)(c) is attached as **EXHIBIT 11** to this application.

Outreach

41. Kentucky Power publicly announced the Project on August 19, 2021 through a news release. The Company concurrently the Project website and a virtual open house platform where interested persons could obtain information regarding the Project and submit comments. In addition, Kentucky Power on August 19, 2021 mailed post cards regarding the Project to landowners of property crossed by or adjacent to the proposed Transmission Line.

42. Other outreach efforts for the Project included:

(a) Information packets were mailed to 243 affected landowners on August 26, 2021;

(b) Automated voice calls regarding the Project were made to the 243 affected landowners on August 23, 2021 and September 1, 2021;

(c) Newspaper announcements regarding the Project were published in the *Appalachian News-Express* on August 23, 2021 and September 1, 2021;

(d) Two live virtual town hall meetings were conducted at 12:00 p.m. and 5:00 on September 9, 2021;

(e) A tri-fold brochure and comment card were mailed to the affected landowners on September 14, 2021;

(f) A third press release regarding the Project was published on June 21, 2022; and

(g) Letters were mailed on June 21, 2022 notifying affected landowners of the proposed route.

43. The Company met with stakeholders including local Pike County public officials, affected landowners, including two large landowners in the study area, and the general public. Kentucky Power met with representatives of Pike County on July 7, 2021.

44. Route adjustments proposed by stakeholders and landowners were reviewed by Kentucky Power and adjustments made where practicable to do so.

Financial Aspects Of The Project

45. Neither AEP Kentucky Transmission Company, Inc., nor any successor entity, will own or invest in the Project. Kentucky Power will own the portion of the Project located in the Commonwealth in its entirety.

46. The total detailed estimate for the Kentucky Power portion of the Project cost is approximately $49 million. The project cost comprises: (a) approximately $30 million for transmission line work, including right-of-way acquisition; (b) approximately $10 million for construction and upgrade of the substations; (c) approximately $8 million for retirement and removal work; and (d) approximately $1 million for distribution line work.

47. The Project does not involve sufficient capital outlay to materially affect the existing financial condition of Kentucky Power. Kentucky Power anticipates funding the cost of the Project through its operating cash flow and other internally generated funds.

48. Kentucky Power projects the Company's share of the annual operating cost will be approximately $70,000 for general maintenance and inspection. The projected annual additional ad valorem taxes resulting from that portion of the Project located in the Commonwealth, and hence to be paid by Kentucky Power, are expected to total approximately $603,200.

Real Property And Right-Of-Way

49. Kentucky Power will not acquire new property in connection with the work to be performed at the Hatfield 69 kV Substation, the New Camp 69 kV Substation, or the Stone 69 kV Substation.

50. Kentucky Power in October 2021 acquired a 12.363 acre tract in connection with the construction of the proposed Orinoco 69 kV Substation.

51. Approximately 0.7 miles of the proposed 69 kV Transmission Line will be constructed within or near the existing right-of-way. The remainder of the 69 kV Transmission Line will be constructed on yet-to-be-acquired right-of-way. Kentucky Power proposes to maintain the proposed 69 kV Transmission Line right-of-way at 100 feet wide (50 feet on either side of the line), except where a wider ROW is required to address constructability and operational requirements.

52. A wider right-of-way of up to 400 feet may be required for certain longer spans and in steep terrain to permit the safe and efficient operation of the transmission line. The wider ROW also would facilitate additional tree clearing to prevent the conductors from coming in contact with trees during high wind conditions and tree clearing on the up-hill side in order to

prevent trees from falling down hill and into the conductors and structures. These areas of wider ROW will be identified during detailed engineering design and will be included during the right-of-way negotiations with landowners.

53. To ensure the ability to address potential issues that may emerge in connection with ground surveys, final engineering, and right-of-way negotiations, Kentucky Power requests, based upon guidance provided by the Commission's April 13, 2022 Order in Case No. 2021-00346,[3] authority to relocate the centerline and associated right-of-way up to 200 feet in any direction from the location as shown on the maps filed with the Application as **EXHIBIT 4**, if required to address such conditions or issues as may be subsequently determined.

54. This 400-foot wide area is consistent with the width of the proposed ROW at its widest points, and as illustrated on **EXHIBIT 4.** The proposed 400-foot wide area consists of two strips of a buffered area surrounding the centerline and ROW that allows flexibility for minor adjustments that result during final engineering. As explained in greater detail by Company Witness Reese, it is not expected that the centerline will shift significantly outside the 400-foot area shown on **EXHIBIT 4**.

55. The Company proposes to file a motion in this proceeding, if needed, to request approval to move the centerline more than 200 feet in any direction from the centerline as it appears on the maps filed into the record in this proceeding. The motion will identify the proposed new location of the centerline, the affected landowner(s), and state in detail, and with technical specificity, the need for the proposed modification of the centerline. Kentucky Power will serve the motion for approval to move the centerline on any affected landowner(s), even if

[3] *See* Order, *In the Matter of: Electronic Application Of Kentucky Power Company For A Certificate Of Public Convenience And Necessity To Construct A 138 kV Transmission Line And Associated Facilities In Breathitt, Floyd And Knott Counties, Kentucky (Garrett Area Improvements 138 kV Transmission Project),* Case No. 2021-00346 (Ky. P.S.C. March 8, 2022) as amended by the Commission's Order on rehearing dated April 13, 2022.

not an intervening party to this proceeding. The Company respectfully requests that upon receiving adequate information to consider the request, the Commission use its best efforts to rule upon such motions within 14 days.

56. After construction is completed, Kentucky Power will file with the Commission a revised plan showing the final location of the transmission line and structures. Company Witnesses West provides a further description of the proposed 400-foot wide area and the manner in which Kentucky Power proposes to use it.

57. Engineering estimates indicate that the 400-foot-wide area and right-of-way includes 57 parcels (49 unique parcel owners). Forty two of the parcels (35 unique parcel owners) are crossed by the proposed 100-foot-wide right-of-way based on engineering estimates. A list of parcels and associated landowners within the right-of-way and the 400-foot-wide area is provided as **EXHIBIT 11**. Kentucky Power worked with property owners affected by the right-of-way.

58. Kentucky Power plans to begin to acquire right-of-way in the first quarter of 2023. Kentucky Power will provide monthly property acquisition status updates beginning January 2023.

Notices

59. Kentucky Power filed its Notice of Intent in conformity with 807 KAR 5:120, Section 1 on July 29, 2022. This proceeding was assigned Case No. 2022-00236.

60. Kentucky Power, by a mailing made August 24, 2022, provided the notice required by 807 KAR 5:120, Section 2(3) to all property owners, as indicated by the records of the property valuation administrator of Pike County, whose land is included within ROW and the

400-foot wide area surrounding the proposed centerline ("Affected Landowners") of the route of the Transmission Line and the proposed station work.

61. The August 16, 2022 Notice included the following information:

a. notice of the proposed construction;

b. the docket number (P.S.C. Case No. 2022-00236) under which the Application will be processed;

c. the address and telephone number of the Commission's Executive Director;

d. a description of the property owners' rights to request a public hearing and the right to request intervention; and

e. a description of proposed 69 kV Transmission Line and proposed station work and corresponding maps indicating their locations.

62. A sample copy of the August 16, 2022 Notice, including all enclosures, and the verification by Vicki L. Stone of the mailing of the letters are attached as part of **EXHIBIT 12**. The list of the Affected Landowners to whom the Notice was mailed, including their addresses as indicated by the records of the property valuation administrator of Pike County, is attached as **EXHIBIT 12**.

63. The notice required by 807 KAR 5:120, Section 2(5) was published on August 16, 2022 in the *Appalachian News-Express*, the newspaper of record for Pike County, Kentucky. The published notices included the following information:

a. a description of the Proposed Route;

b. the docket number (P.S.C. Case No. 2022-00236) under which the Application will be processed;

c. the address and telephone number of the Commission's Executive Director;

d. a description of the property owners' rights to request a public hearing and the right to request intervention; and

e. a map illustrating the proposed route of the 69 kV Transmission Line and substation locations.

The notices published in *Appalachian News-Express* and Affidavit of Publication are attached as **EXHIBIT 14**.

Franchises And Permits

64. Kentucky Power is not required to obtain a franchise from any public authority. 807 KAR 5:001, Section 15(2)(b).

65. Kentucky Power will obtain all required environmental compliance permits and complete the required studies prior to beginning Project construction. A summary of the environmental surveys and permitting anticipated to be required is provided in Section VII of Company Witness Reese's testimony.

66. Following receipt of the requested authority, and completion of final design and right-of-way acquisition, but prior to the beginning of construction, Kentucky Power will update or supplement the listing in Company Witness Reese's testimony of required environmental surveys or permitting, as necessary.

67. The Company will also timely submit the final line design to the Federal Aviation Administration and the Kentucky Transportation Cabinet to secure a "Determination of No Hazard to Air Navigation." Other permits that will be obtained include road and railroad crossing permits. These will be submitted to the Commission once final engineering has been completed.

The Proposed Construction Is Required By The Public Convenience And Necessity

68. The Project is required by the public convenience and necessity.

69. The Project will not produce wasteful duplication. It will not result in an excess of capacity over need, and does not represent an excess of investment in relation to the productivity and efficiencies to be gained.

70. There are no like electric utility facilities in the area.

71. The Project addresses the PJM Baseline voltage violations at the New Camp 69 kV Substation in the event of an N-1 violation that involves the loss of the 138/69 kV transformer at the Johns Creek Substation and the loss of the Inez – Sprigg 138 kV line. Failure to address the PJM Baseline voltage violations would result in the Company being required to drop load to avoid the voltage violations.

72. Other alternatives studied by Kentucky Power provide only incomplete solutions, or fail to provide the benefits to be provided by the Project. The Project allows Kentucky Power to retire the 6.5 miles of the 8.2 mile Sprigg – Stone 46 kV located line in the Commonwealth. The Project will also provide looped service to the New Camp 69 kV Substation, and will allow Kentucky Power to support multiple requests for service from new customers and provides capacity for future load growth.

73. The Project upgrades and addresses substantial deficiencies in existing Kentucky Power 46 kV facilities beyond what could be provided through normal improvements in the ordinary course of business.

74. The Project also will improve the reliability and increase the capacity of the Company's existing transmission network in the northeastern portion of Pike County, Kentucky by upgrading the network from 46 kV to 69 kV. It also strengthens the existing 69 kV transmission system by adding a new 69 kV source to Hatfield substation (via New Camp – Stone line).

75. The Project will allow Kentucky Power to retire the approximately 8.2 mile existing Stone – Sprigg 46 kV transmission line. The existing Stone – Sprigg 46 kV transmission line was placed in service in 1940. The existing line structures are principally

wooden. Thirty two of the 47 Stone – Sprigg 46 kV transmission line structures (68 percent) located in Kentucky are in poor condition with one or more open conditions. *See e.g.* **EXHIBIT 5**.

76. The Kentucky portion of the Stone – Sprigg 46 kV transmission circuit experienced ten momentary and five permanent outages between 2017 and 2021 The outages resulted in 113.4 hours of interruption for the Kentucky customers served by the Stone – Sprigg 46 kV transmission circuit. The outages interrupted service to 4,808 customers and resulted in 880,039 customer minutes of interruption. Additional information regarding the circuit outages is attached as **EXHIBIT 3**.

77. The work to be performed was identified through use of the "AEP Guidelines for Transmission Owner Identified Needs" ("AEP Guidelines"). A copy of the AEP Guidelines is attached as **EXHIBIT 17**.

78. The need for and benefits of the Project are further detailed in the testimony of Company Witness Koehler, **EXHIBIT 18** (the Local Plan) and **EXHIBIT 19** (PJM RTEP Solution Slides). The need for the substation work, and the functions of the major substation components, are explained in further detail in **EXHIBIT 20**.

79. The Project is located entirely within Kentucky Power's certified territory and will not compete with any public utilities, corporations or persons.

Commencement Of Work And Anticipated In-Service Date

80. Kentucky Power anticipates commencing work, subject to the grant of the requested authority, beginning the second quarter of 2023. The expected in-service date for the Project is November 2024. The related distribution work is estimated to begin the second quarter or third quarter of 2023.

Exhibits And Testimony

81. The exhibits and testimony listed in the Appendix to this Application are attached to and made a part of this Application.

Communications

82. Kentucky Power respectfully requests that communications in this matter be addressed to the e-mail addresses identified on Kentucky Power's July 25, 2022 Notice of Election of Use of Electronic Filing Procedures.

Filing Requirements

83. Kentucky Power's compliance with the requirements of 807 KAR 5:001, Section 14, 807 KAR 5:001, Section 15, and 807 KAR 5:120 is detailed in **EXHIBIT 16** to the Application.

WHEREFORE, Kentucky Power Company requests that the Commission issue an Order:

(1) Granting Kentucky Power a Certificate of Public Convenience and Necessity for the Project authorizing Kentucky Power to:

(a) Construct the New Camp – Stone 69 kV Transmission Line in Pike County, Kentucky;

(b) Upgrade the New Camp 69 kV Substation; upgrade the Stone 69 kV Substation; reconfigure the New Camp 69 kV Tap; and perform the Hatfield 69 kV Substation work;

(c) Construct the Orinoco 69 kV Substation in Pike County, Kentucky;

(d) Perform the identified retirement and replacement work;

(2) Granting Kentucky Power the authority to relocate the centerline and associated ROW up to 200 feet in any direction from the location as shown on the maps filed with the Application as **Exhibit 4**, if required to address these conditions or issues;

(3) Allowing Kentucky Power to file a motion in this proceeding to request

approval to move the centerline more than 200 feet in any direction from the centerline as it appears on the maps filed into the record in this proceeding, with such motion containing the following:

(a) The proposed new location of the centerline, the affected landowner(s), and state in detail, and with technical specificity, the need for the proposed modification of the centerline;

(b) A statement that Kentucky Power served the motion for approval to move the centerline on any affected landowner(s), even if not a party to this proceeding;

(4) Stating that upon receiving the Company's motion to relocate the centerline more than 200 feet from the proposed centerline, the Commission use its best efforts to rule upon such motions within 14 days; and

(5) Granting Kentucky Power such other relief as may be appropriate.

Respectfully submitted,

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EXHIBIT LIST

Exhibit No.	Exhibit Name
1	Kentucky Power Company's August 15, 2022 Certificate of Existence
2	Map illustrating the general location of the Project
3	Information regarding Sprigg – Stone 46 kV outages, causes, and supporting data
4	Map of suitable scale illustrating the proposed transmission center line, right-of-way, and the boundaries of each property crossed by the proposed right-of-way. Also illustrated are the limits of the 400-foot notification area and each boundary crossed thereby. Boundary information was obtained from the records of the Pike County Property Valuation Administrator.
5	Photographs of existing Sprigg – Stone 46 kV transmission line structures
6	Photographs and drawings of the proposed monopole single circuit transmission line structure
7	Photographs and drawings of the proposed H-Frame single circuit transmission line structure
8	Photographs and drawings of the proposed three pole single circuit transmission line structure
9	Includes drawings and photos of the tower single circuit transmission line structure
10	Project siting study (includes both transmission line and substation siting information)
11	Separate maps illustrating the alternative routes that were considered
12	List of landowners within the right-of-way; separate list of landowners within the 400-foot notification corridor. Information was obtained from the records of the Pike County Property Valuation Administrator. Verified statement attesting to the mailing of the notice of proposed construction to affected landowners
13	Plans and specifications for substations

Exhibit No.	Exhibit Name
14	August 16, 2022 Project notice published in the *Appalachian News-Express* and affidavit of publication
15	Project press releases
16	Filing requirements
17	Guidelines used by Kentucky Power to determine the need for supplemental projects ("AEP Transmission Planning Criteria And Guidelines for End-Of-Life and Other Asset Management Needs") (December 2020)
18	PJM Local Plan
19	PJM Solution
20	List of the major components of the proposed substation work and their purpose
21	Results of the desktop geotechnical hazard assessment for the Project and its area

TESTIMONY

Direct Testimony of Nicolas C. Koehler
Direct Testimony of George T. Reese
Direct Testimony of Brian K. West

Commonwealth of Kentucky
Michael G. Adams, Secretary of State

Michael G. Adams
Secretary of State
P. O. Box 718
Frankfort, KY 40602-0718
(502) 564-3490
http://www.sos.ky.gov

Certificate of Existence

Authentication number: 275676
Visit https://web.sos.ky.gov/ftshow/certvalidate.aspx to authenticate this certificate.

I, Michael G. Adams, Secretary of State of the Commonwealth of Kentucky, do hereby certify that according to the records in the Office of the Secretary of State,

KENTUCKY POWER COMPANY

is a corporation duly incorporated and existing under KRS Chapter 14A and KRS Chapter 271B, whose date of incorporation is July 21, 1919 and whose period of duration is perpetual.

I further certify that all fees and penalties owed to the Secretary of State have been paid; that Articles of Dissolution have not been filed; and that the most recent annual report required by KRS 14A.6-010 has been delivered to the Secretary of State.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Official Seal at Frankfort, Kentucky, this 15th day of August, 2022, in the 231st year of the Commonwealth.

Michael G. Adams
Secretary of State
Commonwealth of Kentucky
275676/0028317

BELFRY AREA
TRANSMISSION LINE PROJECT

Case No. 2022-0236
Exhibit 2
Project Location Map
Page 1 of 1

KENTUCKY POWER
An AEP Company
BOUNDLESS ENERGY

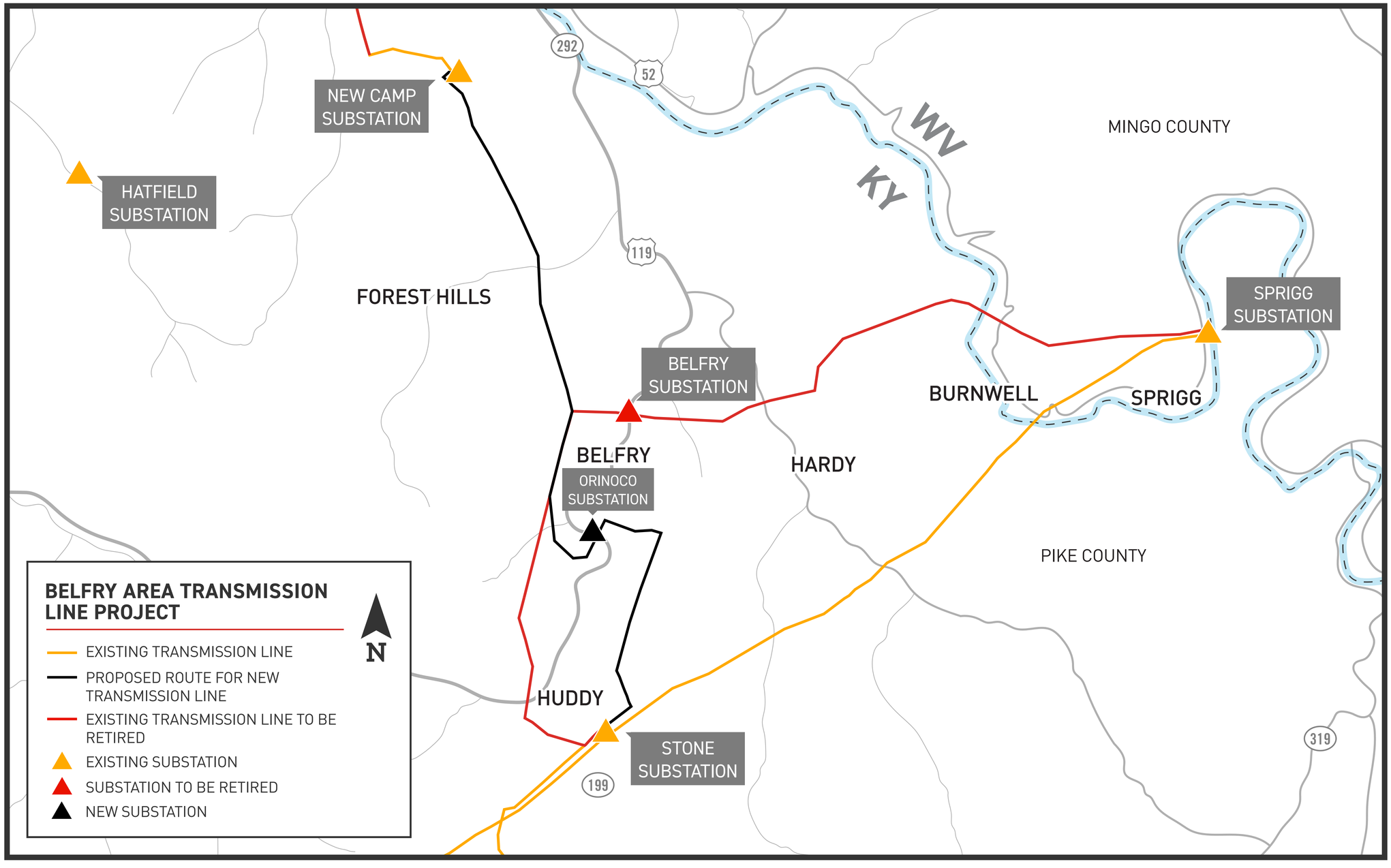


Table 1
Sprigg – Stone 46 kV Circuit Outage History

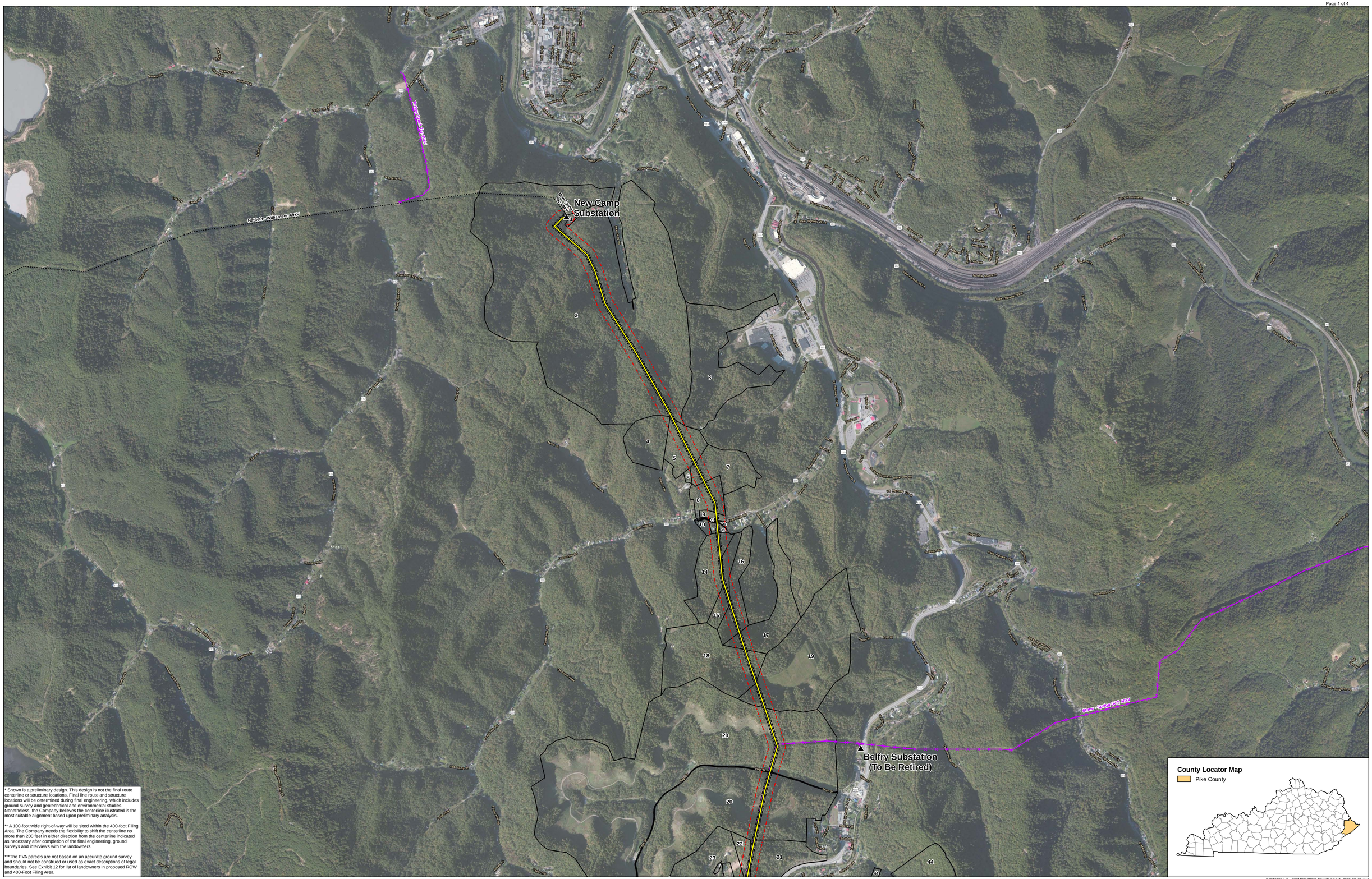
Circuit Outage Cause Summary			
Sprigg – Stone 46 kV Circuit 5 Years (2017 – 2021)			
Date	**Cause**	**Duration (Hours)**	**CI**
8/30/21	Weather - Lightning/Tstorm	0	0
9/13/20	Weather - Lightning/Tstorm	0	0
9/13/20	Weather - Lightning/Tstorm	0	0
4/12/20	Weather - Lightning/Tstorm	0	0
8/19/19	Weather - Lightning/Tstorm	0	0
6/30/19	Weather - Lightning/Tstorm	0	0
2/24/19	Weather - Wind	31.70	1,560
11/15/18	Weather - Ice/Snow	0	0
9/1/18	Vegetation Fall-In (Outside R/W)	18.60	1,337
8/31/18	Weather - Lightning/Tstorm	0	0
5/27/18	Weather - Lightning/Tstorm	0	0
5/9/17	Weather - Lightning/Tstorm	0	0
3/15/17	Equip-Line-Crossarm	2.75	0
3/1/17	Vegetation Fall-In (Outside R/W)	31.10	548
2/28/17	Weather - Lightning/Tstorm	29.23	1,363

Table 2
Kentucky (KPCo) 46 kV Average Circuit Outages Per Line

Kentucky (KPCo) 46 kV Circuits Annual Outage Averages		
5 Years (2017 - 2021)		
# of 46 kV Circuits	Frequency	Duration (Hours)
14	2.97	0.89

Table 3
Sprigg – Stone 46 kV Circuit Outage Averages

Circuit Annual Outage Averages		
5 Years (2017 - 2021)		
Circuit Name	Frequency	Duration (Hours)
Sprigg – Stone 46 kV	3.00	6.20



* Shown is a preliminary design. This design is not the final route centerline or structure locations. Final line route and structure locations will be determined during final engineering, which includes ground survey and geotechnical and environmental studies. Nonetheless, the Company believes the centerline illustrated is the most suitable alignment based upon preliminary analysis.

** A 100-foot wide right-of-way will be sited within the 400-foot Filing Area. The Company needs the flexibility to shift the centerline no more than 200 feet in either direction from the centerline indicated as necessary after completion of the final engineering, ground surveys and interviews with the landowners.

***The PVA parcels are not based on an accurate ground survey and should not be construed or used as exact descriptions of legal boundaries. See Exhibit 12 for list of landowners in proposed ROW and 400-Foot Filing Area.

County Locator Map

Pike County

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APPALACHIAN POWER
An AEP Company
BOUNDLESS ENERGY™

Belfry Area Transmission Line Project

Exhibit 4: Proposed Route (Aerial Background)

Legend

- Existing Substation
- Proposed Substation
- Proposed Route*
- Proposed 100-foot ROW**
- 400-foot Filing Area**
- Existing Transmission Line
- Existing Transmission Line (To Be Removed)
- The Property Value Administrator (PVA) Parcels and Landowner Reference No.***

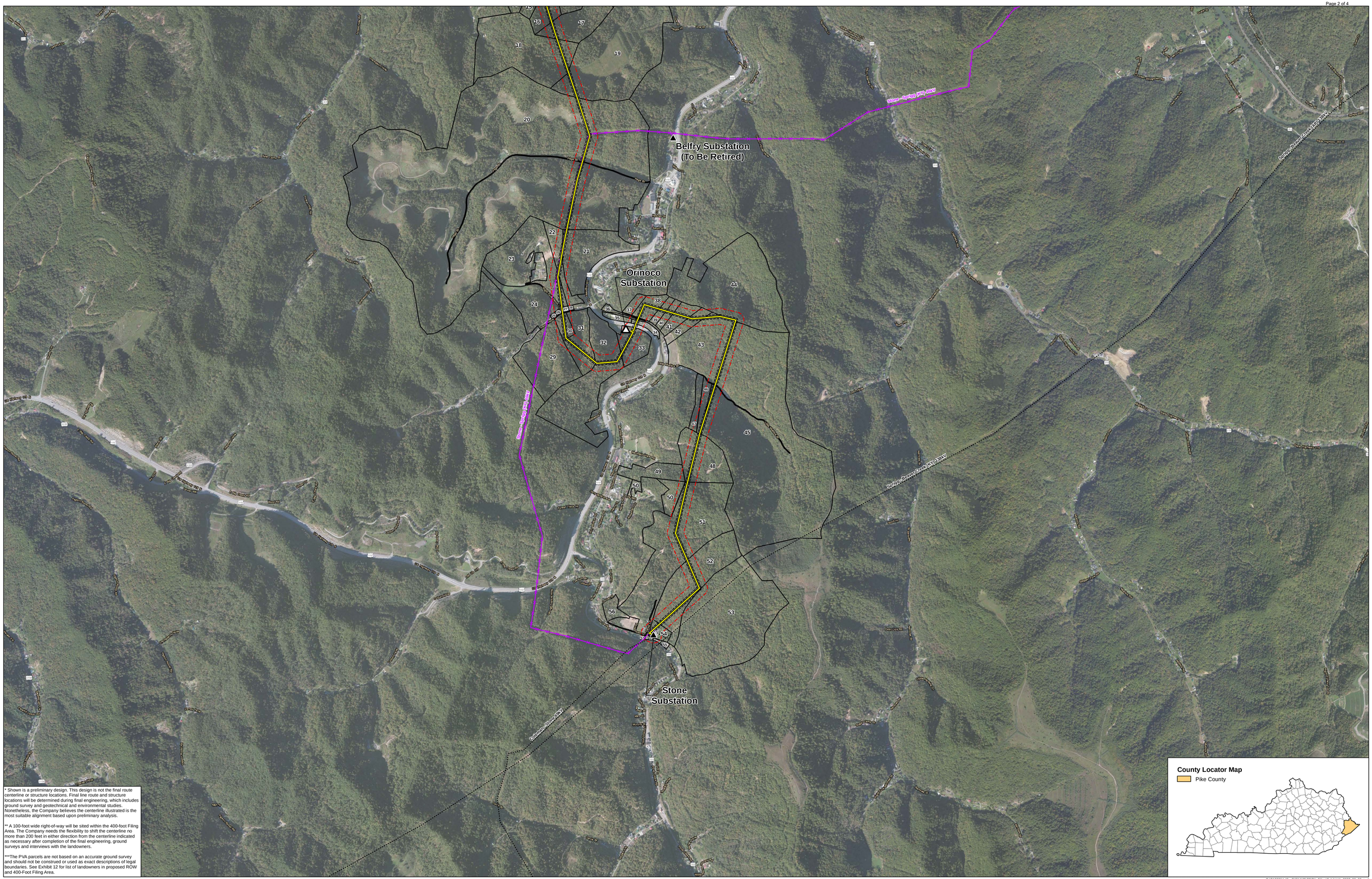
0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 1000 feet

