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April 10, 2019

VIA HAND DELIVERY

Rosemary Chiavetta, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
400 North Street, 2nd Floor North
P.O. Box 3265
Harrisburg, PA 17105-3265

Re: Joint Petition of PPL Electric Utilities Corporation for Waiver of Certain Provisions of the Pennsylvania Public Utility Commission's Regulations at 52 Pa. Code § 57.71 *et seq.*, and Letter of Notification of PPL Electric Utilities Corporation, Filed Pursuant to 52 Pa. Code Chapter 57 Subchapter G, for Approval of the Siting and Construction of the Siegfried – East Palmerton #1 and #2 138/69 kV, the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines, and Associated Tap Lines located in Lehigh and Carbon Counties, Pennsylvania
Docket No. A-2019-

Dear Secretary Chiavetta:

Enclosed for filing is the Joint Petition for Waiver and Letter of Notification of PPL Electric Utilities Corporation in the above-referenced proceeding. A CD containing a copy of the Letter of Notification and Attachments in Support of the Letter of Notification is also enclosed.

As indicated on the Certificate of Service, copies of the Letter of Notification are being served by certified mail, return receipt requested upon the involved governmental agencies, municipalities and property owners.

Construction is scheduled to begin upon receipt of Commission approval to support an in-service date before the end of 2022.

If you have any questions concerning this matter, please contact me at the address or telephone numbers provided above.

Enclosed please find our firm's check in the amount of $350 representing the filing fee.

Respectfully submitted,

Jessica R. Rogers

JRR/jpf
Enclosures

cc: Certificate of Service
Robert F. Young
Paul T. Diskin
Kimberly Hafner
Debra Backer
Jordan Van Order

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Joint Petition of PPL Electric Utilities Corporation for Waiver of Certain Provisions of the Pennsylvania Public Utility Commission's Regulations at 52 Pa. Code § 57.71 *et seq.*, and Letter of Notification of PPL Electric Utilities Corporation, Filed Pursuant to 52 Pa. Code Chapter 57 Subchapter G, for Approval of the Siting and Construction of the Siegfried – East Palmerton #1 and #2 138/69 kV and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines, and Associated Tap Lines located in Lehigh and Carbon Counties, Pennsylvania	:	Docket No. A-2019-_____

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JOINT PETITION FOR WAIVER AND LETTER OF NOTIFICATION

TO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:

PPL Electric Utilities Corporation ("PPL Electric"), hereby files this Petition for Waiver, pursuant to 52 Pa Code §§ 5.43 and 57.72(e), for a waiver of certain of the Pennsylvania Public Utility Commission's ("Commission") regulations governing the review and approval of the siting and construction of high voltage electric transmission lines set forth at 52 Pa. Code §§ 57.71 *et seq.*, together with this Letter of Notification to request that the Commission approve the siting and construction of the proposed Project pursuant to 52 Pa. Code § 57.72(d).

This Project involves Phases 2 and 3 of a larger three phase project in which the transmission lines between the Siegfried, Hauto and East Palmerton Substations are being rebuilt. Phase 1 was approved by the Commission on July 5, 2013 at Docket No. A-2013-2372112. For Phases 2 and 3, PPL Electric seeks approval to rebuild approximately 6.9 miles of

the existing Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line and approximately 15.2 miles of the existing Hauto – Siegfried #1 and #4 138/69 kV Transmission Line located in Lehigh and Carbon counties, Pennsylvania

The existing Siegfried – East Palmerton #1 and #2 138/69 kV and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines have reached the end of their useful lives and the facilities must be replaced in order for PPL Electric to continue to provide safe and reliable service and meet its obligations as a public utility. The necessary modernization of the lines will help ensure reliable and continuous service to more than 26,000 customers in Lehigh and Carbon counties.

This project will be constructed in Washington Township in Lehigh County, and Palmerton, Nesquehoning and Summit Hills Boroughs, and Lower Towamensing, Mahoning and East Penn Townships in Carbon County. PPL Electric has provided information regarding this Project to all of the identified political subdivisions, and none of them have objected to the Project. Construction on Phase 2 and Phase 3 will begin upon receipt of the Commission's approval of this filing, with an estimated in-service date before the end of 2022. In support thereof, PPL Electric states as follows:

I. INTRODUCTION

1. This Joint Petition for Waiver and Letter of Notification is filed by PPL Electric, a public utility that provides electric distribution, transmission, and provider of last resort services in Pennsylvania subject to the regulatory jurisdiction of the Commission.

2. PPL Electric's address is as follows:

PPL Electric Utilities Corporation
Two North Ninth Street
Allentown, Pennsylvania 18101

3. PPL Electric's attorneys are:

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PPL Electric's attorneys are authorized to receive all notices and communications regarding this Joint Petition for Waiver and Letter of Notification.

4. PPL Electric furnishes electric service to approximately 1.4 million customers throughout its certificated service territory, which includes all or portions of twenty-nine counties and encompasses approximately 10,000 square miles in eastern and central Pennsylvania. PPL Electric is a "public utility" and an "electric distribution company" as defined in Sections 102 and 2803 of the Pennsylvania Public Utility Code, 66 Pa.C.S. §§ 102, 2803.

5. PPL Electric owns approximately 5,000 miles of transmission lines operating at 69 kV (kilovolts) or higher, approximately 375 substations with a capacity of 10 MVA (megavolt amperes) or more, and approximately 43,000 miles of distribution lines operating at less than 69 kV.

6. PPL Electric originally proposed to undertake three separate transmission projects as part of its plan to replace the aging transmission lines between the Siegfried Substation and the East Palmerton and Hauto Substations. These lines have reached the end of their useful lives and must be replaced in order to continue to provide safe and reliable service. The first phase was approved by the Commission on July 5, 2013 at Docket No. A-2013-2372112.

7. This Joint Waiver Petition and Letter of Notification seeks Commission approval for the second and third phases, which encompass (1) the approximately 6.9 mile section between a point where the existing Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines and the existing Siegfried – Hauto #1 and #4 138/69 kV Transmission Lines diverge in Washington Township ("the Split") and the East Palmerton 230-69 kV Substation; (2) 15.2 miles of the existing Hauto-Siegfried #1 and #4 138/69 kV Transmission Line from the Split to the Hauto substation; and (3) the tap lines associated with these two segments.

8. This Joint Petition for Waiver and Letter of Notification includes the following accompanying Attachments:

- Attachment 1 Necessity Statement.
- Attachment 2 Engineering Description.
- Attachment 3 Description of Right-of-Way.
- Attachment 4 PPL Electric Design Criteria and Safety Practices.
- Attachment 5 List of Property Owners Within The Right-of-Way
- Attachment 6 List of Involved Governmental Agencies, Municipalities and Other Public Entities

9. This Joint Petition for Waiver and Letter of Notification and accompanying Attachments, which are incorporated herein by reference, contain all the information required by 52 Pa. Code § 57.72(d)(4).

II. LETTER OF NOTIFICATION

A. THE PROJECT

1. Overview

10. PPL Electric proposes to rebuild approximately 6.9 miles of the existing Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line and approximately 15.2 miles of the

existing Hauto-Siegfried #1 and #4 138/69 kV Transmission Line located in Lehigh and Carbon counties, Pennsylvania. PPL Electric also proposes to reconstruct the existing Palmerton #1 and #2 138/69 kV Transmission Tap, the Palmerton Zinc #1 and #2 138/69 kV Transmission Tap, the South Slatington #1 and #4 138/69 kV Transmission Tap, and the Ashfield #1 and #4 Transmission Tap. Collectively, these are referred to as "the Project" for purposes of this Letter of Notification.

11. The proposed Project is necessary to continue to provide safe and reliable service in the future to approximately 26,000 customers who are currently served off the combination of transmission circuits, tap lines, and substations that make up the three phases of this Project. The rebuilt lines will meet all current design and lightning protection standards. Modernization of the lines will help ensure that PPL Electric will be able to provide reliable and continuous service to customers in Lehigh and Carbon Counties now and in the future.

2. Need for the Project

12. PPL Electric has a responsibility to provide transmission assets and maintain them in a manner that is safe, reliable, and resilient to meet the needs of the electric system and the expectations of its customers. To meet this duty, PPL Electric applies its transmission asset management planning procedure, which includes system performance and condition assessments. These performance and condition assessments identify system needs and prioritize projects based on several variables such as equipment age, condition, maintenance schedule, and impact on system reliability and performance to ensure a reliable electric grid and service to its customers.

13. As part of this process, the Hauto – Siegfried #1 and #4 138/69 kV and Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines was first formally assessed in 2011 as part of a system-wide review of aging infrastructure. Additional comprehensive testing was

conducted on the lines in late 2018. The recommendation from both assessments is for the transmission lines to be rebuilt, because both condition assessments confirmed that the transmission lines are in a failing health. A detailed description of these assessments and their conclusions are provided in the Necessity Statement included as Attachment 1 to this Letter of Notification.

14. As explained in greater detail in the Necessity Statement, the purpose of the Project is to modernize the lines to reduce the risk of failure due to aged facilities, and to meet all current design and lightning protection standards which will help ensure reliable and continuous service to customers in Lehigh and Carbon Counties.

a. Existing System

15. This Project completes a three-phase plan to replace aging transmission lines between the Siegfried Substation and the East Palmerton and Hauto Substations. PPL Electric divided the overall plan into three separate phases to reduce the complexity of project execution. The first phase of this plan addressed the 8.5 miles of the Hauto – Siegfried #1 and Siegfried – East Palmerton #2 138/69 kV circuits, and the Hauto – Siegfried #4 and Siegfried – East Palmerton #1 138/69 kV circuits, from the Siegfried 230-138-69 kV Substation until it reached the "Split." These four transmission circuits were on two sets of double circuit structures in the same corridor between the Siegfried Substation and the "Split". The project was approved by the Commission in an Order entered on July 5, 2013 at Docket No. A-2013-2372112. This Letter of Notification seeks the Commission's approval for reconstruction of the final two phases of this system. Phase Two is the section of the system from the "Split" to the East Palmerton Substation, and all associated tap lines, and Phase Three is the section between the "Split" and the Hauto Substation and its associated tap line.

16. From the "Split", the Siegfried – East Palmerton #1 and #2 138/69 kV circuits continue northeast from the "Split" for approximately 6.9 miles to the East Palmerton 230-69 kV Substation. The Hauto – Siegfried #1 and #4 138/69 kV circuits continue west for approximately 15.2 miles to the Hauto 69-12 kV Substation on two separate sets of structures mostly in the same corridor.

17. The Phase 2 portion of the Project begins at the "Split". There are parallel pairs of adjacent single-circuit transmission structures for approximately 3.4 miles, and then double-circuit structures for another approximately 2.1 miles towards the East Palmerton 230/69 kV Substation. From there, the line transitions back to pairs of adjacent single-circuit structures for approximately 0.6 miles northeast to the Palmerton Zinc 69 kV customer transmission tap, after which it goes back to double-circuit structures for another approximately 0.5 miles. For the last 0.2 miles, the line operates on pairs of adjacent single-circuit structures on PPL Electric-owned property until it terminates at the East Palmerton 230-69 kV Substation.

18. As part of Phase Two, three short transmission taps extend from the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line to the Palmerton, Palmerton Zinc, and South Slatington Substations which are included in the proposed rebuild. The Palmerton #1 and #2 138/69 kV Transmission Tap consists of approximately 300 feet of two 69 kV lines on adjacent single-circuit structures into PPL Electric's Palmerton 69-12 kV Substation. The Palmerton Zinc #1 and #2 138/69 kV Transmission Tap consist of approximately 0.1 miles of adjacent single-circuit structures into the customer-owned Palmerton Zinc 69-12 kV Substation. The South Slatington #1 and #4 138/69 kV Transmission Tap consist of approximately 0.1 miles of adjacent single circuit structures into PPL Electric's South Slatington 69-12 kV Substation.

19. Phase Two serves approximately 11,500 customers located in Carbon and Lehigh counties, as well as a 69 kV transmission customer.

20. The Phase Three portion of the Project begins at the "Split" as parallel pairs of adjacent structures and continues on for approximately 15.2 miles to the Hauto 69-12 kV Substation. The structures on this portion of the line are typically pairs of single circuit steel lattice towers; however, there are some locations where the lattice towers for each separate circuit are not adjacent to each other.

21. Phase Three has a transmission tap included in the proposed rebuild called the Ashfield #1 and #4 138/69 kV Transmission Tap. The Ashfield #1 and #4 138/69 kV Transmission Tap includes a 0.1 and 0.04-mile-long transmission tap. These taps include five wood poles, four of which carry the Ashfield #1 138/69 kV Transmission Tap and one of which carries the Ashfield #4 138/69 kV Transmission Tap, into the Ashfield 69-12 kV Substation.

22. Phase Three serves approximately 16,000 customers in Lehigh, Carbon, and Northampton counties.

b. Definition of the Problem

23. The Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line was constructed in 1948. The structures on this portion of the Project (Phase 2) include 21 steel monopole structures, 25 steel lattice towers, and 187 wood poles. The average ages of the steel monopole structures, steel lattice towers, and wood pole structures are 17 years, 68 years, and 51 years, respectively. The wood poles are the greatest concern on these lines, as the majority of them are past their expected useful life of 40-50 years of age.

24. The Hauto – Siegfried #1 and #4 138/69 kV Transmission Line was originally constructed in 1914 and 1923. The structures on this portion of the Project (Phase 3) include 23 steel monopole structures, 260 steel lattice towers, and 5 wood poles. The average age of the

steel monopole structures, steel lattice towers, and wood poles are 20, 98, and 43 years, respectively. The lattice towers and wood poles are the greatest concern on these lines, as the majority of them are at or past their expected useful life of 80 years (towers) and 40-50 years (wood poles). The 260 steel lattice towers are the original towers installed in 1914 and 1923.

25. The age of the existing conductor, which dates back to 1948 and is therefore 71 years old, is an additional asset health concern. The conductors are past the end of their respective expected life of 65 years. The Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines and taps have 250 MCM copper conductors. The Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines and taps have a mixture of 96 and 105 4/0 copper and some newer ACSR[1] conductor. The Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line conductor is especially concerning since copper conductors of similar vintage on PPL Electric's system have failed due to a patina developing on the copper over time, which can cause surface corrosion pits. These pits can cause micro-cracks which propagate into larger cracks along the cross section of each strand of wire, eventually resulting in failure.

26. The 2011 assessment of a sample of 55 structures on the Hauto – Siegfried #1 and #4 and the Siegfried – East Palmerton #1 and #2 Transmission Lines found that the structures exhibited conditions indicating that they were beyond the end of their useful life. The conditions found included foundation corrosion, insulator and hardware corrosion, poor grounding, and poor geotechnical conditions. The recommendation was that the Siegfried – East Palmerton #1 and #2 138/69 kV and Hauto – Siegfried #1 and #4 138/69 kV transmission lines, and associated taps, be rebuilt.

27. An additional and more comprehensive field condition assessment of a sample of 143 structures on the four circuits was undertaken at the end of 2018. The sample size was

[1] Aluminum Conductor Steel Reinforced.

selected in order to yield a 90% confidence level that the results are representative of the condition of the entirety of the lines. The report identified that 35% of the steel lattice structures and 78% of the wood structures inspected required immediate restoration or replacement. Many of the types of defects found in the initial assessment were identified again in the second inspection, including hardware corrosion, split wood pole tops, mechanical damage, and leaning wood poles.

28. A full description of the assessments and their results is found in Attachment 1.

29. The impact of the deterioration of the transmission lines has and will continue to cause reliability concerns on the lines identified in this Project. The Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line has had generally good performance, with five momentary outages since 2008. One industrial customer was affected by these outages. However, if one of the double circuit structures or two of the single circuit structures were to fail, approximately 11,200 customers would be impacted. The risk of a significant outage increases as the condition of the facilities degrades.

30. The Hauto – Siegfried #1 and #4 138/69 kV Transmission Line has experienced 32 outages since 2006, of which 28 were momentary and 4 were permanent. Two of the failed equipment outages were caused by an insulator failure and tower failure. Over 16,000 customers are at risk from outages on these lines, with over 10,000 impacted by single-circuit operations and 2,000 considered "stranded load", meaning they have no other restoration source and are susceptible to prolonged outages. Again, the risk of a significant outage increases as the condition of the facilities age and degrade.

31. Based on the outcome of the two assessments, PPL Electric considered and ultimately determined that rebuilding the existing lines with a more reliable and robust circuit

constructed on steel monopoles would provide the most reliability benefits with the least impact on customers and property owners. Rebuilding the existing single-circuit portion of the lines as double-circuits will allow PPL Electric to construct the new line on the center of the existing right-of-way, in most areas, to increase safety and reliability by increasing the distance between the conductors and the edge of the right of way. A full cost-benefit analysis of the chosen option compared with the other alternatives assessed is provided in Attachment 1.

3. The Proposed Project

32. PPL Electric determined that the best solution is to replace the existing transmission lines with new and updated facilities within the existing right-of-way. The double-circuit lines will be designed to modern 138 kV standards, but will initially operate at 69 kV. As described in the Attachments, there are two primary transmission line sections that will be replaced as part of this Project, as well as the associated transmission tap lines. The total number of poles will be reduced from 440 to 220 on the combined system. The entire project, except for one 0.3 mile section, will be built within the existing right-of-way. For that 0.3 mile section, at the request of the impacted landowner, a new 100-foot-wide right-of-way has been obtained adjacent to the Delaware and Lehigh ("D&L") Trail, which will limit the impacts on the landowner's property, reduce the site preparation work that is required, and is not opposed by the two other impacted property owners.

33. The segment of the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line included in the Project begins at the "Split" and continues to the East Palmerton Substation. Currently, there are a total of 124 existing structures along the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines. A majority of the existing Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines are carried on separate single-circuit

structures, while a few short portions of the lines are carried on double-circuit structures. The existing structures consist of a mix of single-circuit wooden H-frame, single-circuit wooden single-pole, double-circuit wooden single-pole, and double-circuit steel lattice structures. The Project will reduce the number of poles on this portion of the line from 124 to 74. It will also reduce the footprint of the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line by creating a double-circuit and removing the old structures, which take up more of the right-of-way than steel monopoles. The new poles will range in height between approximately 65 and 145 feet with an approximate average structure height of approximately 90 feet.

34. The Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines support three tap lines that will also be rebuilt. The new Palmerton Zinc 138/69 kV Transmission Tap will consist of two single-circuit steel MOLBAB[2] switch structures and two single-circuit steel monopoles. The new Palmerton 138/69 kV Transmission Tap will consist of five single-circuit steel monopoles. Both taps will be replaced structure for structure on steel single-circuit monopole structures. The steel monopoles for these taps are expected to range between approximately 65 and 75 feet in height, with an average height of approximately 70 feet. The South Slatington #1 138/69 kV Transmission Tap will consist of three new single-circuit steel monopole structures, which range in height from approximately 70 feet to 80 feet. The new South Slatington #2 138/69 kV Transmission Tap will consist of one approximately 115-foot dead-end pole and one approximately 135-foot tap pole.

35. From the Split, the Hauto – Siegfried #1 & #4 Transmission Lines operate as two parallel single-circuit 138/69 kV transmission lines for 15.2 miles between the Split and the Hauto Substation. The entire line will be reconstructed as a double-circuit 138/69 kV transmission line on new self-weathering steel monopoles with high capacity conductors and two

[2] MOLBAB stands for motor-operated load break air break.

fiber OPGW. PPL Electric has designed the rebuilt Hauto – Siegfried #1 and #4 138/69 kV Transmission Line to fit within the existing right-of-way. New structures will be located near the existing structures where practical. No new structures will be located on any property that currently does not have an existing structure and no new right-of-way is required for this segment. The Project will reduce the number of poles on this portion of the line from 299 to 130. It will also reduce the footprint of the Hauto – Siegfried #1 & #4 138/69 kV Transmission Line by creating a double-circuit and removing the old structures, which take up more of the right-of-way than steel monopoles. The new poles will range between approximately 75 and 125 feet in height. Two guyed poles will be used as part of rebuilding the proposed Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines located on either side of the Lansford Substation. The guyed poles will be permanent and will not be removed after construction on the transmission line is complete.

36. The Hauto – Siegfried #1 & #4 138/69 kV Transmission Lines support the Ashfield #1 and #4 138/69 kV Transmission Tap. The proposed Ashfield #1 and #4 138/69 kV Transmission Tap will consist of one single-circuit steel MOLBAB switch structure approximately 69 feet in height, and three single-circuit steel monopoles that range in height from approximately 70 feet to 75 feet.

37. The Project will utilize six power conductors and two overhead ground wires for the double circuit portions, while each single circuit branch will utilize three power conductors and a single overhead ground wire. The power conductors will be 556.5 kcmil,[3] 24/7 stranding, ACSR conductors. The overhead ground wires will be 0.791-inch-diameter optical ground wire.

[3] Wire sizes are expressed in thousands of circular mils (kcmil). A circular mil is the cross-sectional area of a wire one mil in diameter, where 1 kcmil = 0.5067 mm².

38. The proposed Project will bring the lines into compliance with current design standards, including increased vertical ground clearance, modern conductors, and installation of steel monopole structures for optimal structure longevity. The Project will also increase the lightning protection of the transmission lines to reduce the frequency of momentary outages experienced by customers. Additionally, as a part of the Project, PPL Electric will be installing MOLBAB switches that will allow for remote sectionalizing of the transmission system to restore service to customers in instances of sustained outages or during maintenance scenarios.

39. This Project is necessary to stop the continued degradation of the transmission lines, which are putting customers at an increased risk of a significant outage. Due to the age and condition of the facilities, PPL Electric must take some action merely to ensure that customers continue to receive the reliable service they have experienced in the past. After completion of this Project, the customers served from these facilities should experience improved service reliability that is maintainable for many years into the future, with little to no additional cost for ongoing maintenance. SAIFI, SAIDI, and CAIDI are expected to be maintained at current or better levels by rebuilding these lines to current PPL Electric design standards. It is unlikely that PPL Electric could maintain its SAIFI, SAIDI, and CAIDI levels without undertaking this Project.

40. The total estimated cost for the proposed Project is approximately $55.5 million.

41. Construction on Phase 2 and Phase 3 will begin upon Commission approval, with an estimated in-service date before the end of 2022. The Project should be placed in-service as soon as possible, to address the threats to reliability identified in the field condition assessment.

42. The detailed Engineering Description of the proposed Siegfried – East Palmerton #1 and #2 138/69 kV and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines, and associated tap lines, is provided in Attachment 2 accompanying this Letter of Notification.

B. HEALTH AND SAFETY

43. The proposed lines will not create any unreasonable risk of danger to the public health or safety. The proposed lines will be designed, constructed, operated, and maintained in a manner that meets or surpasses all applicable National Electrical Safety Code ("NESC") minimum standards and all applicable legal requirements. Descriptions of the NESC standards, PPL Electric's design criteria, and PPL Electric's safety practices are provided in Attachment 4 to this Letter of Notification.

44. Attachment 4 accompanying this Letter of Notification explains PPL Electric's standards for Magnetic Field Management. Ground clearances for the proposed Project will be increased five feet higher than those required by the NESC standard in order to reduce the magnetic field exposure. The proposed Siegfried – East Palmerton #1 and #2 138/69 kV and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines will be constructed for double circuit operation, which will allow for reverse phasing. A reduction in magnetic field exposure is anticipated due to the higher ground clearances and reverse phasing.

C. DESCRIPTION OF THE RIGHT-OF-WAY

45. The proposed rebuild of the Siegfried – East Palmerton #1 and #2 138/69 kV and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines will be entirely within the existing rights-of-way with one exception. PPL Electric did not seek additional rights-of-way for the Siegfried – East Palmerton #1 and #2 138/69 kV and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines because the existing rights-of-way are sufficient to accommodate the reconstructed transmission lines without the need for additional right-of-way. Although PPL

Electric can rebuild the Project entirely within the existing rights-of-way, at the request of Lehigh Gap Nature Center in order to minimize impacts on its property, PPL Electric acquired a new right-of-way adjacent to the D&L Trail and Lehigh River. By shifting the line on the Lehigh Gap Nature Center property, rights-of-way on two additional properties also had to be shifted. All three affected property owners, the Lehigh Gap Nature Center, Lehigh County and East Penn Township, agreed to the shifts and voluntarily granted PPL Electric the newly-acquired rights-of-way.

46. New structures will be located in close proximity to existing structures where it is reasonably practical to do so, however the vast majority of new structures will be located within the existing right-of-way. All structures will be located in order to avoid wetlands and other areas of concern. Where structures will be relocated, PPL Electric has discussed the proposed structure locations with the respective property owners, none of which had any objection to the new pole locations. No new structures will be located on any property that currently does not have an existing structure. Further, the Project will dramatically reduce the number of poles used for these sections of transmission line.

47. As explained in Attachment 2, the average height of the new structures will be slightly taller than the average height of the existing structures. Although the new structures will increase in height as compared to the existing outdated structures, the rebuilt Transmission Lines will reduce overall impacts to land use within the right-of-way by consolidating portions of previously parallel single-circuit lines and using steel monopoles, which have a smaller overall footprint than the existing structures.

48. An aerial plot plan is provided at the end of Attachment 3 to this Letter of Notification. The plot plan depicts the location of the existing transmission facilities for this Project.

D. LAND USE AND ENVIRONMENTAL EVALUATION

49. As explained above, construction of the proposed Project will take place almost entirely within existing rights-of-way. Therefore, it is anticipated that the proposed Siegfried – East Palmerton #1 and #2 138/69 kV and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines will have minimal incremental impacts on land use in the area. PPL Electric will use and update previously established access roads for construction to the extent practical to further reduce interference with existing uses and minimize land use impacts. A detailed description of the route of each individual component of the Project can be found in Attachment 3.

50. The existing Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines are located within right-of-way up to 150-feet wide. A majority of the line is located within a 100-foot-wide right-of-way. The existing Palmerton 138/69 kV Transmission Tap is located within a right-of-way that varies in width from 230 to 340 feet. The existing Palmerton Zinc 138/69 kV Transmission Tap is located within a 175-foot right-of-way. The land uses within a quarter mile (1,320 feet) of the existing Siegfried – East Palmerton #1 & #2 138/69 kV Transmission Lines, Palmerton 138/69 kV Transmission Tap and Palmerton Zinc 138/69 kV Transmission Tap are predominantly forest. The remaining area is split between: developed land; open space; barren land predominantly associated with an industrialized area; scattered agricultural fields and hay/pasture areas; and open water at the Lehigh River and Aquashicola Creek crossings. The existing right-of-way has previously been cleared of woody vegetation and further impacts to forested land use is not anticipated.

51. The Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines are located within right-of-way up to 150 feet in width. The existing Ashfield 138/69 kV Transmission Tap is located entirely on property owned by PPL Electric. The land uses within a quarter mile (1,320 feet) of these segments are predominantly forest land, accounting for over 71% of the area. The remaining 29% is split between intermittent grassland/pasture areas and agricultural land, developed land associated with roadways, golf courses, industrial areas, and Lansford Borough and the village of Slatedale. The existing right-of-way has previously been cleared of woody vegetation and further impacts to forested land use is not anticipated. The existing South Slatington 138/69 kV Transmission Tap is entirely located on property owned by PPL Electric. Agricultural land is the predominant land use, along with a mix of forested land and residential development.

52. Vegetative cover in the Project area consists primarily of forested and agricultural land. The southwestern portion of the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines right-of-way and the southern portion of the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines right-of-way cross forested areas associated with the Appalachian Trail and State Game Land 217. The existing right-of-way areas and PPL Electric-owned transmission corridor for the Siegfried – East Palmerton #1 & #2 138/69 kV and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines have previously been cleared of vegetation and no extensive tree clearing is anticipated. If vegetation management is required in specific locations, PPL Electric will apply its "*Specifications for Transmission Vegetation Management LA-79827*" to minimize potential impacts.

53. PPL Electric conducted a review of the online Pennsylvania State Historic Preservation Office ("SHPO") Bureau for Historic Preservation ("BHP") Cultural Resources

Geographic Information System ("CRGIS") database to determine if National Register of Historic Places ("NRHP")-listed or eligible historic properties are located in the Project vicinity. PPL Electric submitted a letter to the SHPO on December 11, 2017 covering the entire Project. The SHPO responded in a letter dated August 10, 2018 that the Project will have no effect on above ground historic properties. Subsequently, the SHPO responded in a letter dated November 29, 2018 that no further archaeological work is necessary within the Project area. PPL Electric will continue to consult with the SHPO to minimize any potential impact on above-ground resources. Similarly, PPL Electric will continue to coordinate with the National Park Service regarding any cultural resource concerns related to crossing the Appalachian Trail and work on federal lands. A full discussion of the NRHP-listed and eligible sites in the Project Area is described in Attachment 3.

54. No communication towers, pipelines, or other utilities will be affected by the proposed Project.

55. The closest active airport is a privately-owned airport located approximately 1 mile south of the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines. The closest public airport is the Jake Arner Memorial Airport which is located approximately 1.8 miles east of the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines. Three other private airports or heliports are located within 2 miles of the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines: the Lizard Creek Ultralight Airport, located 0.8 mile to the north; Miners Memorial Hospital Heliport, located in Coaldale 1.8 miles to the west; and the East Penn Airport, located 1.2 miles to the south. PPL Electric does not anticipate any interference with airport operations because the Project is located in an area where there are existing electrical

facilities. However, PPL Electric will file any required documentation with the Federal Aviation Administration and the Pennsylvania Department of Transportation, Bureau of Aviation.

56. Two state or federal recreation areas are crossed by the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines. The line route will cross approximately 1 mile of Pennsylvania State Game Land 217, east of I-476 in Washington Township, Lehigh County. This portion of the project crosses approximately 230 feet of the Appalachian Trail and associated federal lands just west of the intersection of Route 873 and Mountain Road in Washington Township, Lehigh County. The existing transmission lines will reduce the total number of structures from two to one on the federal property. State Game Land 168 is located approximately 0.4 mile southeast of the Project. Based on this distance, the change in elevation, and heavy tree cover, the existing transmission line is not visually noticeable from State Game Land 168 and no significant impacts to these areas are anticipated. No other recreational areas or natural landmarks are located within 1 mile of the Project.

57. One federal recreation area is crossed by the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines. The project crosses approximately 1,000 feet of the Appalachian Trail and associated land just south of Blue Mountain Road in East Penn Township, Carbon County. The Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines also crosses approximately 0.1 mile of Pennsylvania State Game Land 217 in Washington Township, Lehigh County. Because the Hauto – Siegfried 138/69 kV Transmission Lines will be constructed entirely within existing, cleared right-of-way and the number of structures will decrease, no significant impacts to these areas are anticipated. A portion of the Project also traverses the western boundary of Mauch Chunk Lake Park. The park is located in the Boroughs of Jim Thorpe and Summit Hill in Carbon County and contains facilities for camping, swimming, picnicking, hiking, biking,

fishing and boating. Because the Project will be constructed entirely within existing, cleared right-of-way and most park recreational activities are located east of the Project area, no impacts are anticipated. No other recreational areas or natural landmarks are located within 1 mile of the Project. PPL Electric will coordinate with the National Park Service, Appalachian Trail Club, Pennsylvania Game Commission, and Carbon County to discuss the Project and coordinate construction schedules.

58. The Palmerton Transmission Tap, Palmerton Zinc Transmission Tap, Ashfield 138/69 kV Transmission Tap and South Slatington 138/69 kV Transmission Tap will not affect any federal lands, state lands, national parks, state parks, local parks, recreational areas or natural landmarks.

59. The Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines will traverse approximately 6.7 miles of one Important Bird Area ("IBA"). The Hawk Mountain and Kittatinny Ridge IBA is located within Washington Township, Lehigh County and Palmerton Borough, East Penn and Lower Towamensing Townships in Carbon County. The IBA encompasses the National Park Service property, the Appalachian Trail, the Delaware and Lehigh Trail and State Game Land 217 which are all crossed by the Project. Impacts to birds within this IBA will be minimized by constructing the Project within the existing right-of-way. The Project does not introduce a new collision risk, although where taller than existing structures are used, it could potentially increase the currently existing collision risk. It is anticipated, however, that the Project will reduce the path of exposure to the IBA and the risk of collision by consolidating two parallel single-circuits into one double-circuit alignment, and thereby reducing the total number of structures.

60. The Project is located within two natural areas identified by the Pennsylvania National Heritage Program ("PNHP") as the West Lehigh River Kittatinny Slope and the Lehigh Furnace Gap. The West Lehigh River Kittatinny Slope is located in East Penn Township, Carbon County and Heidelberg and Washington Township, Lehigh County, along the southwestern portion of the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines. This area consists of south-facing forested slopes and the ridgeline of Blue Mountain, which provides habitat for several species of concern. The West Lehigh River Kittatinny Slope will not be impacted by the Project because it will be entirely rebuilt within the existing, cleared right-of-way. The Lehigh Furnace Gap is located in East Penn Township, Carbon County and Washington Township, Lehigh County, along the southeastern portion of the Hauto – Siegfried 138/69 kV Transmission Lines. The identified natural area (Lehigh Furnace Gap) provides suitable habitat for two species of concern: the Allegheny woodrat (*Neotoma magister*) and the Sand Quaker Moth (*Platyperigea meralis*). Neither of the natural areas will be impacted by the Project because it will be entirely rebuilt within the existing, cleared right-of-way.

61. Although not crossed by the Project, the Hauto – Siegfried 138/69 kV Transmission Line right-of-way has unique geological, scenic, and natural areas within 0.5 miles. These include Lake Hauto (Nesquehoning Township, Carbon County and Rush Township, Schuylkill County) located approximately 0.1 mile north of the Hauto Substation. The Mauch Chunk Ridge Barrens (Mahoning Township, Carbon County) is located approximately 106 feet east of the existing right-of-way. Stone Mountain Woods (East Penn Township, Carbon County) is located 0.1 mile southwest of the existing right-of-way. Finally, Rexton Ponds (Washington Township, Lehigh County) is located 0.4 mile east of the existing right-of-way. Each of these is described in greater detail in Attachment 3.

62. The Palmerton 138/69 kV Transmission Tap, Palmerton Zinc 138/69 kV Transmission Tap, Ashfield 138/69 kV Transmission Tap and South Slatington 138/69 kV Transmission Tap do not cross any natural areas identified by the PNHP. The Project will not traverse or affect any other unique geological, scenic, or natural areas.

63. PPL Electric retained an environmental consultant to identify and delineate all wetland and watercourses within the Project area. The Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines will span 46 wetlands and 35 streams. The Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines will span 57 wetlands, 51 streams, 2 ponds and seven ditches. The Palmerton Zinc 138/69 kV Transmission Tap will span two wetlands and one stream, while the Palmerton 138/69 kV Transmission Tap will cross one stream. The Palmerton 138/69 kV Transmission Tap will not span any wetlands. The South Slatington Transmission Tap does not span any wetlands or streams. It is anticipated the Project will not cause additional impacts on streams and wetlands because the new monopole structures will be located to specifically avoid impacting these areas. PPL Electric will obtain all necessary permits from the PADEP and the United States Army Corps of Engineers ("USACE") and will comply with all the terms and conditions placed on those permits.

64. The existing Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines span National Hydrography Dataset ("NHD") identified waterways that will continue to be spanned by the rebuilt transmission line. Waterways crossed in the northern portion of the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines include the Aquashicola Creek and Lehigh River. The Palmerton Transmission Tap and Palmerton Zinc Transmission Tap also span the Aquashicola Creek. The portion of the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines west of the Lehigh River span several unnamed tributaries

associated with Trout Creek. None of these waterways are considered an anti-degradation special protection classification water. The South Slatington 138/69 kV Transmission Tap does not span any NHD waterways.

65. The existing Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines spans nine NHD identified waterways that will continue to be spanned by the new transmission line. These include White Bear Creek, Mahoning Creek, Bergers Creek, and Lizard Creek. Two unnamed tributaries to Mahoning Creek and two unnamed tributaries to Bergers Creek are also crossed by the Hauto – Siegfried #1 & #4 138/69 kV Transmission Lines. The Ashfield 138/69 kV Transmission Tap does not span any NHD waterways.

66. The Pennsylvania Fish and Boat Commission ("PFBC") has designated Aquashicola Creek, Mahoning Creek, and Lizard Creek as Stocked Trout Waters. Additionally, White Bear Creek, Bergers Creek, Lizard Creek, Mahoning Creek and one of its crossed unnamed tributaries and an unnamed tributary to Trout Creek are designated as a Naturally Reproducing Trout ("NRT") Stream. Impacts to any waterway are anticipated to be minimal. PPL Electric will obtain all approvals and permits necessary for the construction of the Project and will comply with any conditions placed on those permits.

67. Erosion and Sedimentation ("E&S") control plans will be implemented for the Project to minimize the displacement of soils. Plans for Phase 2 have been developed and were approved by the local county conservation district. Coverage under National Pollutant Discharge Elimination System ("NPDES") permits have been obtained from the Pennsylvania Department of Environmental Protection ("PADEP") for Phase 2. PPL Electric will develop E&S plans for Phase 3 and obtain approval from the county conservation district. PPL Electric will also obtain applicable NPDES permits for Phase 3. During construction, PPL Electric will adhere to all

conditions specified in the NPDES permits. Impacts to local soil resources are anticipated to be minimal.

68. The National Flood Hazard Layer ("NFHL") for Carbon and Lehigh counties was obtained through the Federal Emergency Management Agency ("FEMA") Map Service Center and reviewed for 100-year floodplains within the Project area and surrounding landscapes. The NFHL data incorporates all Flood Insurance Rate Map ("FIRM") datasets published by FEMA and any Letters of Map Revision ("LOMRs") that have been issued against those databases since their publication date. Based on review of this data, the Project will span the FEMA 100-year floodplain associated with the Lehigh River, Aquashicola Creek, White Bear Creek, Mahoning Creek, Bergers Creek, and Lizard Creek. Several structures located along the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line will be placed within the 100-year floodplains associated with Aquashicola Creek and Lehigh River. The Palmerton 138/69 kV Transmission Tap will be placed within the 100-year floodplains associated with Aquashicola Creek, however no impacts to these floodplain areas are anticipated due to the small size of the structures when compared with the overall floodplain and floodway areas. Several structures along the Hauto – Siegfried 138/69 kV Transmission Lines will be placed within 100-year floodplains associated with Mahoning Creek, Bergers Creek, Lizard Creek, and unnamed tributaries associated with Mahoning Creek and Lehigh River. No structures along the Ashfield 138/69 kV Transmission Tap or the South Slatington 138/69 kV Transmission Tap will be placed within 100-year floodplains. Additionally, no increase to the calculated cross section area is expected, again due to the above noted small size of the structures.

69. Two online Pennsylvania Natural Diversity Inventory ("PNDI") Project Environmental Reviews were performed for the Project. The PNDI reviews evaluate the

databases of the United States Fish and Wildlife Service ("USFWS"), PFBC, Pennsylvania Game Commission ("PGC"), and the Pennsylvania Department of Conservation and Natural Resources ("DCNR").

70. Based on the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines PNDI review, a letter of no impact was received on March 16, 2018. The determination is valid for two years. The PNDI review for the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines resulted in further review, however, official responses have not yet been received. PPL Electric does not expect the Project to result in any adverse impacts to species or habitat under their jurisdiction. PPL Electric will continue to consult with PGC and comply with all required mitigation measures.

71. Based on this review, the PFBC reported that the Project will not impact any threatened and endangered species, or special concern species and resources located within the Project area. Although the PFBC results indicated no further review is required, they indicated that the Project is located within the range of the timber rattlesnake (*crotalus horridus*), and identified several recommended conservation measures. PPL Electric will comply with all conservation measures required by PFBC. The Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines resulted in further review. A letter of no impact was received on June 12, 2018. The PFBC determined that no timber rattlesnakes were found to be in the Project area and no impacts are anticipated.

72. The Pennsylvania Department of Conservation and Natural Resources ("DCNR") indicated that the Project is located within the vicinity of Long's sedge (*carex longii*), a special concern species. A botanical survey was conducted by Mellon Biological Services, LLC in July 2012. During surveys, Long's sedge was found within some delineated wetlands. However, no

impacts to Long's sedge are anticipated within specific wetlands because these wetlands will be avoided during construction. PPL Electric submitted a follow-up letter with DCNR on January 31, 2018. The DCNR response letter on February 9, 2018 indicated no impacts are anticipated. The determination is valid for two years. The Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines PNDI review resulted in further review, however, official responses have not yet been received. PPL Electric does not expect the Project to result in any adverse impacts to species or habitat under their jurisdiction. PPL Electric will continue to consult with DCNR and comply with all required mitigation measures.

73. The federally protected bog turtle is known to exist within Lehigh and Carbon counties. Results of Phase II Bog Turtle surveys conducted for the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines were submitted to the USFWS on June 15, 2018. A letter of no impact was received on July 20, 2018. For the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines, under USFWS jurisdiction, the federally protected bog turtle and northern long-eared bat (*myotis septentrionalis*) are known to exist within the vicinity of the Project. The USFWS response letter received on June 5, 2018 indicated the northern long-eared bat is not located within the vicinity of the Project; therefore, no impacts are anticipated. PPL Electric retained a qualified bog turtle surveyor to conduct Phase I Bog Turtle surveys along the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines to determine if any known species habitat is located within the vicinity of the Project in January 2013. The Phase I Bog Turtle survey results determined that all potential bog turtle habitats fall outside of watersheds determined by the USFWS to contain bog turtles. On May 18, 2018, PPL Electric along with Louis Berger and Dubois Environmental held a meeting to discuss the Project, and based on the survey results, concluded that the Project will not impact bog turtle habitat. Subsequently, PPL

Electric submitted a follow-up letter to USFWS on May 24, 2018. The USFWS response letter received on August 20, 2018 indicated no impacts to the bog turtle and northern long-eared bat are anticipated.

74. PPL Electric will continue consultation with USFWS, DCNR and PGC as needed to avoid impacts to species of concern and will obtain all required approvals, clearances, and permits prior to construction.

E. NOTICE

75. PPL Electric has provided information regarding the Project to representatives of Washington Township in Lehigh County, and Palmerton, Nesquehoning and Summit Hills Boroughs, and Lower Towamensing, Mahoning and East Penn Townships in Carbon County. These entities have not objected to the proposed Project. Additionally, PPL Electric has reached out to the owners of properties that are crossed by the transmission lines.

76. Copies of the Letter of Notification and Joint Petition for Waiver will be served on the owners of land subject to the rights-of-way and easement in accordance with 52 Pa. Code § 57.72(d)(1)(vi).

III. PETITION FOR WAIVER

77. PPL Electric intends to proceed by means of this Letter of Notification for the siting and construction of the proposed Project. Use of a Letter of Notification will permit PPL Electric to obtain approval in a much shorter period of time than what would be required to prepare a complete siting Application for the proposed Siegfried – East Palmerton #1 and #2 138/69 kV and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines. Regulatory review in a shorter period of time will enable PPL Electric to complete construction of the proposed Project, which will ensure continued safe and reliable service to customers by modernizing the existing aged facilities. The Commission's Transmission Line Siting Regulations provide for

waivers of specific provisions in the siting regulations. 52 Pa. Code § 57.72(e). PPL Electric previously sought and was granted a waiver for Phase 2 of this project, the relevant circumstances of which are substantially similar to the circumstances presented here.[4] The Commission's prior authorization of the use of the Letter of Notification for the reconstruction of the Siegfried – East Palmerton #1 and #2 138/69 kV should extend to this proposed Project.

78. The vast majority of this 22 mile Project will be completed in existing cleared right-of-way. Only approximately 0.3 miles of the Project will be constructed within right-of-way or land recently acquired by PPL Electric for this Project, which was done on a voluntary basis to accommodate a property owner. As more than 98% of the Project will be a rebuild completed in the existing right-of-way, the most appropriate method to obtain Commission review and approval for the siting of the proposed Project is a Letter of Notification under 52 Pa. Code Pa. Code § 57.72(d) rather than a full Application under 52 Pa Code §§ 57.71(a)-(c).

79. As proposed, the Project does not meet the strict definition of any one of the circumstances in which a Letter of Notification may be used, as set forth above. However, it nearly fits within the circumstances in which a Letter of Notification may be used in lieu of an Application. Further, preparation of a full Application requires the completion of numerous studies, reports, maps and diagrams that are not required to review this Project, because it will not pose the same impacts on the environment and local community as a Project built entirely or substantially within the new right-of-way. The proposed Project will not "substantially alter the right-of-way." PPL Electric believes that the reconstructed segments of the proposed Transmission Lines will not have significant incremental impacts on the existing rights-of-way for the following reasons:

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[4] *See Petition for Waiver of Certain Provisions of the Commission's Regulations for Commission Review of Siting and Construction of Electric Transmission Lines set forth at 52 Pa. Code § 57.71 et seq*, Docket No. A-2018-3001477 (Order entered September 20, 2018).

(a) The overwhelming majority of the line will be constructed entirely within existing right-of-way.

(b) The Project will consolidate the existing transmission lines from two parallel single-circuit lines to one double-circuit line for portions of the right-of-way.

(c) The average structure height is increasing slightly, but the total number of structures is decreasing significantly.

(d) The total footprint of the new structures is a fraction of the size of the existing structures.

(e) New structures will be placed in close proximity to the existing structures.

(f) No structures will be placed on a property that does not already have an existing pole.

80. The Commission's regulation at 52 Pa. Code § 57.72(d) sets forth the circumstances under which an electric public utility may seek Commission approval for the siting and construction of a proposed high voltage transmission line by means of a Letter of Notification instead of a full Application. The Commission has previously found that the Siegfried – East Palmerton #1 and #2 138/69 kV, which is the portion of this Project that includes the new right-of-way, would qualify for the use of a Letter of Notification under 52 Pa. Code § 57.72(d)(1)(i), (v), and (vi) if proposed as smaller individual projects.[5] The Commission found that under the circumstances presented a waiver was appropriate.[6] That prior determination should extend to the current Letter of Notification, where the additional portions of the Project all fall entirely within the scope of 52. Pa Code §57.72(d)(1).

81. To the extent it is required as part of this Joint Petition for Waiver and Letter of Notification, PPL Electric respectfully requests the Commission grant a waiver of the strict Application of 52. Pa Code §57.72(d)(1) to permit PPL Electric to seek approval of the siting and construction of the Siegfried – East Palmerton #1 and #2 138/69 kV and Hauto – Siegfried #1

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5 *Id.* at p. 6.
6 *Id.*

and #4 138/69 kV Transmission Lines, and associated tap lines, which are needed to modernize existing facilities in order to continue to provide safe and reliable service.

IV. CONCLUSION

WHEREFORE, PPL Electric Utilities Corporation respectfully requests that the Pennsylvania Public Utility Commission grant the request for a waiver and approve the siting and construction of the proposed Siegfried – East Palmerton #1 & #2 138/69 kV Transmission Lines, the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines, and Associated Tap Lines to be constructed in Washington Township in Lehigh County, and Palmerton, Nesquehoning and Summit Hills Boroughs, and Lower Towamensing, Mahoning and East Penn Townships in Carbon County, Pennsylvania that is explained above and in the Attachments hereto.

Respectfully submitted,

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Date: April 10, 2019

Attorneys for PPL Electric Utilities Corporation

Before the

Pennsylvania Public Utility Commission

Attachments in support of the Joint Petition of PPL Electric Utilities Corporation for Waiver of Certain Provisions of the Pennsylvania Public Utility Commission's Regulations at 52 Pa. Code § 57.71 *et seq.*, and Letter of Notification of PPL Electric Utilities Corporation, Filed Pursuant to 52 Pa. Code Chapter 57 Subchapter G, for Approval of the Siting and Construction of the Siegfried – East Palmerton #1 and #2 138/69 kV, the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines, and Associated Tap Lines located in Lehigh and Carbon Counties, Pennsylvania

Docket No. _____

Submitted by: PPL Electric Utilities Corporation

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Attachment 1

1.0 APPLICATION SUMMARY

PPL Electric Utilities Corporation ("PPL Electric") requests Pennsylvania Public Utility Commission ("PUC" or "Commission") approval to rebuild approximately 6.9 miles of the existing Siegfried – East Palmerton #1 and #2 138/69 kV[1] Transmission Line and approximately 15.2 miles of the existing Hauto-Siegfried #1 and #4 138/69 kV Transmission Line located in Lehigh and Carbon counties, Pennsylvania. PPL Electric presented the proposed Project at a PJM Mid-Atlantic Sub-Regional RTEP stakeholder meeting in 2013. Following the presentation, the Project was designated by PJM as supplemental project number S0525.

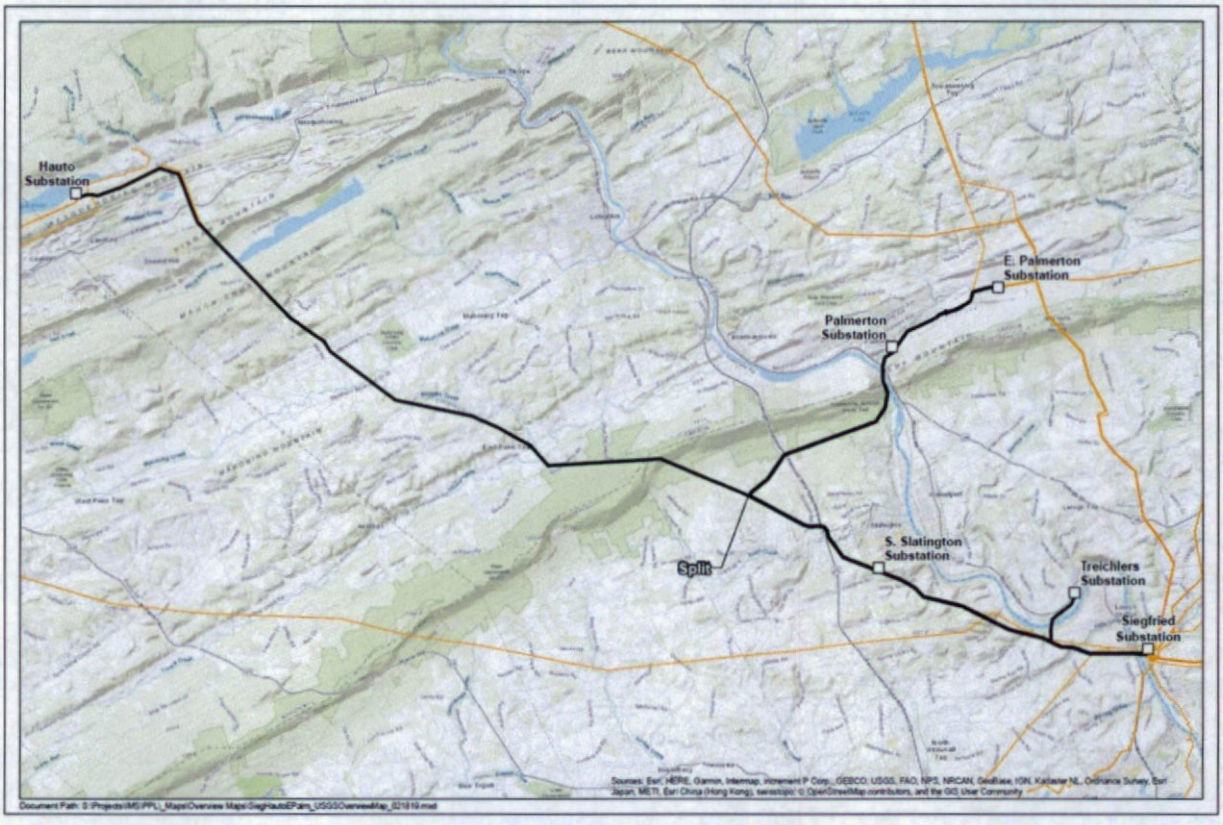


Figure 1-1: Current System Configuration

PPL Electric originally divided the overall plan into separate phases to reduce the complexity of project execution (see Figure 1-1). The first phase ("Phase 1") was approved by

[1] 138/69 kV means that a line is designed and constructed for 138 kV operation but is initially operated at 69 kV until load growth makes it appropriate to increase the operating voltage.

the PUC on July 5, 2013 at Docket No. A-2013-2372112.[2] This application requests approval for the remaining two phases to complete the project in its entirety. Rebuilding the Siegfried – East Palmerton #1 and #2 138/69 kV ("Phase 2") and the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines ("Phase 3") (Phase 2 and Phase 3 collectively referred to as the "Project") are the second and third phases of PPL Electric's three-phase plan to replace aging transmission lines between the Siegfried Substation and the East Palmerton and Hauto Substations.