N

Date: 8/30/2022

Sheet: 1 of 2



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County Locator Map

Pike County

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BOUNDLESS ENERGY™

Belfry Area Transmission Line Project

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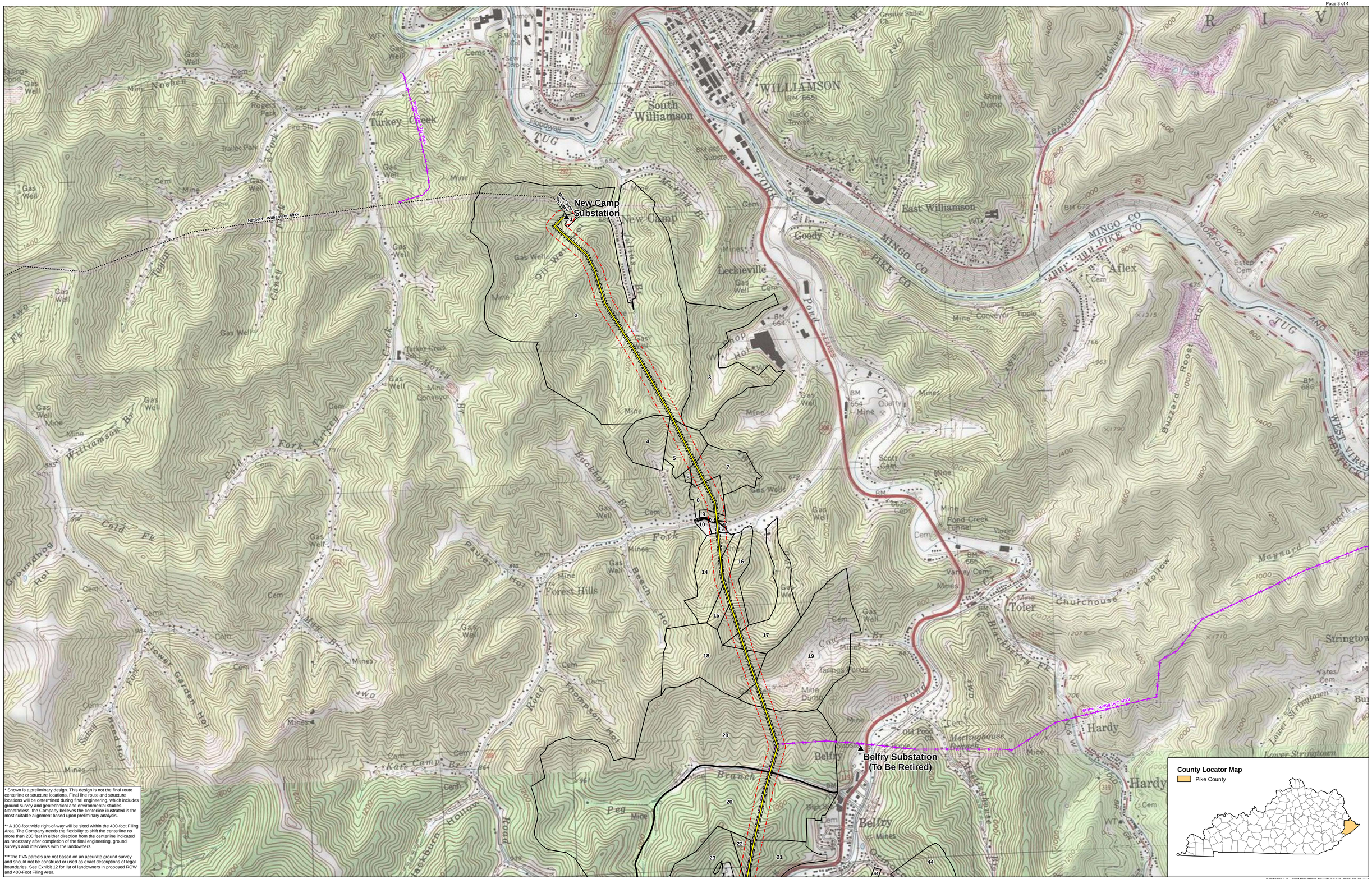
1 inch = 1000 feet

N

Date: 8/30/2022

Sheet: 2 of 2



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APPALACHIAN POWER
An AEP Company
BOUNDLESS ENERGY™

Belfry Area Transmission Line Project

Exhibit 4: Proposed Route (Topographic Background)

Legend

- Existing Substation
- Proposed Substation
- Proposed Route*
- Proposed 100-foot ROW**
- 400-foot Filing Area**
- Existing Transmission Line
- Existing Transmission Line (To Be Removed)
- The Property Value Administrator (PVA) Parcels and Landowner Reference No.***

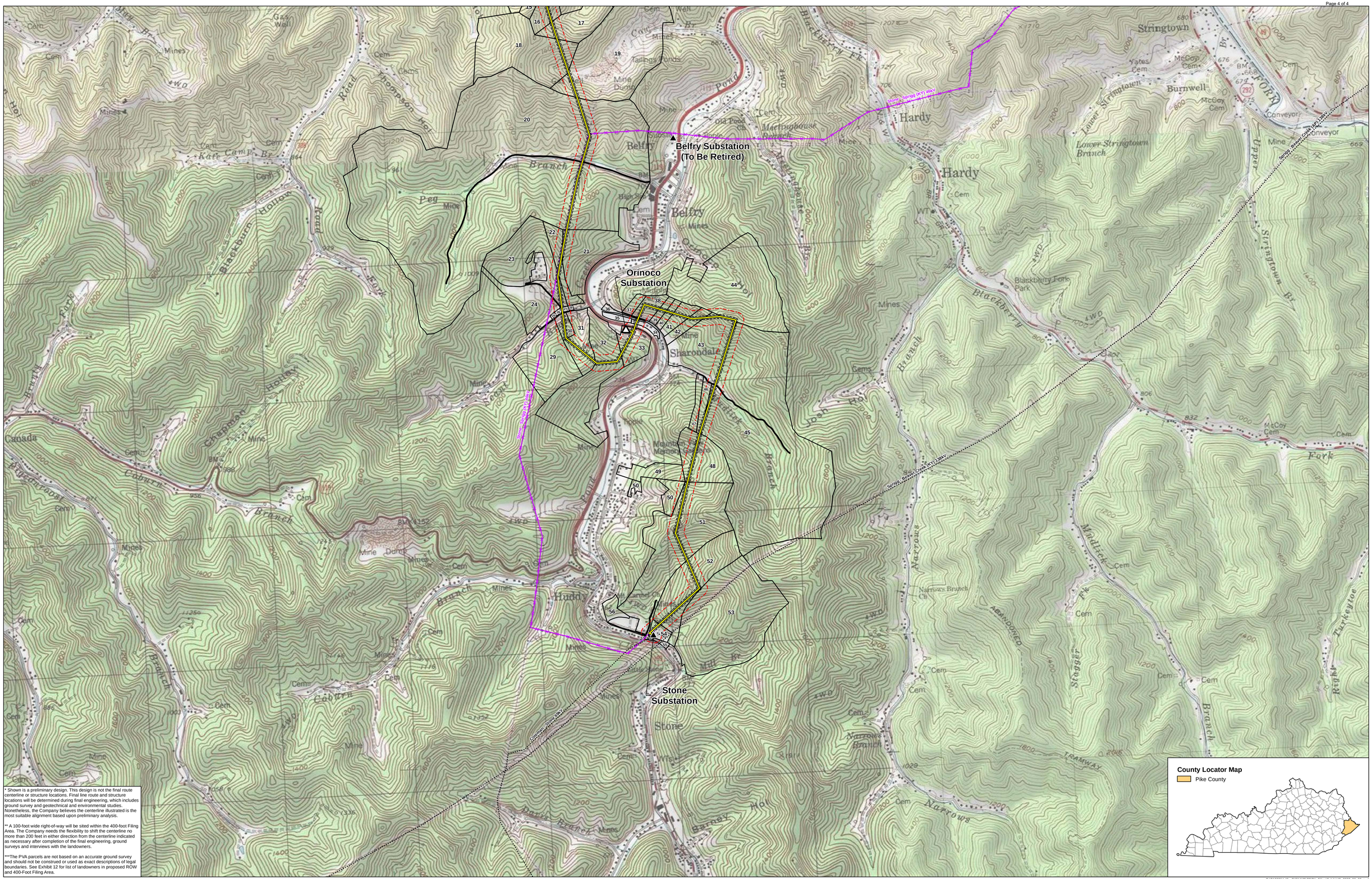
0 500 1,000 2,000 3,000 4,000 Feet

1 inch = 1000 feet

N

Date: 8/30/2022

Sheet: 1 of 2



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County Locator Map

Pike County

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APPALACHIAN POWER
An AEP Company
BOUNDLESS ENERGY™

Belfry Area Transmission Line Project

Exhibit 4: Proposed Route (Topographic Background)

Legend

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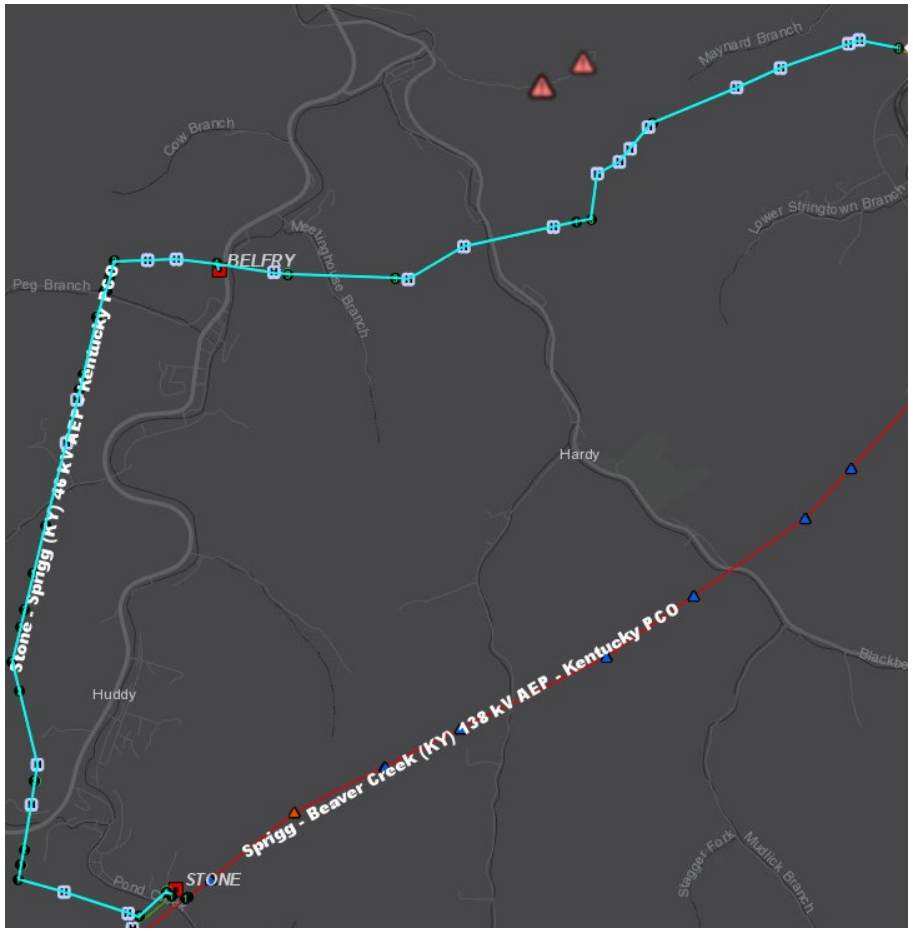
N

Date: 8/30/2022

Sheet: 2 of 2



The Stone – Sprigg 46kV Line is being fully retired between Stone Substation and the West Virginia State Line in Kentucky. Additionally, the Stone – Sprigg 46kV Line crosses into West Virginia, continuing from the Kentucky State Line to Sprigg Substation as an Appalachian Power Company asset. This segment in West Virginia is also being retired as part of the Project. These retirements address the degraded condition of the wood structures. There were five (5) structures photographed by drone, and the following conditions were found on those structures.

AEP; Sprigg-Stone (APCo & KYPCo)					
Date of Aerial Inspection: 11 December 2019					
Provided by: Asymmetric Technologies LLC.					
Structure Number	***Latitude***	***Longitude***	***Picture Range***	***Full Structure Image***	***Deficiency Remarks***
K426-8	37.59691045	-82.27972424	1-8	1	Two (2) guy-wires loose; attached to structure
K426-11	37.60308857	-82.28055329	9-15	9	Upper pole splitting
K426-12	37.60468507	-82.28104908	16-22	16	Upper pole decay
					Conductor jumper uncoiling; arcing evidence
K426-36	37.62859272	-82.24227183	24-33	24	Minor flashover indication to H post insulator
					Minor flashover indication to H post insulator
					Minor flashover indication to H post insulator
					Several pole cavities
					Partial rot-top
K426-37	37.62872825	-82.24126304	34-40	34	Upper pole splitting
					Partial rot-top

Please view slides 2 - 11 showing representative photographs regarding the condition on the Stone – Sprigg 46kV Line in Kentucky.

Structure K426-8:

- Two (2) Loose Guy Wires Attached to Strucutre

Structure K426-11:
- Pole Cavity

EXHIBIT 5 – EXISTING STRUCTURE PHOTOS

Structure K426-11:

- Upper Pole Splitting

Structure K426-12:

- Crossarm and Hardware Rusting

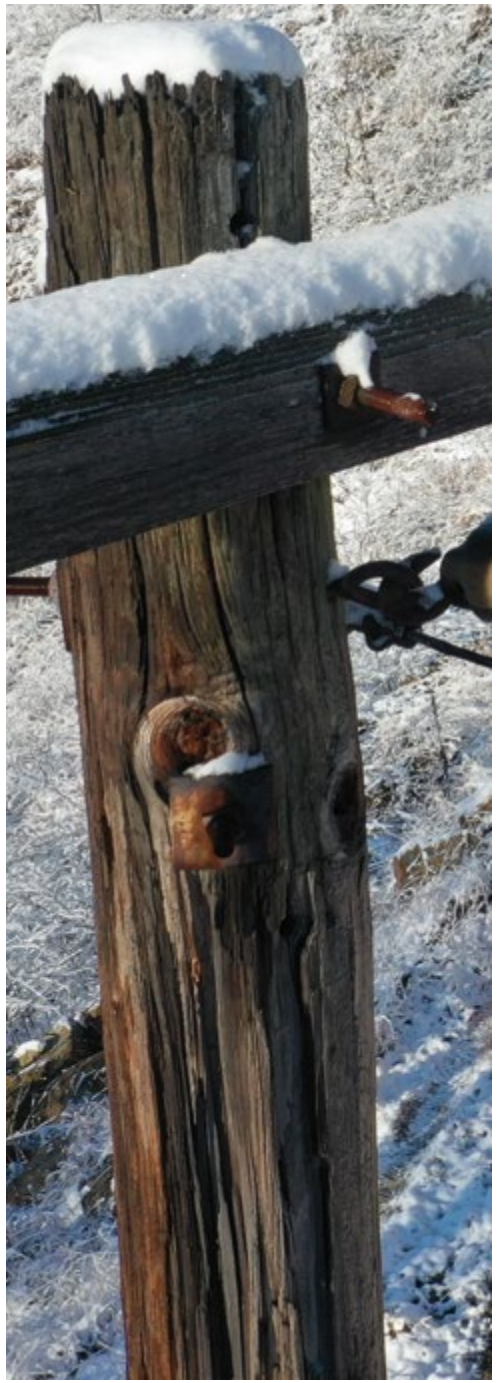
Structure K426-12:
- Upper Pole Decay
- Pole Cavities

Structure K426-12:
- Conductor Jumper Uncoiling
- Evidence of Arcing

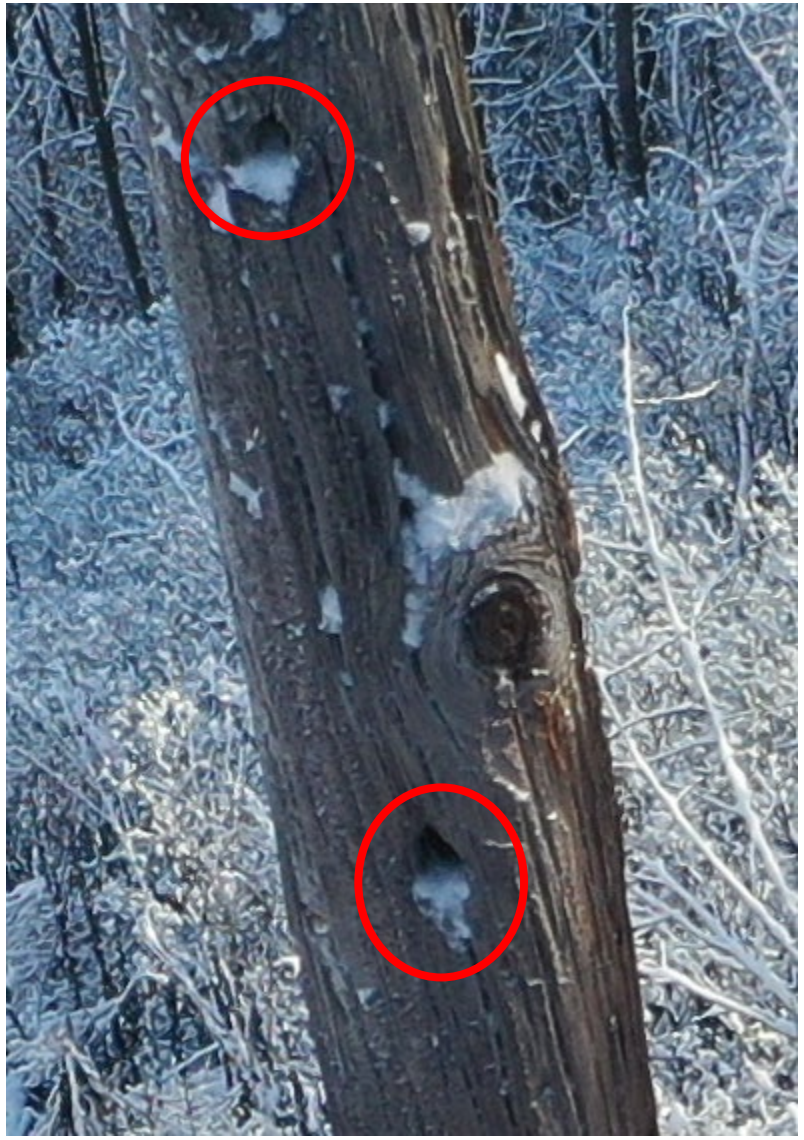
Structure K426-36:
- Minor Insulator Flashover Evidence

Structure K426-36:

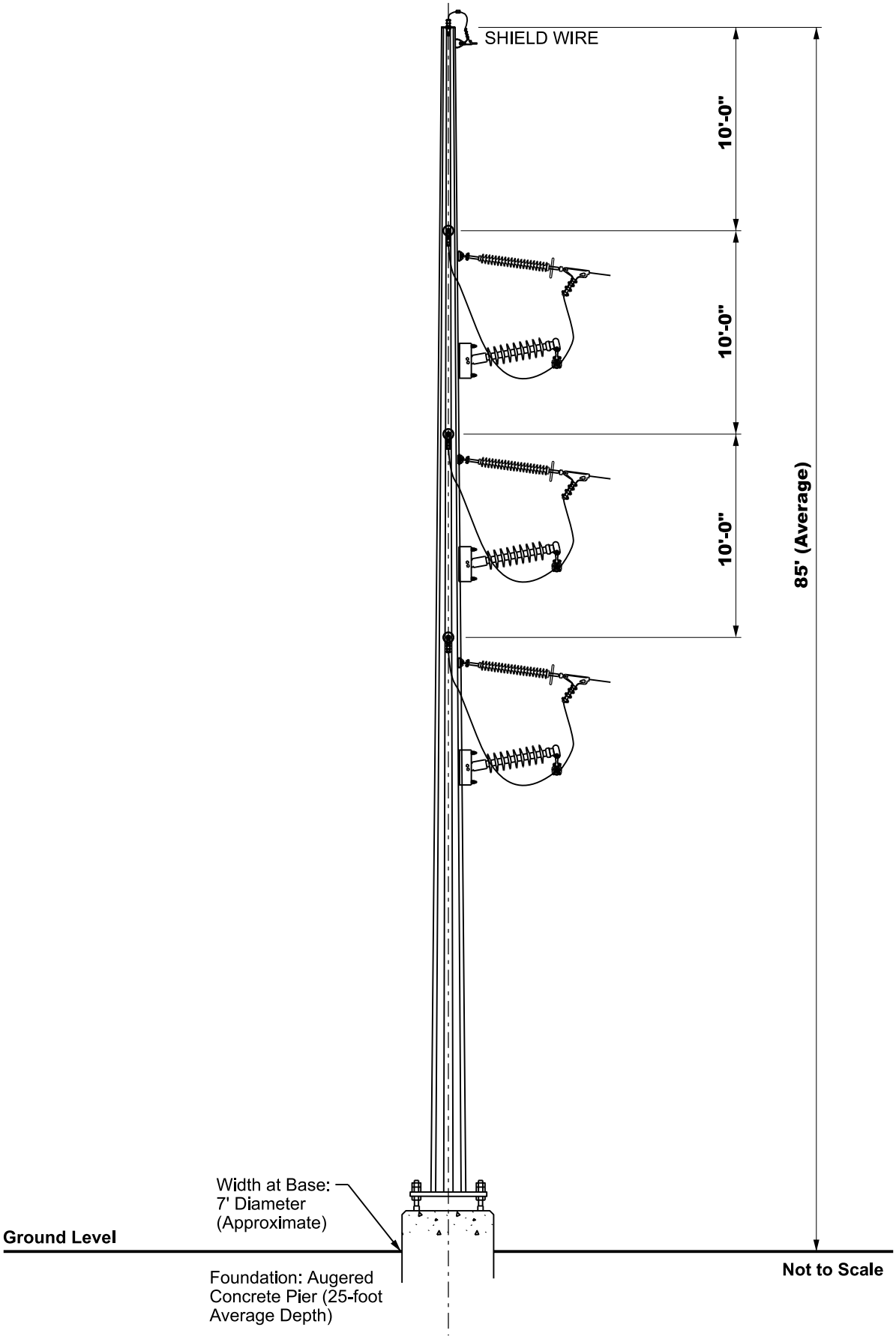
- Several Pole Cavities
- Patrial Rot Top



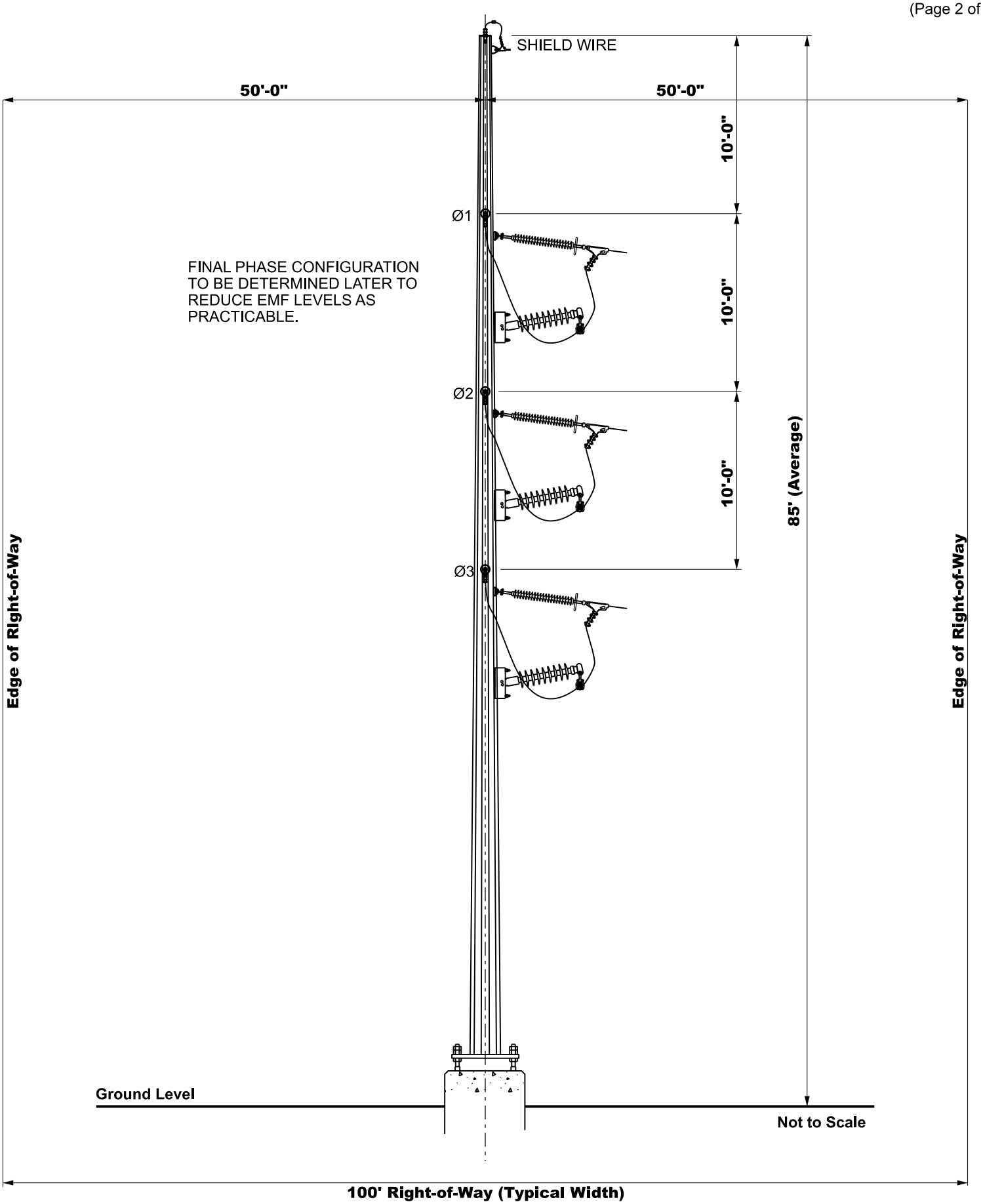
Structure K426-37:
- Upper Pole Splitting