As explained below, the existing Siegfried – East Palmerton #1 and #2 138/69 kV and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines have reached the end of their useful lives and the facilities must be replaced in order for PPL Electric to continue to provide safe and reliable service and meet its facility maintenance obligations as a public utility and under the Consolidated Transmission Owners Agreement. The proposed rebuilds contained in Phase 2 and Phase 3 are were identified as part of PPL Electric's transmission asset management planning procedure and involves rebuilding the lines to meet all current design and lightning protection standards. The modernization of the lines will help ensure reliable and continuous service to more than 26,000 customers in Lehigh and Carbon counties.

The Project is required to comply with:

1. The Consolidated Transmission Owners Agreement ("TOA") Rate Schedule – FERC No. 42.
2. PPL Electric's transmission asset management planning procedure.

Once the Project is complete, the new double-circuit 138/69 kV lines will be designated the Siegfried-East Palmerton #1 and #2 and the Frackville – Siegfried #1 and #2 138/69 kV Transmission Lines.

Construction on Phase 2 and Phase 3 will begin upon Commission's approval with an estimated in-service date of Q4 2022. The total estimated cost of this Project is $55.5 million.

[2] PPL Electric previously represented that it anticipated submitting an updated LON for Phase 1 to account for subsequent design changes. PPL Electric has decided not to make any design changes to the portion of the line covered by Phase 1, eliminating the need for an updated LON filing.

2.0 BACKGROUND

PPL Electric has a responsibility to provide transmission assets and maintain them in a manner that is safe, reliable, and resilient to meet the needs of the electric system and the expectations of its customers. To meet this duty, PPL Electric applies its transmission asset management planning procedure, which includes system performance and condition assessments. These performance and condition assessments identify system needs and prioritize projects based on several variables such as equipment age, condition, maintenance schedule, and impact on system reliability and performance to ensure a reliable electric grid and service to our customers. The transmission system is the backbone of the electric grid. Failure to plan, design, and operate the transmission system reliably increases the risk of overall system instability and cascading outages.

3.0 TRANSMISSION SYSTEM PLANNING PROCESS

PPL Electric's transmission asset management planning procedure involves identifying system needs and determining the best available solution to address those needs. This process includes: Asset Evaluation, Asset Condition and System Risk Assessments, Analysis of Alternative Solutions and Project Initiation and Scheduling.

System needs are identified based on the overarching goals of reducing outage frequency and duration, improving system reliability, decreasing system maintenance cost, and maintaining operational flexibility to ensure safe and reliable electric service of the transmission system and to our customers.

PPL Electric's transmission asset management planning procedure systematically identifies and develops projects to modernize aging facilities. This planning procedure evaluates equipment age, condition, maintenance schedule, and impact on system reliability of the line. As explained below, the proposed Project is necessary to replace facilities that have reached the end of their useful life and to meet PPL Electric's transmission asset management planning procedure.

3.1 Consolidated Transmission Owner's Agreement – Rate Schedule FERC No.42

The TOA (FERC ER10-2713-000) is an agreement between (1) individual Transmission Owner's operating within the PJM Region and (2) the Transmission Owner's and PJM. The TOA facilitates the planning and operation of the transmission grid within the PJM region and establishes the rights and responsibilities of each party to the TOA. Section 4.5 of the TOA requires that transmission facilities be operated and maintained in accordance with Good Utility Practice and the guidelines and standards of Reliability First Corporation and NERC. This Project is necessary to fulfill PPL Electric's obligations under the TOA.

4.0 THE NEED FOR THE PROJECT

4.1 Project Background

The Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines were originally constructed in 1914 and 1923, respectively, on two adjacent sets of lattice towers within the same transmission corridor. In 1948, the Siegfried – East Palmerton #1 and #2 Transmission Line was constructed. The southern half of the Siegfried – East Palmerton #1 and #2 Transmission Line, between the Siegfried Substation and the "Split" was strung on the other side of the existing Hauto – Siegfried #1 and #4 lattice towers. A new set of primarily wood pole structures were constructed between the "Split" and the East Palmerton Substation to carry the northern half of the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line. All of the transmission lines were initially designed for 138 kV operation, but have been operated at 69 kV.

The condition of the Hauto – Siegfried #1 and #4 138/69 kV and Siegfried – East Palmerton #1 and #2 Transmission Lines was first formally assessed in 2011 as part of a system-wide review of aging infrastructure. Additional testing was conducted on the lines in late 2018. The recommendation from both assessments is for the transmission lines to be rebuilt.

The condition assessment confirmed that the transmission lines are in a failing health condition as detailed in sections 4.3 and 4.4 and that immediate action is required. PPL Electric evaluated potential solutions, and the Project to rebuild these lines was initiated in 2013.

4.2 Existing System Configuration

Currently the Hauto – Siegfried #1 and Siegfried – East Palmerton #2 138/69 kV circuits extend west from the Siegfried 230-138-69 kV Substation for approximately 8.5 miles as a double-circuit transmission line until reaching the "Split." Similarly, the Hauto – Siegfried #4 and Siegfried – East Palmerton #1 138/69 kV circuits extend west from the Siegfried 230-138-69 kV Substation for approximately 8.5 miles until reaching the "Split" as a double-circuit transmission line. These four transmission circuits run on two sets of double circuit structures in the same corridor between the Siegfried Substation and the "Split". From the "Split", the Hauto – Siegfried #1 and #4 138/69 kV circuits continue west for approximately 15.2 miles to the Hauto 69-12 kV Substation on two separate structures mostly in the same corridor. The Siegfried – East Palmerton #1 and #2 138/69 kV circuits continue northeast from the "Split" for approximately 6.9 miles to the East Palmerton 230-69 kV Substation. This portion of the line alternates between two single-circuit structures and double-circuit structures in the same corridor.

This filing includes the following facilities:

Phase 2:

- 6.9-mile double circuit Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line between the "Split" and East Palmerton Substation
- 300-foot double circuit Palmerton #1 and #2 138/69 kV Transmission Tap
- 0.1-mile double circuit Palmerton Zinc #1 and #2 138/69 kV Transmission Tap
- 0.1-mile double circuit South Slatington #1 and #4 138/69 kV Transmission Tap[3]

Phase 3:

- 15.2-mile double circuit Hauto – Siegfried #1 and #4 138/69 kV Transmission Line between the "Split" and Hauto Substation

[3] The South Slatington Tap is off the Siegfried – East Palmerton #1 and #2 transmission line south of the "Split." PPL Electric did not plan on rebuilding this tap when the LON for Phase 1 was submitted to the PUC. Subsequently PPL Electric has determined that this tap has exceeded its life expectancy and requires replacement. This tap was included in PPL Electric's previous filing for Phase 2 and for consistency has been included in the Phase 2 discussion herein.

- 0.1-mile and 0.04-mile double circuit Ashfield #1 and #4 138/69 kV Transmission Tap

Additional detail about the configuration of each line is provided below, and a one-line diagram and map of the existing system are provided in **Figures 1-2** and **1-3**.

4.2.1 Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Lines Configuration (Phase 2)

The Phase 2 portion of the Project begins at the "Split". There are parallel pairs of adjacent single-circuit transmission structures for approximately 3.4 miles, and then double-circuit structures for another approximately 2.1 miles towards the East Palmerton 230/69 kV Substation. From there, the line transitions back to pairs of adjacent single-circuit structures for approximately 0.6 miles northeast to the Palmerton Zinc 69 kV customer transmission tap, and then transitions back to double-circuit structures for another approximately 0.5 miles. For the last 0.2 miles, the line operates on pairs of adjacent single-circuit structures on PPL Electric-owned property until it terminates at the East Palmerton 230-69 kV Substation.

Three short transmission taps extend from the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line to the Palmerton, Palmerton Zinc, and South Slatington Substations and are included in the proposed rebuild. The Palmerton #1 and #2 138/69 kV Transmission Tap consist of approximately 300 feet of two 69 kV lines on adjacent single-circuit structures into PPL Electric's Palmerton 69-12 kV Substation. The Palmerton Zinc #1 and #2 138/69kV Transmission Tap consist of approximately 0.1 miles of adjacent single-circuit structures into the customer-owned Palmerton Zinc 69-12 kV Substation. The South Slatington #1 and #4 138/69 kV Transmission Tap consist of approximately 0.1 miles of adjacent single circuit structures into PPL Electric's South Slatington 69-12 kV Substation.

The Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line serves the Palmerton 69-12 kV and South Slatington 69-12 kV Substations, which are distribution substations serving approximately 11,500 customers located in Carbon and Lehigh counties, as well as a 69 kV transmission customer, Palmerton Zinc.

4.2.2 Hauto – Siegfried #1 and #4 138/69 kV Transmission Line Configuration (Phase 3)

The Phase 3 portion of the Project begins at the "Split" as parallel pairs of adjacent structures and continues on for approximately 15.2 miles to the Hauto 69-12 kV Substation. The structures on this portion of the line are typically pairs of single circuit steel lattice towers; however, there are some locations where the lattice towers for each separate circuit are not adjacent to each other.

The Hauto – Siegfried #1 and #4 138/69 kV Transmission Line have two transmission taps included in the proposed rebuild called the Ashfield #1 and #4 138/69 kV Transmission Tap. The Ashfield #1 and #4 138/69 kV Transmission Tap includes two short 0.1 and 0.04-mile-long transmission taps that serve approximately 5,000 customers. These taps include five wood poles, four of which carry the Ashfield #1 138/69 kV Transmission Tap and one of which carries the Ashfield #4 138/69 kV Transmission Tap, into the Ashfield 69-12 kV Substation.

The Hauto – Siegfried #1 and #4 138/69 kV Transmission Line serves the existing Ashfield, Lansford, Treichlers, and Hauto 69-12 kV substations, which are distribution substations serving approximately 16,000 customers in Lehigh, Carbon, and Northampton counties, as well as a 69-kV transmission customer, Pennsylvania Solar Park.

4.3 Aging Infrastructure: Condition Assessment

The Siegfried-East Palmerton #1 and #2 138/69 kV Transmission Line was constructed in 1948. The structures on this portion of the Project (Phase 2) include 21 steel monopole structures, 25 steel lattice towers, and 187 wood poles. The average ages of the steel monopole structures, steel lattice towers, and wood pole structures are 17 years, 68 years, and 51 years, respectively. The wood poles are the greatest concern on these lines, as the majority of them are past their expected useful life of 40-50 years of age.

The Hauto – Siegfried #1 and #4 138/69 kV Transmission Line was originally constructed in 1914 and 1923. The structures on this portion of the Project (Phase 3) include 23 steel monopole structures, 260 steel lattice towers, and 5 wood poles. The average age of the steel monopole structures, steel lattice towers, and wood poles are 20, 98, and 43 years,

respectively. The lattice towers and wood poles are the greatest concern on these lines, as the majority of them are at or past their expected useful life of 80 years (towers) and 40-50 years (wood poles). The 260 steel lattice towers are the original towers installed in 1914 and 1923.

The age of the existing conductor, which dates back to 1948, is an additional asset health concern. The conductors are past the end of their respective expected life of 65 years. Siegfried - East Palmerton #1 and #2 138/69 kV Transmission Line and its taps have 71-year-old 250 MCM copper conductors. Hauto – Siegfried #1 and #4 138/69kV Transmission Lines and its taps have a mixture of 96 and 105 4/0 copper and some newer ACSR[4] conductor. The Siegfried - East Palmerton #1 and #2 138/69 kV Transmission Line conductor is especially concerning since copper conductors of similar vintage on PPL Electric's system have failed due to a patina developing on the copper over time which can cause surface corrosion pits. These pits can cause micro-cracks which propagate into larger cracks along the cross section of each strand of wire, eventually resulting in failure.

In 2011, a third-party engineering firm, DiGioia Gray and Associates ("DGA"), of Monroeville, PA, was contracted to complete an assessment of a sample of 55 structures on the Hauto – Siegfried #1 and #4 and the Siegfried – East Palmerton #1 and #2 Transmission Lines. The main findings were that the structures exhibited conditions indicating that they were beyond the end of their useful life. The conditions found included foundation corrosion, insulator and hardware corrosion, poor grounding, and poor geotechnical conditions. DGA recommended that the Siegfried - East Palmerton #1 and #2 138/69 kV and Siegfried – Hauto #1 and #4 138/69 kV transmission lines (and associated taps) be rebuilt based on these findings.

PPL Electric retained DGA to complete an additional field condition assessment of a sample of 143 structures on the four circuits at the end of 2018. The sample size was selected in order to yield a 90% confidence level that the results are representative of the condition of the entirety of the lines. The sampled structures were randomly selected by DGA and included a mixture of steel poles, steel lattice towers, and wood poles in proportion to their population on the lines. This condition assessment consisted of a combination of visual inspections of overhead components, sounding and boring testing of wood poles, measurements of section loss

[4] Aluminum Conductor Steel Reinforced.

due to corrosion on steel structures, and foundation inspections. The report identified 35% of the steel lattice structures and 78% of the wood structures inspected as "reject" structures requiring immediate restoration or replacement. Many of the types of defects found in the initial assessment were identified again in the second inspection, including hardware corrosion, split wood pole tops, mechanical damage, and leaning wood poles. Table 1 summarizes the defects found in the second assessment.

Table 1: Structure Overhead Visual Inspection Reported Items Summary - Third Party Condition Assessment

Reported Item	Number of Instances – Wood Poles	Percentage of Inspected Wood Structures	Number of Instances – Steel Structures	Percentage of Inspected Steel Structures
Fully Inspected Wood and Steel Structures	72	-	86	-
Structure Damage, Decay, or Corrosion	64	89%	51	59%
Cross Arm Damage, Decay, or Corrosion	12	17%	6	7%
Conductor Damage or Corrosion	24	33%	19	22%
Guy Wire/Anchor Damage or Corrosion	16	22%	3	3%
Ground System Damage or Corrosion	14	19%	13	15%

4.4 Line Performance

As a result of the poor condition of the existing assets described in Section 4.2, each of the lines have experienced unplanned outages in the past. Details about each of the circuit outage histories and impacts are included below.

4.4.1 Siegfried – East Palmerton #1 and #2 138/69 kV Performance

The Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line have experienced five momentary outages since 2008, due to undetermined causes and failed equipment. One industrial customer was affected by these outages. Although the reliability of these lines has been relatively stable in the past, the risk of unplanned outages of longer duration

increases exponentially as assets age past their expected useful life. If one of the double circuit structures or two of the single circuit structures were to fail, approximately 11,200 customers would be impacted. SAIFI, SAIDI, and CAIDI are expected to be maintained at current or better levels by rebuilding these lines to current PPL Electric design standards.

4.4.2 Hauto – Siegfried #1 and #4 138/69 kV Performance

The Hauto – Siegfried #1 and #4 138/69 kV Transmission Line has experienced 32 outages since 2006, of which 28 were momentary and 4 were permanent. The outages were primarily caused by lightning, but vegetation fall-ins, failed equipment, and other undetermined causes also contributed to outages. Two of the failed equipment outages were caused by an insulator failure and tower failure. Over 16,000 customers are at risk from outages on these lines, with over 10,000 impacted by single-circuit operations and 2,000 considered "stranded load", meaning they have no other restoration source and are susceptible to prolonged outages. Similar to above, if these lines were to be rebuilt to current PPL Electric design standards, SAIFI, SAIDI, and CAIDI impacts are expected to be reduced to near zero.

5.0 FUNCTIONAL ALTERNATIVES

PPL Electric evaluated several solutions to address the degrading health of the Siegfried – East Palmerton #1 and #2 and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines. After careful consideration, it was determined that the most cost effective and reliable solution is to rebuild each existing line to new double circuit lines consistent with PPL Electric transmission design standards. The solutions considered included:

1) Rebuild the Siegfried – East Palmerton #1 and #2 and the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines

2) Structure Restoration and Conductor Replacement on Siegfried – East Palmerton #1 and #2 and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines

3) Continued Maintenance of Siegfried – East Palmerton #1 and #2 and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines

An analysis of each option is provided below.

5.1 Rebuild the Siegfried – East Palmerton #1 and #2 and Hauto – Siegfried #1 and #4 138/69kV Transmission Lines

The Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line is comprised of a combination of parallel single circuit transmission lines and double circuit transmission line that run for approximately 6.9 miles between the "Split" and the East Palmerton 230-69 kV Substation. It also has three double circuit transmission taps: the 0.05-mile Palmerton #1 and #2 138/69 kV Transmission Tap, the 0.1-mile Palmerton Zinc #1 and #2 Transmission Tap, and the 0.1-mile South Slatington #1 and #4 Transmission Tap. The Hauto – Siegfried #1 and #4 138/69 kV Transmission Line is comprised of two parallel single circuit transmission lines that run on separate structures for approximately 15.2 miles between the "Split" and Hauto 69-12 kV Substation. It has two single circuit taps that serve PPL's Ashfield 69-12 kV Substation. The total line length of the proposed rebuild is approximately 22.45 miles. The estimated cost to rebuild these lines in place as new double circuit 138/69 kV transmission lines is $55.5 million. These four circuits will be replaced with two double circuit transmission lines supported by steel monopole structures. The steel monopole structures will replace the existing structures that are currently in service. The count of structures on the lines will be reduced by almost half.

The estimated total cost of ownership of this option, including the Project and maintenance costs over the next 45 years, is the Project cost of $55.5 million because it can be reasonably assumed that PPL Electric will incur minimal operation and maintenance costs over the next 45 years to maintain newly constructed assets.

Rebuilding resolves all the current issues on these lines, including the advanced age and poor condition of the structures, the poor condition of non-standard conductor, high maintenance costs, and heightened risk of customer outages. This is the best and most reliable option and is in accordance with PPL Electric's transmission asset management planning procedure.

5.2 Structure Restoration and Conductor Replacement on the Siegfried – East Palmerton #1 and #2 and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines

PPL Electric reviewed the option of restoring and reconductoring the Siegfried – East Palmerton #1 and #2 and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines.

Restoration would include replacing all the conductor and the associated hardware, repairing the steel lattice towers and wood poles, performing ground line repairs on structures and foundations, installing fiber optic ground wire, and stripping and recoating the steel towers. The existing towers are coated in lead paint and remediation/repair may result in lead exposure, creating environmental and safety issues that are less prevalent when the coated structure is replaced. This option would initially cost approximately $53.1. million. The total cost of ownership, including the project and maintenance costs over the next 45 years, is estimated to be $72.7 million. This includes $19.6 million in expected maintenance, such as inspections, re-coating, and replacement of failing structures and appurtenances.

PPL Electric determined structure restoration and conductor replacement is not an acceptable option for the following reasons:

- Existing lattice towers and wood structures will remain with an unacceptable risk of failure;
- Continuous maintenance at an increasing cost will be required;
- Removal of lead paint on the towers creates an environmental and safety concern; and
- Higher cost of total ownership compared to rebuilding the lines.

5.3 Continued Maintenance of Siegfried – East Palmerton #1 and #2 and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines

PPL Electric evaluated the option of taking no remedial action on the Siegfried – East Palmerton #1 and #2 and Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines in favor of continued maintenance. Although there is no specific project cost associated with this option, the estimated total cost of ownership if the assets are simply maintained over the next 45 years is $91.6 million. This includes inspections, coatings, and systematic structure replacements, the need for which would all increase as the assets continue to age.

This option is not an acceptable solution because it does not improve the health or the reliability of the lines but will require continuous maintenance at an ever-increasing cost. This

option is inconsistent with Good Utility Practices, and continues to leave customers at risk of outages due to catastrophic equipment failures.

6.0 PROPOSED SOLUTION

PPL Electric has determined that rebuilding the Siegfried – East Palmerton #1 and #2 and the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines is the most effective and cost-efficient solution to resolve the issues of aging infrastructure and reliability risk on the circuits. A one-line diagram and map of the proposed lines is included in **Figures 1-4 and 1-5**.

Phase 2 of the Project will rebuild approximately 7.15 miles of the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line, including the Palmerton #1 and #2 138/69 kV Transmission Tap, the Palmerton Zinc #1 and #2 138/69 kV Transmission Tap, and the South Slatington #1 and #4 138/69 kV Transmission Tap. Phase 3 will rebuild approximately 15.34 miles of the Hauto – Siegfried #1 and #4 138/69 kV Transmission Line including the Ashfield #1 and #4 138/69 kV Transmission Tap. Phase 2 of the Project will be primarily located on the same right of way as the existing lines, but a small section will be rebuilt on a section of new right of way. Phase 3 will be built entirely on the same right of way and will not require the purchase of any additional land or rights. The Project will decrease the number of structures utilized by approximately half. Detailed descriptions of the new structure types and locations are provided in **Attachments 2 and 3**.

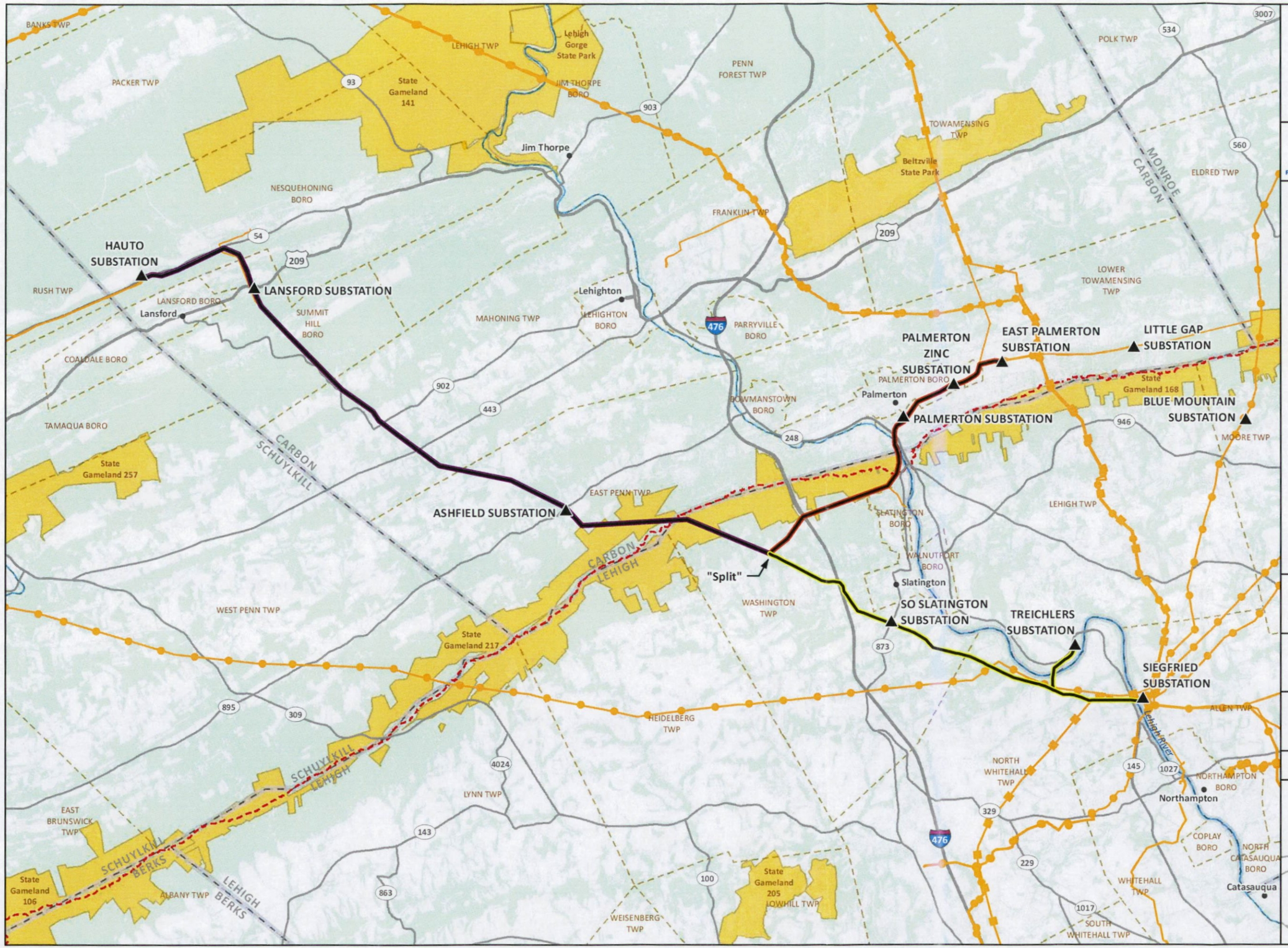
The following benefits will be realized by the Project:

- Reduces property owner impacts by replacing the existing 521 structures with approximately 260 lower profile steel monopoles.
- Improves service reliability to more than 27,000 residential customers and 1 transmission customer.
- Improves safety and reliability by replacing conductor and structures that are beyond their expected useful life.
- Minimizes unplanned line outages due to equipment failures.
- Increases conductor to ground clearances which will bring the lines up to current PPL design standards and EMF program.

- Elimination of potential environmental impacts caused by the inadvertent release of lead paint during tower restoration and maintenance.

- Significantly reduces future operation and maintenance costs.