Structure K426-54:
- Pole Cavities

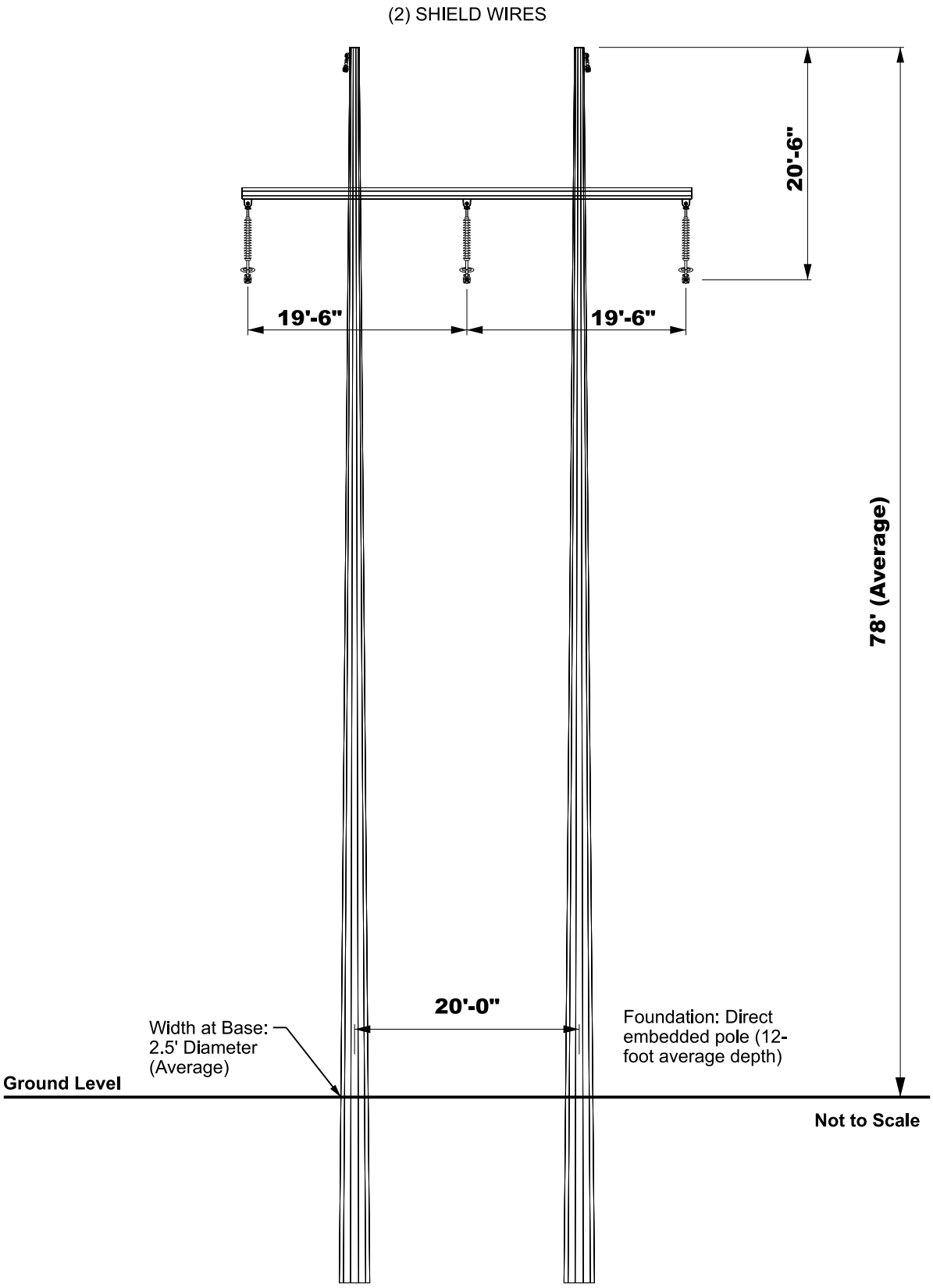


TYPICAL SCHEMATIC

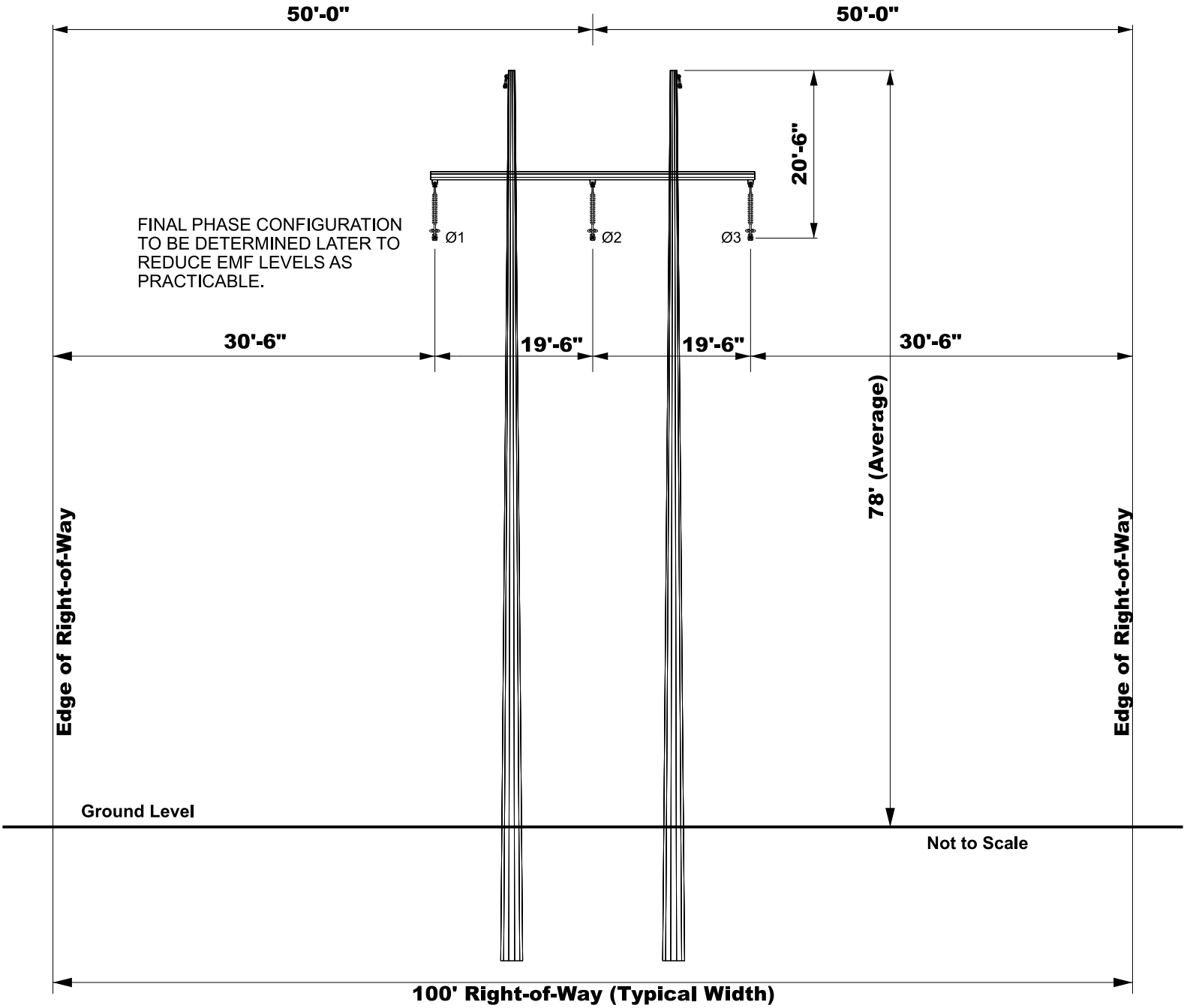


TYPICAL RIGHT-OF-WAY CROSS SECTION

COMPARABLE STRUCTURE PHOTOGRAPH

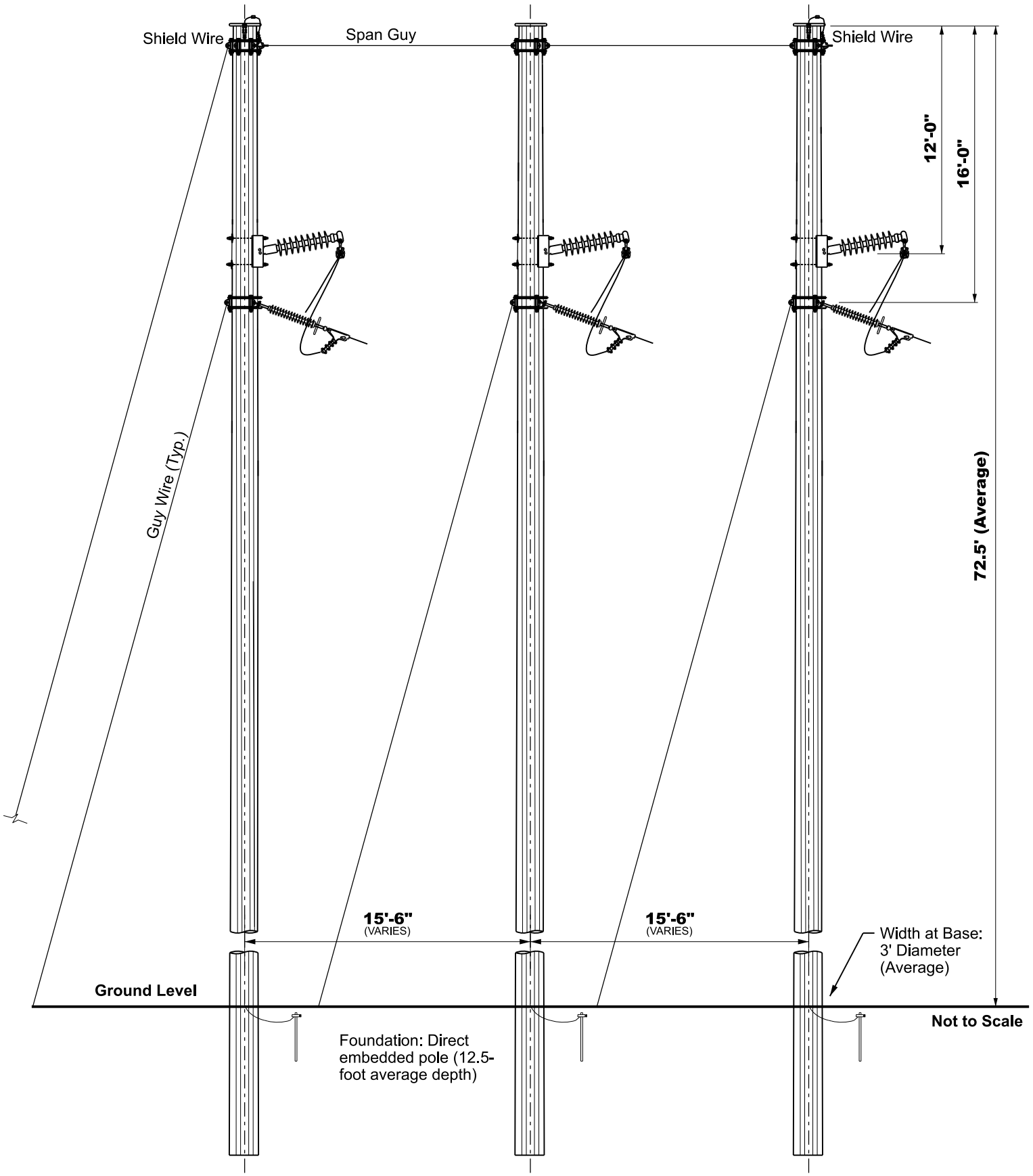


TYPICAL SCHEMATIC



TYPICAL RIGHT-OF-WAY CROSS SECTION

COMPARABLE STRUCTURE PHOTOGRAPH



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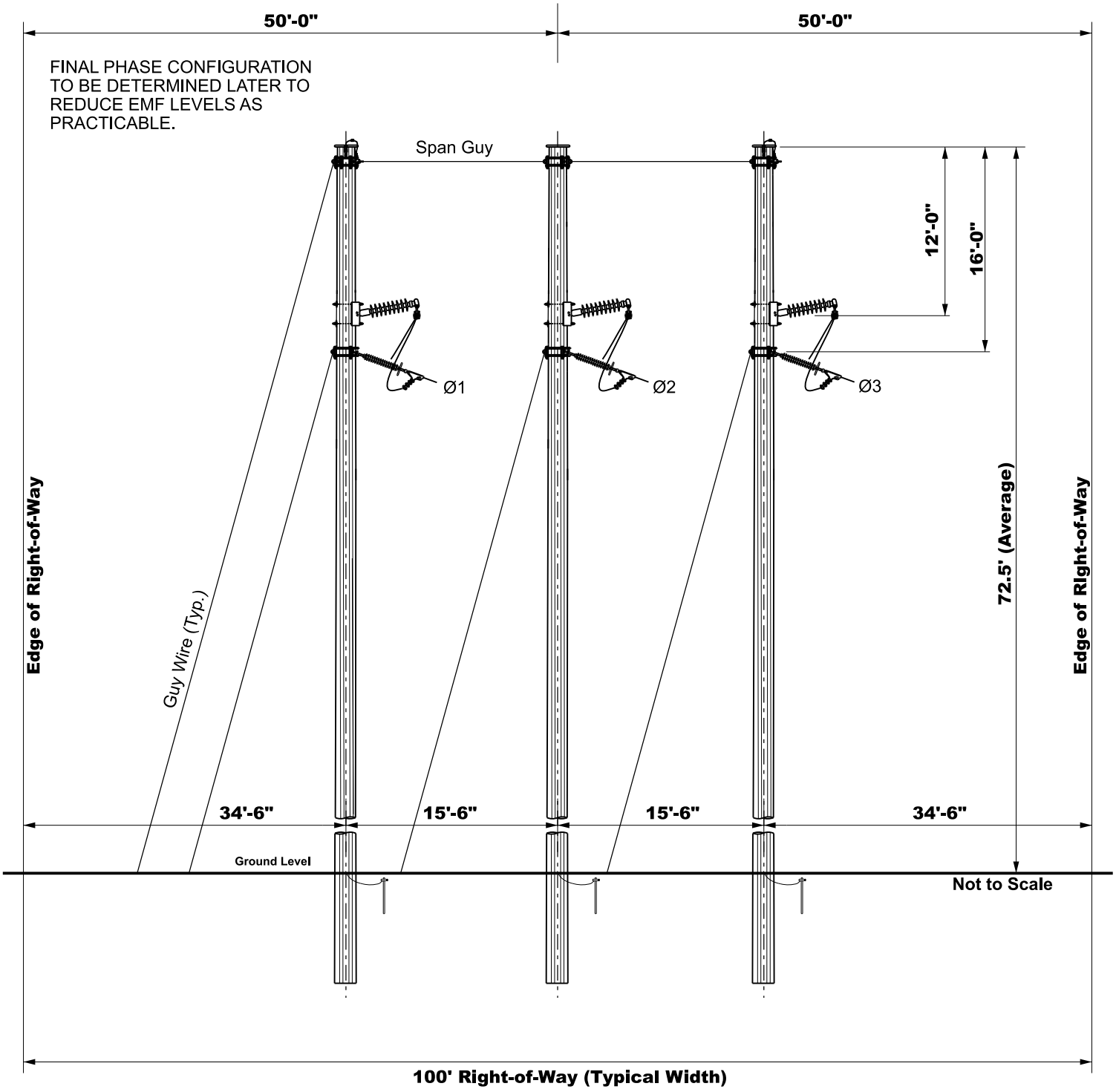
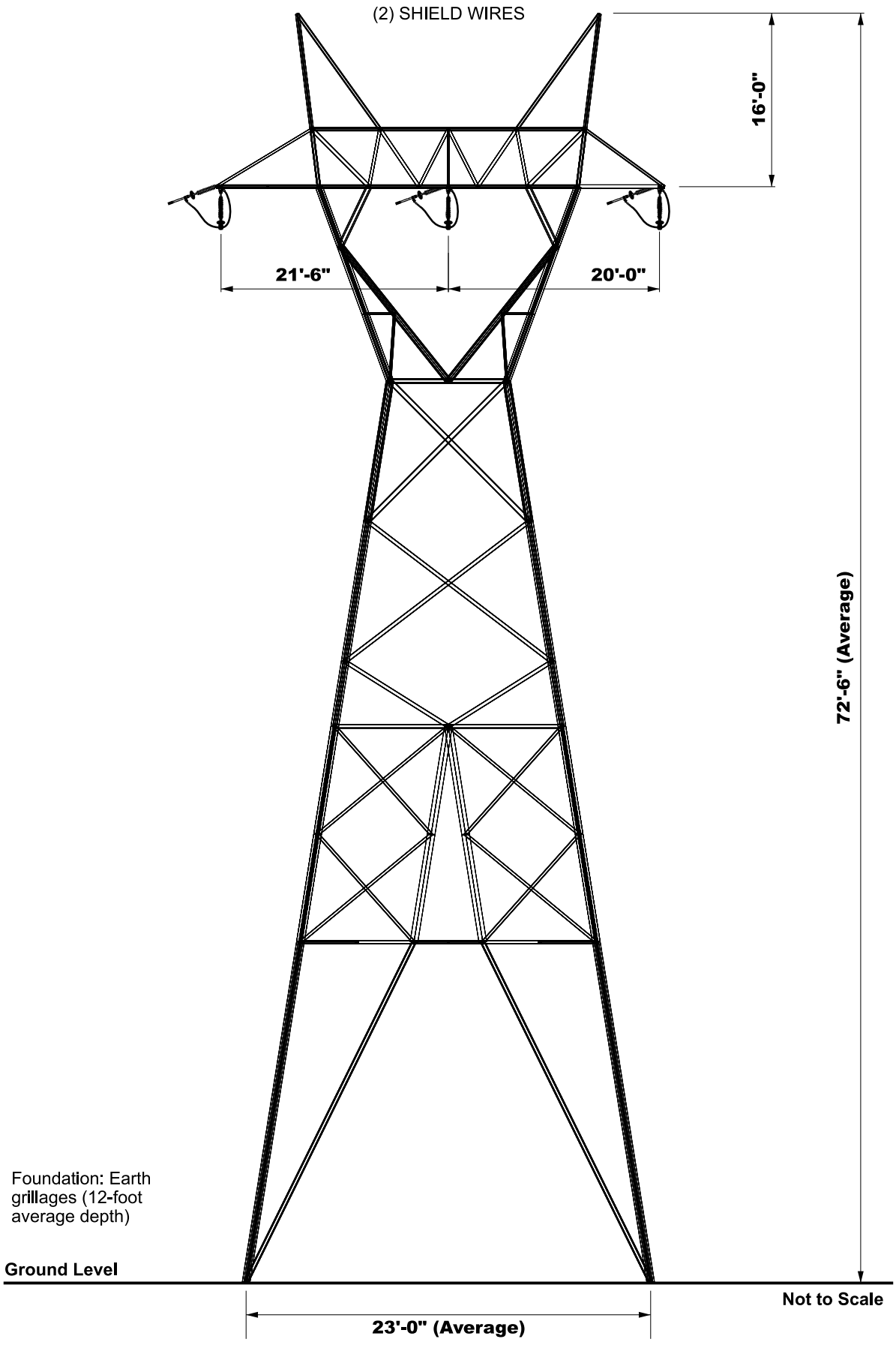


TYPICAL RIGHT-OF-WAY CROSS SECTION

COMPARABLE STRUCTURE PHOTOGRAPH



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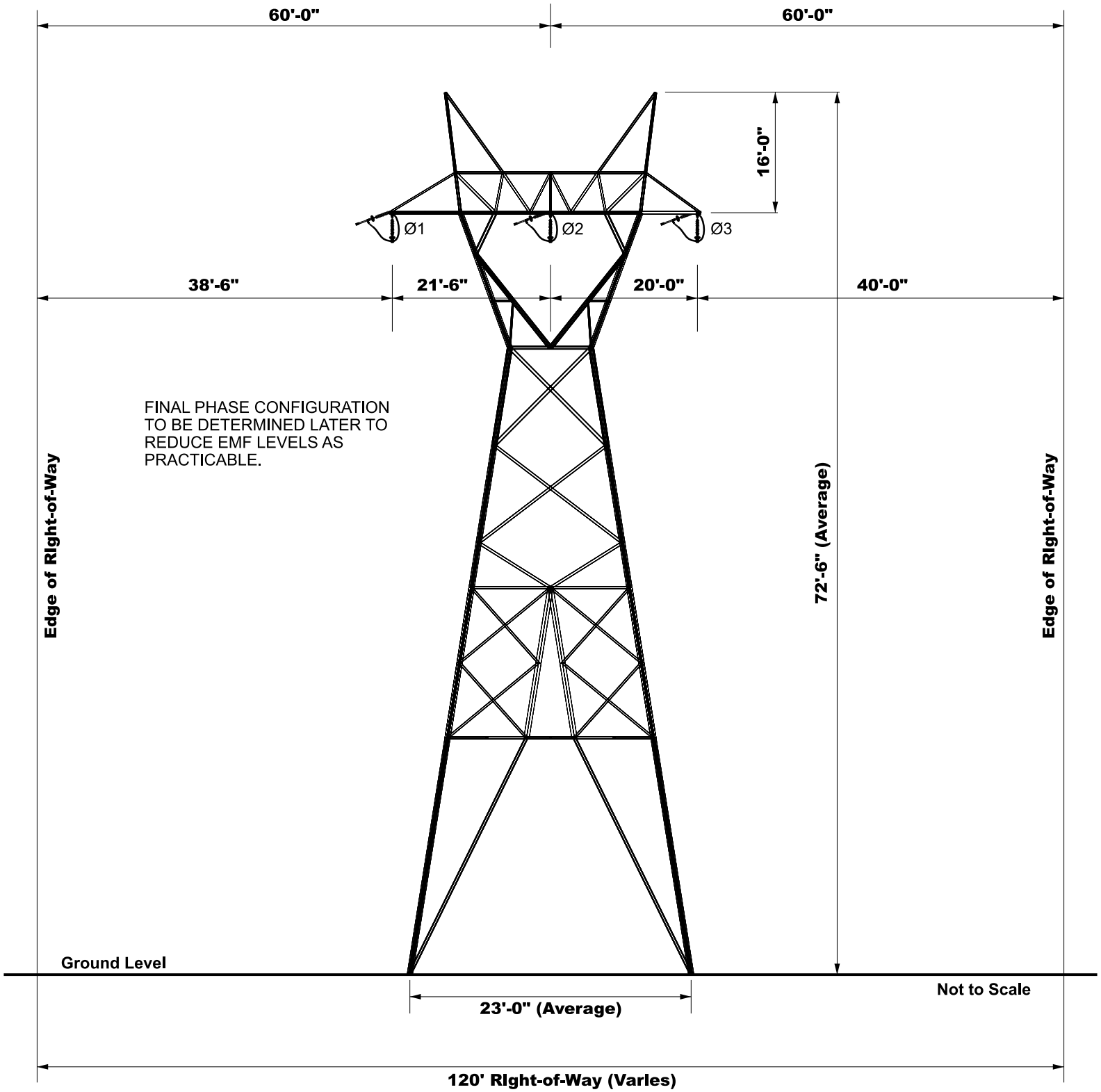

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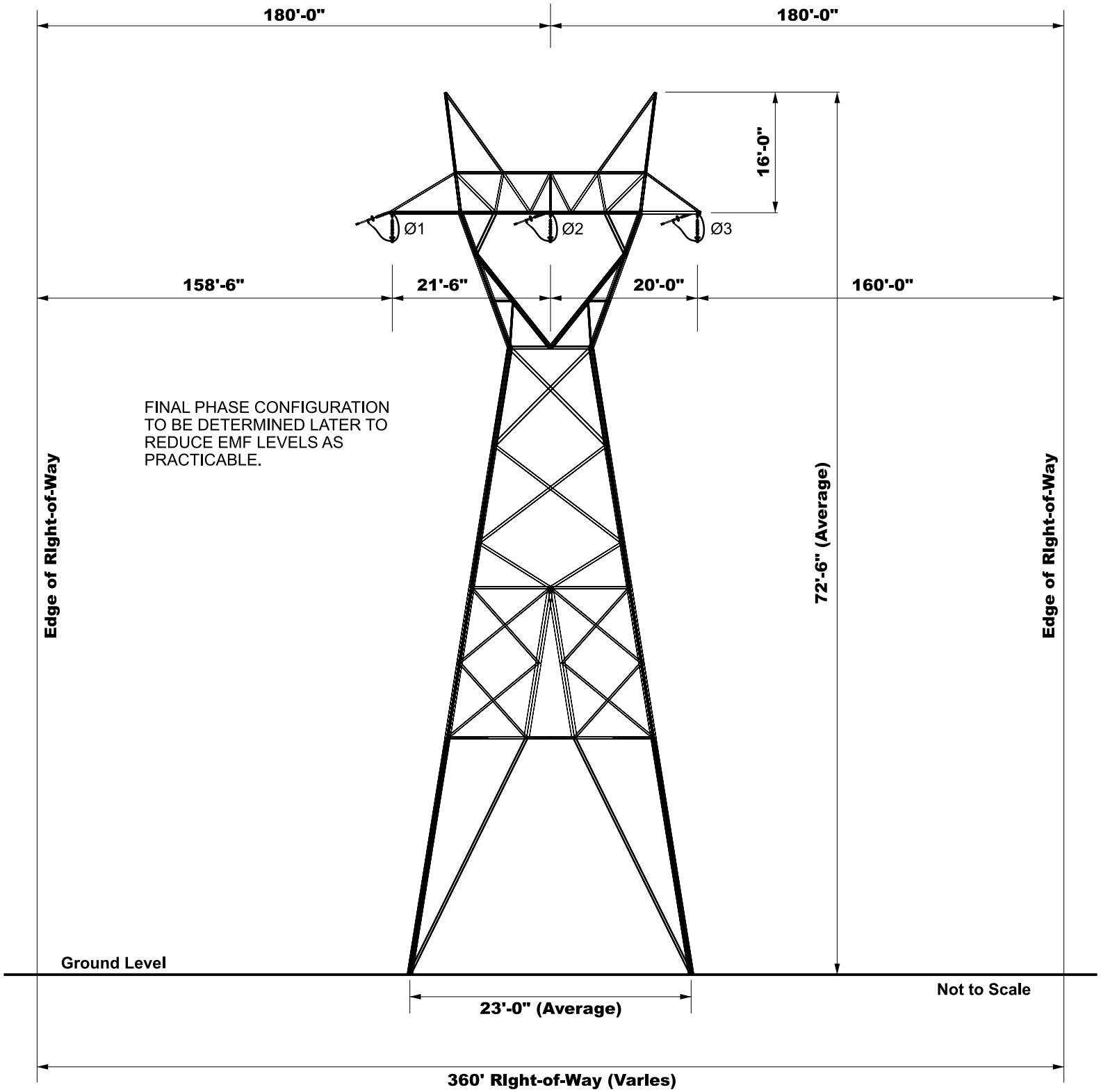


TYPICAL RIGHT-OF-WAY CROSS SECTION

COMPARABLE STRUCTURE PHOTOGRAPH

Siting Study

for

Belfry Area Transmission Line Project

Prepared for:

KENTUCKY POWER
An AEP Company

Prepared by:

GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, Pennsylvania 15120

gai consultants
transforming ideas into reality®

Date: May 2022

Revision: August 2022

TABLE OF CONTENTS

METRIC TABLES

ATTACHMENTS

1.0 PROJECT DESCRIPTION

Kentucky Power (the "Company") is proposing to build approximately 6.5 miles of 69 kilovolt ("kV") transmission line and a new substation (Orinoco Substation) in Pike County, Kentucky ("KY"). The Belfry Area Transmission Line Project (the "Project") is being constructed to allow for the retiring of 8.2 miles of 46kV transmission line with 1940s wooden poles. Approximately 6.5 miles of this retirement is located in Kentucky with the remainder in West Virginia. The new transmission line will be an upgrade to the power grid (46kV to 69kV) routed from the existing New Camp Substation to the proposed Orinoco Substation and then to the existing Stone Substation. These upgrades will strengthen the local electric system, address aging infrastructure, and increase reliability for the area.

The Project will primarily be built using H-frame structures; however, final structure types will be dependent on engineering design and terrain and may include lattice towers and/or three-pole structures. The typical height of the structures will be approximately 80 to 100 feet but will vary along the route depending on topography and constraints. To meet long-term maintenance and safety criteria, the Project will use a typical right-of-way ("ROW") width of approximately 100 feet; however, this may vary along the route depending on Project needs, topography, and specific parcel uses and configurations. See the attached Outreach Fact Sheet (Attachment A) for further information.

The Project will require filing a Certificate of Public Convenience and Necessity application with the Kentucky Public Service Commission ("PSC"). The Company anticipates filing the application with the PSC in August 2022.

The Company initiated the siting process for the Project in spring 2021, with initial study segments being reviewed throughout summer and fall 2021. Study segments were presented to the public on a Project-specific website with a 30-day comment period in August 2021. Pending issuance of all required federal, state, and/or local permits, construction is expected to begin in the spring 2023 and be completed in November 2024.

This Siting Study describes the transmission line route development process and the rational for the proposed route selection.

2.0 ROUTE DEVELOPMENT OVERVIEW

Company electrical planners started the route development process by defining the **Project Endpoints** which included the existing New Camp Substation in the north, the proposed Orinoco Substation located along US Route 119 (US-119), and the Stone Substation near KY Route 199 (KY-199) in Huddy. A **Substation Siting Study** (Attachment B) was completed for the proposed Orinoco Substation to identify the most suitable site.

Next, the Siting Team defined the **Study Area** to develop transmission line routes. The Study Area encompasses the Project Endpoints and the logical area in between (see Attachment C, Map 1). The Study Area spans up to three miles wide (east to west) and is approximately five miles in length (north to south). The Study Area begins approximately one-quarter-mile south and west of the community of South Williamson where the New Camp Substation is located and extends south to the Huddy community where the Stone Substation is located. The eastern boundary of the Study Area tightly follows US-119 in the north and then then loosely follows KY-319 and Narrows Branch as it proceeds south. The western boundary of the Study Area is not associated with roadways or constraints but was developed to allow space for logical route options. The Study Area is generally rural, rugged, mountainous, forested terrain with developed land use in the valleys along major roadways.

Data Collection (see Attachments D, E, and F) and **Constraints and Opportunities** (see Attachment G) mapping were completed for the Study Area. Readily available public data sources were used initially and supplemented with stakeholder input, non-public data, and field inspections. Constraints identified with the Study Area include mining activities, pipelines, rugged terrain, and steep slopes. Constraints were also identified along more densely developed roadways including Forest Hills Road (KY-308) and US-119, where gaps in development suitable for locating a transmission line are limited. Opportunities within the Study Area include large areas of undeveloped forest, existing ROW of transmission lines to be retired, and the ability to locate the route along ridges and span from ridgetop to ridgetop (which can simplify construction).

The Siting Team next developed the siting guidelines to be used in locating the transmission line corridor to achieve three primary goals or objectives. The goals are that the Proposed Route should (1) reasonably avoid or minimize adverse impacts on residential areas and the natural and cultural environment; (2) minimize special design requirements and unreasonable costs; and (3) permit the line to be constructed and operated in a timely, safe, and reliable manner.

The development of **Study Segments** was the next step (see Section 3.0), which are partial alignments connecting the Project Endpoints while avoiding or minimizing constraints to extent possible.

Next, the Study Segments were assembled into logical **Alternative Routes** and a comparison was completed (see Section 4.0). These Alternative Routes were organized for analysis according to two general **Project Components**, the first describing Study Segments between New Camp Substation and Orinoco Substation, and the second describing Study Segments between Orinoco Substation and Stone Substation. Lastly, based on analysis and stakeholder input, the Siting Team

identified a **Proposed Route** and the reasons for the Project's Proposed Route selection are summarized in Section 5.0.

3.0 STUDY SEGMENTS

Study Segments (see Attachment C - Map 2) are partial alignments connecting the Project Endpoints within the Study Area. The Study Segments are developed to meet the Project's functional requirements (engineering and construction) and, at the same time, minimize environmental and socioeconomic impacts and project costs.

The majority of the Study Area is generally rugged, with narrow valleys developed with residential structures and outbuildings. The majority of development is seen along US-119 and in the communities of Belfry and Huddy. The eastern half of the Study Area contains more access opportunities from existing roads. Making use of these opportunities and those mentioned in Section 2.0, the Siting Team developed 17 Study Segment options within the Study Area to connect the New Camp, Orinoco, and Stone Substations.

Five greenfield Study Segments (01, 02, 03, 04, and 05) were developed in the northern portion of the Study Area. Study Segment 01 exits the western side of the New Camp Substation then immediately turns south-southeast to cross several streams and runs along a ridgetop. This is the only Study Segment option for exiting the New Camp Substation as the terrain and orientation of the substation limit additional options. Study Segments 02 and 03 provide two different options for locations to span the residential development along Forest Hills Road before terminating at Study Segment 06. Study Segments 04 and 05 originate from Study Segment 03 and provide two different options for traversing a reclaimed area of previous surface mining.

Two Study Segments (06 and 10) were developed along the existing ROW of the Stone-Sprigg 46kV line that is planned to be retired as part of the Project. Study Segment 06 runs east-west in the middle of the Study Area and would allow for a route option to connect to the proposed Orinoco Substation from the ridges to the west of US-119. Study Segment 10 also runs east-west in the middle of the Study Area and would allow for a route option to the Orinoco Substation from the ridges to the east of US-119.

Ten Study Segments (07, 08, 09, 11, 12, 13, 14, 15, 16, and 17) were developed in the southern portion of the Study Area. The segments are mainly greenfield options, although a few (07, 09, and 12) include portions along existing ROWs of transmission lines to be retired. Study Segment 07 starts at the terminus of Study Segments 02, 04, and 06 and heads south spanning from ridgetop to ridgetop. It was designed as an option for routing the line into the proposed Orinoco Substation from the southwest while also utilizing the existing ROW of the Stone-Sprigg 46kV line to the extent feasible. Study Segment 08 continues from Study Segment 07 to the proposed location of the Orinoco Substation and was intended to have the potential to be a double circuit

in and out of the substation. Study Segment 09 heads southwest from the intersection of Study Segments 07 and 08, running along ridgeline before linking up to the existing ROW of the Stone-Sprigg 46kV line and utilizing it until reaching the Stone Substation, where it terminates.

Study Segment 11 and 12 are options to route the transmission line along the undeveloped ridges east of the proposed Orinoco Substation while also utilizing the Stone-Sprigg 46kV line ROW. Study Segment 14 crosses US-119 in a northeasterly direction before connecting to a ridgeline and following it east-southeast until terminating at Study Segments 13 and 15. Study Segment 13 continues along the same ridgeline to the east-southeast before terminating at the junction of Study Segments 12 and 16.

Study Segments 13, 14, 15, and 16 provide various options along different ridgelines for locating the transmission line between the Orinoco Substation and Stone Substation. Study Segment 17 starts at the terminus of Study Segments 15 and 16 and heads southeast as the only option on the east side of US-119 into the Stone Substation.

These 17 Study Segments can be combined in various ways to link the New Camp, proposed Orinoco, and Stone Substations. In August 2021, these segments were presented to the public with a request for comments during a 30-day comment period. This information was provided via a Project-specific website which included a virtual open house, interactive overview map, fact sheet, updates and news releases, schedule information, and photographs of representative structures. Additionally, two live virtual town halls were conducted at 12:00 pm and 5:00 pm on September 9, 2021, in which a presentation was made by Kentucky Power representatives and landowners were given the opportunity to ask questions. At the conclusion of the 30-day comment period, Kentucky Power received approximately 15 landowner comments. A summary of comments is discussed in Section 4.0.

Kentucky Power also met at various times with stakeholders including local public officials and affected landowners. In the early stages of Study Segment development, members of the Siting Team met with representatives of Pike County on July 7, 2021. These local stakeholders were supportive of the Project and did not foresee major issues or conflicts with the Project. Kentucky Power also met with Tierney Lawrence Land Company, which is a mining company that owns permitted mining areas in the Study Area, and Kinzer Business Reality which owns several parcels within the Study Area.

4.0 ALTERNATIVE ROUTE COMPARISON

At the conclusion of the 30-day comment period, the Siting Team reviewed the Study Segments, constraints, and comments in detail to determine if any Study Segments should be revised or eliminated. Comments were well dispersed along the entire Study Segment network and included requests for additional information, landowners providing feedback as to potentially sensitive locations on their properties, and concerns regarding future development plans. After the public comment period had ended, Kentucky Power ROW representatives reached out to key landowners along the Study Segments to request additional feedback and permission to survey. This effort led to receipt of additional comments, including from a landowner in the vicinity of the New Camp Substation expressing concern regarding the impact to the property. This property cannot be avoided due to the orientation and size of the property in relation to the existing substation. Kentucky Power ROW representatives will continue to work with this property owner to address their concerns to the extent possible.

As a result of the Study Segment review, Study Segment 02 was eliminated due to engineering concerns regarding the potential need to remove residences from beneath the span across Forest Hills Road to accommodate blowout. Additionally, this span would require the structure south of Forest Hills Road to be placed in a swale to make sufficient use of the undeveloped area along the roadway as ROW. Study Segment 06 became unnecessary as Alternative Routes were formed, and it was also eliminated.

As a result of public comments, the Siting Team also reviewed an additional option for routing the transmission line between the New Camp and Orinoco Substations. This option would route the line further west than the proposed Study Segments, with the intention of spanning Forest Hills Road in a less developed area. The Siting Team found few areas along Forest Hills Road that would allow the transmission line to span without requiring purchase of residences to accommodate blowout and sufficient to allow the transmission line to span from ridgetop to ridgetop. Additionally, the overall length of the transmission line would be approximately 0.6-mile longer than the existing option that spans Forest Hills Road. Given that options exist for spanning Forest Hills Road in an area that could accommodate blowout without requiring the purchase of residences, coupled with the shorter line length, the option of locating the transmission line further to the west was ultimately eliminated.

Within the New Camp-Orinoco Project Component area, the remaining Study Segments were combined into three Alternative Routes (A, B, and C). Alternative Route A was developed as an option that crossed Forest Hills Road in a location that would not require purchase of residences for blowout concerns and would utilize the existing ROW of the Stone-Sprigg 46kV line on the east side of US-119 for approximately 2,000 feet. Alternative Route B follows the same alignment as Alternative Route A; however, it follows the existing ROW of the Stone-Sprigg 46kV line for an

additional 2,600 feet to the east (4,600 feet total) until reaching the next ridgeline where it turns south. It follows this ridgeline for approximately 3,900 feet before turning west and intersecting the alignment of Alternative Route A, which it follows into the Orinoco Substation. Alternative Route C is similarly situated to Alternative Routes A and B until it spans Forest Hills Road. At this point it diverges to utilize the existing ROW of the Stone-Sprigg 46kV line on the west side of US-119 for approximately 3,600 feet before turning to enter the Orinoco Substation on its southwestern side.

Three Alternative Routes (D, E, and F) were developed within the Orinoco-Stone Project Component area. Alternative Route D was developed as an option that utilizes the existing ROW of the Stone-Sprigg 46kV line to the extent feasible, traversing the ridges to the west of US-119 and entering the Stone Substation on its southern side. Alternative E is a greenfield route option that traverses the ridges to the east of US-119 before entering the Stone Substation on its northern side. Alternative Route F is also a route option east of US-119 that enters the Stone Substation on its northern side; however, this option is located on the ridges to the east of Alternative Route E making it a longer route option situated further from the development along US-119.

The following compares the Alternative Routes within each Project Component (see Attachment C – Map 3).

Natural Environment

The natural environment includes water, soil, sensitive species, and wildlife habitat. Potential impacts are based on publicly available maps and data as well as coordination with federal, state, and local agencies, as practical. In many cases, the length of an Alternative Route is a good indication of how impactful to the natural environment it may be. The longer the Alternative Route, the more opportunities for impacting streams, wetlands, or other sensitive features including tree clearing. Longer Alternative Routes typically require more structures and access roads, and in areas that are heavily forested, more tree clearing is required which can negatively impact the habitats of many species, including threatened and endangered bat species. Within the New Camp-Orinoco Project Component, the Alternative Route options vary substantially in length. Alternative Route B is the longest option at 5.7 miles. It also would require the most tree clearing with approximately 58.3 acres even though it is the route option that utilizes the existing ROW of the Stone-Sprigg 46kV line to the greatest extent (for nearly 0.90-mile). Conversely, Alternative Route C is the shortest option between the New Camp and Orinoco Substations (4.3 miles) and requires the least amount of tree clearing with approximately 41.5 acres. This Alternative Route also follows the existing ROW of the Stone-Sprigg 46kV line for a portion of its alignment (approximately 4,000-feet). Review of recent aerial imagery also identified potential existing access corridors to the existing ROW in this area that could be used during construction.

Similar roads are also visible near Alternative Routes A and B; however, these roads are associated with pipelines and/or not as well defined as those accessing Alternative Route C. The length and tree clearing impacts associated with Alternative Route A falls between the other route options, at 4.7 miles long and approximately 49.6 acres of tree clearing. None of the Alternative Routes cross National Wetland Inventory (NWI) wetland areas, and each crosses a similar number of streams. Alternative Routes A and B each cross approximately 1.0-acre of floodplain, mostly associated with the spanning of Pond Creek and its associated floodplain along US-119. Alternative Route C, however, only spans 0.1-acre of floodplain associated with Road Fork along Forest Hills Road. No impact to these floodplains is anticipated. Based on this review, Alternative Route C is anticipated to have less of an impact on the natural environment due to it being the shortest option requiring fewer structures and likely less access roads and for requiring less tree clearing and maximizing use of the existing ROW.

Within the Orinoco-Stone Project Component, three Alternative Route options were developed. Alternative Route D, while not the shortest at 2.3 miles, would require the least amount of tree clearing (approximately 15.4 acres) due to it being the route option that maximizes use of the existing ROW of the Stone-Sprigg 46kV line. Alternative Route E, which is a greenfield route located to the east of US-119, is the shortest route option at 2.2 miles and requires approximately 26.5 acres of tree clearing. Alternative Route F is the longest route option at 2.7 miles. It is also a greenfield route and would require the most tree clearing with approximately 31.9 acres. None of the Alternative Routes cross NWI wetland areas, and each crosses a similar number of streams. Based on this review, even though it is not the shortest, Alternative Route D is anticipated to have less of an impact on the natural environment due to it maximizing use of the existing ROW, thereby reducing the amount of necessary tree clearing.

Human Environment

The human environment consists of the human use of the land and activities at a given location such as agricultural, forestry, residential, industrial, mining, commercial, institutional, scenic assets, and recreational uses. Within the New Camp-Orinoco Project Component area, land use in the Study Area is mostly undeveloped forest with natural gas pipeline infrastructure scattered throughout. Development is generally limited to stream valleys with roadways, with the most developed roadways being Forest Hills Road and US-119. Alternative Route C crosses nearest to an active mining operation. However, coordination with the mine indicated this alignment was conducive to their future plans. Alternative Routes A and B avoids the active areas of the mine but would still require spanning areas of historic mining. With regard to landowner impacts, Alternative Route C crosses substantially fewer parcels (23) as compared to Alternative Route A (41) and Alternative Route B (47). Each Alternative Route avoids buildings within the proposed 100-foot ROW. At further distances, the distribution of residences and other buildings is generally correlated with the overall length of each Alternative Route. For instance, Alternative Route B

(the longest Alternative Route) is the only route option with a residence within 100 feet of its centerline. At 500 feet from centerline, Alternative Route B again has the most residences at 28, while the Alternative Route A and C have 21 and 23 residences, respectively. Based on this review, Alternative Route C impacts substantially fewer parcels and landowners overall compared to the other Alternative Routes. Therefore, it is anticipated that construction of Alternative Route C would have less of an impact on the human environment.

Land use within the Orinoco-Stone Project Component is similar to that of the New Camp-Orinoco Project Component area. Land use mostly consists of undeveloped forest with development associated with stream valleys with roadways; the most developed is the US-119 corridor including the communities of Belfry and Huddy. The Alternative Routes each cross a similar number of parcels, with the highest number being crossed by Alternative Route E (22), the lowest being crossed by Alternative Route F (17), and Alternative Route D crossing 19. Interestingly, the longest Alternative Route crosses the least number of parcels (Alternative Route F). This can be attributed to Alternative Route F being located at a further distance from US-119, where parcels are generally much larger. Alternative Route D contains two outbuildings and one commercial building (an apparent autobody shop) within the 100-foot ROW. These buildings are located directly outside the Stone Substation and would require removal prior to energizing the transmission line. There are no buildings within the 100-foot ROW of Alternative Routes E or F. Alternative D has one residence within 100 feet of the centerline. It is the only alternative with a residence within this distance. Alternative Route D also has the highest number of residences within the 250 and 500 feet from centerline metrics. Based on this review, even though it is not the shortest, Alternative Route F is anticipated to have less of an impact on the human environment. It impacts the fewest number of parcels and does not require removal of buildings from its ROW. Alternative Route E is similar in overall impacts. It impacts five additional parcels, is shorter, and does not require removal of buildings from its ROW.

Constructability

Constructability is the ability to efficiently and cost effectively engineer, acquire ROW, construct, operate, and maintain the proposed transmission line. Major factors include safety, steep topography, condensed ROWs, heavy angles (greater than 30 percent), access, ability to parallel or use existing ROWs, proximity to major highways, etc. The Study Area's undeveloped regions are generally comprised of mountainous terrain with steep side slopes. The Siting Team identified key areas where slide and slip development appeared to be a risk. These areas were reviewed by engineers and construction managers both via desktop resources and in the field to assess the constructability of each route being explored. While this investigation did not identify fatal flaws along the routes, a number of areas were identified that indicate the presence of previous landslides or risk of sliding in the future. To reduce the risk of slide and slip development throughout the Study Area, selecting a route option that is shorter will likely require fewer

structures and access roads, thus crossing a lesser amount of steep slopes. Additionally, geologic and mining hazards can impact the constructability of a project. The entire Study Area has areas of current and historic mining (both deep and surface mining). Numerous natural gas wells are also located in the project vicinity, some of which may be unrecorded. Constraints regarding geologic and mining hazards will require further investigation during final design.

Where feasible, each Alternative Route was situated to utilize the topography to reduce the need for heavily angled structures and the required number of structures, utilize ridgelines, span roadways and stream valleys, and utilize existing ROW.

Within the New Camp-Orinoco Project Component, Alternative Route A would cross approximately 4.0 miles of steep slopes (defined as slopes greater than 20 percent). It avoids an area of active mining. However, it (as well as Alternative Route B) does still span reclaimed mining areas. Once Alternative Route A crosses US-119, it follows a ridgeline to the south that contains a natural gas pipeline ROW. Constructing Alternative Route A in this area may require special engineering design to avoid interference with the pipeline and special construction techniques and protections to abate physical and chemical interactions between the pipeline and transmission line and access roads. Alternative Route B avoids potential issues with the pipeline by continuing further to the east to utilize an adjacent ridgeline. However, this substantially increases its length, making it a mile longer than Alternative Route A. The additional length would likely require more structures and access roads be constructed. Additionally, Alternative Route B crosses the greatest extent of steep slopes with approximately 4.6 miles. Both Alternative Routes A and B would each require two crossings of US-119. Alternative Route C avoids the pipeline by utilizing the existing ROW of the Stone-Sprigg 46kV line on the west side of US-119. Being the shortest route option, it also crosses the fewest steep slopes (approximately 3.8 miles) and would likely require fewer structures and access roads. It also does not require the spanning of US-119. Alternative Route C is located the closest to active mining operations, however, coordination with the mine indicated that its alignment was conducive to their future plans. Additionally, review of recent aerial imagery also identified potential existing access corridors to the existing ROW in this area that could be used during construction, many of which appear to be associated with the mine and others associated with the existing ROW of the Stone-Sprigg 46kV line. Based on this review, Alternative Route C is anticipated to be the most constructable route option due to it being the shortest option and likely requiring fewer structures and access roads, utilizes approximately 0.7 mile of existing transmission line ROW, avoids co-location with pipeline infrastructure, and avoids the need to span US-119.

Within the Orinoco-Stone Project Component, Alternative Route D is the only option that utilizes the existing ROW of the Stone-Sprigg 46kV line. While utilizing existing ROW is typically an opportunity, review of this particular ROW by engineering team members determined that

portions of the ROW are located in areas of steep terrain that would make construction difficult and potentially increase the likelihood of slides and slips, with the most difficult areas located on the hillsides outside of the Stone Substation. Alternative Route D would also require entering the Stone Substation on its southern side, which was determined to be less desirable by the engineering team. Additionally, since Alternative Route D utilizes existing ROW for 1.6 miles (well over half its length), its construction timeline is highly susceptible to issues regarding outage constraints associated with the Stone-Sprigg 46kV line. Conversely, Alternative Routes E and F are greenfield options located to the east of US-119. Alternative Route E is also the shortest option (2.2 miles) and crosses the fewest steep slopes (approximately 1.9 miles). Compared to Alternative Route F, which is the longest option (2.7 miles) and requires crossing the greatest extent of steep slopes (approximately 2.3 miles), Alternative Route E will likely require fewer structures and access roads for its construction. Both Alternative Routes E and F will allow for the Orinoco Substation to be energized before the existing Belfry Substation and the Stone-Sprigg 46kV line are taken out of service. Therefore, there would be no outage constraint associated with these options. Based on this review, Alternative Route E is anticipated to be the most constructable route option due to it being the shortest option and likely requiring fewer structures and access roads, avoiding terrain and outage issues associated with the existing ROW, and entering the Stone Substation on its preferred side (north side).

5.0 PROPOSED ROUTE

Based on stakeholder input and analysis, the Siting Team identified Alternative Route C within the New Camp-Orinoco Project Component and Alternative Route E within the Orinoco-Stone Project Component as the **Proposed Route.** Between the New Camp and Orinoco Substations, the Proposed Route is comprised of the route option that is the shortest (likely requiring fewer structures and access roads), it utilizes approximately 0.7 mile of the existing Stone-Sprigg transmission line ROW, it may be able to utilize existing access roads in the vicinity of the mine and the portion that follows the existing ROW, has the lowest amount of tree clearing, avoids known pipeline infrastructure, and does not require spanning US-119. While the other route options between the New Camp and Orinoco Substation are constructable, utilizing them as the Proposed Route would require the transmission line to be unnecessarily longer, potentially increase the risks of slides and slips due to additional access roads and structures, span US-119 twice, and potentially interfere with pipeline infrastructure.

Between the proposed Orinoco Substation and the Stone Substation, Alternative Route E was selected for the Proposed Route as it is the shortest route option (likely requiring fewer structures and access roads), is not outage constrained, enters the Stone Substation on the preferred side, and crosses the lowest extent of steep slopes. Alternative Route D, which utilizes existing ROW to the greatest extent, was ultimately not selected as the Proposed Route due to

concerns regarding the steep terrain crossed, outage constraints, the likelihood of needing to purchase and remove buildings within the ROW, and the orientation of the entrance into Stone Substation. Alternative Route F was removed from consideration due to its unnecessary length as compared to Alternative Route E.

Ultimately, the Proposed Route is comprised of the shortest route options between each substation, it utilizes a portion of the existing ROW of the Stone-Sprigg 46kV line while minimizing engineering concerns related to outages and terrain, it avoids known pipeline infrastructure, and it enters the Stone Substation on its northern (preferred) side. Construction of Alternative Routes C and E will also allow for an "in-and-out" alignment as the line enters and exits the proposed Orinoco Substation, as opposed to double circuiting in areas already constrained by the terrain. Selecting other Alternative Routes for the Proposed Route would unnecessarily increase line length or require construction in close proximity to pipeline infrastructure or on less conducive topography.

Collectively, the Siting Team determined the Proposed Route (**Attachment C – Map 4 and Attachment H**) meets the goal of minimizing impacts on land use and the natural and cultural resources along the Project, while avoiding circuitous routes, extreme costs, and non-standard design requirements. After selection of the Proposed Route, minor adjustments were made for engineering purposes. These are reflected on Map 4 and Attachment H.

Metric Tables

Table 1. Natural Environment Evaluation Criteria							
		New Camp-Orinoco			Orinoco-Stone		
Alternative Route	**Unit**	**A**	**B**	**C**	**D**	**E**	**F**
General							
Length	miles	4.7	5.7	4.2	2.3	2.3	2.7
Water Resources							
Total streams crossed	count	6	7	5	3	2	1
Special designated waters crossed	count	0	0	0	0	0	0
Forested wetlands in the ROW (NWI)	acres	0.0	0.0	0.0	0.0	0.0	0.0
PEM/PSS wetlands in the ROW (NWI)	acres	0.0	0.0	0.0	0.0	0.0	0.0
Waterbody (lakes, ponds, reservoirs etc.) crossings	feet	0.0	0.0	0.0	0.0	0.0	0.0
FEMA-designated floodplain crossed by ROW	acres	1.0	1.0	0.1	0.6	0.3	0.3
Geological and Soil Resources							
Prime and unique farmland foil in the ROW[1]	acres	0.0	0.0	0.0	0.0	0.0	0.0
Farmland of statewide importance in the ROW[2]	acres	0.0	0.0	0.0	0.0	0.0	0.0
Karst topography in the ROW	acres	0.0	0.0	0.0	0.0	0.0	0.0
Known caves or mines in the ROW	count	2	3	3	0	0	0
Wildlife and Habitat							
Tree clearing required in the ROW (digitized based on aerial photography)	acres	49.6	58.3	41.5	15.4	26.5	31.9
Designated natural areas crossed by the ROW	acres	0.0	0.0	0.0	0.0	0.0	0.0
Designated natural areas within 250 feet of the ROW	count	0	0	0	0	0	0

[1] Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops.

[2] Soils that do not meet the prime farmland category but are still recognized for their productivity by states may qualify as soils of statewide importance.

Table 2. Human Environment Evaluation Criteria							
		New Camp-Orinoco			Orinoco-Stone		
Alternative Route	**Unit**	**A**	**B**	**C**	**D**	**E**	**F**
General							
Length	miles	4.7	5.7	4.2	2.3	2.3	2.7
Number of parcels[3] crossed	count	41	47	23	19	22	17
Landowners within ROW	count	29	33	16	13	19	13
Residential							
Barns, outbuildings, sheds, garages and silos in the ROW (excludes abandoned features)	count	0	0	0	2	0	0
Residences/single-family dwellings within ROW	count	0	0	0	0	0	0
Residences/single-family dwellings within 100 feet of centerline	count	0	1	0	1	0	0
Residences/single-family dwellings within 250 feet of centerline	count	6	8	4	4	3	3
Residences/single-family dwellings within 500 feet of centerline	count	21	28	23	21	9	10
Multi-family dwellings[4] within ROW	count	0	0	0	0	0	0
Multi-family dwellings within 250 feet of centerline	count	0	0	0	1	0	0
Multi-family dwellings within 500 feet of centerline	count	0	0	0	1	0	0
Commercial/Industrial							
Businesses/commercial buildings[5] within the ROW	count	0	0	0	1	0	0
Businesses/commercial buildings within 250 feet of the centerline	count	1	1	2	2	2	2
Businesses/commercial buildings within 500 feet of the centerline	count	5	5	8	7	6	5
Mining areas crossed	count	12	12	15	1	2	4
Quarries crossed	count	0	0	0	0	0	0
Agricultural							
Pasture/rangeland crossed in ROW (based on NLCD data)	acres	0.5	0.5	0.2	0.0	0.3	0.3
Cropland crossed in ROW (based on NLCD data)	acres	0.0	0.0	0.0	0.0	0.0	0.0
Tree farms/orchards crossed in ROW	acres	0.0	0.0	0.0	0.0	0.0	0.0
Community/Recreational Facilities							
Schools within 1,000 feet of centerline	count	1	1	0	0	0	0
Designated places of worship within 1,000 feet of centerline	count	0	0	1	1	0	0
Cemeteries within 250 feet of centerline	count	1	1	0	0	1	1
Hospitals and assisted living facilities within 250 feet of centerline	count	0	0	0	0	0	0
Parks and recreation areas crossed by the ROW	count	0	0	0	0	0	0
Scenic byways crossed	count	0	0	0	0	0	0
Protected Land							
Federal/state land crossed by ROW	acres	0.0	0.0	0.0	0.0	0.0	0.0
Conservation easements crossed by the ROW	acres	0.0	0.0	0.0	0.0	0.0	0.0
Local public lands crossed by ROW	acres	0.0	0.0	0.0	0.0	0.0	0.0

[3] The number of parcels crossed refers to the number of individual plots of owned land recorded by each County. The number of landowners within the ROW represent the number of individual landowners, who each may own one or more parcels.
[4] Multi-family dwellings include townhome, condominium, and apartment complexes, and duplexes
[5] Commercial development includes retail, service, office, restaurants, and lodging establishments

Table 2. Human Environment Evaluation Criteria							
		New Camp-Orinoco			Orinoco-Stone		
Alternative Route	**Unit**	**A**	**B**	**C**	**D**	**E**	**F**
Cultural Resources							
National Register Historic Places-listed and eligible architectural resources within one mile of the centerline	count	0	0	0	42	42	42
National Historic Landmarks within one mile of the centerline[6]	count	0	0	0	0	0	0
NRHP-listed Historic Districts within one mile of the centerline	count	0	0	0	1	1	1
NRHP-listed and eligible archaeological sites within ROW	count	0	0	0	0	0	0

[6] The 42 resources identified within one-mile of each Alternative Route between Orinoco and Stone Substations are encompassed by the Stone Historic District, which is located 0.15-mile south of Stone Substation. No impact, including visual, to the district or its resources is anticipated due to terrain and layout of the historic district.

Table 3. Constructability Evaluation Criteria							
		New Camp-Orinoco			Orinoco-Stone		
Alternative Route	**Unit**	**A**	**B**	**C**	**D**	**E**	**F**
General							
Length	miles	4.7	5.7	4.2	2.3	2.3	2.7
Transportation Resources							
Interstate highways crossed	count	0	0	0	0	0	0
U.S. highways crossed	count	2	2	0	1	1	1
State highways crossed	count	1	1	1	1	0	0
Local roads and streets crossed	count	0	1	2	2	1	0
Railroads crossed	count	0	0	0	0	0	0
Airports within one mile of the centerline	count	2	2	2	0	0	0
Utility Resources							
Oil and gas pipelines crossed	count	0	2	0	0	0	2
Communication towers within 1,000 feet of the centerline	count	4	2	7	4	3	1
Existing Transmission Lines Crossed (excluding the line being rebuilt)	count	1	1	1	0	0	0
Engineering and Geotechnical Considerations							
Steep slopes crossed by ROW (>20%)	miles	4.0	4.6	3.8	2.0	1.9	2.3
Heavy angles, greater than 30 degrees	count	6	7	7	5	4	3
Rights-of-Way Rebuild/Parallel							
Existing transmission lines rebuild or paralleled	miles	0.3	0.8	0.7	1.6	0.0	0.0
Existing distribution lines paralleled or underbuilt	miles	0.0	0.0	0.0	0.0	0.0	0.0
Existing transmission lines rebuilt	miles	0.0	0.0	0.0	0.0	0.0	0.0
Oil and Gas Pipeline paralleled	miles	0.3	0.0	0.0	0.0	0.0	0.1
Interstate highways, U.S. highways, State highways, and local roads paralleled	miles	0.0	0.0	0.0	0.0	0.0	0.0
Railroad paralleled	miles	0.0	0.0	0.0	0.0	0.0	0.0

Attachment A: Outreach Fact Sheet

BELFRY AREA
TRANSMISSION LINE PROJECT

Kentucky Power representatives plan to upgrade the electric transmission grid in Pike County. The Belfry Area Transmission Line Project involves building 6-8 miles of 69-kilovolt (kV) electric transmission line and an electrical substation to enhance electric reliability for area customers.

WHAT

The project involves:

- Building 6-8 miles of 69-kV transmission line
- Retiring approximately 9 miles of 46-kV transmission line
- Building the Orinoco Substation
- Retiring the Belfry Substation

This project involves filing an application with the Kentucky Public Service Commission.

WHY

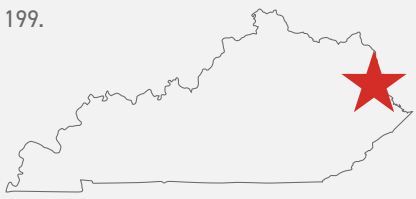
Project benefits include:

- Retiring approximately 9 miles of transmission line that includes wooden poles from the 1940's. The line has experienced multiple power outages in recent years.
- Providing a second source of power to customers served from the New Camp Substation.
- Upgrading the power grid from a 46-kV system to 69-kV, strengthening the local electric system and increasing reliability for area customers.

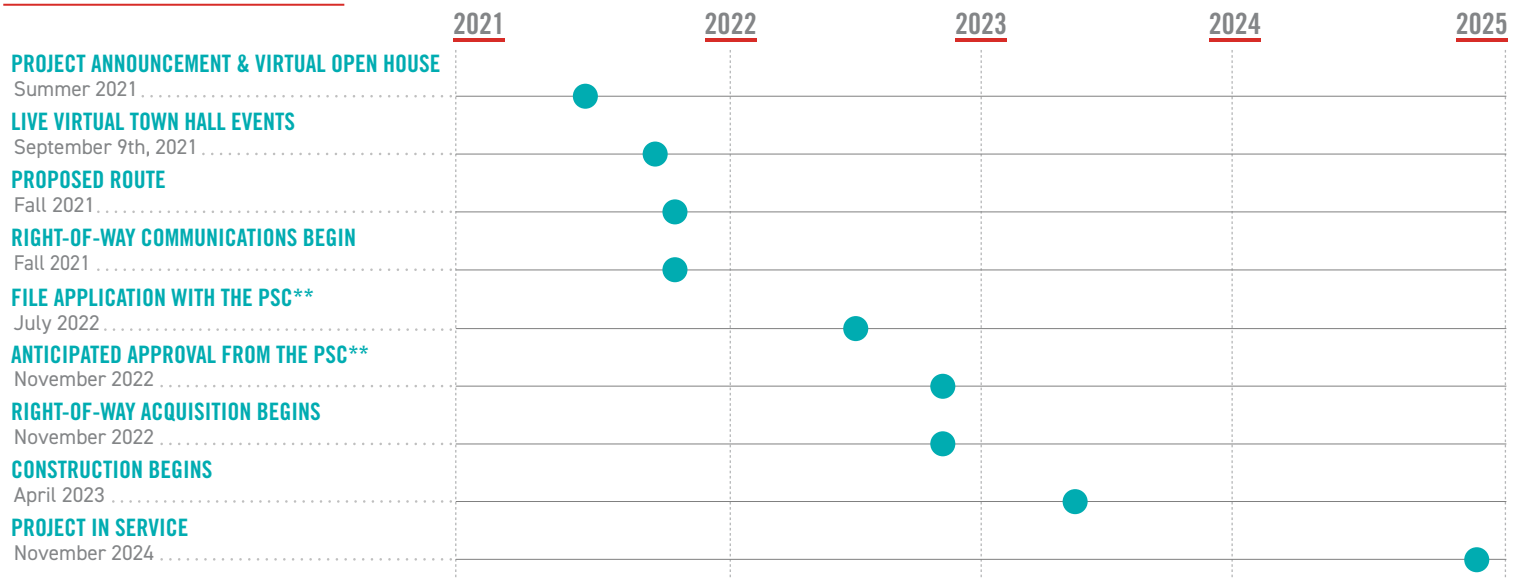
WHERE

The project begins at the New Camp Substation in South Williamson and continues southeast to the proposed Orinoco Substation located along Route 119.

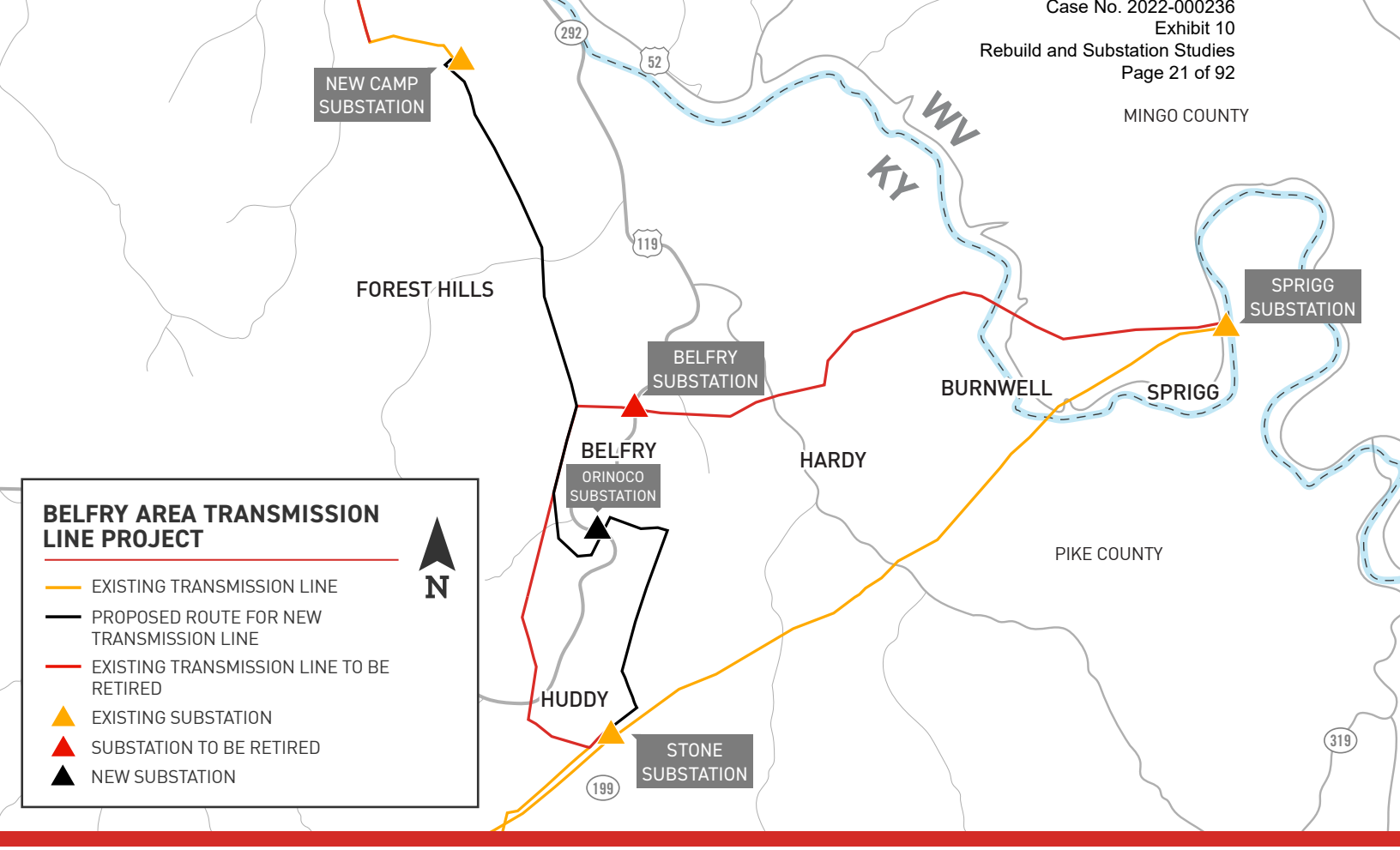
From there the project continues south through Belfry to the Stone Substation near Route 199.



PROJECT SCHEDULE



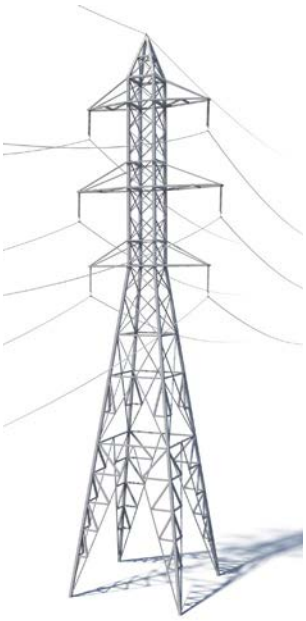
**Kentucky Public Service Commission *Timeline subject to change

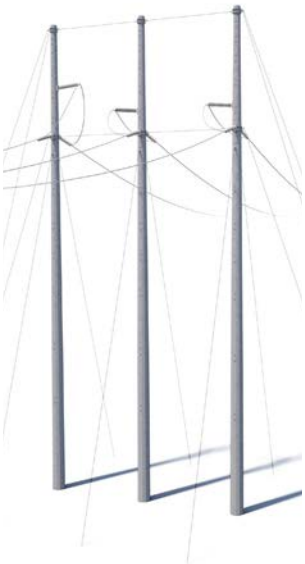


TYPICAL STRUCTURES

Crews plan to install primarily H-frames. At certain points, crews could use Lattice towers and three-pole structures with guy wire.

Typical Structure Height:
Approximately 80-100 feet*
Typical Right-of-Way Width:
Approximately 100 feet*





*PRIMARY STRUCTURE TO BE USED

H-FRAME* | **LATTICE TOWER** | **THREE-POLE STRUCTURES**

*Exact structure, height and right-of-way requirements may vary

KENTUCKY POWER VALUES YOUR INPUT ABOUT THIS PROJECT. PLEASE SEND COMMENTS AND QUESTIONS TO:

CORTNEY MUSTARD
Project Outreach Specialist
833-760-0604
KentuckyPowerOutreach@aep.com
KentuckyPower.com/Belfry

KENTUCKY POWER
An AEP Company
BOUNDLESS ENERGY™

03/18/2022

Attachment B: Substation Siting Study

Substation Siting Study

Orinoco Substation Project

Prepared for:

KENTUCKY POWER
An AEP Company

Prepared by:

GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, Pennsylvania 15120

gai consultants
transforming ideas into reality

Date: August 2022

Revision: N/A

TABLE OF CONTENTS

Figures

Table

Attachments

1.0 INTRODUCTION

Kentucky Power (the "Company") is proposing to construct a new 69 kilovolt ("kV") transmission substation in Pike County, Kentucky ("KY") called the Orinoco Substation Project (the "Project"). The proposed substation is a component of the Belfry Area Transmission Line Project, which includes the construction of approximately 6.5 miles of 69kV transmission line and the retirement of approximately 8.2 miles of existing transmission line.

The Project is needed to replace the existing 46 kV Belfry Substation that cannot be expanded at its current location. A new substation in this area will reasonably address the identified electrical issues by upgrading the local system from 46kV to 69kV, thereby strengthening the local electrical system and increasing reliability for the area. Project details pertaining to the development of the greenfield transmission line are documented in the Belfry Area Transmission Line Project Siting Study Report, which can be referenced for additional Project details and descriptions. This Substation Siting Report provides a description of the process used to identify the Proposed Substation site.

1.1 Proposed Substation Description

The Proposed Substation site is an approximately 140 feet by 225 feet gravel-fenced area and includes equipment approximately 50-feet-tall (including lighting mitigation). See comparable representative photograph for the Proposed Substation below in Figure 1, and see Attachment A for the Proposed Substation layout plan. The site must be approximately one to two acres in size to accommodate the construction area (grading), the substation, and associated stormwater controls. The proposed Belfry Area Transmission Line Project's routing through this new substation site is required, see its separate Siting Report.

Figure 1: Comparable Proposed Substation

1.2 Proposed Substation General Location

Kentucky Power's planners and engineers defined the general location for the Proposed Substation to be as close as possible to the existing Belfry Substation to minimize distribution system work (the Study Area shown on Figure 2 below). A new substation in this Study Area (i) reasonably addresses the identified electrical issues; (ii) is in proximity to the existing Belfry Substation; and (iii) is in proximity to the existing distribution circuits that must connect to the proposed substation.