Figure 1-1. Project Overview Map



Siegfried - East Palmerton and Siegfried - Hauto 138/69 kV Transmission Line Rebuild

ppl Electric Utilities

Louis Berger

- City
- Substation

Project Component

- Siegfried - Split 138/69 kV
- Split - East Palmerton 138/69 kV
- Split - Hauto 138/69 kV

Existing Transmission Line

- 500kV
- 138 - 230 kV
- 69kV
- Appalachian Trail
- River
- Municipality Boundary
- County Boundary
- State Gameland or State Park
- Forested Area

0 1 2 Miles

N

Sources: ESRI (2013), PASDA (2017), USGS (2017)

Coordinate System:
State Plane Pennsylvania North
Datum: North American 1983

January 09, 2018

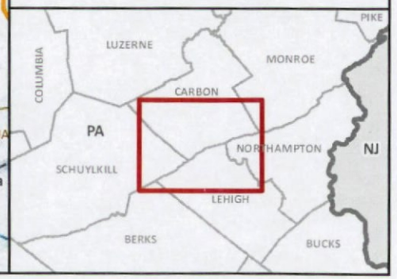


Figure 1-2. One-Line Diagram of Existing Transmission Facilities

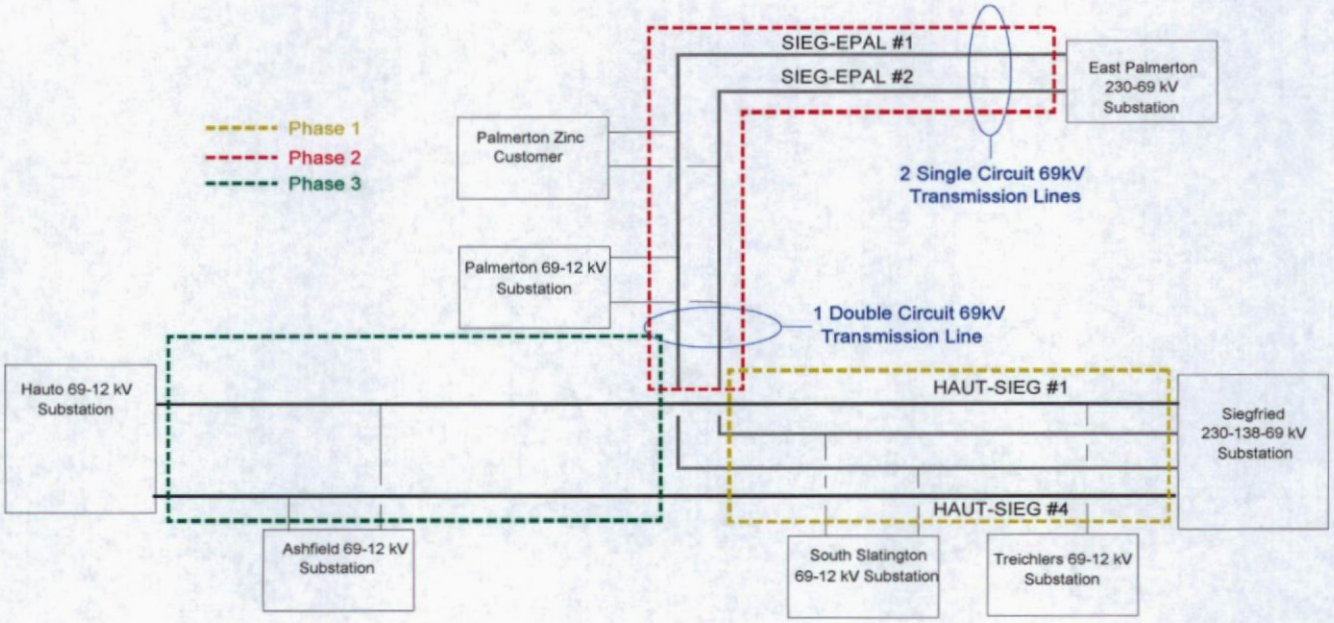
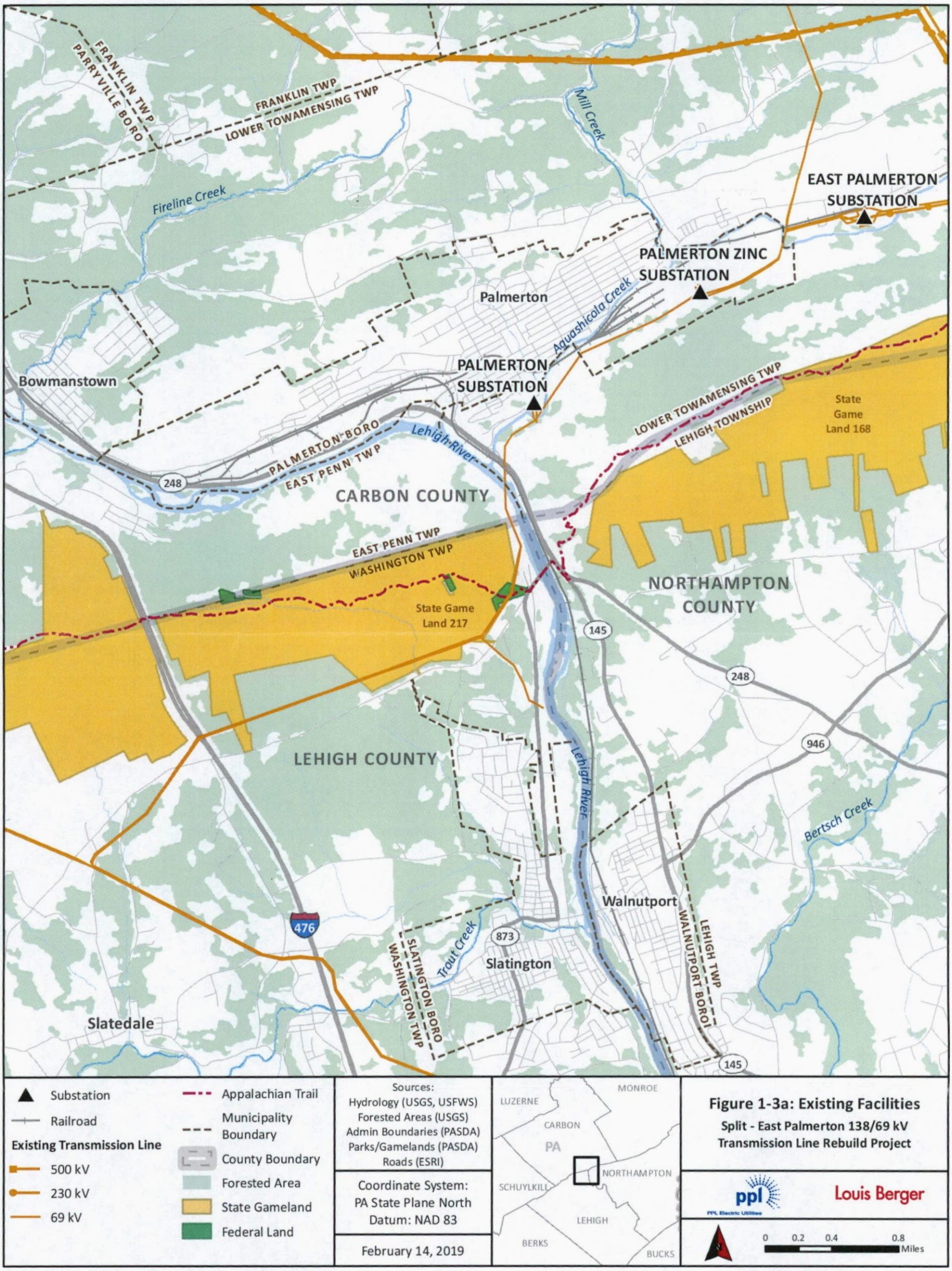


Figure 1-3. Map of Existing Transmission Facilities


FRANKLIN TWP
PARRYVILLE BORO
FRANKLIN TWP
LOWER TOWAMENSING TWP
Fireline Creek
Mill Creek
EAST PALMERTON
SUBSTATION
PALMERTON ZINC
SUBSTATION
Palmerton
Aquashicola Creek
PALMERTON
SUBSTATION
Bowmanstown
PALMERTON BORO
EAST PENN TWP
Lehigh River
248
CARBON COUNTY
LOWER TOWAMENSING TWP
LEHIGH TOWNSHIP
State
Game
Land 168
EAST PENN TWP
WASHINGTON TWP
State Game
Land 217
NORTHAMPTON
COUNTY
145
248
LEHIGH COUNTY
946
Lehigh River
Bertsch Creek
476
Walnutport
LEHIGH TWP
WALNUTPORT BORO
SLATINGTON BORO
WASHINGTON TWP
Trout Creek
873
Slatington
Slatedale
145
Substation
Railroad
Existing Transmission Line
500 kV
230 kV
69 kV
Appalachian Trail
Municipality Boundary
County Boundary
Forested Area
State Gameland
Federal Land
Sources:
Hydrology (USGS, USFWS)
Forested Areas (USGS)
Admin Boundaries (PASDA)
Parks/Gamelands (PASDA)
Roads (ESRI)
Coordinate System:
PA State Plane North
Datum: NAD 83
February 14, 2019
MONROE
LUZERNE
CARBON
PA
NORTHAMPTON
SCHUYLKILL
LEHIGH
BERKS
BUCKS
Figure 1-3a: Existing Facilities
Split - East Palmerton 138/69 kV
Transmission Line Rebuild Project
ppl
PPL Electric Utilities
Louis Berger
0 0.2 0.4 0.8
Miles


7th St
SLATINGTON BORO
WASHINGTON TWP
4th St
Cemetery St
2nd St
1st St
Union
Cemetery
Oakland Ave
873
SOUTH SLATINGTON
SUBSTATION
Friedens Rd
Avery Rd
Existing Transmission Line
69kV
South Slatington
Substation Parcel
Substation
Cemetery
Municipality
Boundary
Forested Area
Parcel Boundary
Sources:
Forested Areas (USGS)
Muncipalities (PASDA)
Roads (ESRI)
Parcels (Lehigh County)
Coordinate System:
PA State Plane South
Datum: NAD 83
February 14, 2019
NORTHAMPTON
LEHIGH TWP
SLATINGTON
BORO
LEHIGH
WASHINGTON
TWP
NORTH
WHITEHALL
TWP
Figure 1-3b: Existing Facilities
South Slatington Tap 138/69 kV
Transmission Line Rebuild Project
ppl
PPL Electric Utilities
Louis Berger
0
100
200
400
Feet

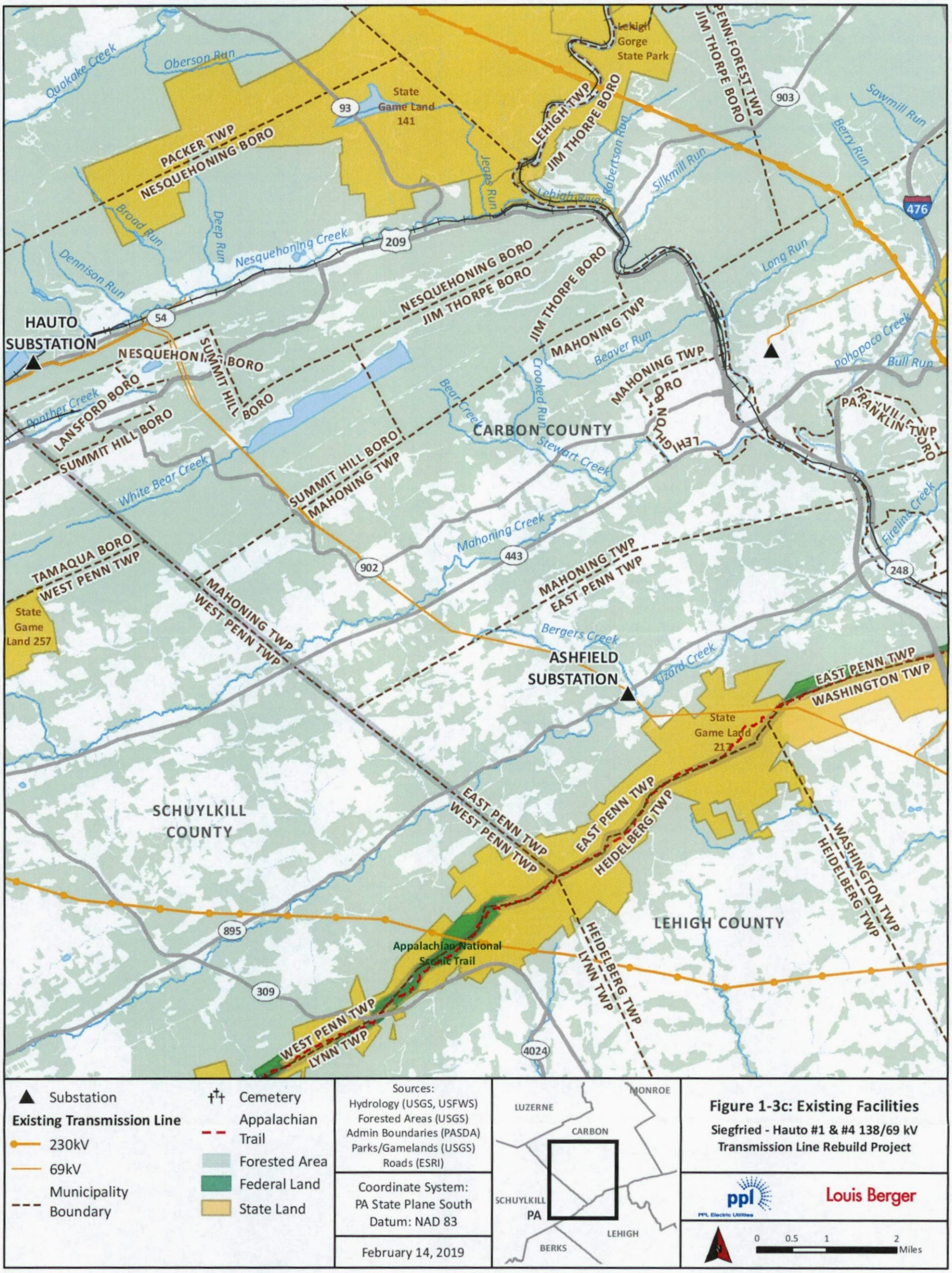

Quakake Creek
Oberson Run
State Game Land 141
93
PACKER TWP
NESQUEHONING BORO
Lehigh Gorge State Park
LEHIGH TWP
JIM THORPE BORO
PENN FOREST TWP
JIM THORPE BORO
903
Sawmill Run
Berry Run
Robertson Run
Silkmill Run
Jeans Run
Lehigh River
476
Broad Run
Deep Run
Dennison Run
Nesquehoning Creek
209
Long Run
HAUTO SUBSTATION
54
NESQUEHONING BORO
JIM THORPE BORO
MAHONING TWP
Beaver Run
Pohopoco Creek
Bull Run
SUMMIT HILL BORO
LANSFORD BORO
Panther Creek
Bear Creek
Crooked Run
Stewart Creek
CARBON COUNTY
FRANKLIN TWP
White Bear Creek
Mahoning Creek
902
443
248
Firelime Creek
TAMAQUA BORO
WEST PENN TWP
MAHONING TWP
EAST PENN TWP
State Game Land 257
Bergers Creek
Lizard Creek
ASHFIELD SUBSTATION
EAST PENN TWP
WASHINGTON TWP
State Game Land 217
SCHUYLKILL COUNTY
EAST PENN TWP
WEST PENN TWP
HEIDELBERG TWP
LEHIGH COUNTY
895
Appalachian National Scenic Trail
309
WEST PENN TWP
LYNN TWP
HEIDELBERG TWP
LYNN TWP
4024
Substation
Existing Transmission Line
230kV
69kV
Municipality Boundary
Cemetery
Appalachian Trail
Forested Area
Federal Land
State Land
Sources:
Hydrology (USGS, USFWS)
Forested Areas (USGS)
Admin Boundaries (PASDA)
Parks/Gamelands (USGS)
Roads (ESRI)
Coordinate System:
PA State Plane South
Datum: NAD 83
February 14, 2019
LUZERNE
MONROE
CARBON
SCHUYLKILL
PA
LEHIGH
BERKS
Figure 1-3c: Existing Facilities
Siegfried - Hauto #1 & #4 138/69 kV
Transmission Line Rebuild Project
ppl
PPL Electric Utilities
Louis Berger
0 0.5 1 2
Miles

Figure 1-4. One-Line Diagram of Proposed Transmission Facilities

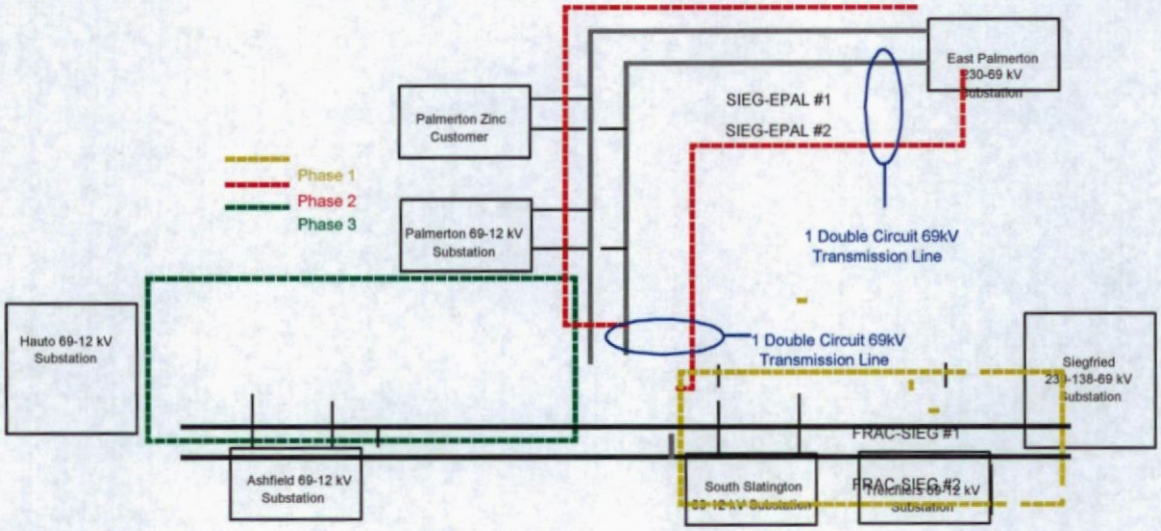
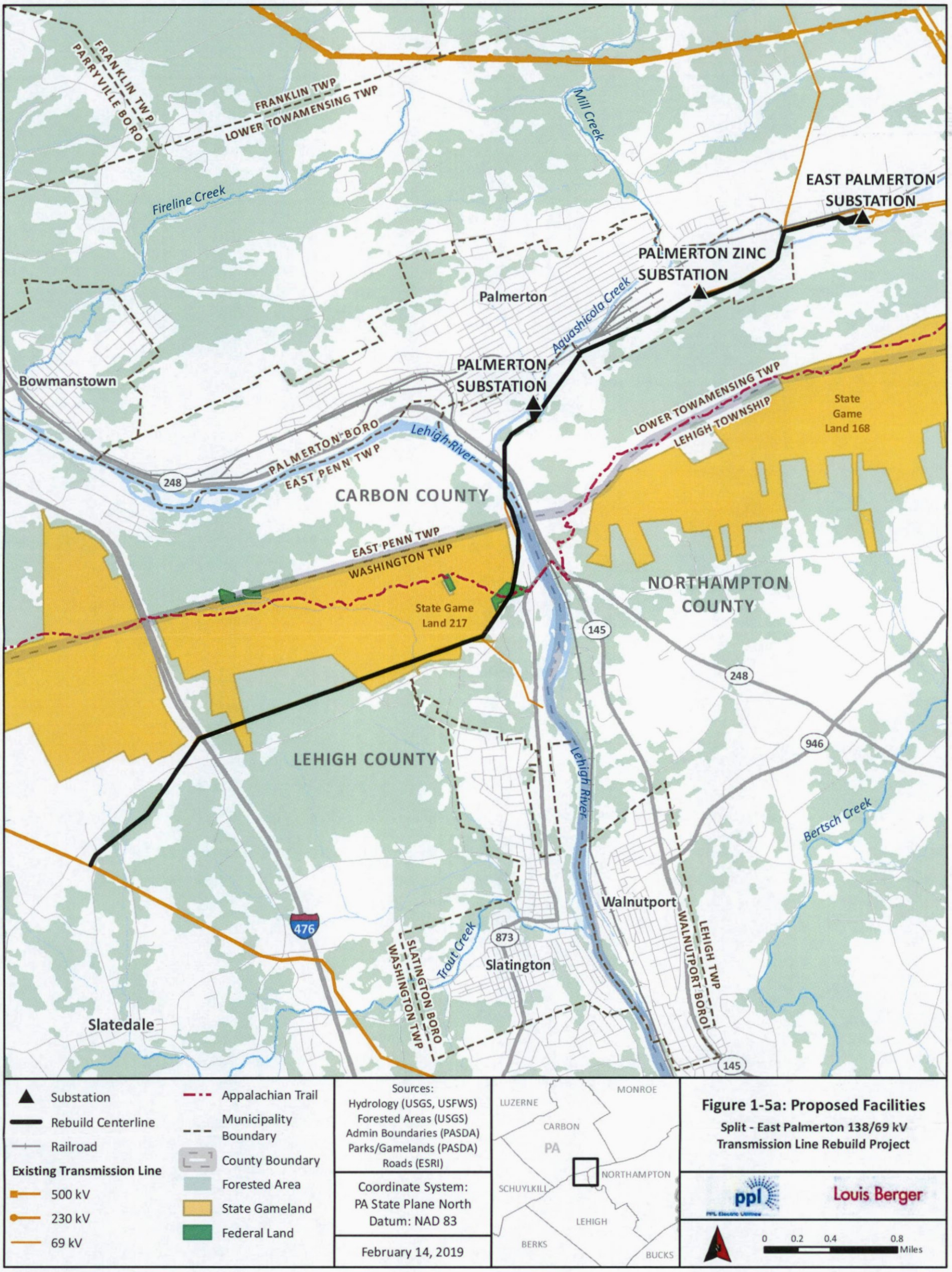