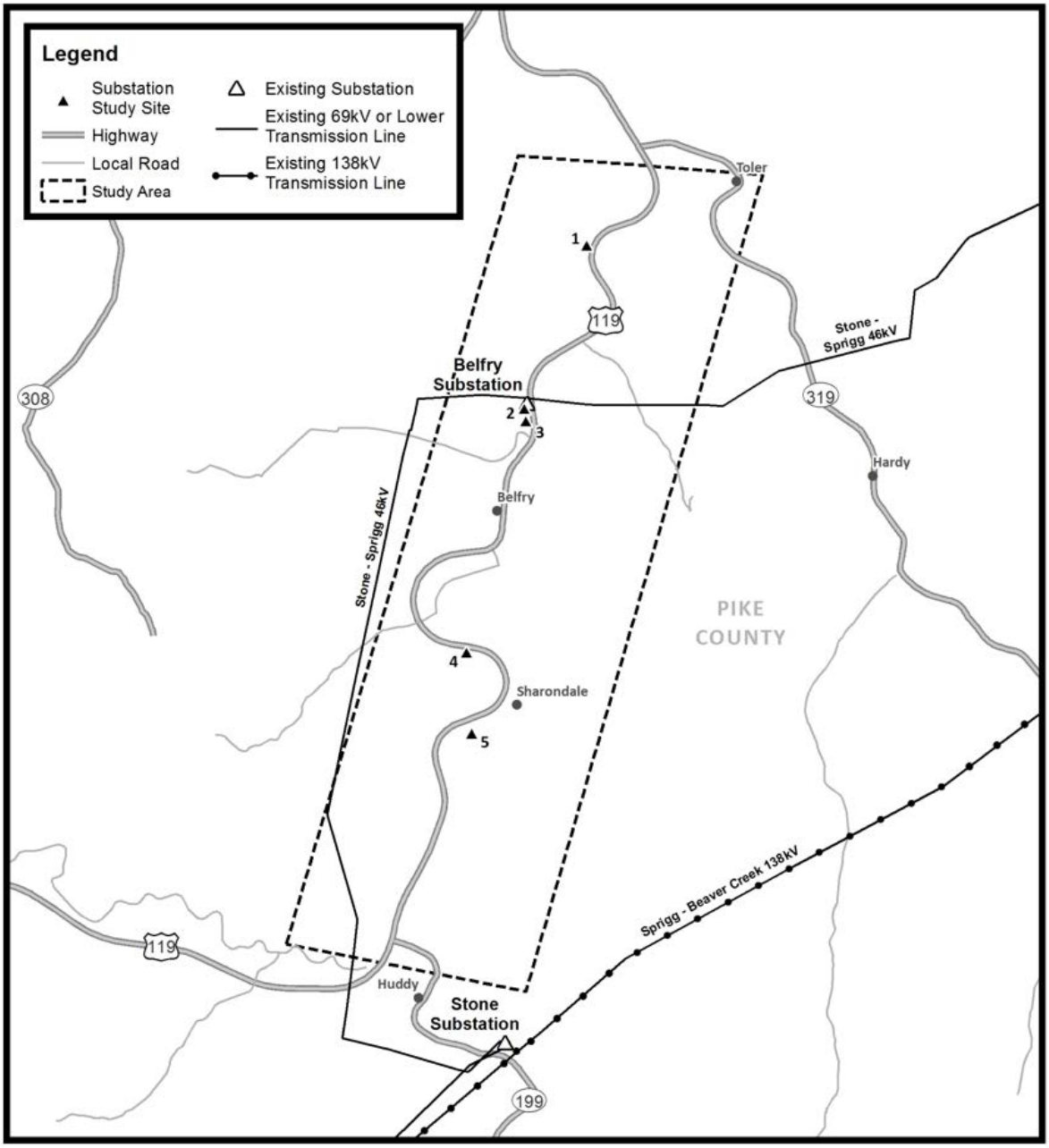


Figure 2: Study Area

The Study Area is the generally defined by the three mile stretch along US-119 between the unincorporated communities of Toler and Huddy. The Study Area is characterized by a landscape typical of the mountainous regions of Eastern KY. The topography includes steep hills, side slopes, floodplains, and valleys. The prominent valley within the Study Area includes the floodplain and floodway of Pond Creek, which parallels US-119 and occupies much of the level terrain. Human development within the Study Area consists of surface and deep mining areas (active and inactive), natural gas wells, and residences and businesses established along US-119, including those within the unincorporated communities of Toler, Belfry, and Huddy. Schools, churches, and cemeteries are located throughout the Study Area as well. Undeveloped portions of the Study Area consist of forested ridgetops and side slopes.

1.3 Goals of the Substation Siting Study

The overall goal of the Orinoco Substation Siting Study (the Substation Siting Study) is to evaluate potential sites within the Study Area and identify a suitable substation site that represents a balance between impacts on the natural and human environments while meeting the engineering and operational needs of the Project in an effective manner. To the extent reasonable and practical, the proposed site is the site that:

- Considers safety in all aspects of the station's construction, operation, and maintenance.
- Is located in the defined Study Area (as described in Section 1.2) and in reasonable proximity to the transmission line source and existing distribution system (if applicable).
- Reasonably minimizes adverse impacts on the natural and human environments from the construction of the proposed substation and the associated transmission line entrances and exits.
- Meets the Project's site engineering and operational requirements, which can include (but are not limited to) the following: space and clearance requirements; access road requirements such as slopes, turning radius, and line of sight; site development requirements such as grading, existing contaminants, and geotechnical; distribution and transmission line exit requirements; and existing infrastructure conflicts such as sewer and water lines.
- The station site selection and associated line routes will fairly consider the environmental impacts on the surrounding community and area.
- Typically has a willing seller; however, there are exceptions where this is not always practical or reasonable.
- Considers landowner and stakeholder input.

- Minimizes special design requirements and unreasonable costs.
- Can be constructed and operated in a safe, timely, cost-effective, and reliable manner.

Refer to the Belfry Area Transmission Line Project's Siting Study Report for additional siting guidelines used in the development of the Project.

2.0 SUBSTATION SITE IDENTIFICATION PROCESS

The following provides a general overview of the typical process used to identify a suitable substation site for a project. The process is modified and adapted depending on location, regulatory requirements, and unique project needs.

The substation site identification process begins by assembling a multi-disciplinary team with a wide range of experience. Team member expertise includes (but is not always limited to) transmission siting, environmental impact assessment, impact mitigation, engineering, construction management, project management, electrical system planning, and public relations (the Siting Team). The Siting Team includes the Company's employees and outside consultants. Additional expertise is added depending on the project needs.

Next, constraints and opportunity features are mapped within the Study Area. The initial constraints and opportunity features are typically identified using readily available public data sources (property lines, existing land uses, natural resources, cultural resources, transportation facilities, existing utility and linear features, base mapping, etc.) and supplemented with stakeholder input and field inspections.

Once the Study Area and Constraints and Opportunity Features are identified, the Siting Team identifies Study Sites (typically less than 10 sites) adhering to the goals outlined in Section 1.3 and a series of general siting and technical guidelines (see the Belfry Area Transmission Line Project Siting Study Report). The number of Study Sites could be numerous, low, or even limited to one depending on the project.

The Siting Team conducts desktop reviews and field inspections of the Study Sites and surrounding area from public roads (focusing on environmental constraints and engineering/operational requirements). As this process progresses, the Study Sites are refined or eliminated. The remaining sites are then elevated to Alternative Sites, which are studied in more detail.

The Company's real estate specialists contact the landowners of the Alternative Sites to measure interest in selling, collect input, and to obtain permissions to survey. Local officials and key stakeholders are interviewed as needed. Additionally, further studies and examinations are completed as warranted. Depending on the project, this could include (but are not limited to)

the following: conceptual grading plans, conceptual transmission line entrances and exits, geotechnical investigations including core bores, environmental and/or cultural resource field surveys, ground surveys, previous use research, contaminants investigations, title search, etc. Ultimately, through a quantitative and qualitative analysis and comparison of the Alternative Sites, the Siting Team identifies a Proposed Substation Site, which is the most suitable site that meets the goals of the Substation Study (Section 1.3).

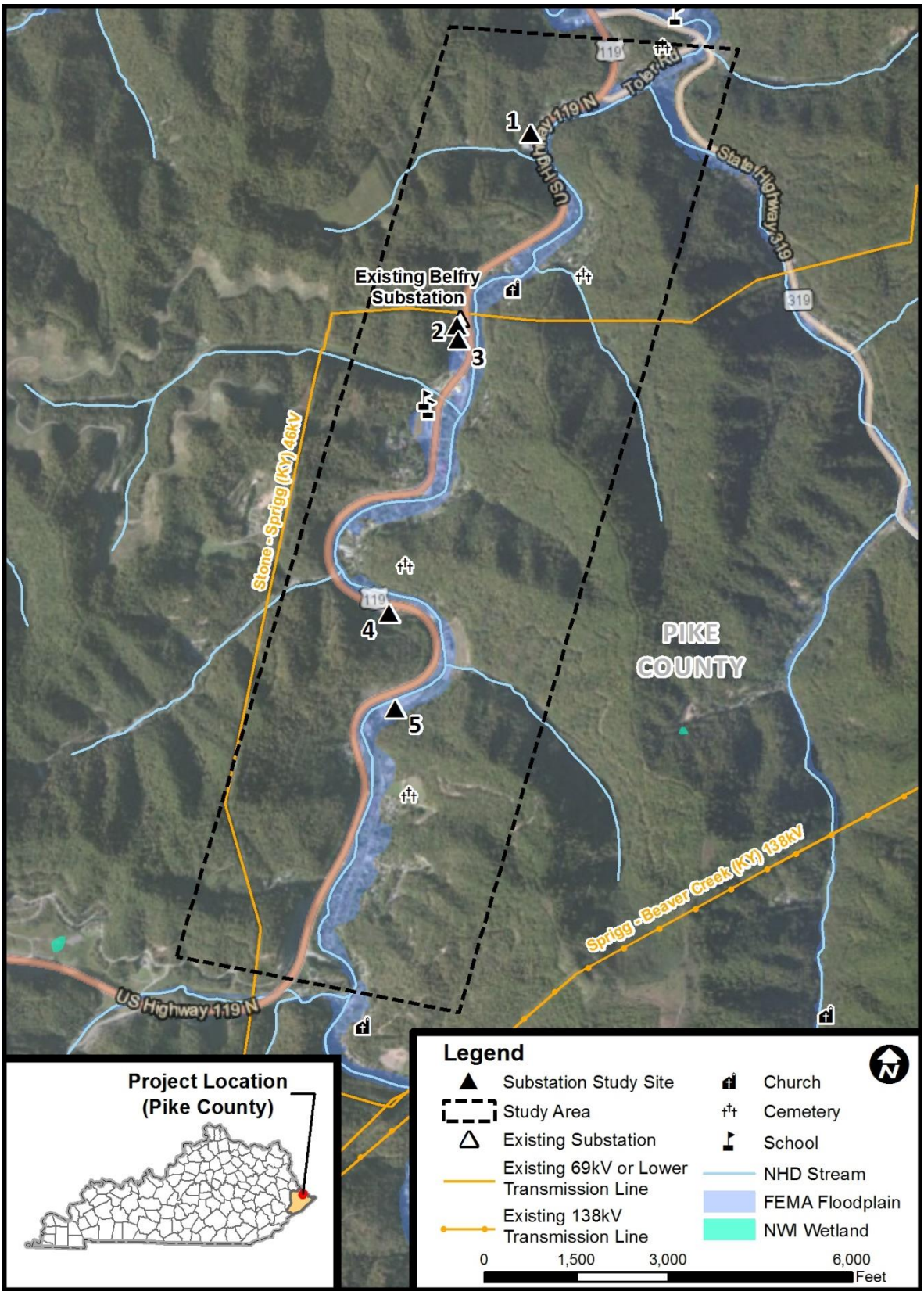
3.0 STUDY SITES

The Siting Team identified five Study Sites within the Study Area, as shown and labeled (Sites 1 to 5) on Map 1. As a result of desktop reviews, engineering reviews, and field inspection, two Study Sites (Study Sites 2 and 5) were eliminated from consideration.

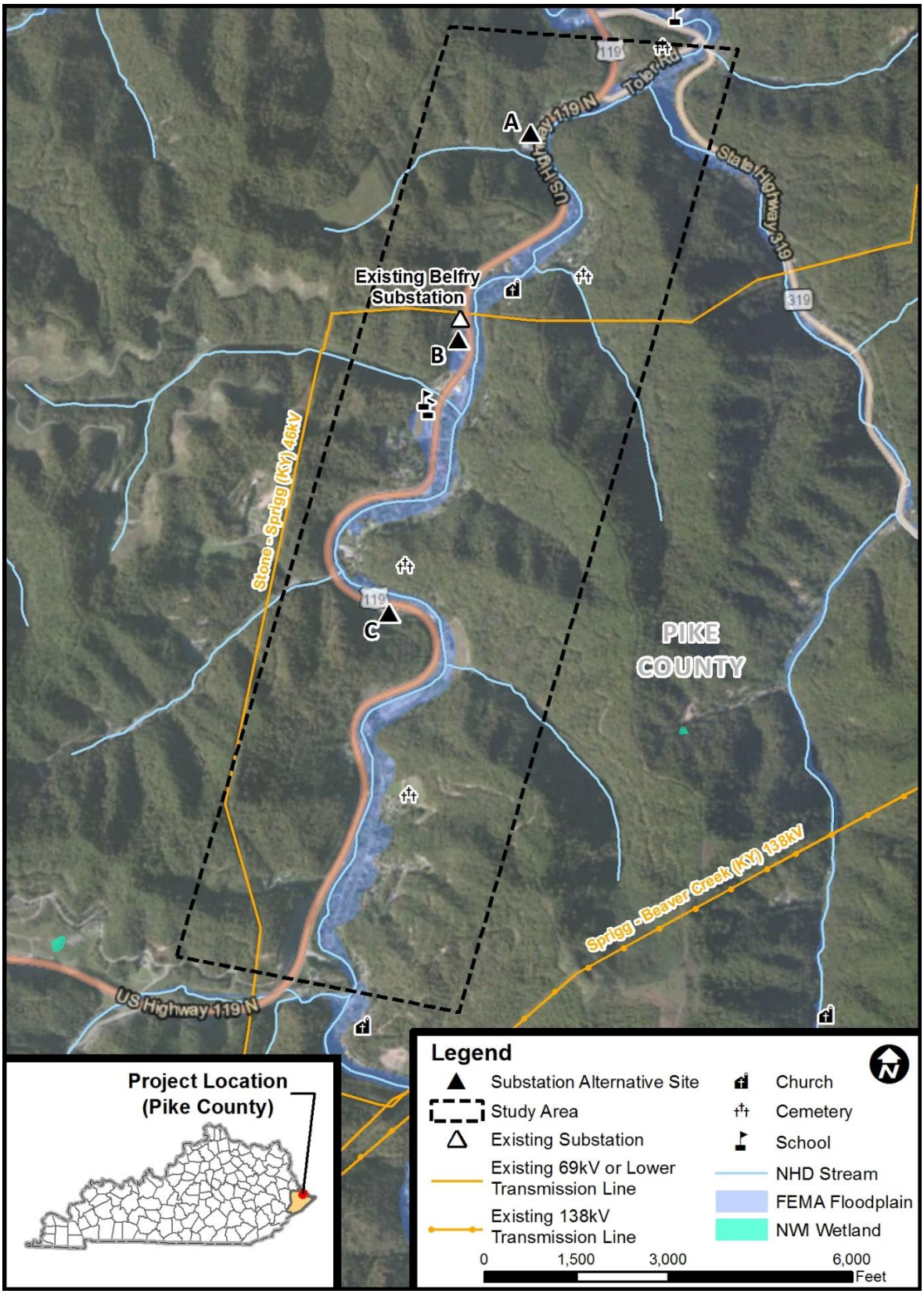
Study Site 2 is adjacent to the Belfry Substation and would involve an expansion of the existing substation in its current location. An expansion of the substation would require the purchase of a minimum of two residences with the possibility of a third. This site, initially a preferred site by the Siting Team due to proximity to the existing substation, was ultimately eliminated from consideration due to landowner impact.

Study Site 5 is the most southern option along US-119 that was considered by the Siting Team. It is a commercial site that is well graded with easy access to US-119 and was for sale at the time of reconnaissance. However, the site was ultimately eliminated after further consideration due to being located within the floodway and floodplain of Pond Creek, its distance from the distribution load center, and access to the site would require utilizing a bridge crossing with unknown weight limits.

As a result of desktop reviews, engineering reviews, and field inspections, the remaining Study Sites 1, 3, and 4 were carried forward for further analysis as Alternative Sites A, B, and C and are shown on Map 2.



Map 1. - Study Sites



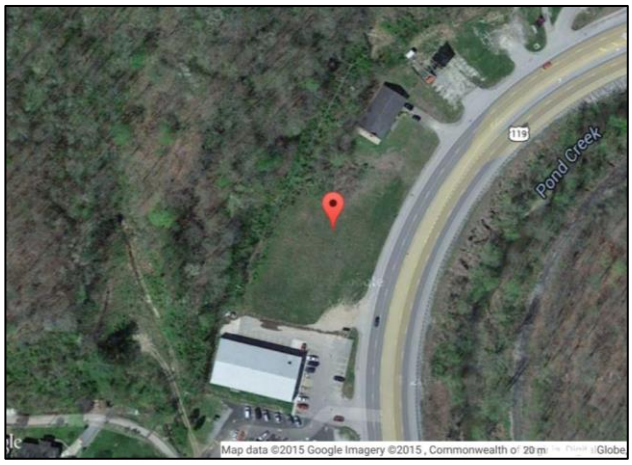
Map 2. - Alternative Sites

4.0 ALTERNATIVE SITES

4.1 Alternative Site A Description - Eliminated

Alternative Site A is located approximately 0.8-mile north of the existing Belfry Substation along US-119 and is adjacent to a Dollar General store. This approximately 1.2-acre unoccupied, previously disturbed, commercial property is the northernmost Alternative Site option and was for sale at the time of reconnaissance. Key features of the site include level ground with minimal clearing needs. See Photograph 1 and 2 and Map 3 of Alternative Site A.

According to an existing survey obtained for this property, only 0.8-acre of the site is useable due to electric and gas line right-of-ways ("ROW") along the rear of the parcel, which limits space for material laydown and parking during construction. Access to the site is directly from US-119, which upon field view, presented a safety concern for the slow-moving, large trucks (during construction) and trailered vehicles (during construction and operation) that would need to access the site from a sharp curve on the four-lane roadway (US-119). At the property's western edge, field review identified a concrete structure on the hillside and a potential mine opening from historic mining (see Photograph 2). Concerns for slides at this steep hillside were also noted as a potential hazard, and the steep slope in combination with observed boulders create a falling rock hazard to the new substation infrastructure and its operators below. Additionally, during field view, a gas line was observed at the surface in places running along the steep slope approximately at the tree line. This exposed gas line presents a rupture potential above the site creating an environmental and safety hazard for this location. Alternative Site A was eliminated from consideration for these reasons.



Photograph 1. Location of Alternative Site A (via Google Earth)

Photograph 2. Alternative Site A field review, facing west

Map 3. - Alternative Site A

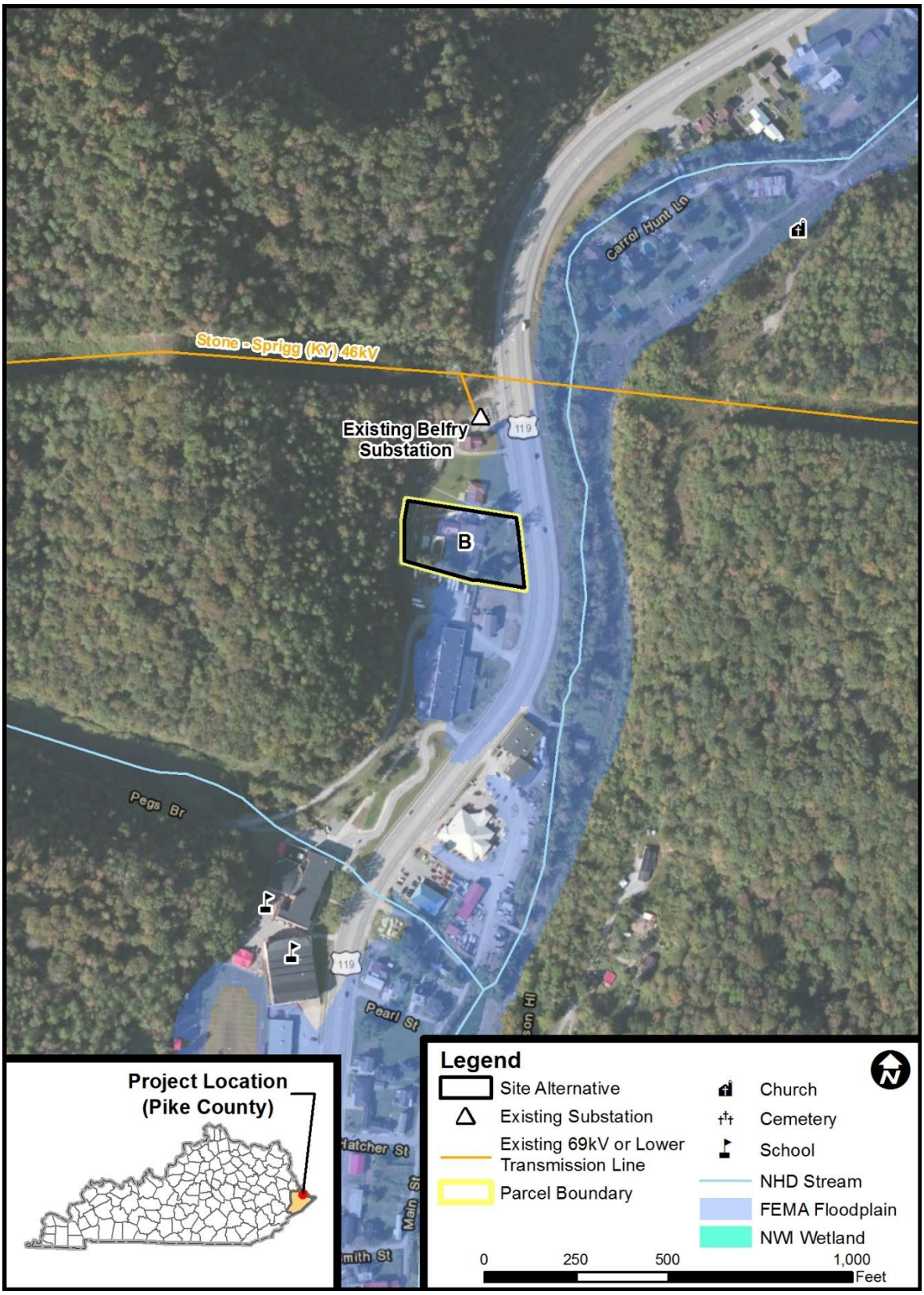
4.2 Alternative Site B Description - Eliminated

Alternative Site B is located approximately 0.1-mile south of the Belfry Substation. This approximately 1.3-acre residential property is the central Alternative Site option of the three sites and the closest to the Belfry Substation. It is currently occupied by a single-family residence and several outbuildings that would need to be removed. Commercial facilities including the Appalachian Beauty School and KY Tech Belfry Center are located 100 feet to 150 feet immediately to the south of the property. Two residences are located 15 to 165 feet north of the property. Key features of the site include level ground with minimal clearing needs. See Photograph 3 and 4 and Map 4 of Alternative Site B.

Access to the site directly from US-119 is on a slight curve, and although it is safer to access for large trucks and trailed vehicles than Alternative Site A, the curve is not ideal for providing safe access in and out of the site. Field review determined the property is large enough for the substation; however, space is limited for material laydown and parking during construction. A land use conversion from residential may also negatively impact residents to the north. Additionally, the site is located within the floodplain of Pond Creek. Alternative Site B was eliminated from consideration for these reasons.

Photograph 3. Location of Alternative Site B (via Google Earth)

Photograph 4. Location of Alternative Site B, facing north (via Google Earth)

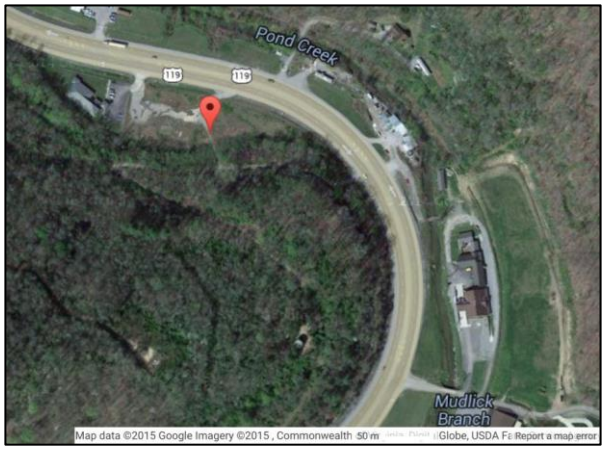


Map 4. - Alternative Site B

4.3 Alternative Site C Description - Retained

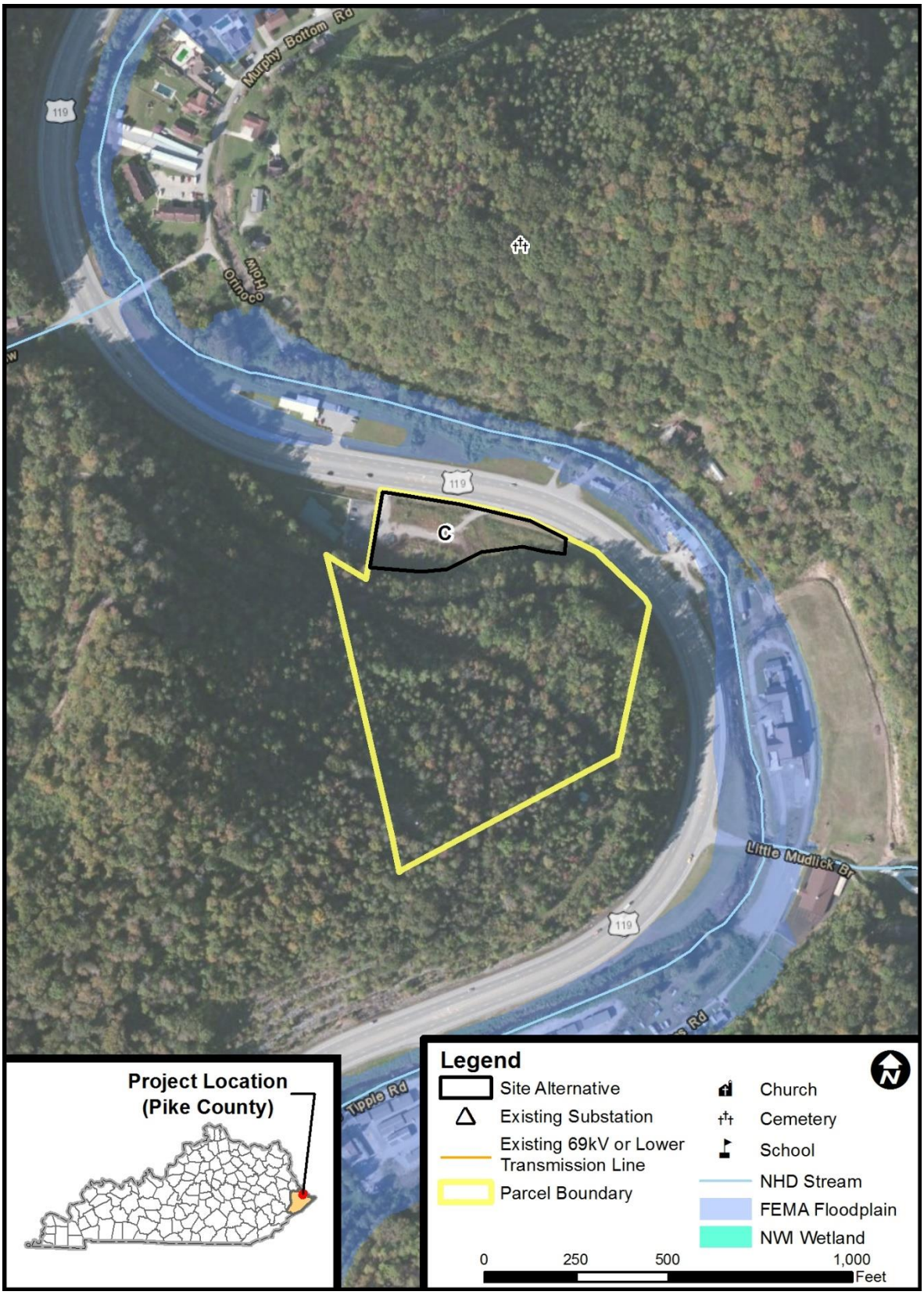
Alternative Site C is located approximately 1.3 miles south of the Belfry Substation and is adjacent to the Belfry Branch Library. This 12.7-acre commercial property was for sale at the time of reconnaissance and has approximately 1.7 acres of unoccupied, previously disturbed, developable land adjacent to US-119. The remaining acreage on the property is undevelopable, rugged forest land and could be used partially for the transmission line easement. It is the southernmost site option of the three Alternative Sites assessed. See Photograph 5 and 6 and Map 5 of Alternative Site C.

Key features of the property include its availability and current land use, level land with better access to/from US-119, it is located outside of the floodplain, and it has the most available acreage for construction of the substation as compared to the other two Alternative Sites. No residences will be impacted, and the library is the only neighbor present. For these reasons, Alternative Site C was retained as the Proposed Substation Site.



Photograph 5. Location of Alternative Site C (via Google Earth)

Photograph 6. Location of Alternative Site C, facing south (via Google Earth)



Map 5. - Alternative Site C

4.4 Alternative Site Comparison

Table 1 compares the suitability and constraints associated with each Alternative Site.

Table 1: Alternative Site Comparison

REQUIRED FIELD: Fails (site elimination), Deficient (requires mitigation), Satisfactory (average), Good (above expectations), or N/A

Alternative Site	A	B	C
Engineering and Operational Requirements			
Site Parcel(s) Size (acres)	1.23	1.25	12.70
Estimated site Development Area (area of disturbance to construct station) (acres)	0.77	1.25	1.68
Site contains a feature that immediately eliminates it from consideration?	No	No	No
Sufficient size for the Standard Design, Stormwater, Setbacks, etc.	No	Yes	Yes
Ability to Acquire the Site (i.e., willing seller & reasonable property cost)	Yes	No	Yes
Ability to minimize and balance Cut & Fill volumes	Yes	Yes	Yes
Ability of the site to promote proper drainage	Yes	Yes	Yes
Geotechnical Suitability: Geo-hazard or risk (landslides, karst, etc.)	Yes	No	No
Geotechnical Suitability: Specialty foundations and/or ground improvement required	No	No	No
Geotechnical Suitability: Significant rock excavation required	No	No	No
Ability to avoid previous use conflicts (e.g., mining, contaminants, pollutants, wells, landfills, etc.)	No	Yes	Yes
Ability to avoid existing infrastructure conflicts (oil, gas, or sewer pipelines)	No	Yes	Yes
Ability for the Company's TFS to safely, efficiently operate & maintain the station	Yes	Yes	Yes
Ability to obtain any required regulatory and site development approvals (e.g., CPCN, zoning, development plan, comprehensive plan conformance) in timely manner	Yes	Yes	Yes
The site location addresses Transmission & Distribution operational needs	Yes	Yes	Yes
***OVERALL** ability to efficiently and cost effectively develop the site, obtain approvals, avoid non-standard designs & mitigations, build the station, and operate & maintain (*)*	Deficient	Satisfactory	Good
Natural Environment			
Protected Species & Habitats or Natural Areas on/near the site (count)	0	0	0
Perennial Streams, Water Bodies, Springs on/near Development Area (count)	0	0	0
Estimated Wetlands (NWI or Field Review) in Development Area (acres)	0.0	0.0	0.0

Table 1: Alternative Site Comparison REQUIRED FIELD: Fails (site elimination), Deficient (requires mitigation), Satisfactory (average), Good (above expectations), or N/A			
Alternative Site	**A**	**B**	**C**
100-year FEMA Floodplain in Development Area (acres)	0.0	0.9	0.0
Estimated Tree Clearing in Development Area (acres)	0.0	0.0	0.0
***OVERALL** ability to avoid or minimize natural environment impacts and acquire the necessary environmental permits in timely manner for the site development area (*)*	Good	Satisfactory	Good
Human Environment			
Site's existing site land use & zoning designation (Residential, Agricultural, Industrial, Manufacturing, etc.).	Commercial	Residential	Commercial
Residences within 1,000 feet of Development Area (count)	17	11	7
Community gathering place (school, daycare, church, etc.) w/in 1,000 feet (count)	0	3	2
Cemetery(s) on/near Development Area (count)	0	0	1
Listed & Eligible Archaeological sites on/near Development Area (count)	0	0	0
Listed & Eligible Architectural Historic Resources & Districts within ¼ mile of the site (count)	0	0	0
Designated Park, Recreation, or Designated Scenic Resources nearby (count)	0	0	0
Avoids impacts on existing & proposed land uses and existing visual character	Yes	No	Yes
***OVERALL** ability to avoid or minimize human environment impacts (*)*	Good	Deficient	Good
Associated Transmission Line Impacts			
A transmission line route to the site is feasible and reasonable	Yes	Yes	Yes
***OVERALL** ability to efficiently and cost-effectively develop a route to the site and reasonably avoid or minimize environmental impacts[5](*)*	Good	Good	Good

5.0 PROPOSED SUBSTATION SITE

The Siting Team recommends Alternative Site C as the Proposed Substation Site, as it best addresses the goals outlined in Section 1.3. While Alternative Sites A and B are constructible, they are not recommended as the Proposed Substation Site.

Field review of Alternative Sites A and B identified concerns with access into the proposed substation from the four-lane roadway (US-119) due to the sites' orientation in relation to the curvature of the roadway, which limits the line-of-sight. Although both sites were of adequate size for substation construction, there was little room left for construction parking and material laydown. Alternative Site A is also located at the base of a steep hillside where historic mining

remnants were identified, large boulders are situated, and an exposed gas line create hazards for this location. Alternative Site B (currently a residential property) is adjacent to other residences and a beauty school. Concerns, including potential visual effects and how the land use change would be perceived by the community, are associated with placing a new substation next to residences. Ultimately, Alternative Site C was selected as the Proposed Substation Site due to its availability, size, accessibility, and line-of sight from the four-lane roadway (US-119). It is also anticipated to have limited visual or land use impact on the community, as it is an undeveloped commercial site.

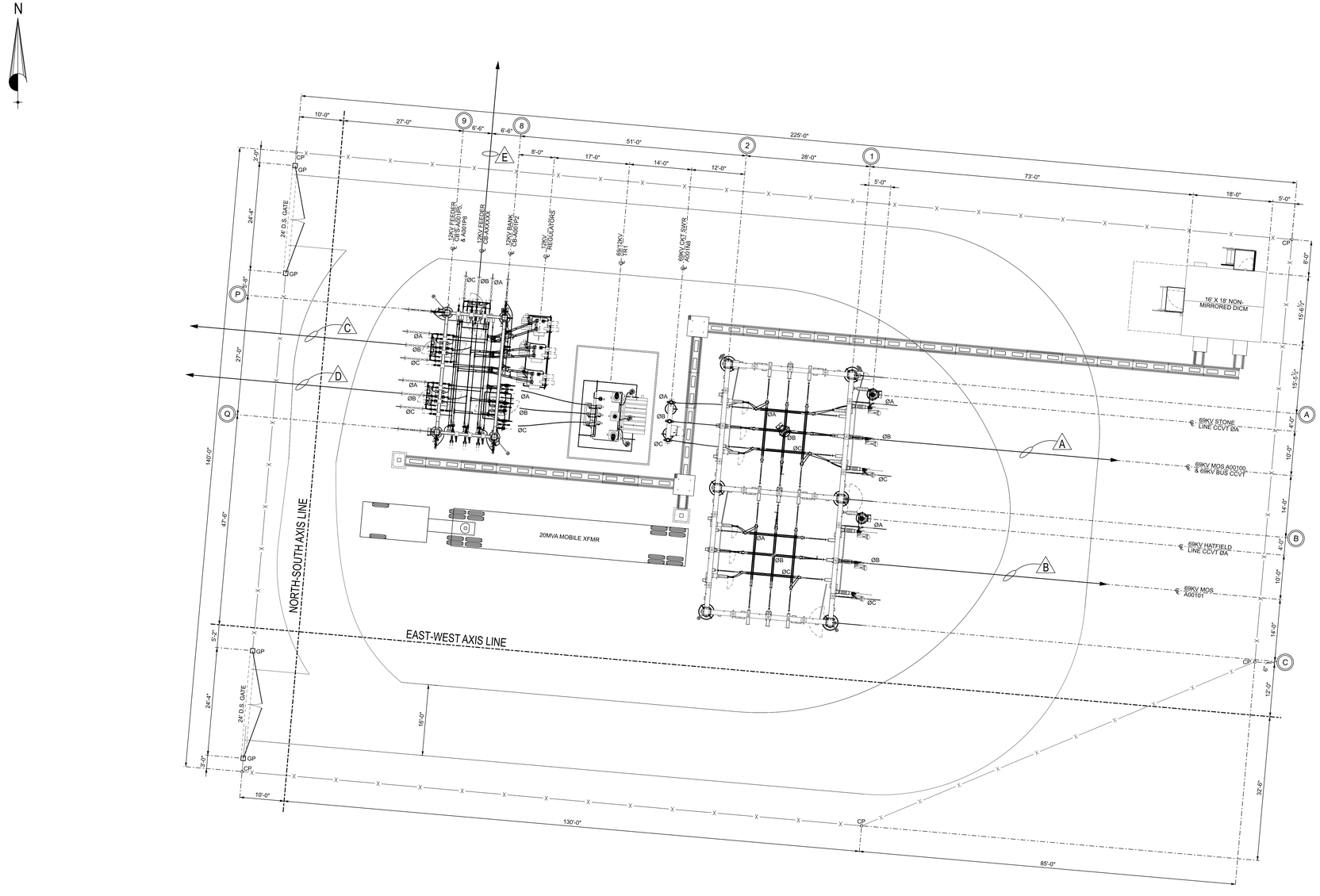
Collectively, the Siting Team believes the Proposed Substation Site meets the overall goals of the Project and represents a balance between impacts on the natural and human environments while meeting the operational needs of the Project in an effective manner.

The following was not conducted as part of this evaluation and should be conducted prior to acquiring any property:

- Phase I Environmental Site Assessment,
- Geotechnical borings and groundwater elevation,
- Wetland delineation,
- Threatened and endangered species habitat surveys, and
- Access road design and line of sight survey.

Attachment A. Proposed Substation Layout Plan

DWG. NO. E-1101-3



LINE SIZES & TENSIONS

- A — 69KV STONE LINE
  3-- MCM @ ---# NESC H.L. T.O. HT --:-
  1-- MCM @ ---# NESC H.L. T.O. HT --:-
- B — 69KV HATFIELD LINE
  3-- MCM @ ---# NESC H.L. T.O. HT --:-
  1-- MCM @ ---# NESC H.L. T.O. HT --:-
- C — 12KV HARDY FEEDER
  3-- MCM @ ---# NESC H.L. T.O. HT --:-
  1-- MCM @ ---# NESC H.L. T.O. HT --:-
- D — 12KV FORREST HILLS FEEDER
  3-- MCM @ ---# NESC H.L. T.O. HT --:-
  1-- MCM @ ---# NESC H.L. T.O. HT --:-
- E — 12KV SHARONDALE FEEDER
  3-- MCM @ ---# NESC H.L. T.O. HT --:-
  1-- MCM @ ---# NESC H.L. T.O. HT --:-

GENERAL NOTES:

1. FOR CONSTRUCTION NOTES SEE AEP "TECHNICAL SPECIFICATION FOR SUBSTATION AND SWITCHING STATION CONSTRUCTION" #SS-160102.

LEGEND:

NUMBERS IN ◯ REFER TO COLUMN LINE DESIGNATION

REFERENCE DRAWINGS

ONE LINE DIAGRAM	E-1100
GRADING PLAN	7-7777
69KV ELECTRICAL ASSY'S	E-2101-3
12KV ELECTRICAL ASSY'S	E-2001-4
FOUNDATION PLAN	E-3101
GROUNDING PLAN	E-3161
RACEWAY PLAN	E-3171

PRELIMINARY

DGA DETAILED SCOPING
DOCUMENT, 3/31/22

OLD DWG #: | STD DWG #:

KENTUCKY POWER COMPANY
ORINOCO STATION
NEW CAMP — KENTUCKY

69/12KV
STATION LAYOUT PLAN

SCALE: 1" = 10'	DR: JGB	ENG:	CH:
	WO#: T10148440C1	APPD:	DATE:
AMERICAN ELECTRIC POWER	1 RIVERSIDE PLAZA COLUMBUS, OH 43215	DWG. NO. E-1101-3	REV. 0

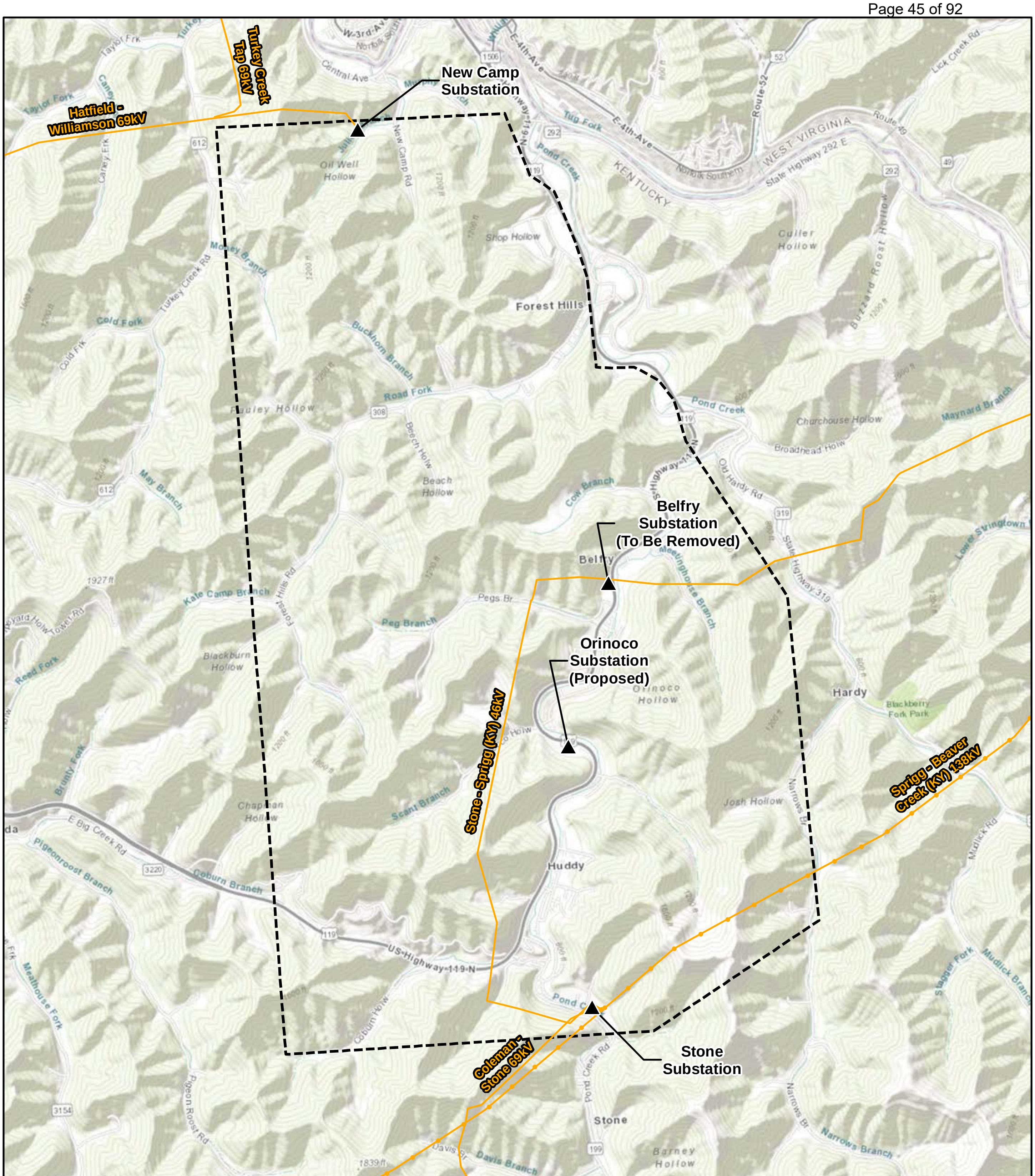
NO	DATE	REVISION DESCRIPTION	APPR	DR	ENG	CK	ISSUE#

CM 1 2 3 4 5 6 7 | 1/16 INCH 4 8 12 16 | TENTHS 10 20 30 | INCHES 1 2 3

C:\Users\jbond\Desktop\Orinoco\E1101-3.dgn

STATION ENGINEERING
AT 11:39:38 AM
3/30/2022
ON
jBond
PLOTTED BY
AEP-C (30 X 42)

Attachment C: Route Development Maps



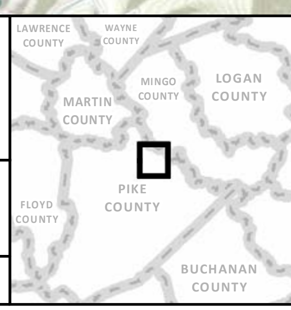
Legend

- ▲ Substation
- Study Area
- Existing 69kV Transmission Line
- Existing 138kV Transmission Line

Sources: ESRI (2022), AEP (2019)

NAD 1983 State Plane Kentucky South Feet

May 06, 2022



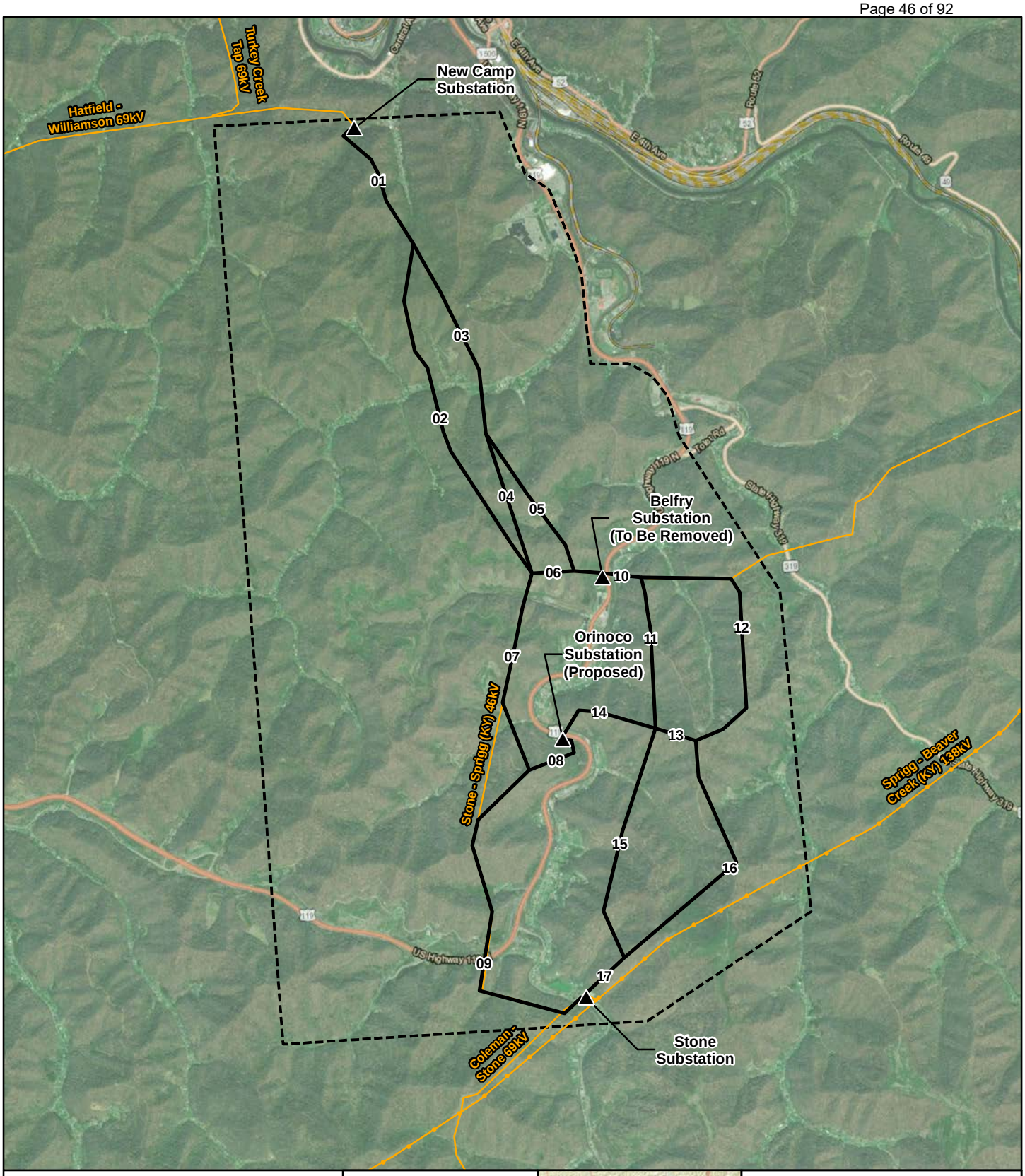
Map 1 Study Area

KENTUCKY POWER

Belfry Area Transmission Line Project

0 4,000

Feet



Legend

- Substation
- Study Segment
- Study Area
- Existing 69kV Transmission Line
- Existing 138kV Transmission Line

Sources: ESRI (2022), AEP (2019)

NAD 1983 State Plane Kentucky South Feet

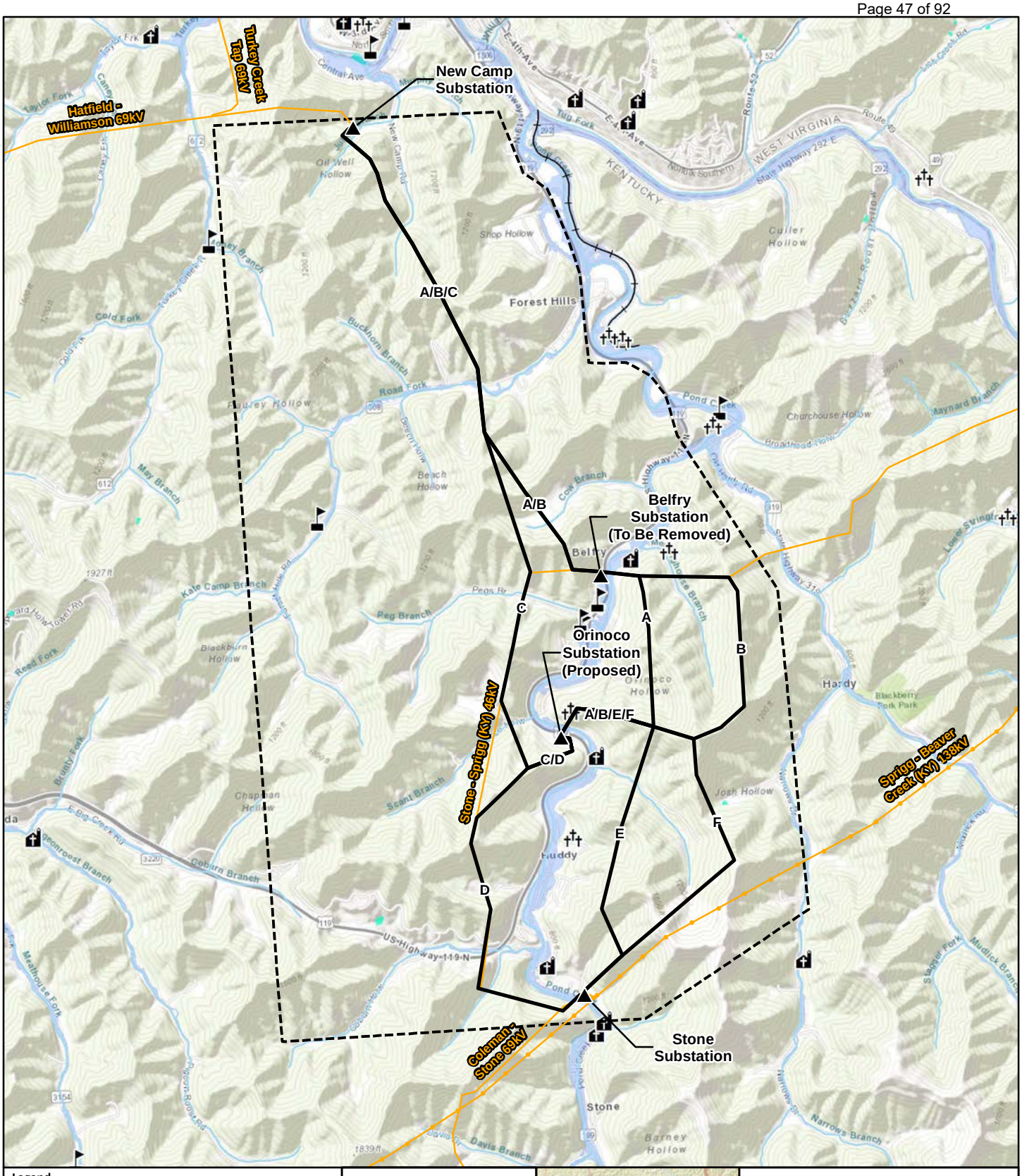
May 06, 2022

Map 2
Study Segments

KENTUCKY POWER
An AEP Company
BOUNDLESS ENERGY

Belfry Area Transmission Line Project

0 4,000
Feet



Legend

- Proposed Substation
- Route Alternative
- Study Area
- Existing 69kV Transmission Line
- Existing 138kV Transmission Line
- Cemetery
- Church
- School
- NHD Stream
- FEMA Floodplain
- NWI Wetland

World Topographic, Street Map, Esri ArcGIS Online, Accessed 05/2022. National Hydrography Dataset (NHD) Streams, USGS, 2020. National Wetland Inventory (NWI) Wetlands, USFWS, 2020. National Flood Hazard Layer, Federal Emergency Management Agency (FEMA), 2020. Existing AEP Transmission Lines, AEP, 2019. Cemeteries, Churches, Schools, Esri ArcGIS Online, 2021.

NAD 1983 State Plane Kentucky South Feet

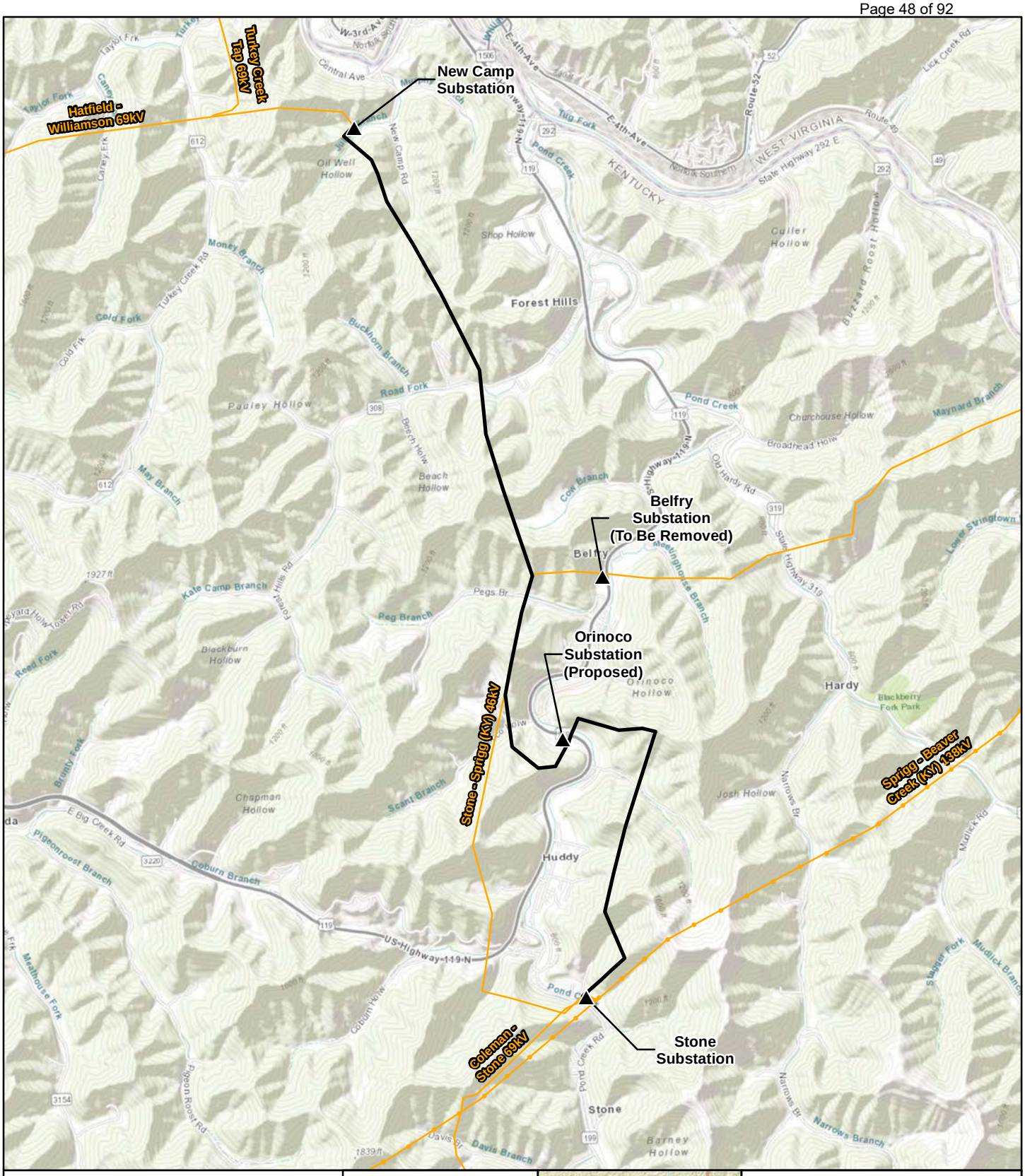
May 07, 2022

Map 3
Alternative Routes

KENTUCKY POWER
An AEP Company
BOUNDLESS ENERGY

Belfry Area Transmission Line Project

0 4,000
Feet



Legend

- Substation
- Proposed Route
- Existing 69kV Transmission Line
- Existing 138kV Transmission Line

Sources: ESRI (2022), AEP (2019)

NAD 1983 State Plane
Kentucky South Feet

August 31, 2022

Map 4
Proposed Route

KENTUCKY POWER
An AEP Company
BOUNDLESS ENERGY

Belfry Area Improvements Project

0 4,000
Feet

Attachment D: Data Collection Summary

Data Source	Description
Geographic Information System ("GIS") Data	See typical GIS data sources in the scope of work templates.
Field Inspections	Siting Team members conducted field inspections throughout the Study Area and along the proposed Study Segments in spring and summer 2021.
Federal Agencies	• Environmental Protection Agency (April 2021) American Heritage Rivers • ESRI (2015) Cemeteries, Churches, Schools • Federal Aviation Administration (April 2021) online mapper • National Conservation Easement Database (April 2021) • National Park Service (April 2021) National Heritage Areas, National Historic Trails, National Natural Landmarks, National Parks, National Recreation Trails, National Scenic Trails, National Trails System • National Wild and Scenic Rivers System (April 2021) online mapper • U.S. Army Corps of Engineers Louisville District Section 10 Waters of the U.S. (April 2021), Regulatory In-lieu Fee and Bank Information Tracking System (April 2021) • U.S. Department of Transportation, Federal Highway Administration (April 2021) America's Byways, National Pipeline Mapping System • U.S. Energy Information Administration (2012) Interstate Gas Pipelines • U.S. Fish and Wildlife Service's ("USFWS"), KY Ecological Services Field Office utilizing the Information, Planning and Consultation ("IPAC") System (April 2022) • U.S. Forest Service (April 2021) National Forests
State Agencies	• KY Air Transportation System (April 2021) KY Aeronautical Chart • KY Department of Education (April 2021) Schools • KY Department of Fish and Wildlife Resources (April 2021) Blue Water Trails, Hunting and Fishing Sites, Recreational Resources, Recreational Trails, Wildlife Management Areas & Public Lands • KY Department of Parks (April 2021) State Parks • KY Division of Forestry (April 2021) State Forests • KY Energy and Environment Cabinet (April 2021) Natural Areas (Nature Preserves, Wild Rivers, and Heritage Lands), Special-Use Waters; Special Waters online mapper; State Forests, Wild Rivers Program online mapper • KY Transportation Cabinet (April 2021) Airport System Map • University of Kentucky Department of Geography (April 2021) KY's Frontier Trails
Local Agencies/Officials	• Pike County Officials – virtual presentation to officials by Siting personnel. [July 7, 2021]
Open House(s)	• Virtual Town Hall, September 9, 2021 • https://www.aeptransmission.com/kentucky/Belfry/open-house/index.html

Data Source	Description
Individual Landowners	• Key landowners crossed by the Proposed Route were contacted by ROW to solicit additional information prior to finalizing the route.
Website and Mailed-In Comments	Received approximately 15 public comments. The Company representatives reviewed the comments and reached out to the authors to address concerns or discuss the Project further, as necessary.
Other	AllTrails (April 2021); Google Earth (April 2021) Airports, Cemeteries, Heliports, Railroads; Rails-to-Trails Conservancy (April 2021) TrailLink; The Wilderness Society (April 2021) Land and Water Conservation Fund

Attachment E: GIS Data Sources

Attachment E. GIS Data Sources		
Siting Criteria	**Source**	**Description**
Land Use		
Number of parcels crossed by the ROW	Pike County Property Value Administrator (July/August 2021)	Count of the number of parcels crossed by the ROW
Number of residences within various distances of an Alternative Route centerline	Digitized from Google Earth (October 2015) and field verified from points of public access	Count of the number of residences within the ROW and within up to 500 feet of the centerline of the Alternative Routes
Number of commercial buildings within various distances of an Alternative Route centerline	Digitized from Google Earth (October 2015) and field verified from points of public access	Count of the number of commercial buildings within the ROW and within up to 500 feet of the centerline of the Alternative Routes
Number of NRHP-listed or eligible archeological sites within the ROW of an Alternative Route centerline	Data received as part of information request from the Kentucky Heritage Council and the Kentucky Office of State Archaeology (March 2020)	Previously identified archeological resources listed or eligible on the National Register of Historic Places (NRHP) acquired through the Kentucky Heritage Council and the Kentucky Office of State Archaeology
Number of NRHP-listed or eligible historic architectural resources or historic districts within one mile of an Alternative Route centerline	Data received as part of information request from the Kentucky Heritage Council and the Kentucky Office of State Archaeology (March 2020)	Previously identified historic architectural resource sites and districts listed or eligible on the NRHP acquired through the Kentucky Heritage Council and the Kentucky Office of State Archaeology
Institutional uses (schools, places of worship and cemeteries) within various distances of an Alternative Route centerline	Digitized from Google Earth (October 2015) and Esri base data (2021)	This dataset includes the locations of cemeteries, churches, hospitals, parks, and schools within varying distances of the centerline of the Alternative Routes.