Figure 1-5. Map of Proposed Transmission Facilities


FRANKLIN TWP
PARRYVILLE BORO
FRANKLIN TWP
LOWER TOWAMENSING TWP
Fireline Creek
Mill Creek
EAST PALMERTON SUBSTATION
PALMERTON ZINC SUBSTATION
Palmerton
Aquashicola Creek
PALMERTON SUBSTATION
Bowmanstown
PALMERTON BORO
EAST PENN TWP
Lehigh River
248
CARBON COUNTY
LOWER TOWAMENSING TWP
LEHIGH TOWNSHIP
State Game Land 168
EAST PENN TWP
WASHINGTON TWP
State Game Land 217
NORTHAMPTON COUNTY
145
248
LEHIGH COUNTY
946
Lehigh River
Bertsch Creek
Walnutport
LEHIGH TWP
WALNUTPORT BORO
476
873
Trout Creek
SLATINGTON BORO
WASHINGTON TWP
Slatington
Slatedale
145
Substation
Rebuild Centerline
Railroad
Existing Transmission Line
500 kV
230 kV
69 kV
Appalachian Trail
Municipality Boundary
County Boundary
Forested Area
State Gameland
Federal Land
Sources:
Hydrology (USGS, USFWS)
Forested Areas (USGS)
Admin Boundaries (PASDA)
Parks/Gamelands (PASDA)
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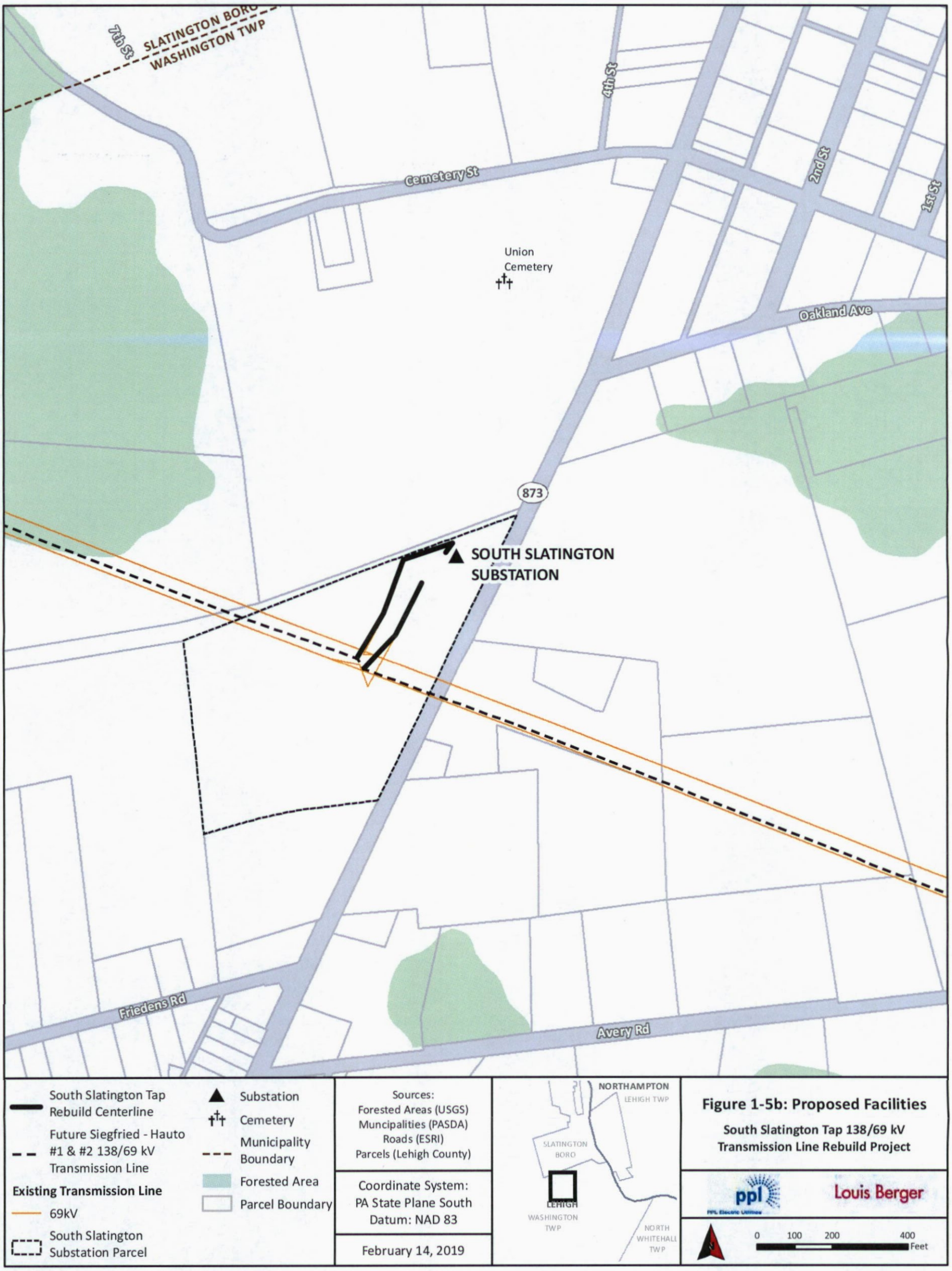
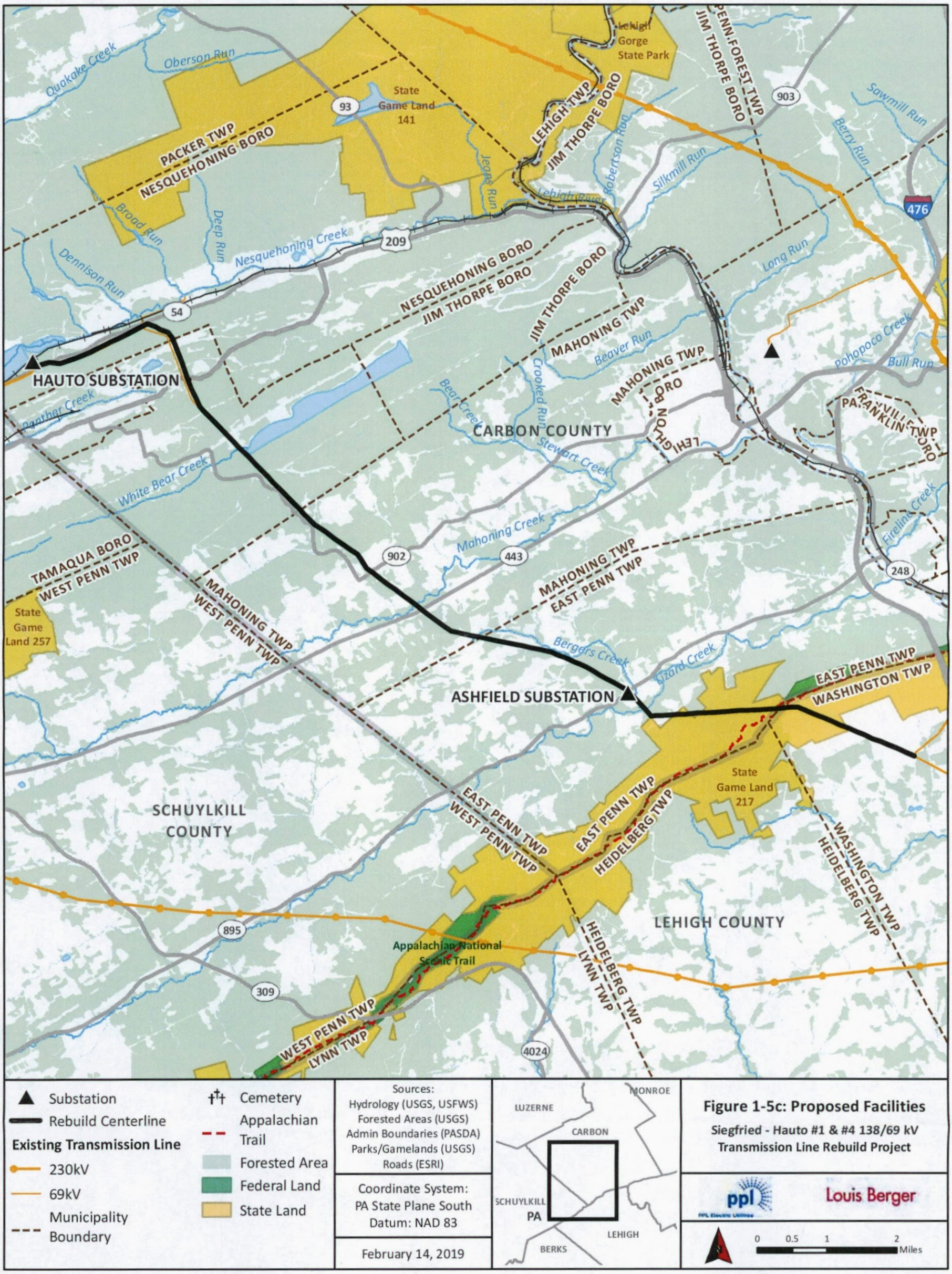
February 14, 2019
LUZERNE
MONROE
CARBON
PA
NORTHAMPTON
SCHUYLKILL
LEHIGH
BERKS
BUCKS
Figure 1-5a: Proposed Facilities
Split - East Palmerton 138/69 kV
Transmission Line Rebuild Project
ppl
Louis Berger
0 0.2 0.4 0.8
Miles


7th St
SLATINGTON BORO
WASHINGTON TWP
4th St
Cemetery St
2nd St
1st St
Union
Cemetery
Oakland Ave
873
SOUTH SLATINGTON
SUBSTATION
Friedens Rd
Avery Rd
South Slatington Tap
Rebuild Centerline
Future Siegfried - Hauto
#1 & #2 138/69 kV
Transmission Line
Existing Transmission Line
69kV
South Slatington
Substation Parcel
Substation
Cemetery
Municipality
Boundary
Forested Area
Parcel Boundary
Sources:
Forested Areas (USGS)
Muncipalities (PASDA)
Roads (ESRI)
Parcels (Lehigh County)
Coordinate System:
PA State Plane South
Datum: NAD 83
February 14, 2019
NORTHAMPTON
LEHIGH TWP
SLATINGTON
BORO
LEHIGH
WASHINGTON
TWP
NORTH
WHITEHALL
TWP
Figure 1-5b: Proposed Facilities
South Slatington Tap 138/69 kV
Transmission Line Rebuild Project
ppl
Louis Berger
0
100
200
400
Feet


Quakake Creek
Oberson Run
State Game Land 141
93
PACKER TWP
NESQUEHONING BORO
Broad Run
Deep Run
Dennison Run
Nesquehoning Creek
209
54
Jeans Run
LEHIGH TWP
JIM THORPE BORO
Lehigh Gorge State Park
PENN FOREST TWP
JIM THORPE BORO
903
Robertson Run
Silkmill Run
Sawmill Run
Berry Run
476
Long Run
NESQUEHONING BORO
JIM THORPE BORO
MAHONING TWP
Beaver Run
Crooked Run
Bear Creek
Stewart Creek
Pohopoco Creek
Bull Run
HAUTO SUBSTATION
Panther Creek
CARBON COUNTY
MAHONING TWP
LEHIGHTON BORO
FRANKLIN TWP
White Bear Creek
Mahoning Creek
902
443
Firelink Creek
248
TAMAQUA BORO
WEST PENN TWP
MAHONING TWP
WEST PENN TWP
MAHONING TWP
EAST PENN TWP
State Game Land 257
Berggrs Creek
Sizard Creek
EAST PENN TWP
WASHINGTON TWP
ASHFIELD SUBSTATION
SCHUYLKILL COUNTY
EAST PENN TWP
WEST PENN TWP
EAST PENN TWP
HEIDELBERG TWP
State Game Land 217
WASHINGTON TWP
HEIDELBERG TWP
LEHIGH COUNTY
895
Appalachian National Scenic Trail
309
HEIDELBERG TWP
LYNN TWP
WEST PENN TWP
LYNN TWP
4024
Substation
Rebuild Centerline
Existing Transmission Line
230kV
69kV
Municipality Boundary
Cemetery
Appalachian Trail
Forested Area
Federal Land
State Land
Sources:
Hydrology (USGS, USFWS)
Forested Areas (USGS)
Admin Boundaries (PASDA)
Parks/Gamelands (USGS)
Roads (ESRI)
Coordinate System:
PA State Plane South
Datum: NAD 83
February 14, 2019
LUZERNE
MONROE
CARBON
SCHUYLKILL
PA
LEHIGH
BERKS
Figure 1-5c: Proposed Facilities
Siegfried - Hauto #1 & #4 138/69 kV
Transmission Line Rebuild Project
ppl
Louis Berger
0 0.5 1 2
Miles

Attachment 2

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1.0 DESCRIPTION OF THE EXISTING LINE AND STRUCTURES

This project involves Phases 2 and 3 (collectively the "Project") of a larger three phase project in which the transmission lines between the Siegfried, Hauto and East Palmerton Substations are to be rebuilt. Phase 1 was approved by the Pennsylvania Public Utility Commission ("PUC") on July 5, 2013 at Docket No. A-2013-2372112. In Phases 2 and 3, PPL Electric Utilities Corporation ("PPL Electric") proposes to rebuild the following transmission lines:

Phase 2:

- 6.9-mile double circuit Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line between the location where these lines diverge from the Hauto – Siegfried Transmission Line ("Split") and the East Palmerton Substation
- 300-foot double circuit Palmerton #1 and #2 138/69 kV Transmission Tap
- 0.1-mile double circuit Palmerton Zinc #1 and #2 138/69 kV Transmission Tap

Phase 3:

- 15.2-mile double circuit Hauto – Siegfried #1 and #4 138/69 kV Transmission Line between the "Split" and Hauto Substation
- 0.1-mile South Slatington #1 and #2 138/69 kV Transmission Tap, and
- 0.1 and 0.04-mile single circuit Ashfield #1 and #4 138/69 kV Transmission Tap.

A detailed map of the proposed Project is provided as **Figure 3-1** in **Attachment 3** and a detailed description of Phases 2 and 3 is provided in **Attachment 1**.

2.0 DESCRIPTION OF THE PROPOSED LINE AND STRUCTURES

The proposed Project will be designed according to, and generally exceed, all National Electrical Safety Code ("NESC") standards. Design specifications and safety rules adhered to by PPL Electric are included as Attachment 4. PPL Electric has

designed the proposed Project to fit entirely within the existing right-of-way ("ROW"), with one exception at the request of a property owner as discussed below. Most new structures will be installed in close proximity to existing structures.

Details for each segment of the Project are provided below.

2.1 Siegfried – East Palmerton #1 & #2 138/69 kV Transmission Line

The existing transmission line operates as two parallel single-circuit 138/69 kV transmission lines for the first 3.4 miles and continues as a combination of single-circuit and double-circuit transmission line for the remaining 3.5 miles to the East Palmerton 230-138-69 kV Substation. The Siegfried – East Palmerton 138/69 kV Transmission Line will be rebuilt as a double-circuit 138/69 kV transmission line on new self-weathering steel monopoles with high capacity conductors and two fiber optic overhead ground wires ("OPGW").

As explained in Attachment 3, the existing ROW varies between centerline rights and defined width of 150 feet but is most commonly 100 feet in width. PPL Electric has designed the rebuilt Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line to fit within the existing ROW. Although PPL Electric can rebuild the Project entirely within the existing ROW, PPL Electric acquired new ROW adjacent to the D&L Trail and the Lehigh River at the request of Lehigh Gap Nature Center to reduce impacts on their property. By shifting the centerline on their property, the centerline on two additional properties also had to be shifted. All three property owners agreed to the shifts and granted PPL Electric additional ROW.[1]

Other than the Lehigh Gap Nature Center relocation, no additional ROW is needed to construct Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line. All new structures will be located in close proximity to the existing double-circuit

[1] Properties are owned by Lehigh Gap Nature Center, Lehigh County and East Penn Township.

structures. To avoid wetlands and other areas of concerns and minimize environmental impacts, 36 new structures along the Siegfried – East Palmerton 138/69 kV Transmission Line will be relocated more than 10 feet from the existing structure locations.

The proposed transmission structures for the Siegfried – East Palmerton 138/69 kV Transmission Line will range in height between approximately 65 and 145 feet with an approximate average structure height of approximately 90 feet, as shown in **Table 2-1**. Structure locations for the Siegfried – East Palmerton 138/69 kV Transmission Line were optimized to reduce project cost and environmental and social impacts. Optimization of the design reduces the total number of transmission structures located within the Siegfried – East Palmerton 138/69 kV Transmission Line ROW by removing all existing structures and replacing them with 74 double-circuit tubular steel monopoles.[2]

The proposed new transmission structures will consist of self-weathering steel monopoles equipped with steel upswept arms and glass insulator assemblies. All new poles will be self-supported, either direct embedded or on concrete caisson foundations. No guyed poles will be used as part of rebuilding the proposed Siegfried – East Palmerton 138/69 kV Transmission Line. **Figures 2-1 through 2-5** depict the typical structure types that will be used for the Siegfried – East Palmerton 138/69 kV Transmission Line.

2.2 Palmerton Zinc 138/69 kV and Palmerton 138/69 kV Transmission Tap

The new Palmerton Zinc 138/69 kV Transmission Tap will consist of two single-circuit steel MOLBAB[3] switch structures and two single-circuit steel monopoles. The new Palmerton 138/69 kV Transmission Tap will consist of five single-circuit steel monopoles. Both taps will be replaced structure for structure on steel single-circuit monopole structures. The steel monopoles for these taps are expected to range between approximately 65 and 75 feet in height, with an average height of approximately 70 feet,

[2] Optimization is defined as strategically selecting pole locations to decrease the number of structures needed to rebuild the transmission line thus reducing the cost to construct and maintain the transmission line.
[3] MOLBAB stands for motor-operated load break air break.

as shown in **Table 2-1**. **Figures 2-1 through 2-5** depict the typical structure types that will be used for the Palmerton Zinc Transmission Tap and Palmerton Transmission Tap.

South Slatington 138/69 kV Transmission Tap

As shown in **Table 2-1**, the proposed South Slatington #1 138/69 kV Transmission Tap will consist of three new single-circuit steel monopole structures, which range in height from approximately 70 feet to 80 feet. The new South Slatington #2 138/69 kV Transmission Tap will consist of one approximately 115-foot dead-end pole and one approximately 135-foot tap pole. **Figures 2-10 through 2-12** depict typical structure types that will be used for the proposed South Slatington 138/69 kV Transmission Tap.

Hauto - Siegfried #1 & #4 138/69 kV Transmission Line

The existing Hauto – Siegfried #1 & #4 Transmission Line operates as two parallel single-circuit 138/69 kV transmission lines for 15.2 miles between the Split and the Hauto Substation. The entire line will be reconstructed as a double-circuit 138/69 kV transmission line on new self-weathering steel monopoles with high capacity conductors and two fiber OPGW. PPL Electric has designed the rebuilt Hauto – Siegfried #1 and #4 13/869 kV Transmission Line to fit within the existing ROW. New structures will be located near the existing structures where practical. Several new structures located along the Hauto – Siegfried 138/69 kV Transmission Line were shifted off centerline based on engineering requirements and landowner requests.[4] However, no new structures will be located on any property that currently does not have an existing structure and no new ROW is required for this segment.

The total number of transmission structures located within the Hauto – Siegfried 138/69 kV transmission corridor will be reduced by removing all structures and replacing

[4] Where the transmission line was shifted off the transmission corridor centerline, the line was designed with shorter span lengths between structures or with increased wire tensions to maintain required clearances from the edge of the transmission corridor during blowout conditions.

them with 130 double-circuit monopoles and two single-circuit monopoles, as shown in **Table 2-1**.

The proposed new transmission structures for this segment will consist of self-weathering steel monopoles equipped with steel upswept arms and glass insulator assemblies. All new poles will be self-supported, either direct embedded or on concrete caisson foundations. Two guyed poles will be used as part of rebuilding the proposed Hauto – Siegfried 138/69 kV Transmission Line located on either side of the Lansford Substation. The guyed poles will be permanent and will not be removed after construction on the transmission line is complete. **Figures 2-6 through 2-9** depict typical structure types that will be used for the proposed Hauto – Siegfried 138/69 kV Transmission Line and Ashfield Transmission Tap. The proposed Hauto – Siegfried 138/69 kV Transmission Line structures will range between approximately 75 and 125 feet in height (see **Table 2-1**).

Ashfield #1 and #4 138/69 kV Transmission Tap

The proposed Ashfield #1 and #4 138/69 kV Transmission Tap will consist of one single-circuit steel MOLBAB switch structure approximately 69 feet in height, and three single-circuit steel monopoles that range in height from approximately 70 feet to 75 feet (see **Table 2-1**). **Figures 2-10 through 2-12** depict typical structure types that will be used for the proposed Ashfield #1 and #4 138/69 kV Transmission Tap.

Table 2-1 provides a summary of the existing and proposed number of structures and structure height.

Table 2-1. Existing and New Transmission Line Construction

Transmission Lines	No. of Existing Structures	Existing Structure Height Range (feet)	Proposed No. of New Structures	Proposed Structure Height Range (feet)
Siegfried – East Palmerton 138/69 kV lines	124	35 – 110	74	65 – 145
Palmerton Zinc 138/69 kV Tap	2	45 – 90	4	65 – 75
Palmerton 138/69 kV Tap	5	45 – 90	5	65 – 75
Hauto - Siegfried 138/69 kV lines	299	50 – 110	130	75 – 125
Ashfield 138/69 kV Tap	5	38 – 45	4	69 – 75
South Slatington 138/69 kV Tap	5	45 – 50	5	70 – 80
Total	**440**		**222**[5]	

All double circuit segments will contain six conductors and two OPGWs, while each single circuit branch of the taps will utilize three conductors and a single OPGW. All new conductor will be 556.5 kcmil,[6] 24/7 stranding, ACSR[7] conductors and all OPGWs will be 0.791-inch-diameter wire. The minimum conductor-to-ground clearance will be 31 feet which occurs at a maximum thermal conductor temperature of 125°C (257°F). The design minimum conductor clearances and conductor thermal ratings for the reconstructed lines are shown in **Tables 2-2 and 2-3**.

[5] Excluding temporary structures
[6] A kcmil is a thousand circular mils. A circular mil is the cross-sectional area of a wire one mil in diameter, where 1 kcmil = 0.5067 mm².
[7] Aluminum conductor steel reinforced.

Table 2-2. Design for Minimum Conductor Clearance for 556.5 kcmil 24/7 strand ACSR[8]	
Condition	**Transmission Double-Circuit Design Clearance-to-Ground**
Heavy Ice (1" ice at 0°C ambient temperature)	31 feet
Predicted extreme thermal load (125°C conductor temperature)	31 feet
Predicted blowout (6 lbs., 16°C, ambient temperature)	31 feet

Table 2-3. Conductor Thermal Rating 556.5 kcmil 24/7 Stranding ACSR 125°C Maximum Conductor			
Condition	**Ambient Temperature (°C)**	**Wind Speed (Ft./sec)**	**Ampacity (Amps)**
Summer Normal	35	0	806
Winter Normal	10	0	929
Summer Emergency	35	2.533	1054
Winter Emergency	10	2.533	1187

[8] Clearances based on an initial maximum tension of 6,000-10,000 pounds at ½ inch ice, 0°F, 4# wind and maximum ruling span of 200-1250 feet.