Attachment E. GIS Data Sources		
Siting Criteria	**Source**	**Description**
Airfield and heliports within one mile of an Alternative Route centerline	Esri base data (2021) and FAA Sectional Charts	Distance from airfields and heliports
Natural Environment		
Forest clearing within the ROW of an Alternative Route centerline	Digitized based on Google Earth (October 2015)	Acres of forest within the ROW of an Alternative Route centerline
Number of National Hydrography Dataset (NHD) stream and waterbody crossings within the ROW of an Alternative Route centerline	USGS (2020)	The NHD is a comprehensive set of digital spatial data prepared by the USGS that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells
Acres of National Wetland Inventory (NWI) wetland crossings within the ROW of an Alternative Route centerline	U.S. Fish and Wildlife Service (USFWS) (2020)	The NWI produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats
Acres of 100-year floodplain crossing within the ROW of an Alternative Route centerline	U.S. Federal Emergency and Management Agency (FEMA) (2020)	Acres of 100-year floodplain within the ROW
Threatened, endangered, rare or sensitive species occurrence within the Project vicinity	Data requests utilizing the USFWS IPaC tool (2022)	Known occurrences; locations of potential habitat based on land use

Attachment E. GIS Data Sources		
Siting Criteria	**Source**	**Description**
	Data request to the Kentucky Department of Fish and Wildlife Resources (2020) and the Kentucky State Nature Preserves Commission (2020)	
Prime and unique farmland soils and farmland of statewide importance within the ROW of an Alternative Route centerline	USDA-NRCS SSURGO Database (2020)	Soil associations crossed by the ROW characterized as prime and unique farmland or farmland of statewide importance
Technical		
Route length	Measured in GIS	Length of route in miles
Heavy angle structures	Developed in GIS	Anticipated number of angled structures in excess of 30 degrees
Number of road crossings	TIGER Road Data, US Census Bureau (2022), Google Earth aerial review (2015)	Count of federal, state and local roadway crossings
Number of pipeline crossings	U.S. Department of Transportation National Pipeline Mapping System (2022)	Number of known pipelines crossed by the ROW of an Alternative Route
Number of transmission line crossings	Kentucky Power	Number of high voltage (69 kV or greater) transmission lines crossed by the ROW of an Alternative Route
Distance of steep slopes crossed	Derived from seamless Digital Elevation Models (DEMs) obtained	Miles of slope greater than 20 percent crossed by the ROW of an Alternative Route

Attachment E. GIS Data Sources		
Siting Criteria	**Source**	**Description**
	from the U.S. Geologic Survey (2022)	
Length of transmission line parallel	Kentucky Power	Miles of an Alternative Route parallel to existing high voltage transmission lines
Length of pipeline parallel	U.S. Department of Transportation National Pipeline Mapping System (2022)	Miles of an Alternative Route parallel to existing pipelines
Length of road parallel	TIGER Road Data, US Census Bureau (2022), Google Earth aerial review (2015)	Miles of an Alternative Route parallel to existing roadways

Attachment F: Agency Correspondence

IPaC **U.S. Fish & Wildlife Service**

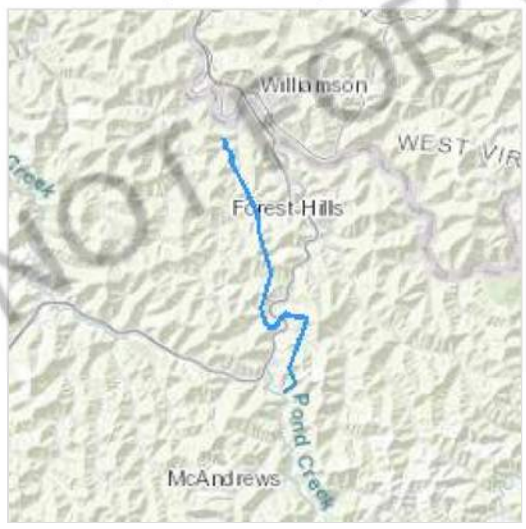
IPaC resource list

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

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

Location

Pike County, Kentucky



Local office

Kentucky Ecological Services Field Office

(502) 695-0468
(502) 695-1024

J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670

http://www.fws.gov/frankfort/

Endangered species

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

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

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

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

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

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

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

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

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

Mammals

NAME	STATUS
Gray Bat *Myotis grisescens* Wherever found This species only needs to be considered if the following condition applies: • The project area includes potential gray bat habitat. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6329	Endangered
Indiana Bat *Myotis sodalis* Wherever found This species only needs to be considered if the following condition applies: • The project area includes 'potential' habitat. All activities in this location should consider possible effects to this species. There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* Wherever found This species only needs to be considered if the following condition applies: • The specified area includes areas in which incidental take would not be prohibited under the 4(d) rule. For reporting purposes, please use the "streamlined consultation form," linked to in the "general project design guidelines" for the species. No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS

Monarch Butterfly Danaus plexippus Wherever found	Candidate

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

Crustaceans

NAME	STATUS
Big Sandy Crayfish Cambarus callainus Wherever found	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/8285

Critical habitats

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

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

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

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-

measures.pdf

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

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

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and

understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

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

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

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

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

Breeding Season (■)

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

Survey Effort (|)

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

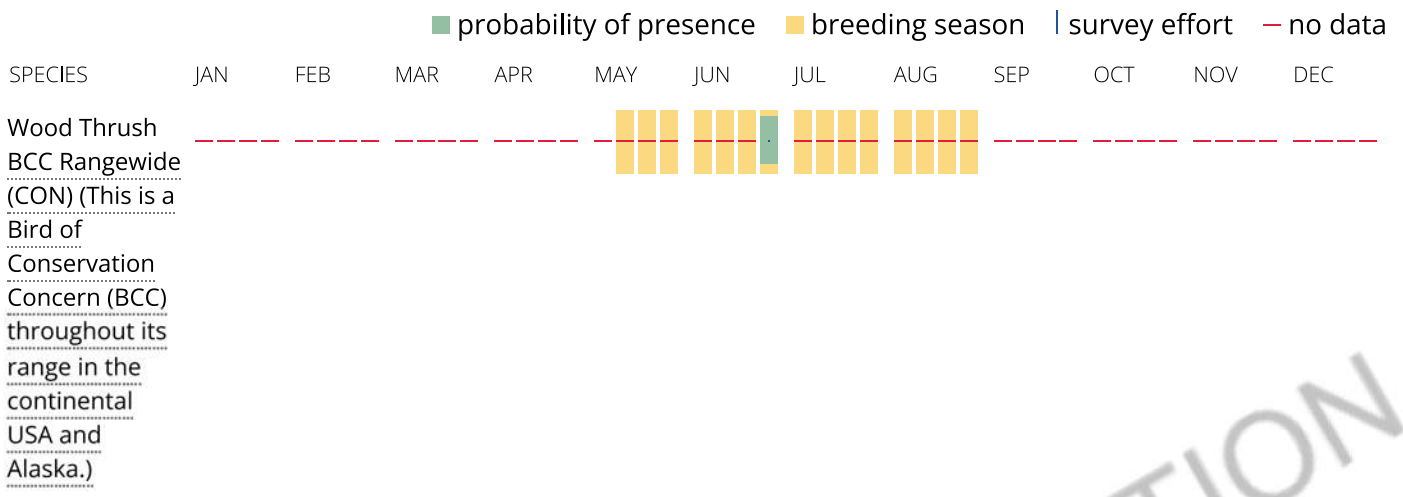
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)

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

Survey Timeframe

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



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

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

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

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

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

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

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

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

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

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

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

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

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

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

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

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

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

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

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

seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

TOURISM, ARTS AND HERITAGE CABINET
KENTUCKY DEPARTMENT OF FISH & WILDLIFE RESOURCES

Andy Beshear
Governor

#1 Sportsman's Lane
Frankfort, Kentucky 40601
Phone (502) 564-3400
1-800-858-1549
Fax (502) 564-0506
fw.ky.gov

Mike Berry
Secretary

Rich Storm
Commissioner

June 8, 2020

GAI Consultants, Inc.
Attn: Elizabeth A. Dubnicay
385 E. Waterfront Drive
Homestead, PA 15120-5005

RE: Utility Project Feasibility Study – American Electric Power (Pike County)

Dear Ms. Dubnicay:

The Kentucky Department of Fish and Wildlife Resources (KDFWR) has received your request for information pertaining to the subject project. According to the Kentucky Fish & Wildlife Information System (KFWIS) the following federally-listed species could occur within the proposed project area:

- Indiana bat *(Myotis sodalis)*,
- Grey bat *(Myotis grisescens)*
- Northern Myotis *(Myotis septentrionalis)*
- Big Sandy Crayfish *(Cambarus callainus)*

KDFWR recommends coordinate the proposed project with the USFWS-Kentucky Field Office at 502-695-0468 for project specific technical assistance concerning federally protected species and tree-clearing.

According to the KFWIS the following state-listed species could occur within the proposed project corridor:

- Dark-eyed Junco *(Junco hyemalis)*
- Little Blue Heron *(Egretta caerulea)*
- Eastern Small-footed Myotis *(Myotis leibii)*
- Northern Harrier *(Circus hudsonius)*
- Northern Madtom *(Noturus stigmosus)*
- Rafinesque's Big-eared Bat *(Corynorhinus rafinesquii)*
- Osprey *(Pandion haliaetus)*
- Rose-breasted Grosbeak *(Pheucticus ludovicianus)*

- American Black Bear *(Ursus americanus)*

As the project progresses the KDFWR ask that you consider minimizing any possible potential impacts to state-listed species. We also ask that tree clearing be minimized without sacrificing the integrity of the proposed project.

I hope this information is helpful to you, if you have questions or require additional information, please call me at 502-892-4472.

Sincerely,

Doug Dawson

Doug Dawson
Environmental Section Chief

ANDY BESHEAR
GOVERNOR

REBECCA W. GOODMAN
SECRETARY

ZEB WEESE
EXECUTIVE DIRECTOR

ENERGY AND ENVIRONMENT CABINET
OFFICE OF KENTUCKY NATURE PRESERVES

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601
TELEPHONE: 502-573-2886
TELEFAX: 502-564-7484

March 11, 2020

Elizabeth Dubnicay
GAI Consultants, Inc.
385 East Waterfront Drive
Homestead, PA 15120

Project:	Utility Project - Feasibility Study
Project ID:	20-0113
Project Type:	Standard (*customers will be invoiced), 1 mile buffer ($120 fee)
Site Acreage:	8,148.06
Site Lat/Lon:	37.626600 / -82.280689
County:	Pike
USGS Quad:	BELFRY; WILLIAMSON
Watershed HUC12:	Miller Creek-Tug Fork; Pond Creek; Sycamore Creek-Tug Fork; Upper Big Creek

Dear Elizabeth Dubnicay,

This letter is in response to your data request for the project referenced above. We have reviewed our Natural Heritage Program Database to determine if any of the endangered, threatened, or special concern plants and animals or exemplary natural communities monitored by the Office of Kentucky Nature Preserves occur within your general project area. Your project does pose a concern at this time, therefore please see the attached reports and report key for more detailed information.

I would like to take this opportunity to remind you of the terms of the data request license, which you agreed upon in order to submit your request. The license agreement states "Data and data products received from the Office of Kentucky Nature Preserves, including any portion thereof, may not be reproduced in any form or by any means without the express written authorization of the Office of Kentucky Nature Preserves." The exact location of plants, animals, and natural communities, if released by the Office of Kentucky Nature Preserves, may not be released in any document or correspondence. These products are provided on a temporary basis for the express project (described above) of the requester, and may not be redistributed, resold or copied without the written permission of the Biological Assessment Branch (300 Sower Blvd - 4th Floor, Frankfort, KY, 40601. Phone: 502-782-7828).

Please note that the quantity and quality of data collected by the Kentucky Natural Heritage Program are dependent

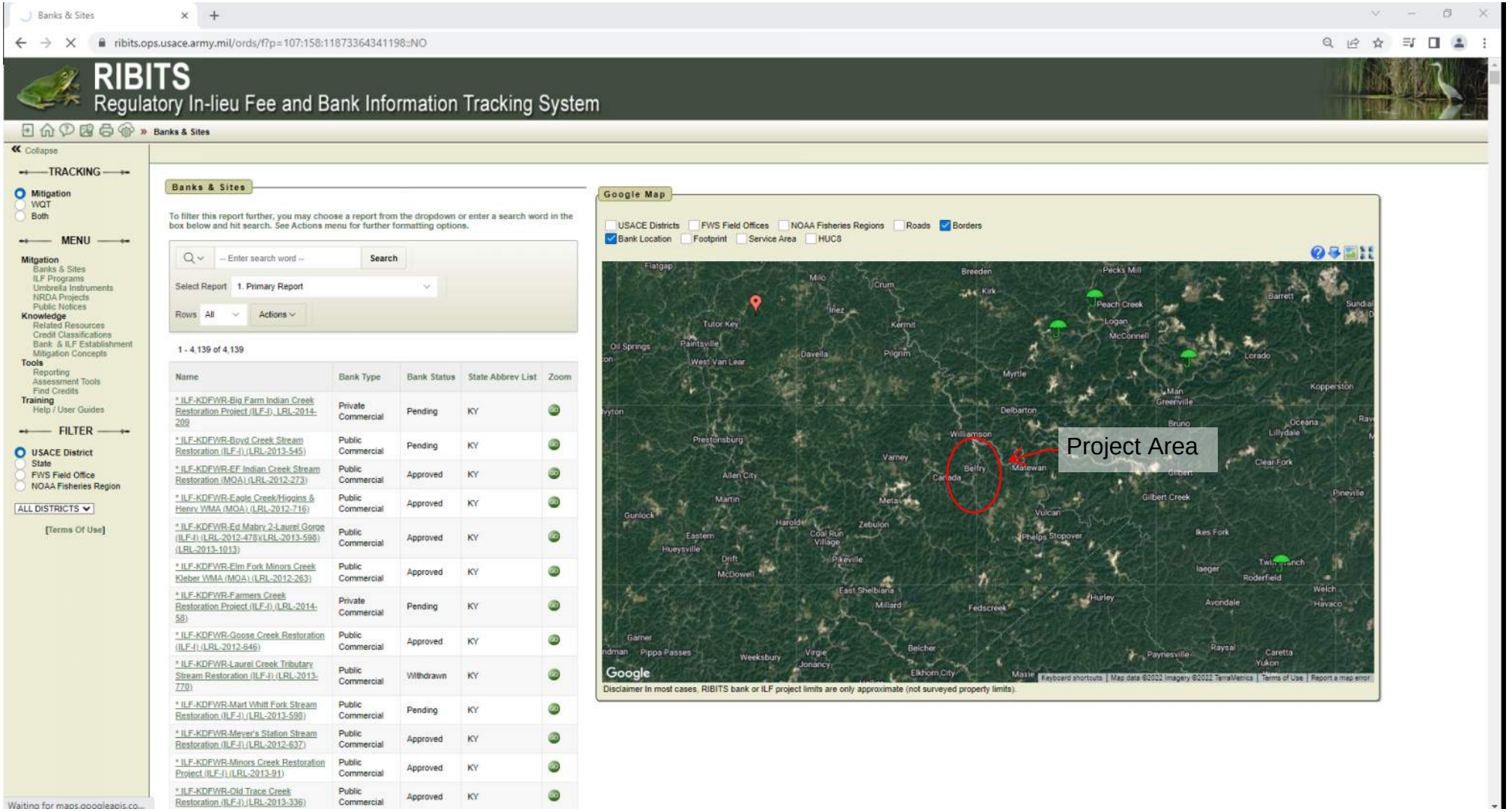
on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Kentucky have never been thoroughly surveyed and new plants and animals are still being discovered. For these reasons, the Kentucky Natural Heritage Program cannot provide a definitive statement on the presence, absence, or condition of biological elements in any part of Kentucky. Heritage reports summarize the existing information known to the Kentucky Natural Heritage Program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments. We would greatly appreciate receiving any pertinent information obtained as a result of on-site surveys.

If you have any questions, or if I can be of further assistance, please do not hesitate to contact me.

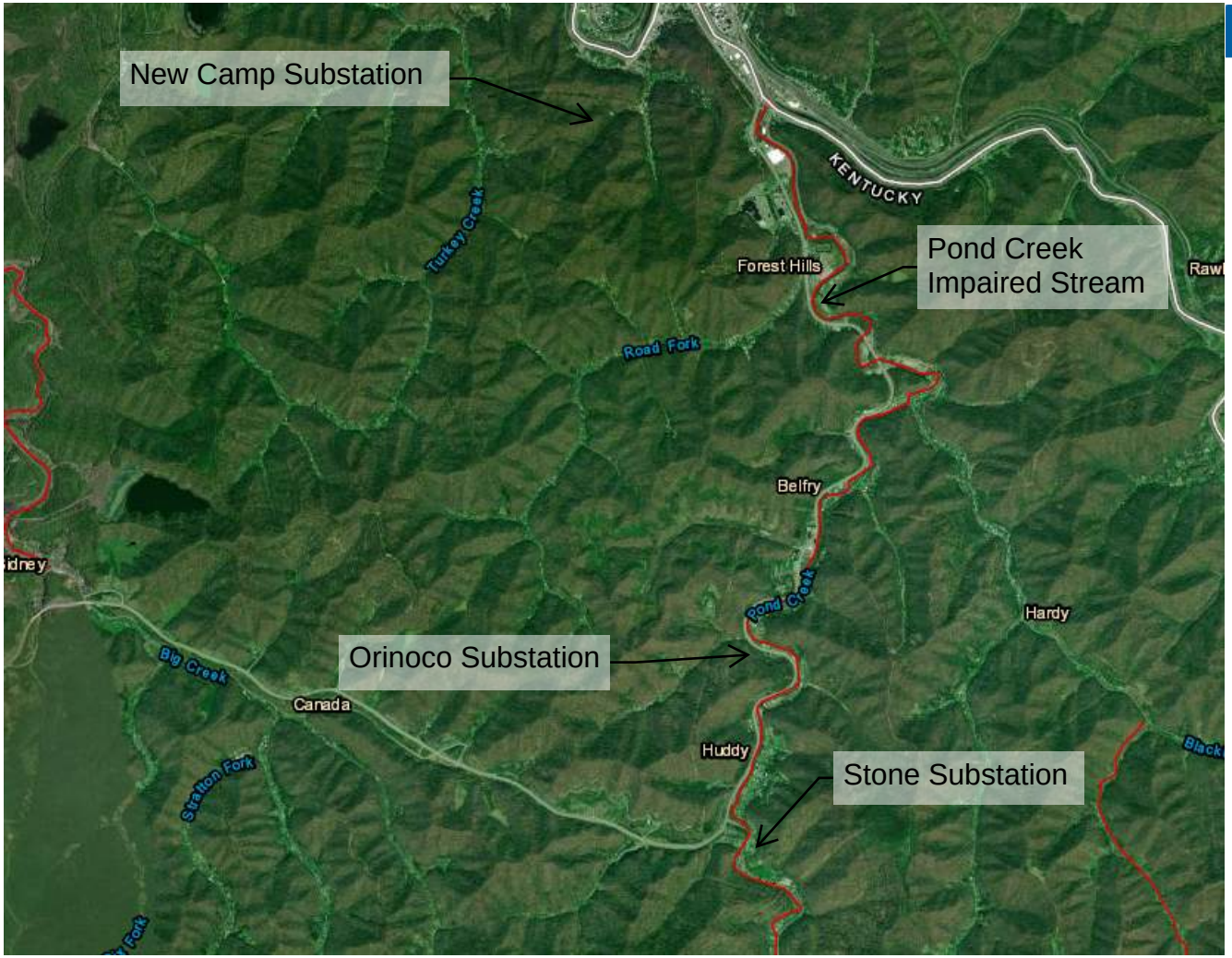
Sincerely,

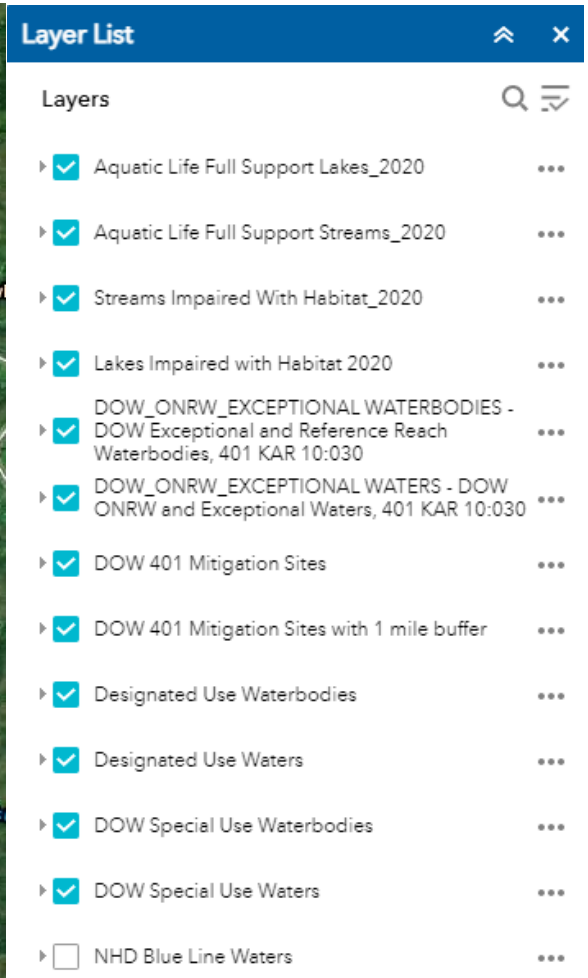
Nour Salam
Geoprocessing Specialist

U.S. Army Corps of Engineers
Regulatory In-lieu Fee and Bank Information Tracking System
May 5, 2022

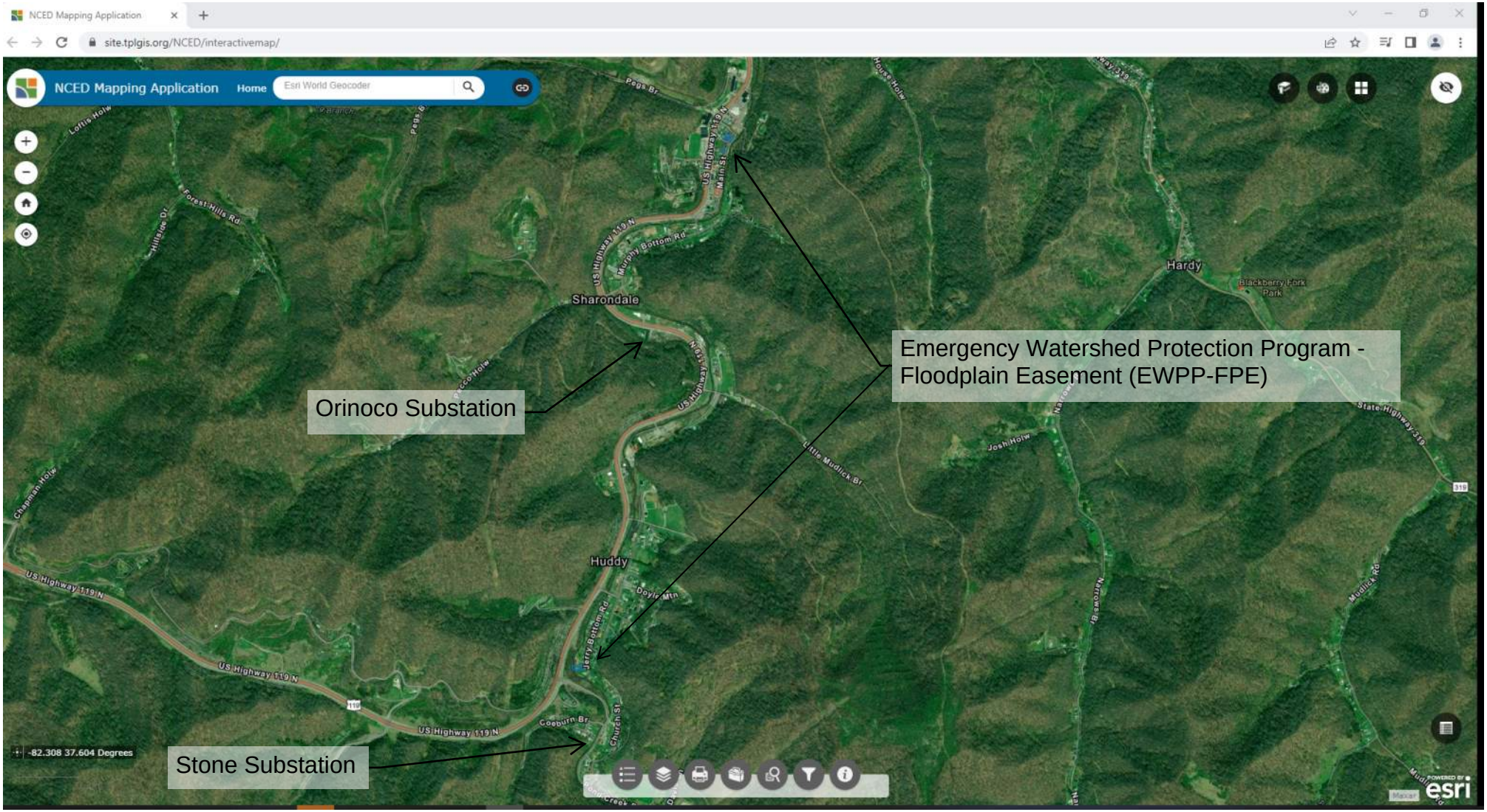


Kentucky Division of Water - Water Maps Portal
401 Water Quality Certification Map Viewer Tool
May 5, 2022





National Conservation Easement Database
Mapping Application - Interactive Map
May 5, 2022



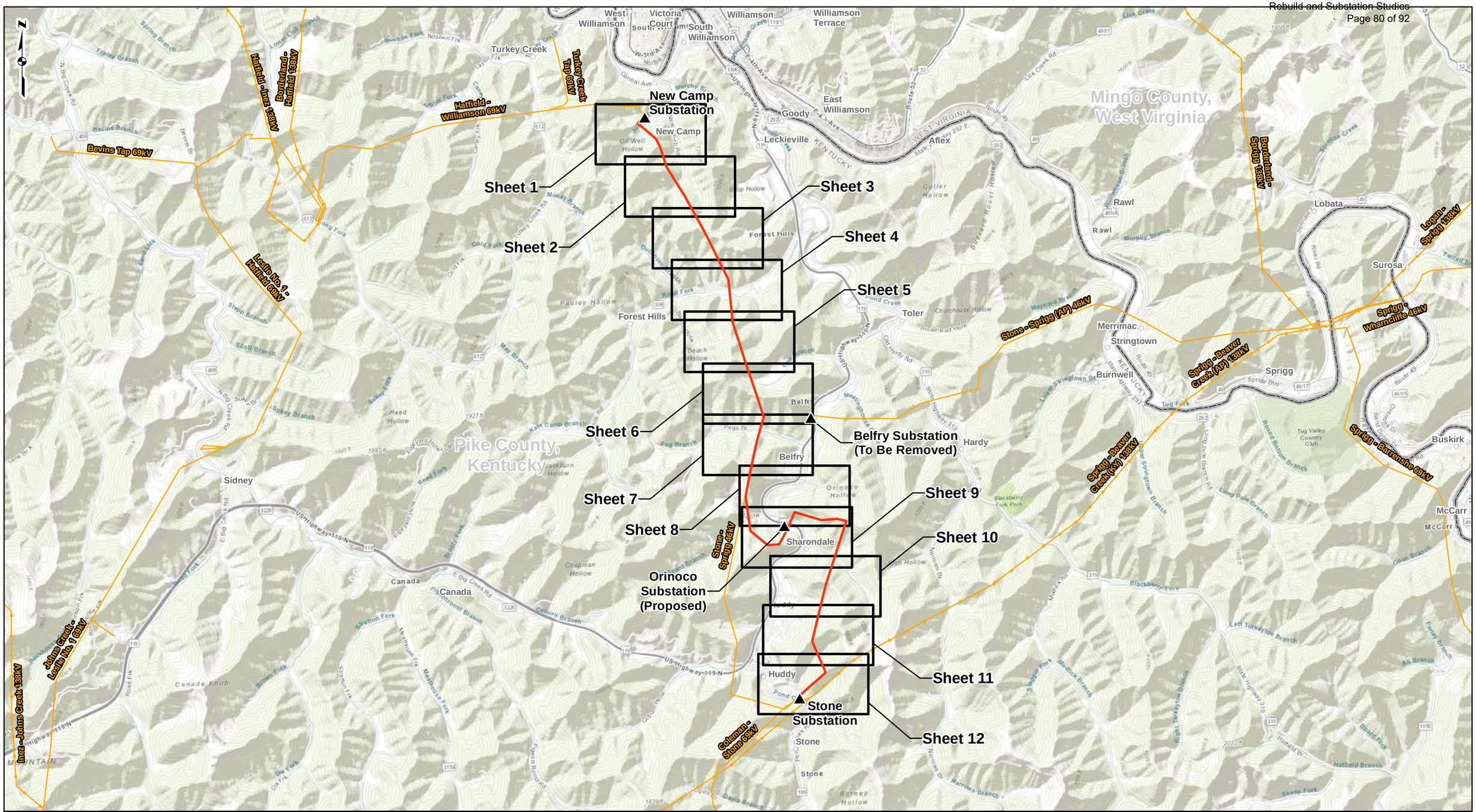
Attachment G: Constraints and Opportunities

CONSTRAINTS	
Recreational and Aesthetic Resources	Desktop review did not identify any recreational or aesthetic resource potentially impacted by the Project. The majority of the Project will occur on undeveloped forested tracts and is not anticipated to be highly visible to the community.
Cultural, Tribal, and Historic Resources	Murphy Cemetery will be in close proximity to the Project as the line exits the Orinoco Substation, however, the cemetery will be avoided by both the transmission line and access roads and no impact to the cemetery is anticipated. Other cemeteries within the study area include Mountain View Memory Gardens, Runyon Cemetery, and several unnamed cemeteries; however, no impacts to cemeteries are anticipated. The Stone Historic district is located approximately 0.15-mile to the south of the Stone Substation along US-119. No impact to this historic district, including visually, is anticipated due to the terrain and layout of the historic district. Although archaeological and architectural surveys will be required, there is a low probability of identifying significant cultural resources along the Project route due to terrain, disturbed area from coal mining and pipeline/transmission line infrastructure, and lack of architectural features.
Land Use and ROW	**Residences**: No significant residential impact is anticipated due to lack of development. The more developed valleys and associated roadways can be spanned with sufficient blowout without the need to acquire properties. **Land use**: The majority of the Study Area is generally forested and rugged. Other infrastructure in the area includes transmission line and pipeline facilities and mining operations. Development is limited to stream valleys with roadways, with the densest development occurring along US-119.
Public Lands and Protected Easements	No public lands were found in the Study Area based on preliminary review; however, there are floodplain easements for the Emergency Watershed Protection Program located along US-119. These easements are not crossed by an Alternative Route.
Transportation and Other Infrastructure	A helicopter landing zone was identified along Forest Hills Road approximately 1,000 feet to the east of the Alternative Routes. The landing zone appears to be part of a commercial business. The major travel corridor within the Study Area is US-119, which runs generally north/south and is the location of the most significant development. Other secondary roadways with mostly residential development include Forest Hills Road, New Camp Road, Church House Hollow, and Pond Creek Road. Other infrastructure within the Study Area includes the Stone-Sprig 46kV line, Spring-Beaver Creek 138kV line, and Coleman-Stone 69kV line. Additionally, numerous pipeline ROWs can be seen on aerial imagery, and historic gas well data indicates the Study Area is heavily developed for natural gas extraction.
Local Zoning Requirements	No local zoning requirements.

Constructability	Rugged terrain will likely require long access roads and significant grading to create work pads for tower construction. Numerous existing and/or previous access roads occur in the area and can likely be utilized for the Project. Crossing of pipelines by access roads may be required and will likely require special techniques to protect the pipeline. Outages will also need coordinated for sections proposed within existing ROW. Additionally, the entire Study Area has areas of current and historic mining (both deep and surface mining). Constraints regarding geologic and mining hazards will require further investigation during final design.
Natural Resources	**Federally Listed Species** **Bats:** The USFWS' IPAC System (April 2022, Attachment F) indicated the Project is located within the overall ranges of the federally-listed gray bat (*Myotis grisescens*), Indiana bat (*Myotis sodalis*), and northern long-eared bat (*Myotis septentrionalis*). The KY Department of Fish and Wildlife Resources (KDFWR) also listed these same species as being federally listed in their comment letter dated June 8, 2020. Desktop review indicated the Project was not within a known-use area for threatened and endangered bats, therefore, mist net surveys can likely be conducted to determine presence and/or probable absence in an attempt to extend the timeframe for forest clearing. Additionally, the Study Area is within areas of known mining, therefore, portal searches (and potentially trapping) will be required. **Crustaceans:** The USFWS' IPAC System (April 2022, Attachment F) indicated the Project is located within the overall ranges of one federally-listed crustacean, the Big Sandy crayfish (*Cambarus callainus*). However, the Project is not anticipated to impact streams capable of supporting this species, and any runoff will be abated with erosion and sediment control measures. The KDFWR also listed these same species as being federally listed in their comment letter dated June 8, 2020. **State-Listed Species** A comment letter (June 8, 2020) from the KDFWR listed the following state-listed species as potentially occurring in the Project area: dark-eyed Junco, little blue heron, Eastern small-footed myotis, northern harrier, Northern madtom, Rafinesque's big-eared bat, osprey, rose-breasted grosbeak, and American black bear. The comment letter requests that as the Project progresses, to consider minimizing any possible potential impacts to these species as well as to tree clearing. A comment letter (March 11, 2020) from the Office of KY Nature preserves indicated one monitored species within one-mile of the Project Area (Squarrose Goldenrod), one managed area within one-mile of the Project Area (National Resources Conservation Service Wetland Reserve Program), and one bat habitat (for northern long-eared bat) area within one-mile of the Project Area. **Anticipated Studies:** Wetland/stream delineations and bat studies (mist net surveys, portal searches, and portal trapping) will be necessary.

OPPORTUNITIES	
Opportunity Features	Between the New Camp and Orinoco Substations, the Study Area contains undeveloped areas suitable for the siting of a transmission line. These areas, generally more mountainous and forested, allow the transmission line to be better hidden from the community and should mitigate its overall impact, both during construction and operation of the line. Additionally, the existing ROW of the Stone-Spring 46kV line being retired presents an opportunity to utilize existing ROW for at least a portion of the route. The Study Area between the Orinoco and Stone Substations is similar to that of New Camp-Orinoco. Major opportunities include the undeveloped, forested mountains and the existing ROW of the Stone-Sprigg 46kV line. However, portions of the existing ROW in this area are situated on steep side slopes and would likely become a constraint during construction and eventual operation of the transmission line.

Attachment H: Aerial Mapbook (Proposed Route)



REFERENCE: WORLD TOPOGRAPHIC, ESRI, ARCGIS ONLINE, ACCESSED 08/2022.