Figure 2-1. Typical Double-Circuit 138 kV Tension Structure

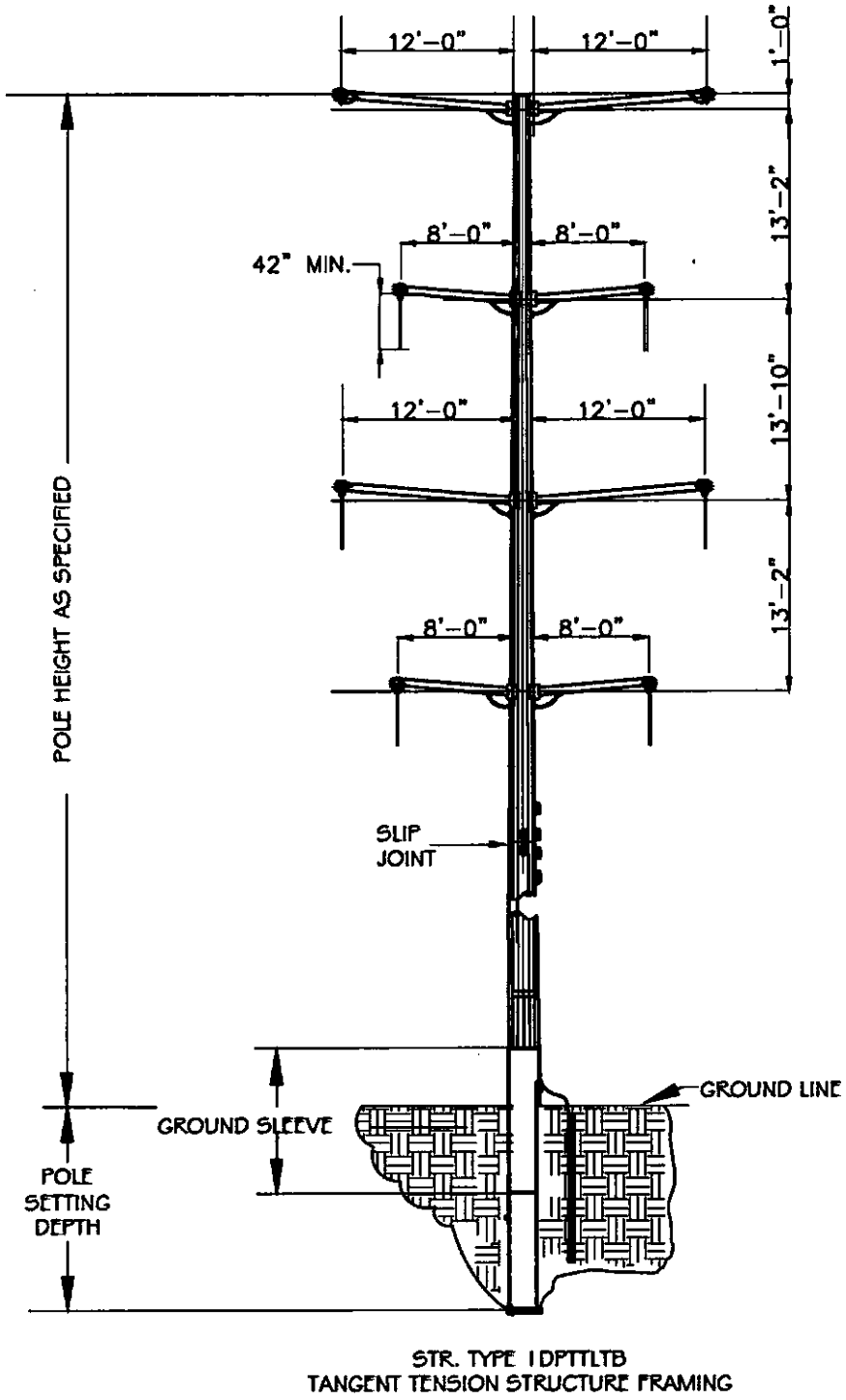


Figure 2-2. Typical Double-Circuit 138 kV Angle Suspension Structure

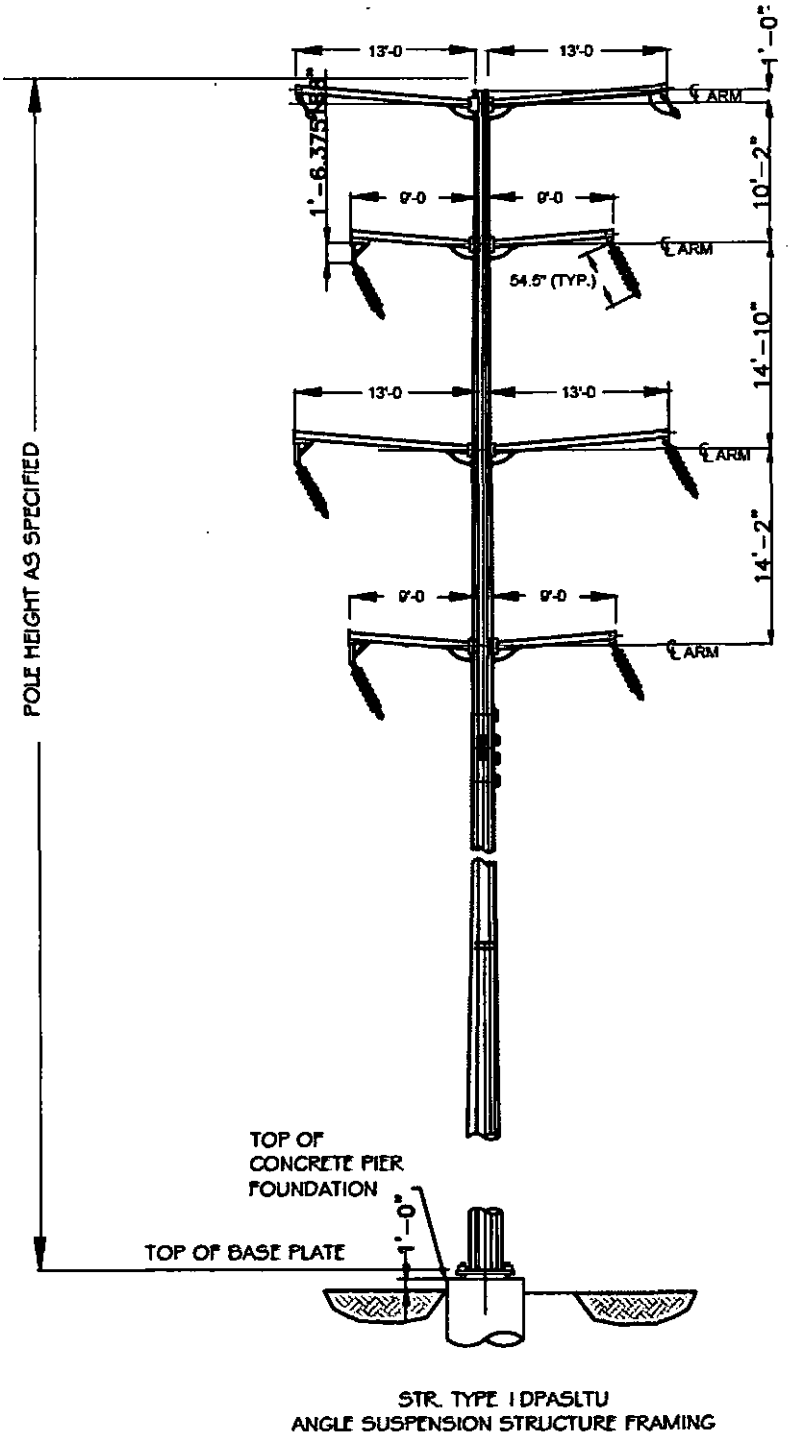


Figure 2-3. Typical Double-Circuit 138 kV Tangent Suspension Structure

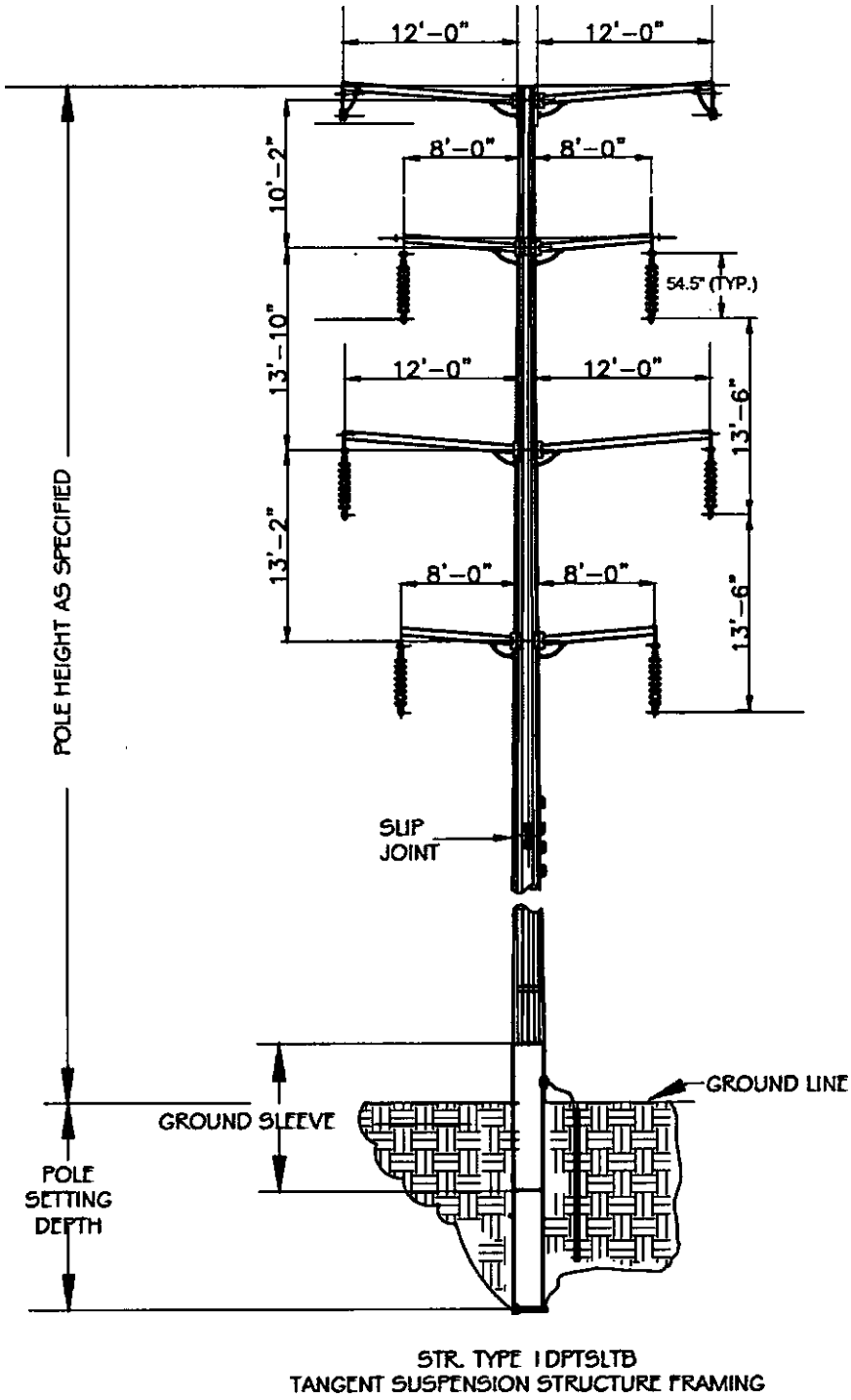


Figure 2-4. Typical Double-Circuit 138 kV 2-Pole Angle Tension Structure

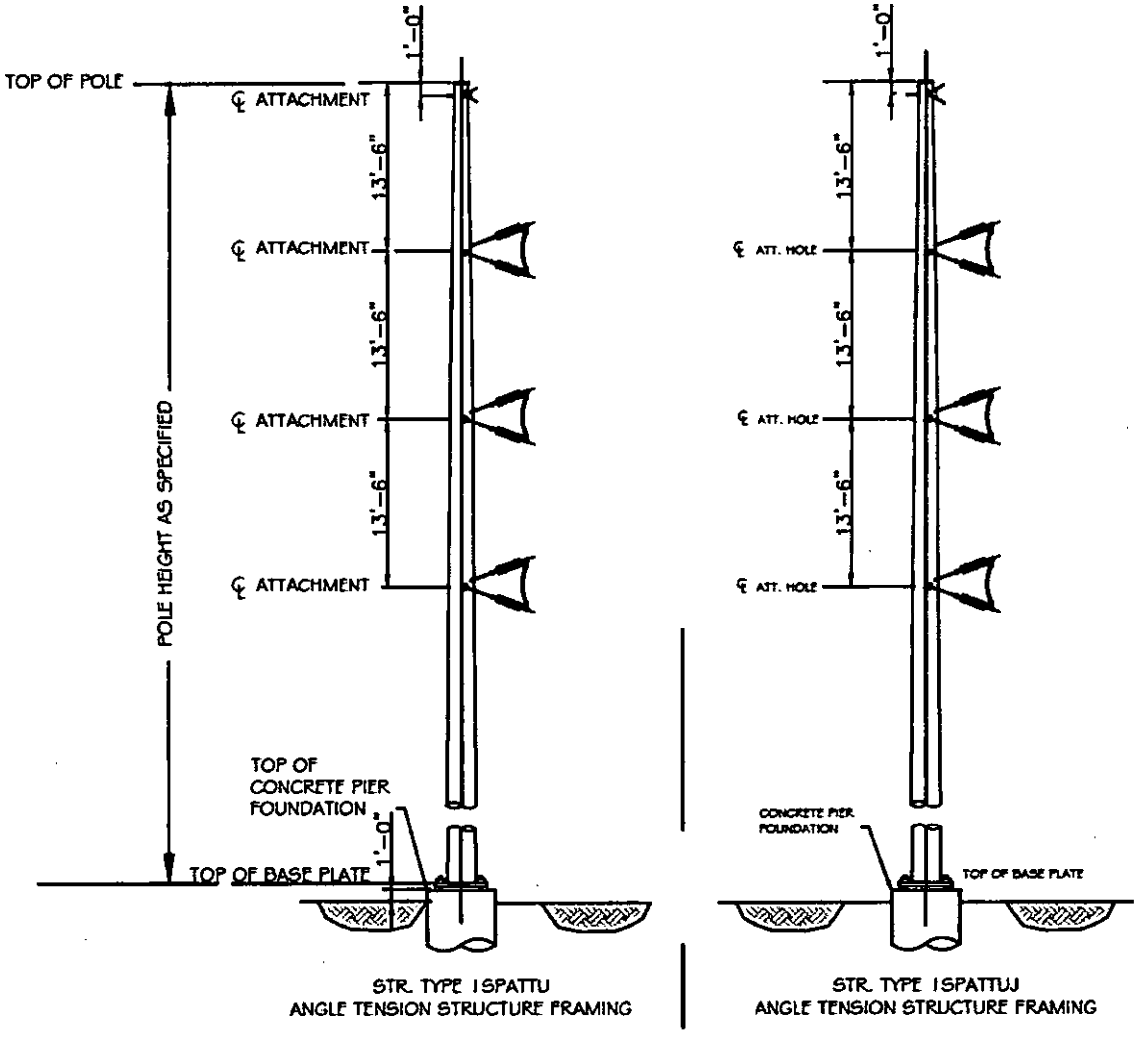
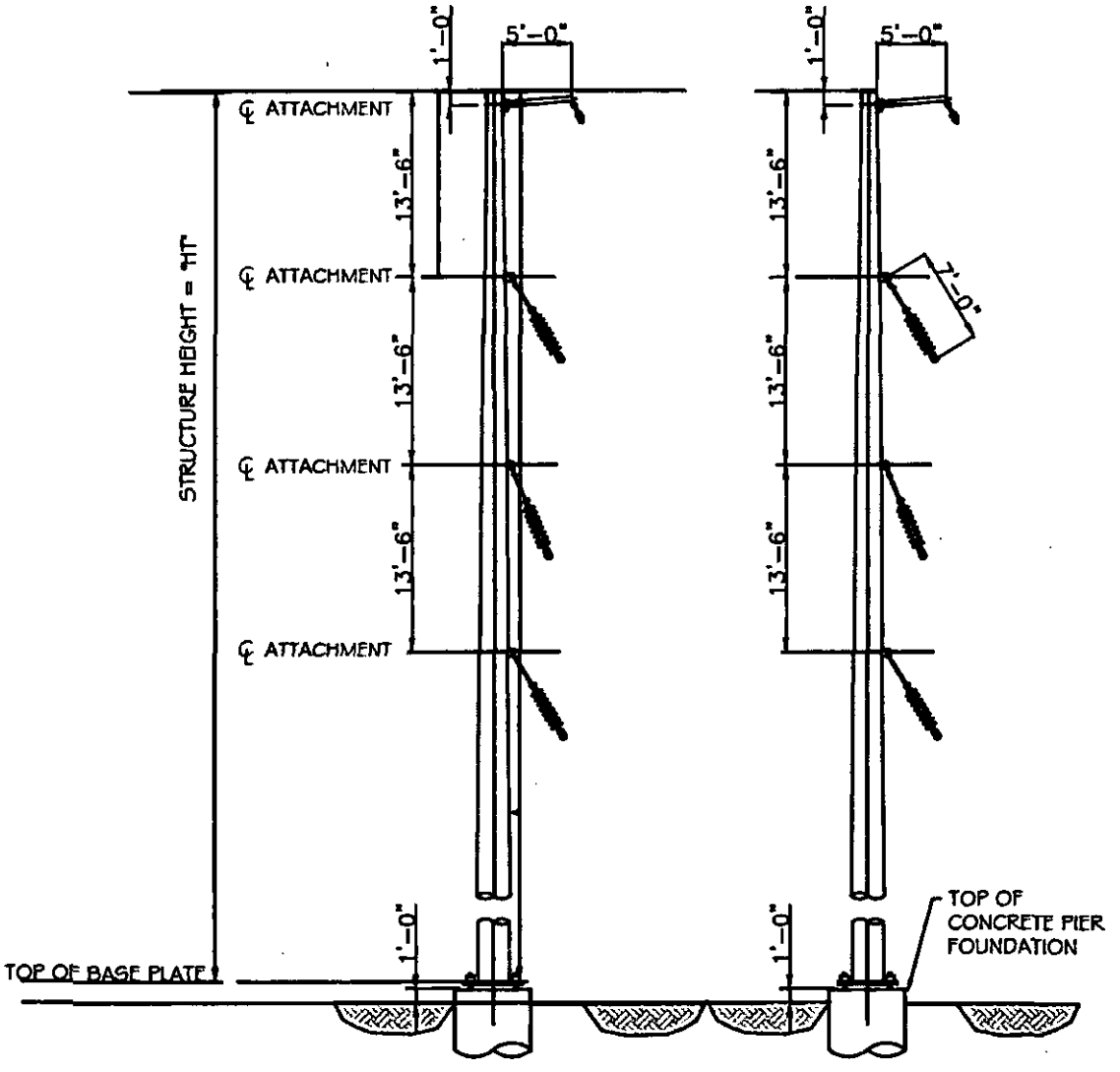


Figure 2-5. Typical Single-Circuit 138 kV 2-Pole Side Tension Structure



FRAMING 7-008-003 (1SPASTU)
ANGLE SUSPENSION STRUCTURE FRAMING

Figure 2-6. Typical Double-Circuit 138 kV Tension Structure

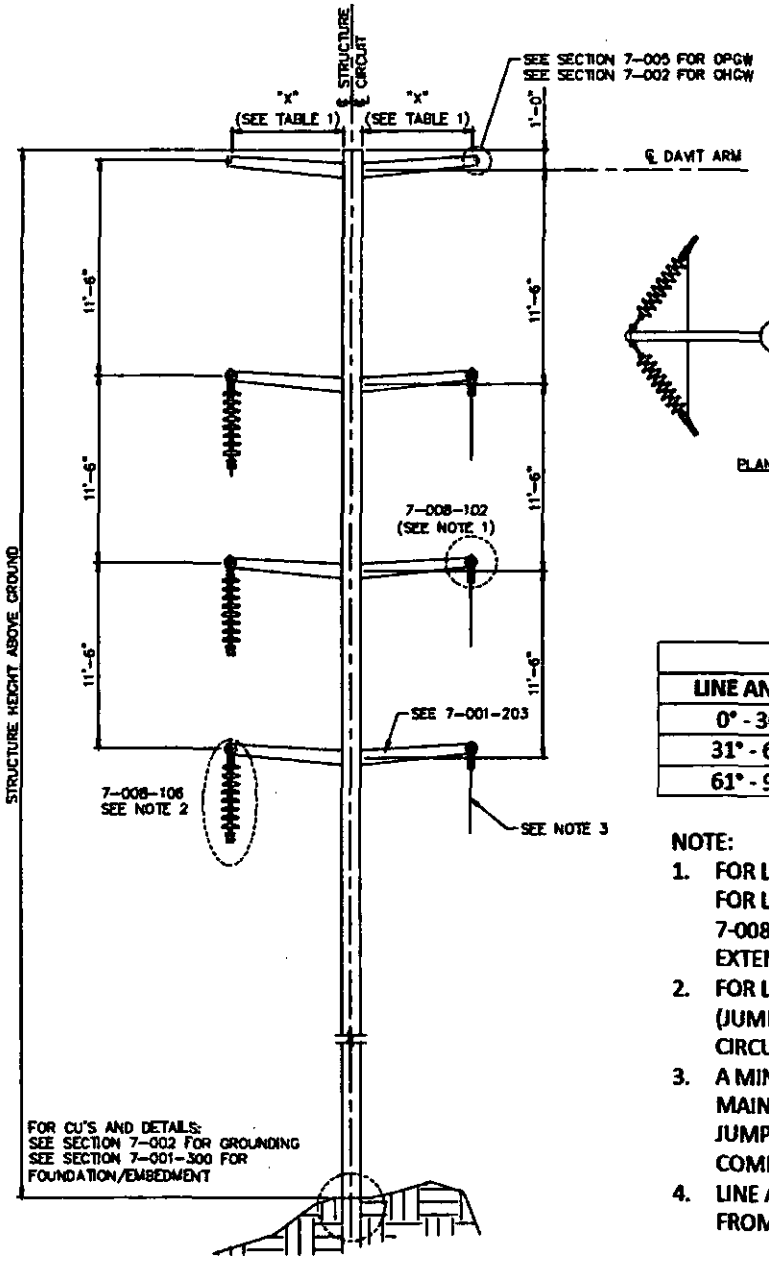


TABLE 1	
LINE ANGLE	DAVIT ARM LENGTH "X"
0° - 30°	8'-0"
31° - 60°	9'-0"
61° - 90°	11'-0"

NOTE:

1. FOR LINE ANGLES 0°-40° INSTALL 7-008-102. FOR LINE ANGLES GREATER THAN 40° INSTALL 7-008-103 (TENSION ASSEMBLY WITH EXTENSION) ON OUTSIDE CIRCUIT ONLY.
2. FOR LINE ANGLES OVER 10° INSTALL 7-008-106 (JUMPER SUSPENSION ASSEMBLY) ON OUTSIDE CIRCUIT ONLY.
3. A MINIMUM 46 INCH CLEARANCE SHALL BE MAINTAINED FROM ANY POINT ON THE JUMPER TO ALL GROUNDED STRUCTURAL COMPONENTS AND HARDWARE.
4. LINE ANGLE MAY EXCEED 90° WITH APPROVAL FROM PPL ENGINEERING/STANDARDS.

Figure 2-7. Typical Double-Circuit 138 kV Angle Suspension Structure

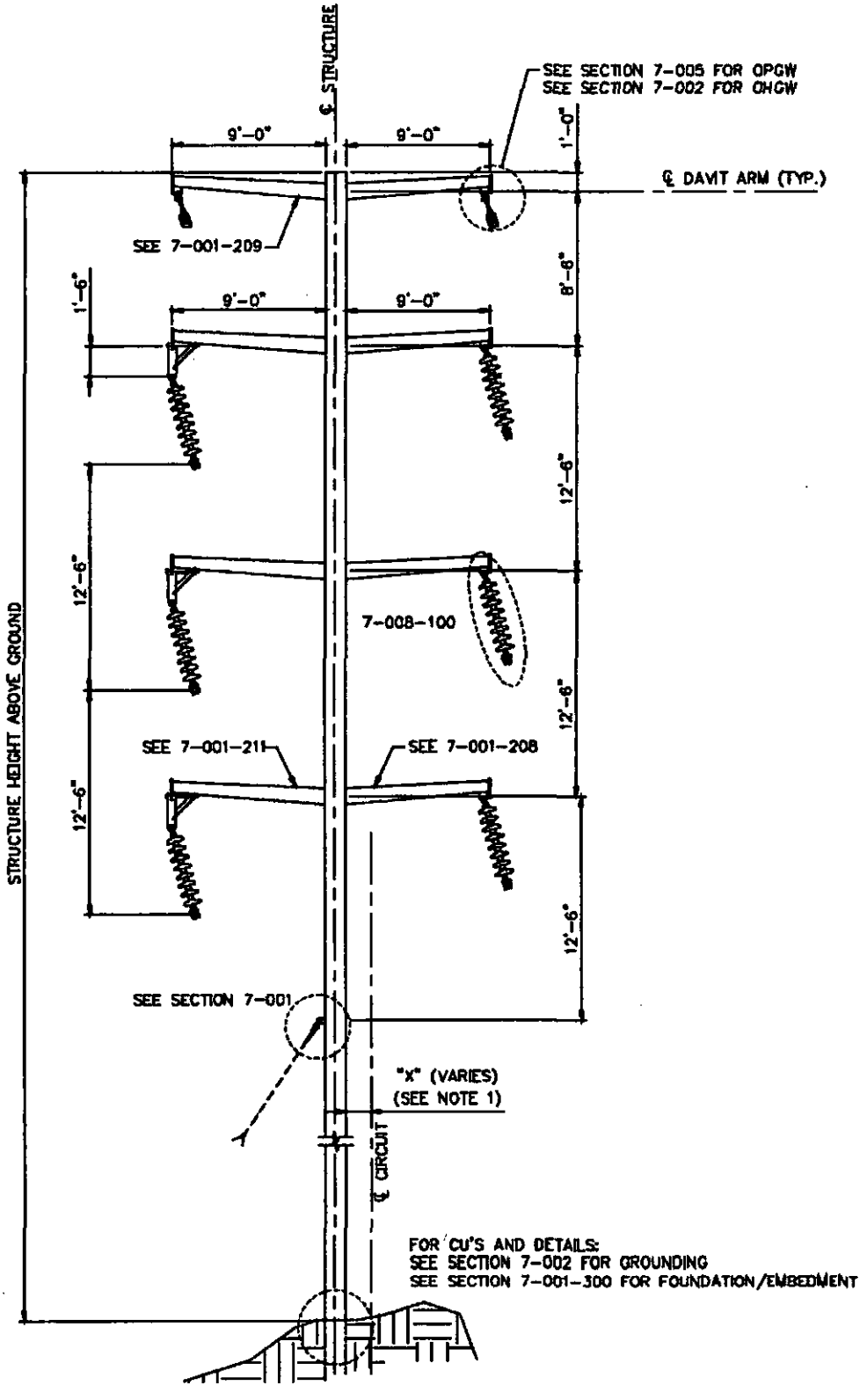
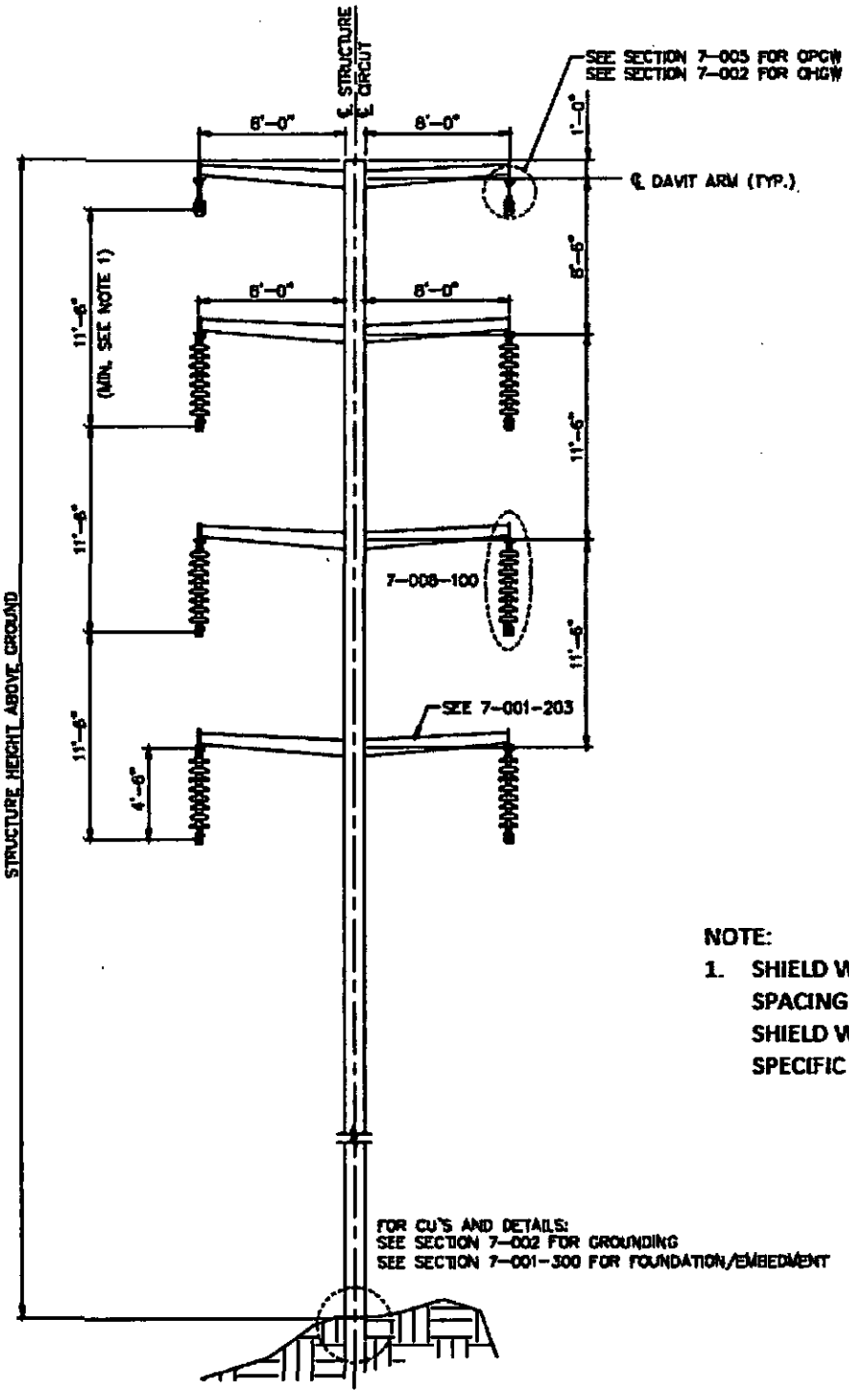


Figure 2-8. Typical Double-Circuit 138 kV Steel Monopole Structure



NOTE:

1. SHIELD WIRE TO CONDUCTOR SPACING VARIES DEPENDING ON SHIELD WIRE SUPPORT ASSEMBLY. SEE SPECIFIC JOB INSTRUCTIONS.

Figure 2-9. Typical Single-Circuit 138 kV Steel Monopole Structure

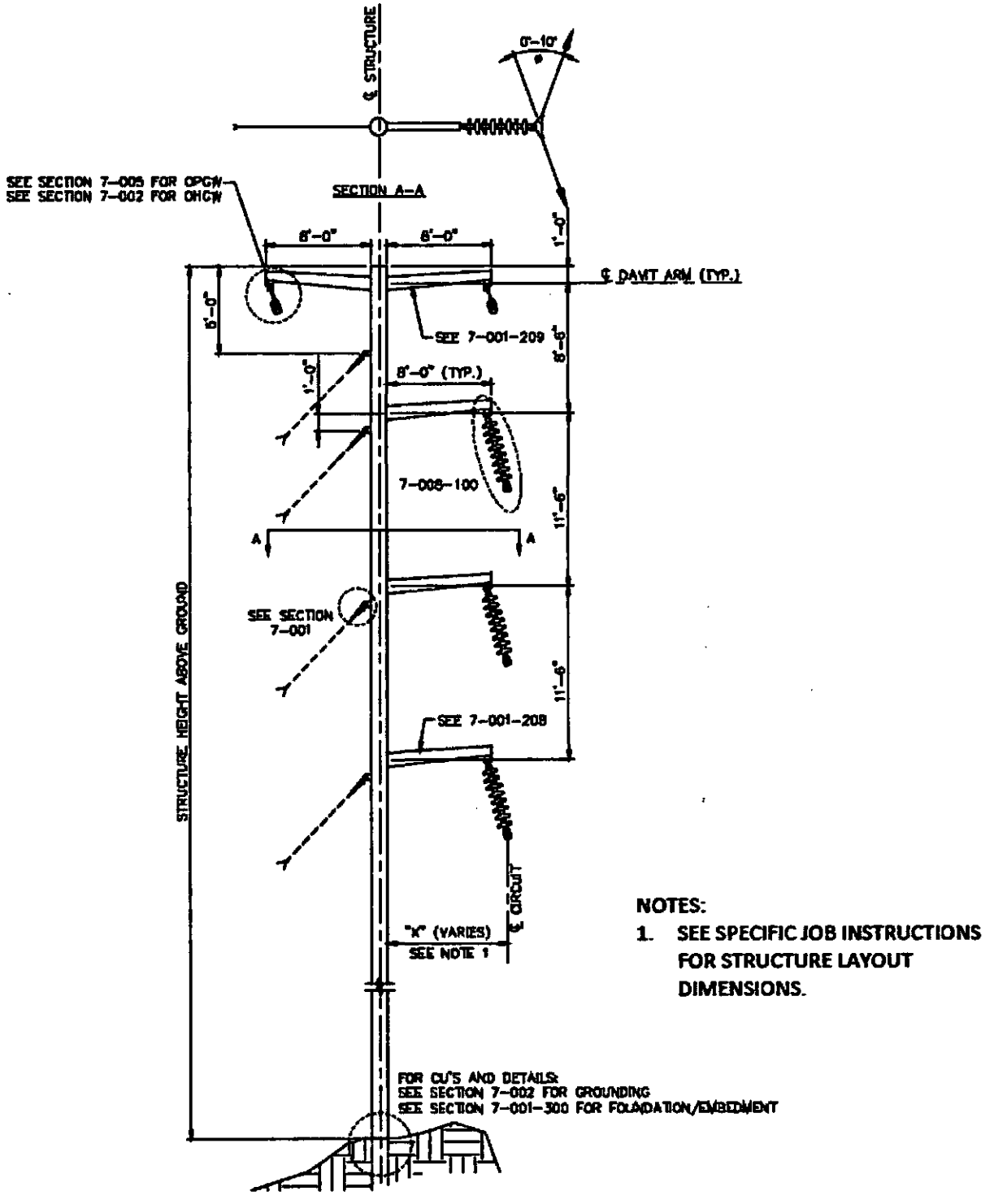


Figure 2-10. Typical Single-Circuit 138 kV Light Angle Structure

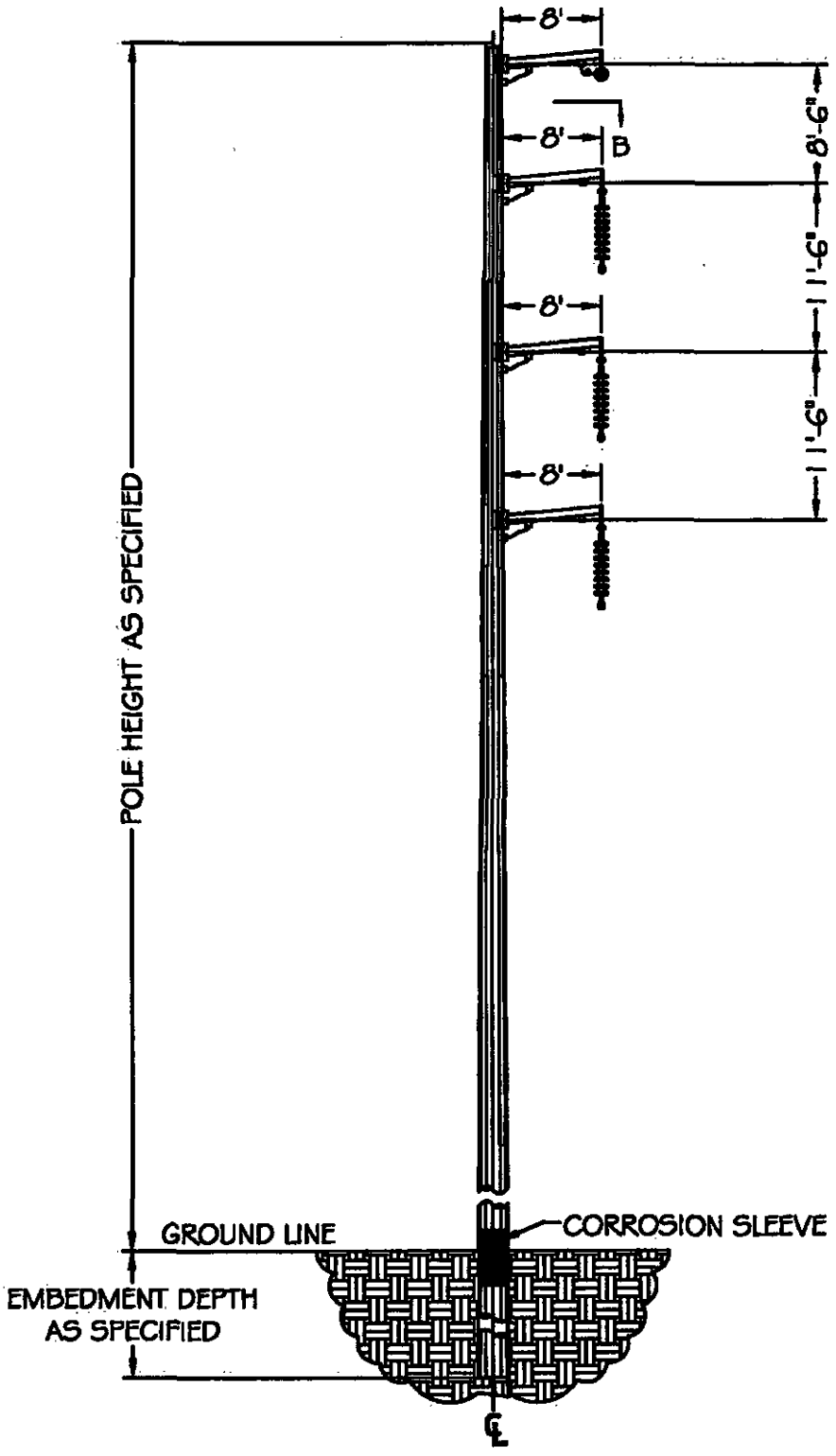


Figure 2-11. Typical Single Circuit 138 kV Running Angle Suspension Structure

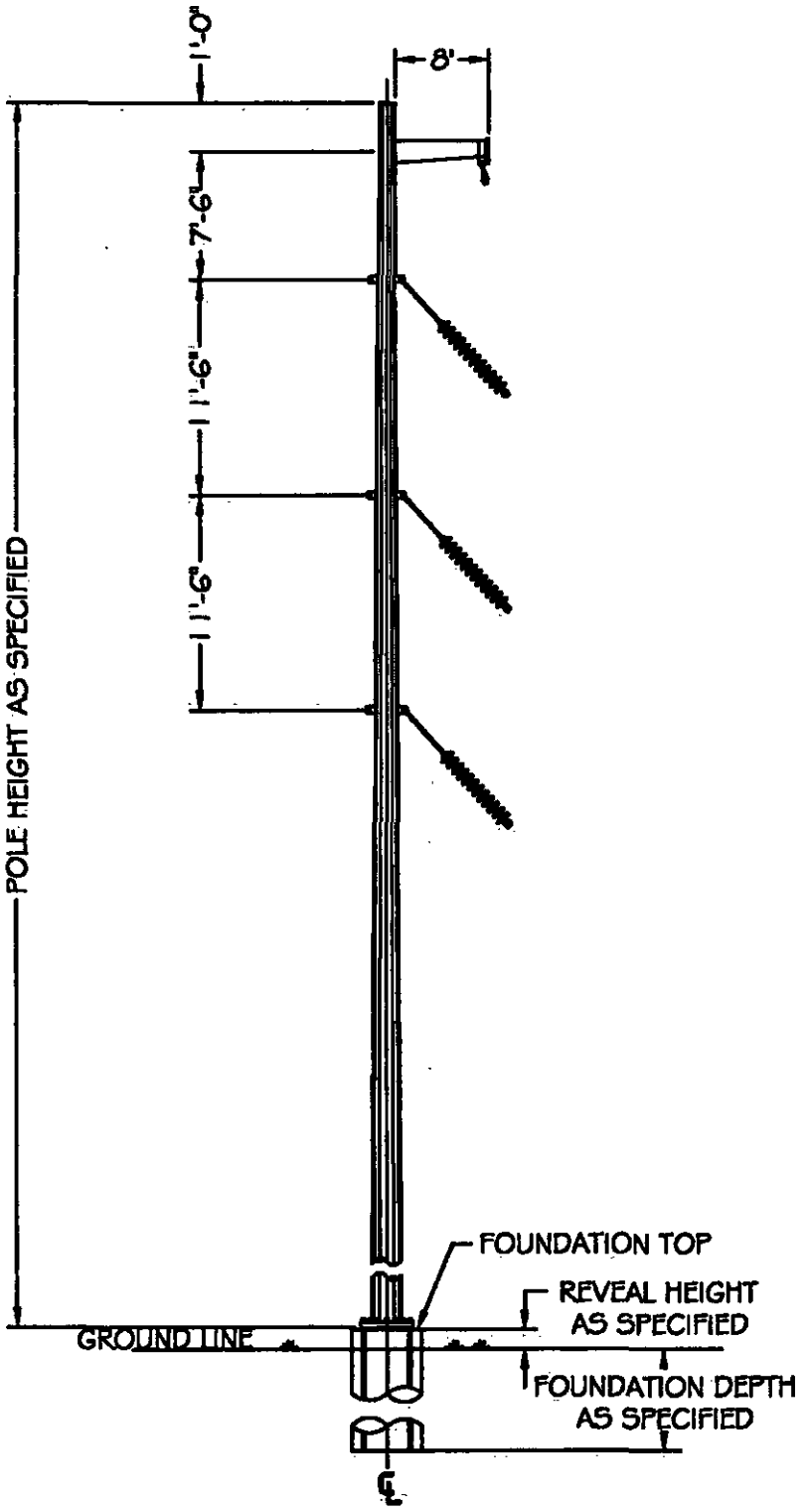
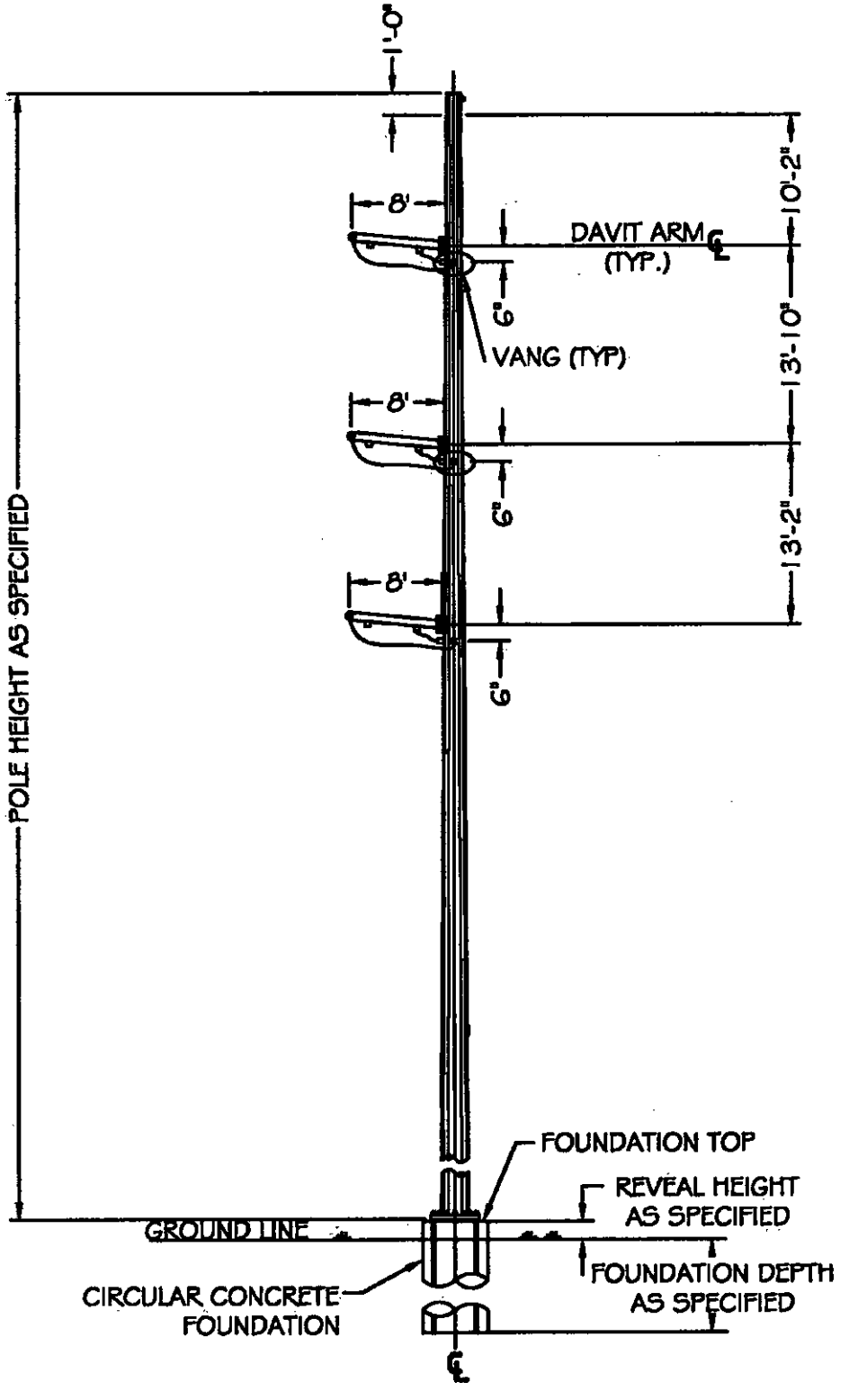


Figure 2-12. Custom Dead-End Structure Outside South Slatington Substation



Attachment 3

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1.0 GENERAL DESCRIPTION OF THE EXISTING ROUTE

This project involves Phases 2 and 3 (collectively the "Project") of a larger three phase project in which the transmission lines between the Siegfried, Hauto and East Palmerton Substations are to be rebuilt. Phase 1 was approved by the Pennsylvania Public Utility Commission ("PUC") on July 5, 2013 at Docket No. A-2013-2372112. In Phases 2 and 3, PPL Electric Utilities Corporation ("PPL Electric") proposes to rebuild the following transmission lines as part of the Siegfried – East Palmerton #1 & #2 and Hauto – Siegfried #1 & #4 138/69 kV rebuild project:

Phase 2:

- 6.9-mile double circuit Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line between the location where these transmission lines diverge from the Hauto - Siegfried Transmission Line ("Split") and the East Palmerton Substation[1]
- 300-foot double circuit Palmerton #1 and #2 138/69 kV Transmission Tap
- 0.1-mile double circuit Palmerton Zinc #1 and #2 138/69 kV Transmission Tap

Phase 3:

- 15.2-mile double circuit Hauto – Siegfried #1 and #4 138/69 kV Transmission Line between the "Split" and Hauto Substation
- 0.1-mile South Slatington #1 and #2 138/69 kV Transmission Tap, and
- 0.1 and 0.04-mile single circuit Ashfield #1 and #4 138/69 kV Transmission Tap.

A detailed map of the proposed Project is provided as **Figure 3-1** in **Attachment 3** and a detailed description of Phases 2 and 3 is provided in **Attachment 1**. The proposed routes of the rebuilt transmission lines are described in detail below:

[1] A map showing the location of the Split is included as Figure 1-1 in **Attachment 1**.

Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line[2]

The segment of the Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line included in the Project begins at the "Split" and continues to the East Palmerton Substation as follows:

- From the Split, the rebuilt line will continue northeast/east for approximately 2.9 miles through forested land, including crossing 0.8 mile of State Game Land 217 and the Appalachian National Scenic Trail (Appalachian Trail). This section of line is located within a 100- to 150-foot right of way ("ROW").
- After crossing the Appalachian Trail, the rebuilt line will travel north/northeast approximately 0.7 miles as a double-circuit transmission line, paralleling the Delaware and Lehigh (D&L) Trail and the Lehigh River. Although PPL Electric can rebuild this segment entirely within the existing ROW, PPL Electric acquired a new ROW adjacent to the D&L Trail and the Lehigh River at the request of Lehigh Gap Nature Center to reduce environmental impacts on those properties. By shifting the centerline in this area, ROWs on two additional properties also had to be shifted. All three property owners agreed to the shifts and granted PPL Electric the new ROWs.[3]
- From there, the route extends approximately 0.3 miles across the Lehigh River and continues generally north/northeast for approximately 3.0 miles before terminating into the existing East Palmerton Substation, located south of Little Gap Road in Lower Towamensing Township, Carbon County.

Palmerton Zinc and Palmerton 138/69 kV Transmission Tap[4]

The Palmerton Zinc and Palmerton 138/69 kV transmission taps are routed as follows:

- The 0.1-mile rebuilt Palmerton 138/69 kV Transmission Tap will be situated within the existing 230- to 340-foot ROW, spanning the Aquashicola Creek through a forested area before terminating at the Palmerton Substation. No new ROW is required to rebuild this tap.

[2] The existing Siegfried – East Palmerton #1 & #2 138/69 kV Transmission Line is shown in **Figure 3-1a** through **Figure 3-1j**.
[3] Properties are owned by Lehigh Gap Nature Center, Lehigh County and East Penn Township.
[4] Palmerton 138/69 kV Transmission Tap is shown on **Figure 3-1g** and Palmerton Zinc 138/69 kV Transmission Tap is shown on **Figure 3-1i**

- The 300-foot rebuilt Palmerton Zinc 138/69 kV Transmission Tap will be situated within the existing 175-foot ROW through an industrialized area before terminating at the Palmerton Zinc Substation. No new ROW is required to rebuild this tap.

Hauto - Siegfried #1 & #4 138/69 kV Transmission Line[5]

The segment of the Hauto - Siegfried #1 & #4 138/69 kV Transmission Lines included in the Project begins at the "Split" and continues to the Hauto Substation as follows:

- From the Split, the line heads northwest for approximately 1.8 miles through primarily forested lands with interspersed agricultural fields and residential properties.
- Then the route heads west for 2.1 miles through forested areas, including crossing the Appalachian Trail, 0.1 mile of State Game Land 217, and 0.4 mile of the inactive Glasgow Quarry.
- Once past the Glasgow Quarry, the route heads north/northwest for approximately 7.8 miles through primarily forested lands mixed with agricultural, industrial, and residential uses. At a point located in Summit Hill Borough approximately 0.4 mile south of U.S. Route 209, the existing circuits diverge in two separate ROWs. Here the proposed route follows the eastern of the two ROWs for approximately 1.5 miles, and traverses through forested lands adjacent to Panther Valley High School.
- At this point, the route turns generally southwest for 1.6 miles through forested areas, generally paralleling State Route 54 before terminating into the existing Hauto Substation, located north of Stock Street in Nesquehoning, Carbon County. In this section, the transmission line corridor varies between 100 and 150 feet wide but is generally a 100-foot-wide ROW.

Ashfield 138/69 kV Transmission Tap[6]

The Ashfield 138/69 kV Transmission Tap will be situated within the existing ROW beginning at the Hauto - Siegfried #1 and #4 Transmission Line and crossing through

[5] The Hauto - Siegfried #1 & #4 138/69 kV Transmission Line is shown in **Figure 3-1l** through **Figure 3-1h**.
[6] The Ashfield 138/69 kV Transmission Tap is shown on **Figure 3-1s**.

agricultural land before terminating at the Ashfield Substation, located off West Lizard Creek Road (State Route 895) in East Penn Township, Carbon County.

South Slatington 138/69 kV Transmission Tap[7]

The South Slatington 138/69 kV Transmission Tap will be situated within the existing ROW that traverses from the shared Siegfried – East Palmerton and Hauto – Siegfried 138/69 kV Transmission Line corridor, through a forested area before terminating at the South Slatington 69-12 kV Substation, located off State Route 873 in Washington Township, Lehigh County.

2.0 DESCRIPTION OF THE RIGHT OF WAY

a. Existing Right of Way

The existing Siegfried – East Palmerton #1 and #2 138/69 kV Transmission Line is located within ROW ranging from centerline rights to fixed width rights up to 150-feet wide. A majority of the line is located within a 100-foot-wide ROW. The existing Palmerton 138/69 kV Transmission Tap is located within a ROW that varies in width from 230 to 340 feet. The existing Palmerton Zinc 138/69 kV Transmission Tap is located within a 175-foot ROW. PPL Electric evaluated and reviewed the land uses within a quarter mile (1,320 feet) of these segments to provide a sense of the landscape in which these segments are located. Land uses were based on the 2011 National Land Cover Data ("NLCD"). Assessment of the data shows that forest is the dominant land cover along the existing Siegfried – East Palmerton #1 & #2 138/69 kV Transmission Line, Palmerton 138/69 kV Transmission Tap and Palmerton Zinc 138/69 kV Transmission Tap, accounting for almost 50% of the review area. The remaining 50% is split between: developed land; open space; barren land predominantly associated with an industrialized area; scattered agricultural fields and hay/pasture areas; and open water at the Lehigh River and Aquashicola Creek crossings. The existing ROW has previously been cleared of woody vegetation and further impacts to forested land use is not anticipated.

The existing Hauto - Siegfried 138/69 kV Transmission Line is located within ROW ranging from centerline rights, 100-foot-wide and 150-foot-wide segments. The existing

[7] The South Slatington 138/69 kV Transmission Tap is shown on **Figure 3-1k**.

Ashfield 138/69 kV Transmission Tap are located entirely on property owned by PPL Electric. PPL Electric evaluated and reviewed the land uses within a quarter mile (1,320 feet) of these segments to provide a sense of the landscape in which these segments are located. Land uses were based on the NLCD. Assessment of the data shows that forest is the predominant land use along the Hauto - Siegfried 138/69 kV Transmission Line and Ashfield 138/69 kV Transmission Tap, accounting for over 71% of the area. The remaining 29% is split mostly between intermittent grassland/pasture areas and agricultural land typically located near the central portion of these segments, developed land associated with roadways, golf courses, industrial areas, and Lansford Borough and the village of Slatedale. The existing ROW easement areas and PPL-owned transmission corridor have previously been cleared of woody vegetation, and further impacts to forested land use is not anticipated.

The existing South Slatington 138/69 kV Transmission Tap is entirely located on property owned by PPL Electric. Assessment of the data shows that agricultural land is the predominant land use accounting for over 55% of the area. The remaining 45% consists of a mix of forested land and residential development.

b. Impact to Right of Way

The size, character, design and configuration of the proposed transmission lines will not substantially alter its existing ROW. The rebuilt transmission lines will generally be on the same alignment as the existing transmission lines and in the same previously cleared and consistently maintained variable-width ROW.

Siegfried – East Palmerton #1 & #2 and Hauto - Siegfried #1 & #4 138/69 kV Lines

Due to span optimization and the fact that single monopole structures will be replacing two parallel single-circuit structures, there will be significantly fewer structures along the Siegfried – East Palmerton 138/69 kV and Hauto - Siegfried 138/69 kV Transmission Line routes at the completion of these segments than exist today.

As described in **Attachment 2**, PPL Electric will replace all 124 existing structures with 74 new steel monopoles along the existing Siegfried – East Palmerton 138/69 kV Transmission Line ROW. The existing structures consist of a mix of wooden H-frame, wooden single-pole, double-circuit wooden single-pole, and double-circuit steel lattice structures

PPL Electric will replace the 299 existing lattice structures along the Hauto - Siegfried 138/69 kV Transmission Line, with 130 new double-circuit steel monopoles and two single-circuit tubular steel monopoles.

Each of the existing lattice towers along the Siegfried–East Palmerton 138/69 kV and Hauto - Siegfried 138/69 kV Transmission Lines currently occupies approximately 400 square feet of ground, with most parallel sets occupying approximately 800 square feet of ground.[8]

All the parallel structures will be replaced by a single steel monopole that will occupy approximately 20 square feet of ground. The smaller footprint of the new monopole will significantly decrease the impacts of these segments. PPL Electric will not place new structures on properties that do not presently contain a structure. Further, the number of poles on any single property will not increase as part of this Project. As a result, the new line will have substantially less impact on the landscape and the land use practices relative to the existing line.

Palmerton, Palmerton Zinc, Ashfield and South Slatington 138/69 kV Transmission Tap

As described in **Attachment 2**, PPL Electric will replace two single-circuit wooden single-poles with two single-circuit steel MOLBAB (motor-operated load break air break) switch structures and two single-circuit steel monopoles along the Palmerton Zinc 138/69 kV Transmission Tap. Additionally, PPL Electric will replace four single-circuit wooden H-frame structures and one wooden structure with five single-circuit steel monopoles along the Palmerton 138/69 kV Transmission Tap.

[8] The existing Hauto - Siegfried #1 & #4 138/69 kV Transmission Lines is located on predominately single-circuit parallel lattice towers along the entire length of the line.

PPL Electric will replace five single-circuit steel monopoles along the Ashfield 138/69 kV Transmission Tap with three self-weathering structures with high capacity conductors. Additionally, PPL Electric will replace three wooden poles with three single-circuit steel monopole structures along the South Slatington 138/69 kV Transmission Tap.

Where possible during construction, PPL Electric will use and update existing access roads associated with the existing ROW areas to further reduce interference with existing land uses.

3.0 PUBLIC OUTREACH

PPL Electric has provided information regarding the Project to representatives of Washington Township in Lehigh County, and Palmerton, Nesquehoning and Summit Hills Boroughs, and Lower Towamensing, Mahoning and East Penn Townships in Carbon County. These entities have not objected to the proposed Project. Additionally, PPL Electric has reached out to the owners of properties that are crossed by the transmission lines.

4.0 ENVIRONMENTAL CONSIDERATIONS

Environmental factors reviewed for the Project included unique natural features, soils, waterways, wetlands, 100-year floodplains, vegetation, and threatened and endangered species.