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LEGEND

- Substation
- Proposed Route*
- Sheet Index
- Existing 69kV or Lower Transmission Line
- Existing 138kV Transmission Line

0 2,000 4,000 8,000 Feet

DETAILED MAPBOOK SHEET INDEX

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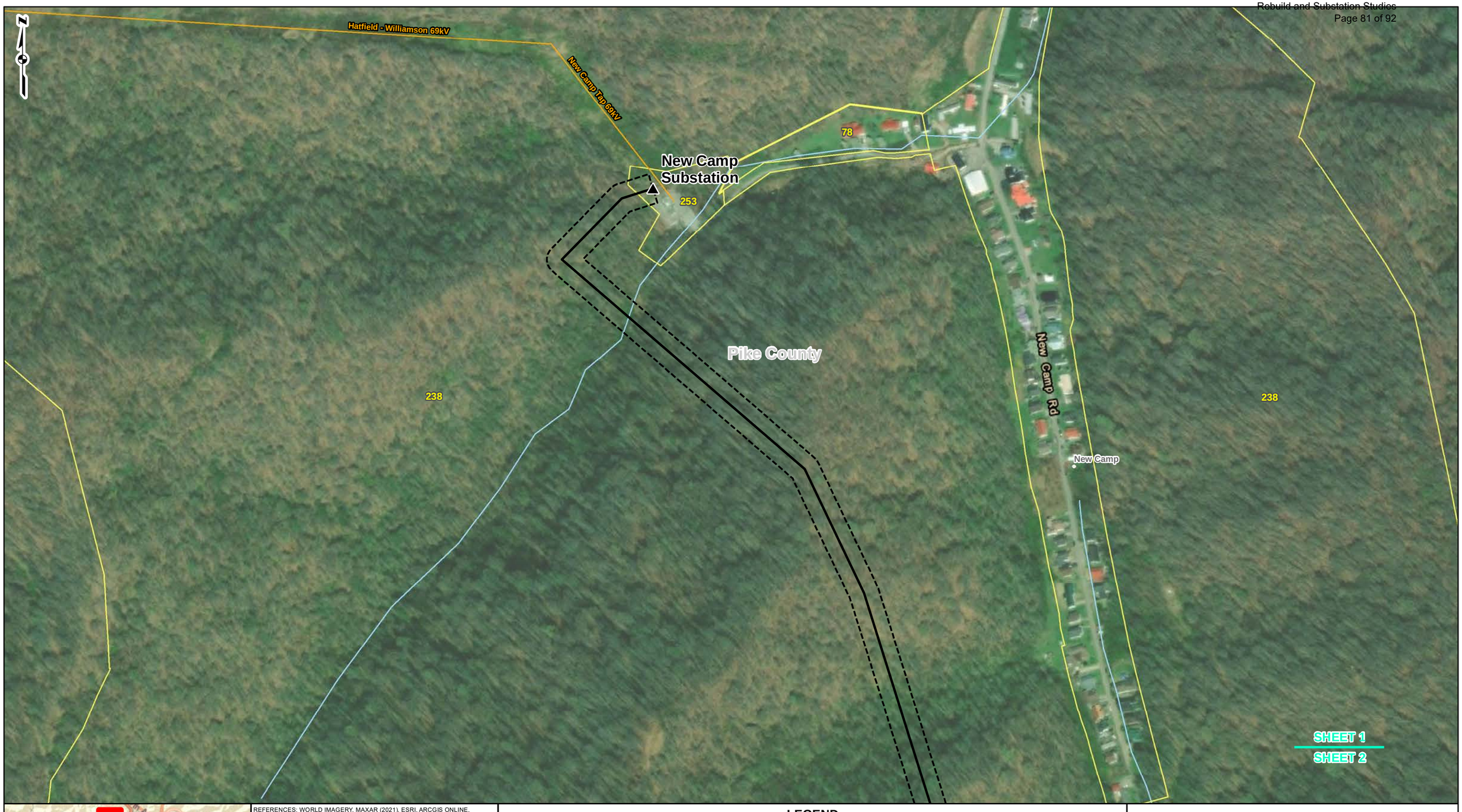

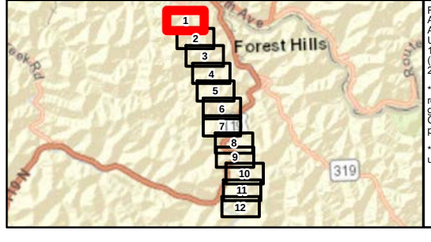

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0 150 300 600 Feet

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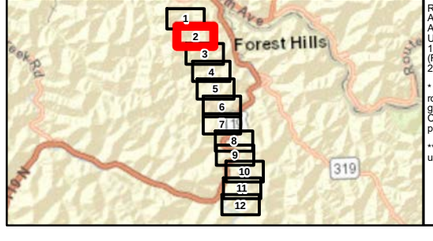

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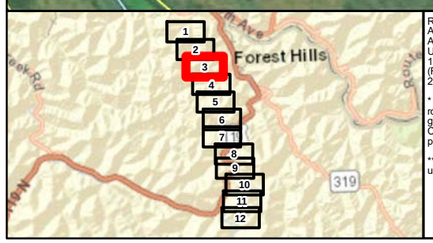

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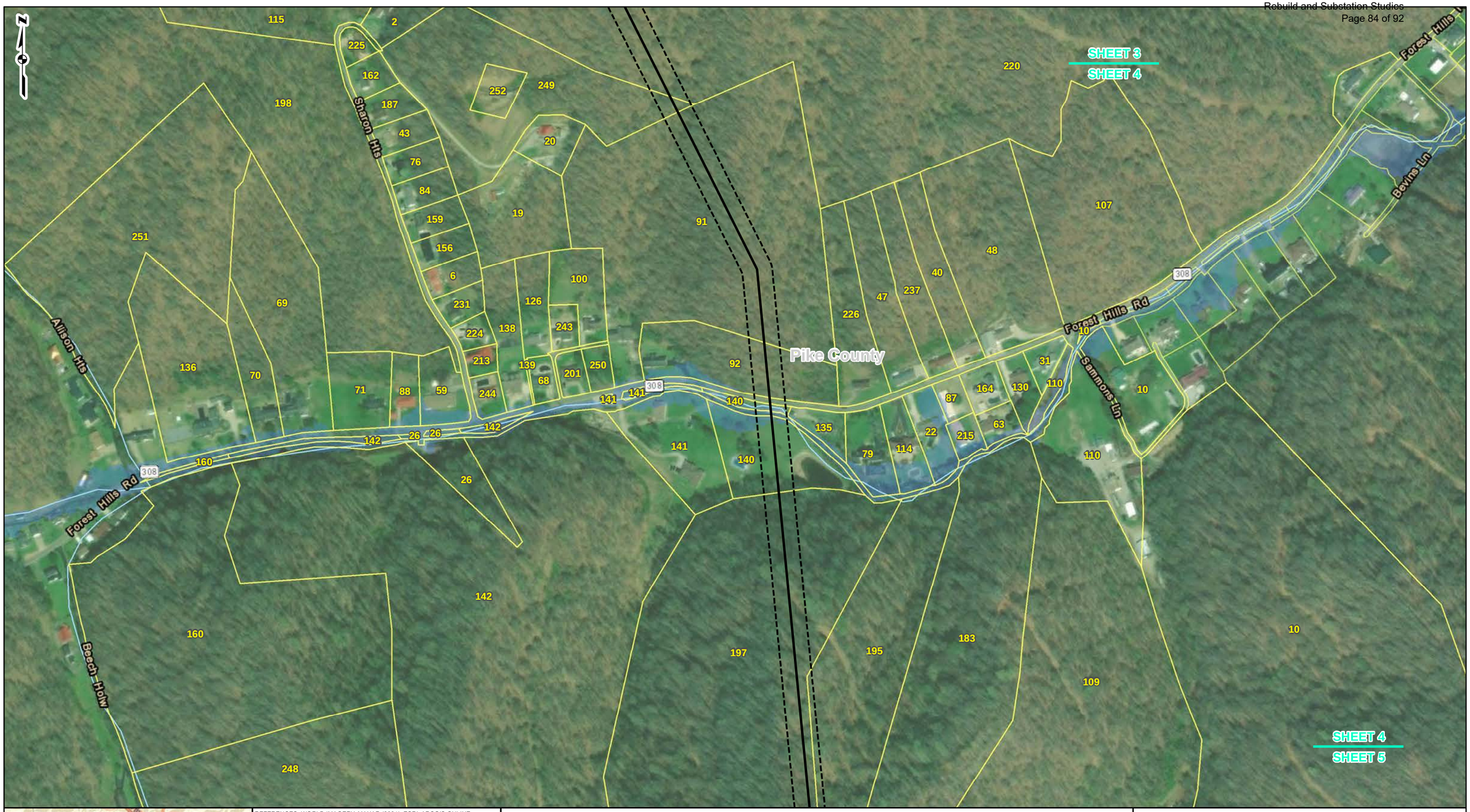

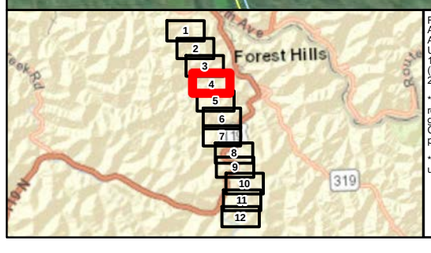

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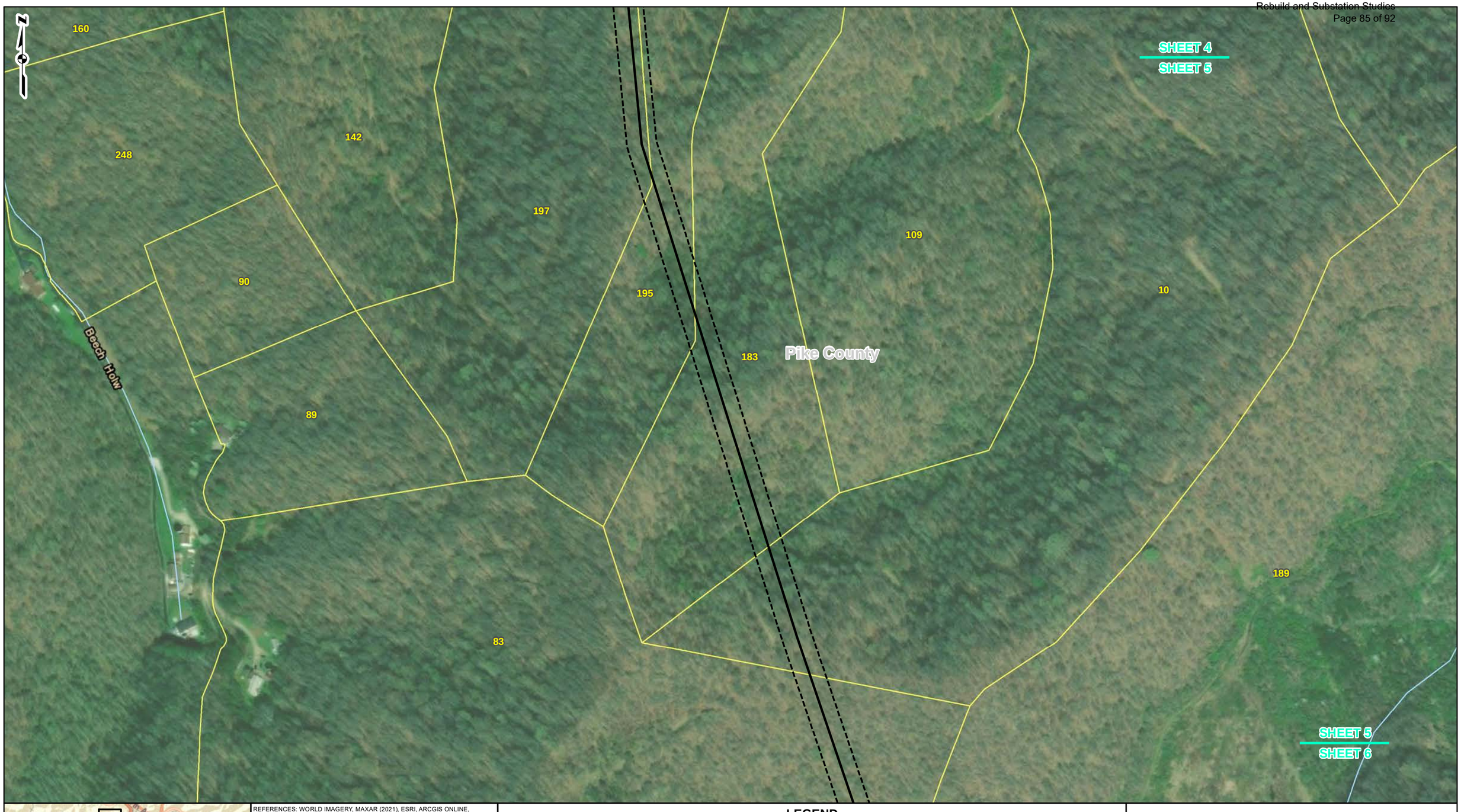

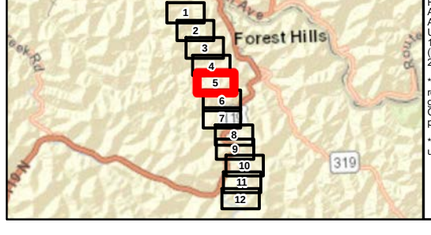

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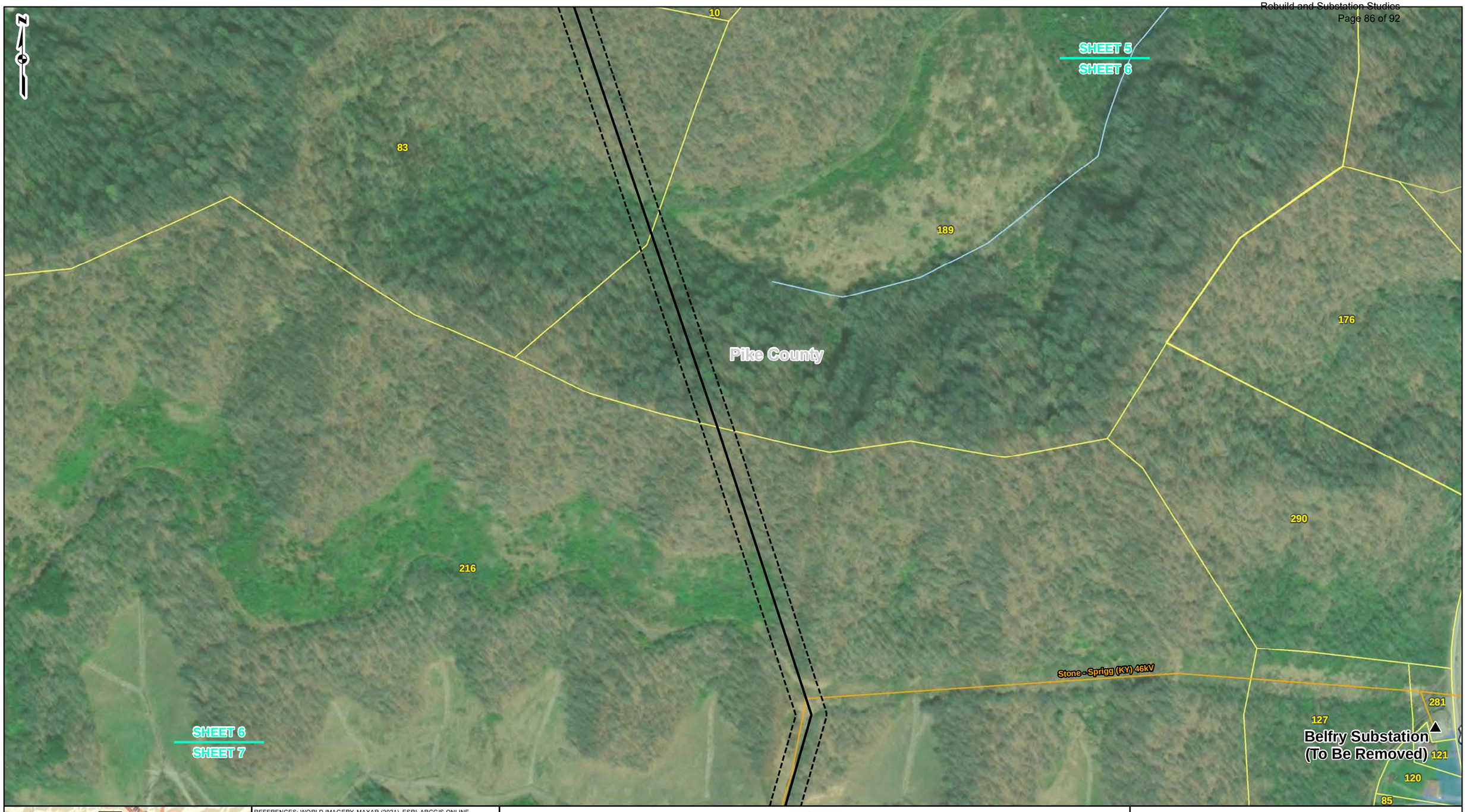

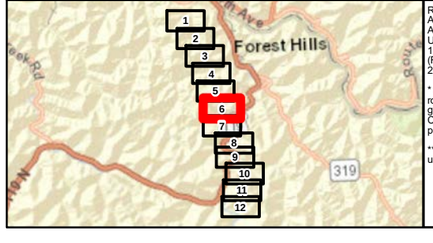

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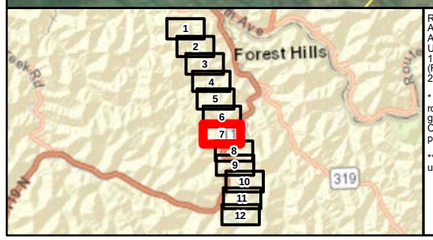

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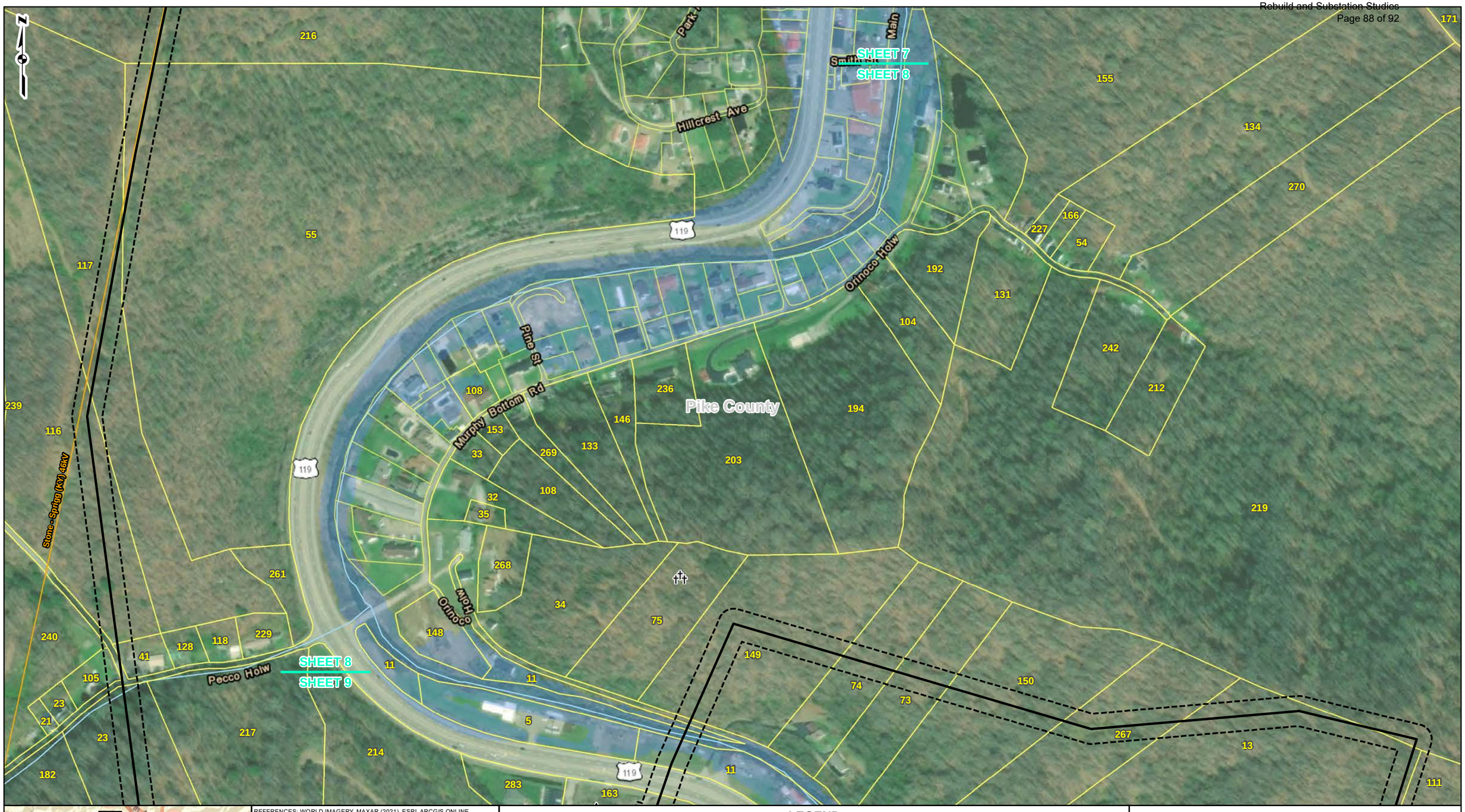

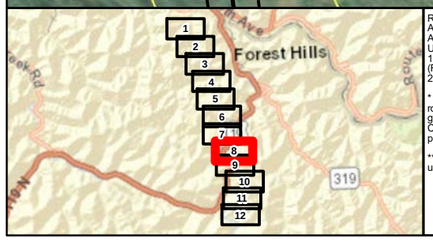

REFERENCES: WORLD IMAGERY, MAXAR (2021), ESRI, ARCGIS ONLINE. ACCESSED 08/2022. WORLD TRANSPORTATION, ESRI, ARCGIS ONLINE. ACCESSED 08/2022. NATIONAL HYDROGRAPHY DATASET (NHD) STREAMS, USGS, 2020. NATIONAL WETLAND INVENTORY (NWI) WETLANDS, USFWS, 2020. 100-YEAR FLOODPLAINS, FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA), 2020. CEMETERIES, CHURCHES, SCHOOLS, ESRI, ARCGIS ONLINE, 2021.

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- 100-Year Floodplain

0 150 300 600 Feet

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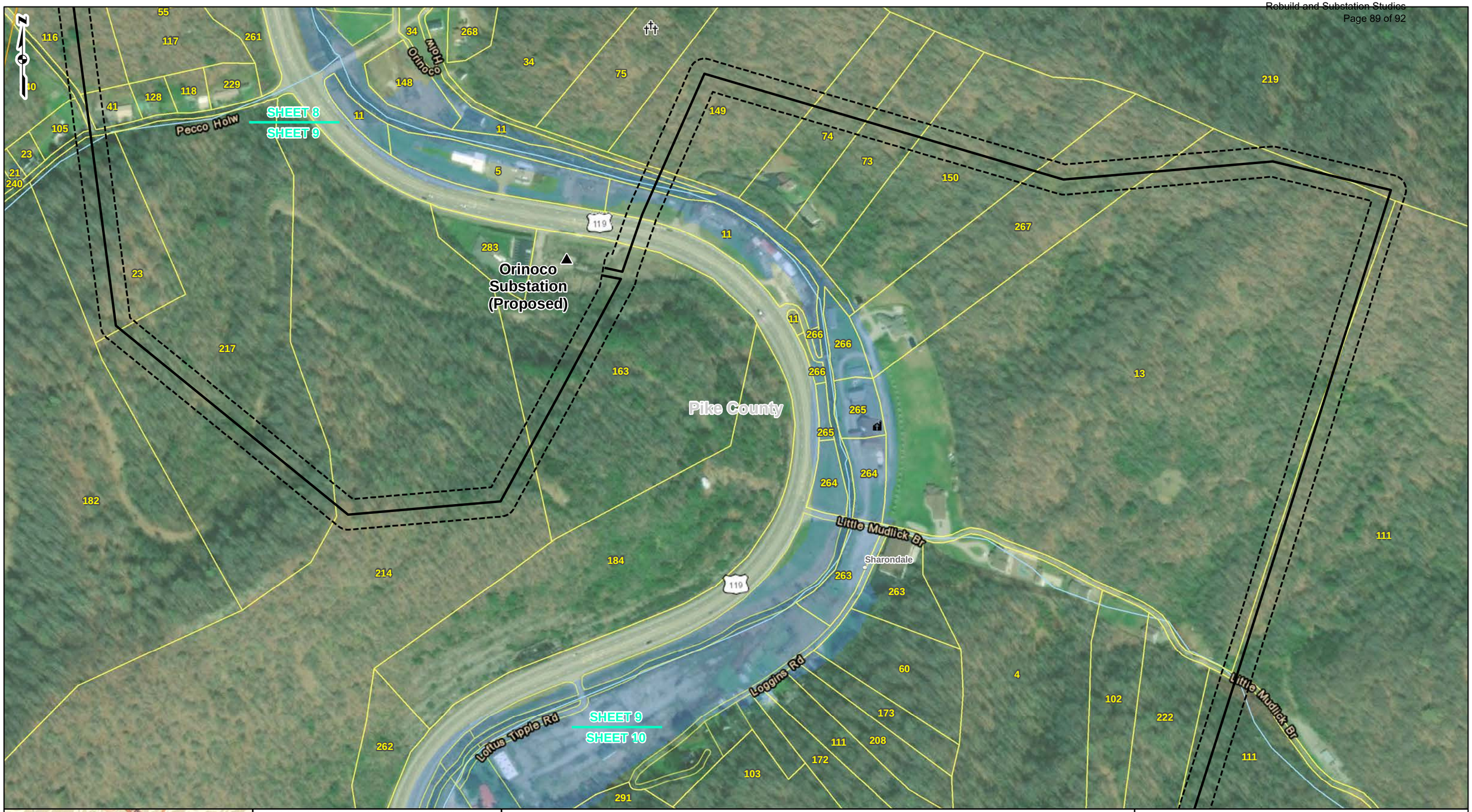

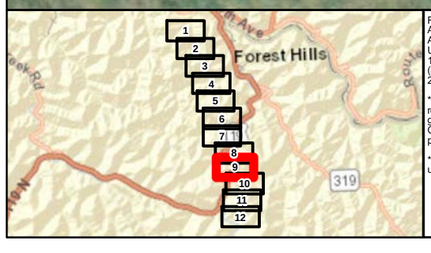

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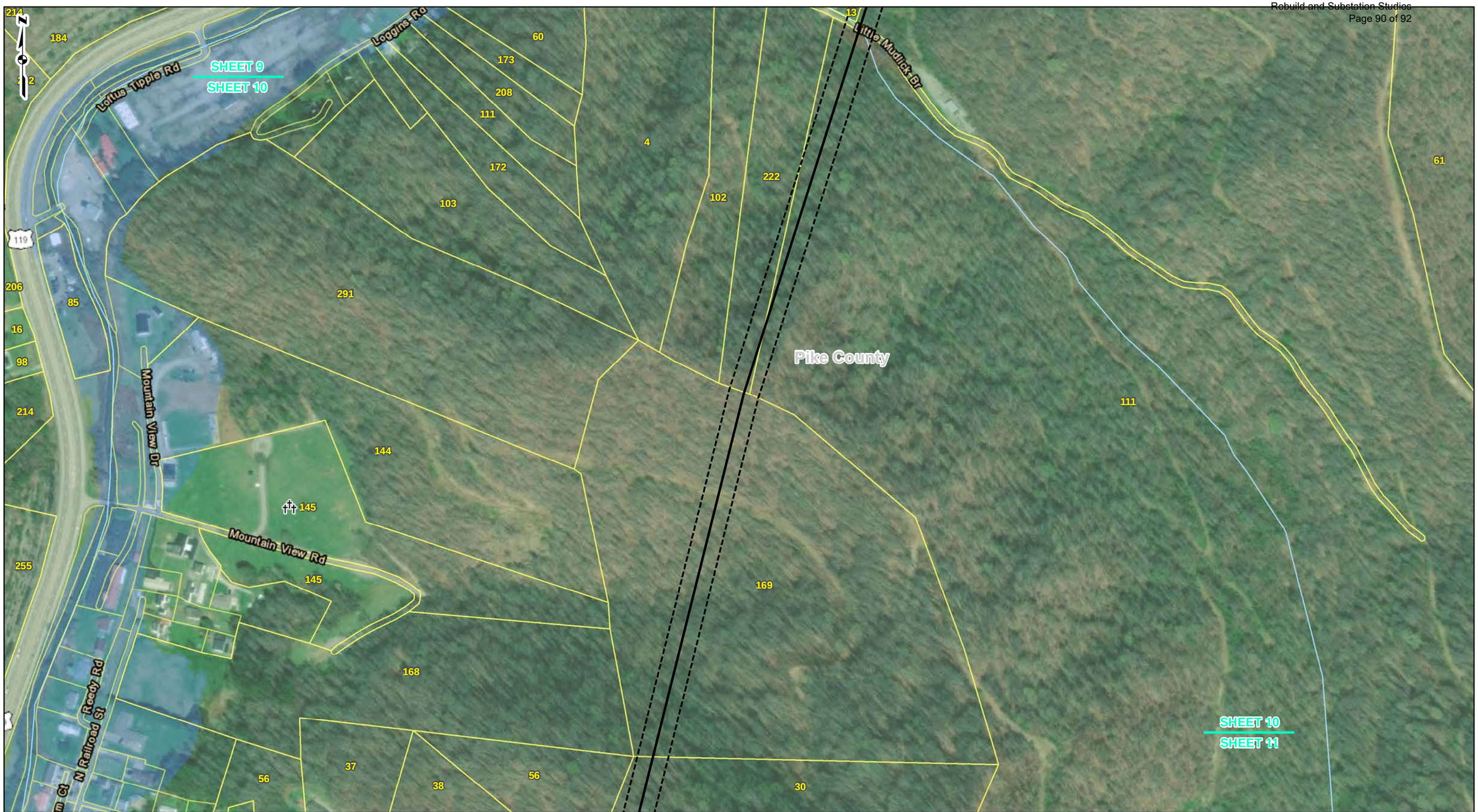

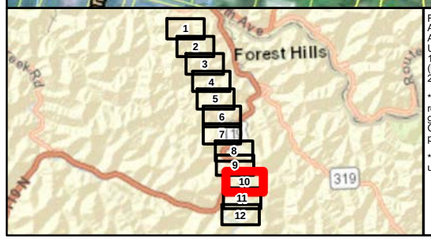

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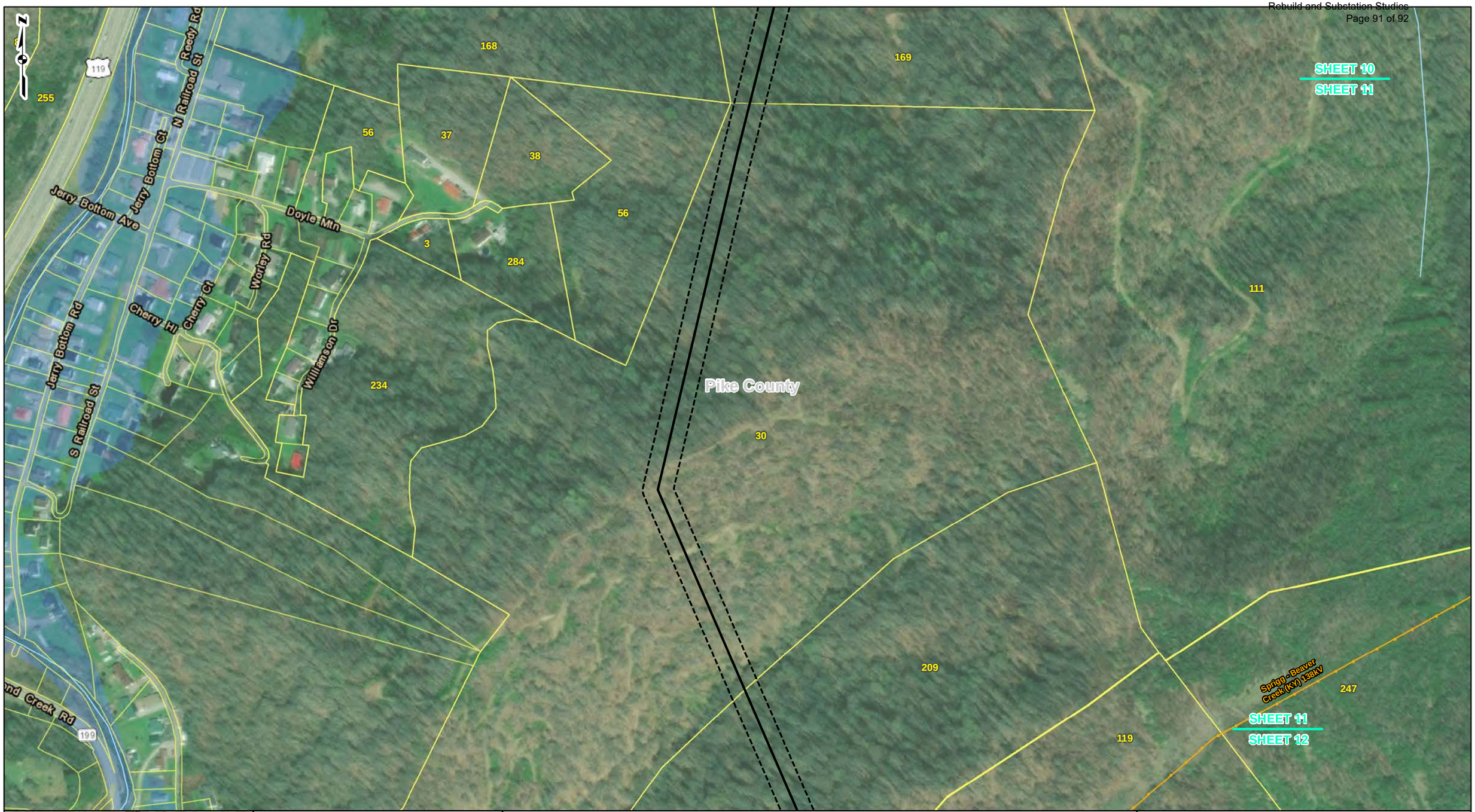

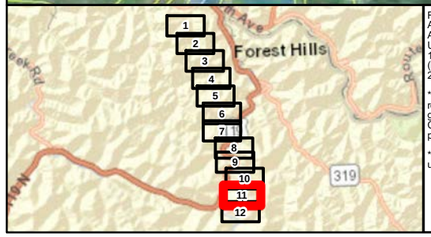

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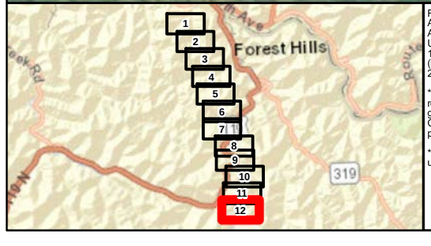

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