Unique Natural Features

The Project is located within two natural areas identified by the Pennsylvania National Heritage Program ("PNHP") as the West Lehigh River Kittatinny Slope and the Lehigh Furnace Gap. The West Lehigh River Kittatinny Slope is located in East Penn Township, Carbon County and Heidelberg and Washington Township, Lehigh County, along the southwestern portion of the Siegfried – East Palmerton 138/69 kV Transmission Line. This area consists of south-facing forested slopes and the ridgeline of Blue Mountain, which provides habitat for several species of concern. The West Lehigh River Kittatinny Slope will not be impacted by the Project because it will be entirely rebuilt within the existing, cleared ROW. The Lehigh Furnace Gap is located in East Penn Township, Carbon County and Washington Township, Lehigh County, along the

southeastern portion of the Hauto - Siegfried 138/69 kV Transmission Line. The identified natural area (Lehigh Furnace Gap) provides suitable habitat for two species of concern: the Allegheny woodrat (*Neotoma magister*) and the Sand Quaker Moth (*Platyperigea meralis*). Neither of the natural areas will be impacted by the Project because it will be entirely rebuilt within the existing, cleared ROW. The Palmerton 138/69 kV Transmission Tap, Palmerton Zinc 138/69 kV Transmission Tap, Ashfield 138/69 kV Transmission Tap and South Slatington 138/69 kV Transmission Tap do not cross any natural areas identified by the PNHP. The Project will not traverse or affect any other unique geological, scenic, or natural areas.

In addition, although the following natural areas are not crossed by the Project, they are located within 0.5 mile of the Hauto - Siegfried 138/69 kV Transmission Line ROW:

- Lake Hauto (Nesquehoning Township, Carbon County and Rush Township, Schuylkill County) is located approximately 0.1 mile north of the Hauto Substation. This identified natural area contains a population of plant species of concern. No impacts to this plant species population is anticipated.

- Mauch Chunk Ridge Barrens (Mahoning Township, Carbon County) is located approximately 106 feet east of the existing ROW. This identified natural area is currently a dry oak-heath forest dominated by chestnut oak with small patches of pitch pine and mixed deciduous forest.

- Stone Mountain Woods (East Penn Township, Carbon County) is located 0.1 mile southwest of the existing ROW. This identified natural area contains a plant species of concern found scattered in open sandy hardwood with mostly small trees.

- Rexton Ponds (Washington Township, Lehigh County) is located 0.4 mile east of the existing ROW. The identified natural area consists of a small woodlot mostly surrounded by agricultural fields and residential development, harboring a series of vernal pools that support an unnamed species of concern.

A segment of the existing Siegfried – East Palmerton 138/69 kV Transmission Line spans the D&L National Heritage Corridor in Washington Township, Lehigh County. The existing Siegfried – East Palmerton 138/69 kV Transmission Line parallels the D&L Trail for approximately 0.2 mile before crossing the trail twice within the existing ROW. Due to a property owner requesting that PPL Electric move the line to the east, the rebuilt line will only cross the D&L Trail once.

The Project is not expected to impact any of these natural areas because it will be rebuilt entirely within the existing, cleared ROW or existing cleared areas.

Soils

Erosion and Sedimentation ("E&S") control plans will be implemented for the Project to minimize the displacement of soils. Plans for Phase 2 have been developed and were approved by the local county conservation district. Coverage under National Pollutant Discharge Elimination System ("NPDES") permits have been obtained from the Pennsylvania Department of Environmental Protection ("PADEP") for Phase 2. PPL Electric will develop E&S plans for Phase 3 and obtain approval from the county conservation district. PPL Electric will also obtain applicable NPDES permits for Phase 3. During construction, PPL Electric will adhere to all conditions specified in the NPDES permit. Impacts to local soil resources are anticipated to be minimal.

Waterways

The existing Siegfried – East Palmerton 138/69 kV Transmission Line spans National Hydrography Dataset ("NHD") identified waterways that will continue to be spanned by the rebuilt transmission line. Waterways crossed in the northern portion of the Siegfried – East Palmerton 138/69 kV Transmission Line include the Aquashicola Creek and Lehigh River, which have a PADEP Chapter 93 Designated Stream Classification of Trout Stocked Fishery ("TSF") – Migratory Fishes ("MF"). The Palmerton Transmission Tap and Palmerton Zinc Transmission Tap also span the Aquashicola Creek. The portion of the Siegfried – East Palmerton 138/69 kV Transmission Line west of the Lehigh River spans several unnamed

tributaries associated with Trout Creek, which has a PADEP Chapter 93 Designated Stream Classification of Cold Water Fishery ("CWF") – Migratory Fishes ("MF"). None of these waterways are considered an anti-degradation special protection classification water.

Additionally, the existing Hauto - Siegfried 138/69 kV Transmission Line spans nine National Hydrography Dataset ("NHD") identified waterways that will continue to be spanned by the new transmission line. Named waterways crossed by the Hauto - Siegfried 138/69 kV Transmission Line include White Bear Creek, Mahoning Creek, Bergers Creek, and Lizard Creek. White Bear Creek has a PADEP Chapter 93 Designated Stream Classification of Exceptional Value ("EV"). Bergers Creek and Lizard Creek are designated Trout Stocked Fishery ("TSF"), and Mahoning Creek is designated as a Cold Water Fishery ("CWF"). Two unnamed tributaries to Mahoning Creek and two unnamed tributaries to Bergers Creek are also crossed by the Hauto - Siegfried #1 & #4 138/69 kV Transmission Line; the tributaries to Mahoning Creek are designated CWF, and the tributaries to Bergers Creek are designated TSF. One of the unnamed tributaries to Mahoning Creek has a PADEP Chapter 93 EV classification and an anti-degradation special protection classification.

The Ashfield 138/69 kV Transmission Tap and the South Slatington 138/69 kV Transmission Tap do not span any NHD waterways.

The Pennsylvania Fish and Boat Commission ("PFBC") has designated Aquashicola Creek, Mahoning Creek, and Lizard Creek as Stocked Trout Waters. Additionally, White Bear Creek, Bergers Creek, Lizard Creek, Mahoning Creek and one of its crossed unnamed tributaries and an unnamed tributary to Trout Creek are designated as a Naturally Reproducing Trout ("NRT") Stream. An E&S control plan was developed to address stormwater control in these watersheds. Impacts to any waterway are anticipated to be minimal. PPL Electric will obtain all approvals and permits necessary for the construction of the Project and will comply with any conditions placed on those permits.

Wetlands

Based on a review of the U.S. Fish and Wildlife Service's ("USFWS") National Wetlands Inventory ("NWI"), the existing Siegfried – East Palmerton #1 & #2 138/69 kV Transmission Line crosses one wetland system, which is classified as a palustrine, unconsolidated bottom, permanently flooded, diked/impounded wetland (PUBHh). The Siegfried – East Palmerton

138/69 kV Transmission Line spans Aquashicola Creek (classified as R5UBH, or riverine, upper perennial, unconsolidated bottom, permanently flooded system), and two unnamed tributaries to Trout Creek (classified as R4SBC, or a riverine, intermittent, streambed, seasonally flooded system).

The Hauto - Siegfried 138/69 kV Transmission Line spans White Bear Creek, which feeds Mauch Chunk Lake. The wetland associated with White Bear Creek that is spanned by the Hauto - Siegfried 138/69 kV Transmission Line are classified by the NWI as a palustrine, scrub-shrub, broad-leaved deciduous, temporarily flooded ("PSS1A") system.

PPL Electric retained an environmental consultant to identify and delineate all wetland and watercourses within the Project area. The Siegfried – East Palmerton 138/69 kV Transmission Line will span 46 wetlands and 35 streams. The Hauto - Siegfried 138/69 kV Transmission Line will span 57 wetlands, 51 streams, 2 ponds and seven ditches. The Palmerton Zinc 138/69 kV Transmission Tap will span two wetlands and one stream, while the Palmerton 138/69 kV Transmission Tap will cross one stream. The Palmerton 138/69 kV Transmission Tap will not span any wetlands. The South Slatington Transmission Tap does not span any wetlands or streams. It is anticipated the Project will not cause additional impacts on streams and wetlands because the new monopole structures will be located to specifically avoid impacting these areas. PPL Electric will obtain all necessary permits from the PADEP and the United States Army Corps of Engineers ("USACE") and will comply with all the terms and conditions placed on those permits.

100-year Floodplains

The National Flood Hazard Layer ("NFHL") for Carbon and Lehigh counties Pennsylvania was obtained through the Federal Emergency Management Agency ("FEMA") Map Service Center and reviewed for 100-year floodplains within the Project area and surrounding landscapes. The NFHL data incorporates all Flood Insurance Rate Map ("FIRM") datasets published by FEMA and any Letters of Map Revision ("LOMRs") that have been issued against those databases since their publication date. Based on review of this data, the Project

will span the FEMA 100-year floodplain associated with the Lehigh River, Aquashicola Creek, White Bear Creek, Mahoning Creek, Bergers Creek, and Lizard Creek. Several structures located along the Siegfried – East Palmerton 138/69 kV Transmission Line will be placed within the 100-year floodplains associated with Aquashicola Creek and Lehigh River. The Palmerton 138/69 kV Transmission Tap will be placed within the 100-year floodplains associated with Aquashicola Creek, however no impacts to these floodplain areas are anticipated due to the small size of the structures when compared with the overall floodplain and floodway areas. Several structures along the Hauto - Siegfried 138/69 kV Transmission Line will be placed within 100-year floodplains associated with Mahoning Creek, Bergers Creek, Lizard Creek, and unnamed tributaries associated with Mahoning Creek and Lehigh River. No structures along the Ashfield 138/69 kV Transmission Tap or the South Slatington 138/69 kV Transmission Tap will be placed within 100-year floodplains. Additionally, no increase to the calculated cross section area is expected, again due to the above noted small size of the structures.

Vegetation

Vegetative cover in the Project area consists primarily of forested and agricultural land. The southwestern portion of the Siegfried – East Palmerton 138/69 kV Transmission Line ROW and the southern portion of the Hauto - Siegfried 138/69 kV Transmission Line ROW cross forested areas associated with the Appalachian Trail and State Game Land 217.

The existing ROW areas and PPL-owned transmission corridor for the Siegfried – East Palmerton and Hauto - Siegfried 138/69 kV Transmission Lines have previously been cleared of vegetation and no extensive tree clearing is anticipated. If vegetation management is required in specific locations, PPL Electric will apply its "*Specifications for Transmission Vegetation Management LA-79827*" to minimize potential impacts.

Threatened and Endangered Species

PPL Electric reviewed the threatened and endangered species that may be encountered within the Project area. This included an evaluation of the Project-related responses provided by

federal and state agencies that have protective jurisdiction over the surrounding animals, plants, and ecological communities.

Two online Pennsylvania Natural Diversity Inventory ("PNDI") Project Environmental Reviews were performed for the Project (PNDI-642457[9] and PNDI-642460[10]). The PNDI reviews evaluate the databases of the United States Fish and Wildlife Service ("USFWS"), Pennsylvania Fish and Boat Commission ("PFBC"), Pennsylvania Game Commission ("PGC"), and the Pennsylvania Department of Conservation and Natural Resources ("DCNR"). The PNDI-642457 was completed on October 19, 2017 and PNDI-64240 was completed on October 17, 2017. The following is a summary of the reviewing agencies' determinations:

Pennsylvania Game Commission

Based on the Siegfried – East Palmerton 138/69 kV Transmission Line PNDI review, a letter of no impact was received on March 16, 2018. The determination is valid for two years. The PNDI review for the Hauto - Siegfried 138/69 kV Transmission Line resulted in further review, however, official responses have not yet been received. PPL Electric does not expect the Project to result in any adverse impacts to species or habitat under their jurisdiction. PPL Electric will continue to consult with PGC and comply with all required mitigation measures.

Pennsylvania Fish and Boat Commission

Based on the Siegfried – East Palmerton 138/69 kV Transmission Line PNDI review, PFBC reported that the Project will not impact any threatened and endangered species, nor any special concern species and resources located within the Project area. Although the PFBC results indicated no further review is required, it did indicate that the Project is located within the range of the timber rattlesnake (*Crotalus horridus*) and identified several recommended conservation measures. PPL Electric will comply with all conservation measures required by PFBC. The Hauto - Siegfried 138/69 kV Transmission Line resulted in further review. A letter of no impact was received on June 12, 2018. The PFBC determined that no timber rattlesnakes (*Crotalus horridus*) were found to be in the Project area and no impacts are anticipated.

[9] On-line PNDI for Siegfried – East Palmerton #1 & #2 138/69 kV Transmission Line
[10] On-line PNDI for Hauto - Siegfried #1 & #4 138/69 kV Transmission Line

Pennsylvania Department of Conservation and Natural Resources

Based on the Siegfried – East Palmerton 138/69 kV Transmission Line review, the DCNR indicated that the Project is located within the vicinity of Long's sedge (*carex longii*), a special concern species. A botanical survey was conducted by Mellon Biological Services, LLC. During surveys, Long's sedge was found within some delineated wetlands. However, no impacts to Long's sedge are anticipated within specific wetlands because these wetlands will be avoided during construction. PPL Electric submitted a follow-up letter with DCNR on January 31, 2018. A letter of no impact was received on February 9, 2018. The determination is valid for two years. The Hauto - Siegfried 138/69 kV Transmission Line PNDI review resulted in further review, however, official responses have not yet been received. PPL Electric does not expect the Project to result in any adverse impacts to species or habitat under their jurisdiction. PPL Electric will continue to consult with DCNR and comply with all required mitigation measures.

United States Fish and Wildlife Service

The USFWS requested additional information on the Project. The federally protected bog turtle is known to exist within Lehigh and Carbon counties. Results of Phase II Bog Turtle surveys conducted for the Siegfried – East Palmerton 138/69 kV Transmission Line were submitted to the USFWS on June 15, 2018. A letter of no impact was received on July 20, 2018.

The federally protected bog turtle and northern long-eared bat (*myotis septentrionalis*) are known to exist within the vicinity of the Hauto – Siegfried 138/69 kV Transmission Line. The USFWS response letter received on June 5, 2018 indicated the northern long-eared bat is not located within the vicinity of the Project; therefore, no impacts are anticipated. PPL Electric retained a qualified bog turtle surveyor to conduct Phase I Bog Turtle surveys in January 2013 along the Hauto – Siegfried 138/69 kV Transmission Line to determine if any known species habitat is located within the vicinity of the Project. The Phase I Bog Turtle survey results determined that no known bog turtle habitat are found within the Project area. Therefore, all potential bog turtle habitats fall outside of watersheds determined by the USFWS to contain bog turtles. On May 18, 2018, PPL Electric along with Louis Berger and Dubois Environmental held a meeting to discuss

the Project, and based on the survey results, concluded that the Project will not impact bog turtle habitat. Subsequently, PPL Electric submitted a follow-up letter to USFWS on May 24, 2018. The USFWS response letter received on August 20, 2018 indicated no impacts to the bog turtle and northern long-eared bat are anticipated.

PPL Electric will continue to consult with the jurisdictional agencies regarding potential impacts to protected species, will obtain all approvals and permits necessary for the construction of the Project, and will comply with all conditions placed on those permits.

Airports

The closest active airport is a privately-owned airport located approximately 1 mile south of the Siegfried – East Palmerton 138/69 kV Transmission Line. The closest public airport is the Jake Arner Memorial Airport which is located approximately 1.8 miles east of the Hauto - Siegfried 138/69 kV Transmission Line. Three other private airports or heliports are located within 2 miles of the Hauto - Siegfried 138/69 kV Transmission Line: the Lizard Creek Ultralight Airport, located 0.8 mile to the north; Miners Memorial Hospital Heliport, located in Coaldale 1.8 miles to the west; and the East Penn Airport, located 1.2 miles to the south. No additional airports are located within 2 miles of the Project. PPL Electric does not anticipate any interference with airport operations because the Project is located in an area where there are existing electrical facilities. However, PPL Electric will comply with any applicable requirements of the Federal Aviation Administration and the Pennsylvania Department of Transportation, Bureau of Aviation.

Conserved Lands

Two state or federal recreation areas are crossed by the Siegfried – East Palmerton 138/69 kV Transmission Line. The line route will cross approximately 1 mile of Pennsylvania State Game Land 217, east of I-476 in Washington Township, Lehigh County. This portion of the project crosses approximately 230 feet of the Appalachian Trail and associated federal lands just west of the intersection of Route 873 and Mountain Road in Washington Township, Lehigh County. The existing transmission lines will reduce the total number of structures from two to one on the

federal property. State Game Land 168 is located approximately 0.4 mile southeast of the Project. Based on this distance, the change in elevation, and heavy tree cover, the existing transmission line is not visually noticeable from State Game Land 168 and no significant impacts to these areas are anticipated. No other recreational areas or natural landmarks are located within 1 mile of the Project.

The Siegfried – East Palmerton 138/69 kV Transmission Line will traverse approximately 6.7 miles of one Important Bird Area (IBA)[11]. The Hawk Mountain and Kittatinny Ridge IBA is located within Washington Township, Lehigh County and Palmerton Borough, East Penn and Lower Towamensing Townships in Carbon County. The IBA encompasses the National Park Service property, the Appalachian Trail, the D&L Trail and State Game Land 217 which are all crossed by the Project. Impacts to birds within this IBA will be minimized by constructing the Project within the existing ROW. The Project does not introduce a new collision risk, however, where taller than existing structures are used, it could potentially increase the currently existing collision risk. It is anticipated, however, that the Project will reduce the path of exposure to the IBA and the risk of collision by consolidating two parallel single-circuits into one double-circuit alignment, and thereby reducing the total number of structures.

One federal recreation area is crossed by the Hauto - Siegfried 138/69 kV Transmission Line. This portion of the project crosses approximately 1,000 feet of the Appalachian Trail and associated land just south of Blue Mountain Road in East Penn Township, Carbon County. In this area, the Hauto – Siegfried 138/69 kV Transmission Line and the Appalachian Trail are located entirely on property owned by PPL Electric. The Hauto – Siegfried 138/69 kV Transmission Line also crosses approximately 0.1 mile of Pennsylvania State Game Land 217 in Washington Township, Lehigh County. As shown in Figure 3m through Figure 3q, the existing transmission line bisects State Game Land 217 for 2.2 miles located entirely within property owned by PPL Electric. Because the Hauto - Siegfried 138/69 kV Transmission Line will be constructed entirely within existing, cleared ROW and the number of structures will decrease, no

[11] IBAs are sites that provide essential habitat for one or more species of bird. IBAs include sites for breeding, wintering, and/or migrating birds.

significant impacts to these areas are anticipated. A portion of the Project also traverses the western boundary of Mauch Chunk Lake Park. The park is located in the Boroughs of Jim Thorpe and Summit Hill in Carbon County and contains facilities for camping, swimming, picnicking, hiking, biking, fishing and boating. Because the Project will be constructed entirely within existing, cleared ROW and most park recreational activities are located east of the Project area, no impacts are anticipated. No other recreational areas or natural landmarks are located within 1 mile of the Project. PPL Electric will coordinate with the National Park Service, Appalachian Trail Club, Pennsylvania Game Commission, and Carbon County to discuss the Project and coordinate construction schedules.

The Palmerton Transmission Tap, Palmerton Zinc Transmission Tap, Ashfield 138/69 kV Transmission Tap and South Slatington 138/69 kV Transmission Tap will not affect any federal lands, state lands, national parks, state parks, local parks, recreational areas or natural landmarks.

Cultural Resources

PPL Electric conducted a review of the online Pennsylvania State Historic Preservation Office ("SHPO") Bureau for Historic Preservation ("BHP") Cultural Resources Geographic Information System ("CRGIS") database to determine if National Register of Historic Places ("NRHP")-listed or eligible historic properties are located in the Project vicinity.

Based on this review, 18 historic architectural resources are located within 1 mile of the Siegfried – East Palmerton 138/69 kV Transmission Line; five of these resources are NRHP-listed or considered eligible for listing. One listed resource is crossed by the Siegfried – East Palmerton 138/69 kV Transmission Line: the Carbon County Section of Lehigh Canal (Key No. 001313), which is located adjacent to Route 248 in Lower Towamensing Township, Carbon County. There are two listed resources within 1 mile that are not crossed by the Siegfried – East Palmerton 138/69 kV Transmission Line: Lehigh Canal / Lehigh Gap to Walnutport Section (Key No. 001015) and Palmerton Historic District (Key. No. 142019). No other listed resources are located within 1 mile of the Siegfried – East Palmerton 138/69 kV Transmission Line. Two eligible architectural resources are located within 1 mile and are not crossed by the Siegfried –

East Palmerton 138/69 kV Transmission Line: First National Bank of Palmerton (Key No. 106133) and Neighborhood House (Key No. 097938). Three resources are identified as an "aggregate file" and their NRHP-eligibility is undetermined. One eligible archaeological site, the Lehigh Gap Dam (Key No. 36LH0105), is located within 0.5 mile of the Siegfried – East Palmerton 138/69 kV Transmission Line. The archeological resources crossed by the ROW are two open habitation and prehistoric sites (Key Nos. 36CR0019 and 36CR0014) located south and east of Gap Road, in Lower Towamensing Township. Each of these archeological sites contain insufficient data available to determine if these sites are NRHP eligible. No previously identified archaeological sites are located within 0.5 mile of the Siegfried – East Palmerton 138/69 kV Transmission Line.

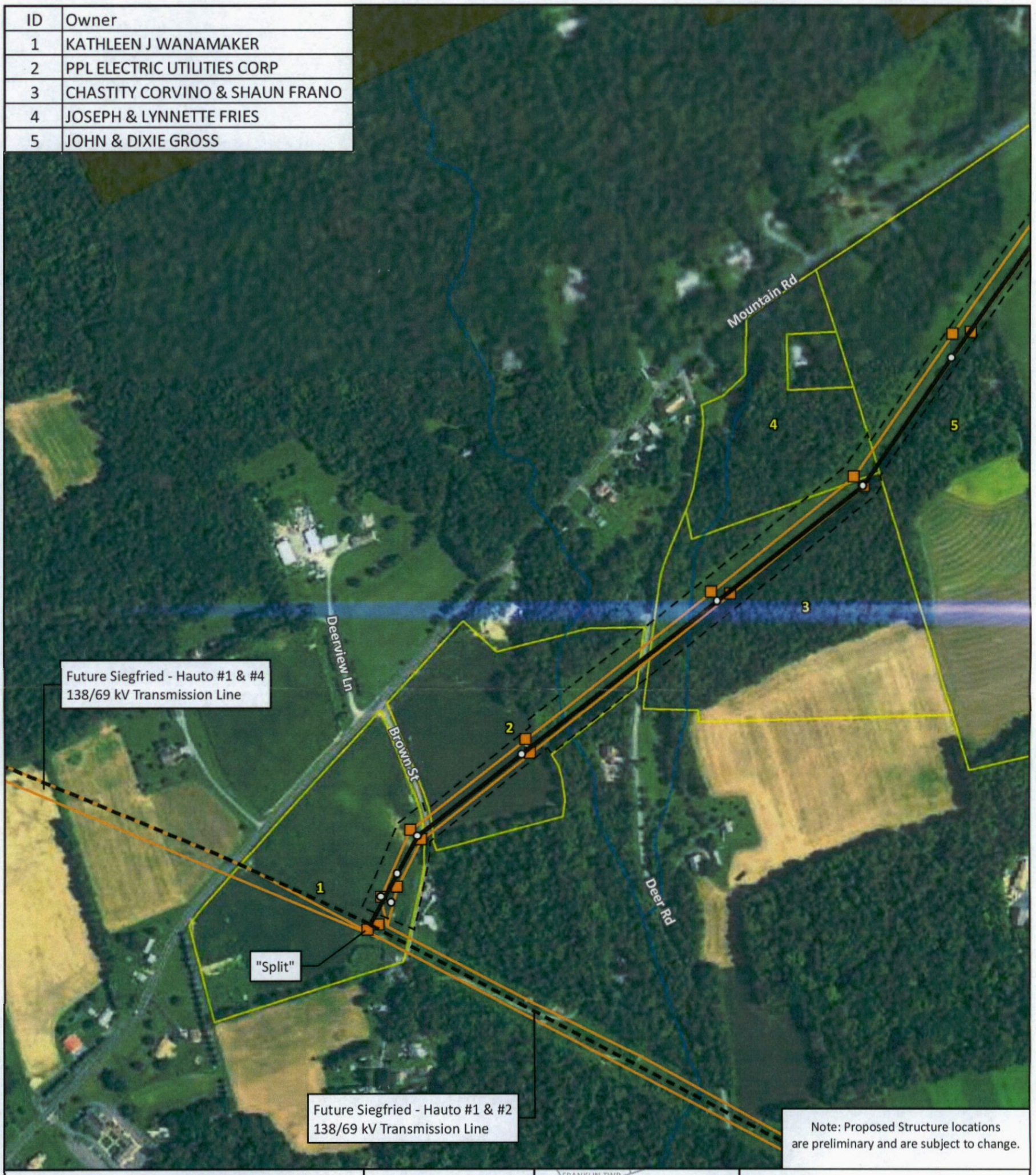
Based on the CRGIS database, nine historic architectural resources are located within 1 mile of the Hauto - Siegfried 138/69 kV Transmission Line; four of these resources are NRHP-listed or eligible. One listed and one eligible resource are crossed by the Hauto - Siegfried 138/69 kV Transmission Line: the listed Summit Hill & Mauch Chunk Railroad (Key No. 001312) and the eligible Appalachian Trail (Key No. 144291). All other listed and eligible resources are not located within the ROW, including the listed Lansford Historic District (Key No. 123504), located in Lansford Borough, and Lansford Community Center (Key No. 097448), located along East Ridge Street in Lansford Borough. Three resources, Lehigh & New England Railroad (Key No. 156534), Lehigh Valley Railroad (Key No. 156109), and Central Railroad of New Jersey (Key No. 155754) are all identified as an "aggregate file" and their NRHP eligibility is undetermined.

There are five archeological resources within 0.5 mile of the Hauto – Siegfried 138/69 kV Transmission Line, all of which are identified as having "insufficient information to evaluate." The sites are labeled as either open habitation, prehistoric, or lithic reduction, including Number 8 (Key No. 36LH0104); Number 24 (Key No. 36LH0106); Schleicher (Key No. 36LH0168); Site #1 Errol Dech 217 SGL (Key No. 36LH0254); and Site #2 Ryan Dech 217 SGL (Key No. 36LH0255). No previously identified archaeological sites are located within 0.5 mile of the Hauto - Siegfried 138/69 kV Transmission Line.

PPL Electric submitted a letter to the SHPO on December 11, 2017 for the Siegfried – East Palmerton 138/69 kV Transmission Line. The SHPO responded in a letter dated August 10, 2018 that the Project will have no effect on above ground historic properties. Subsequently, the SHPO responded in a letter dated November 29, 2018 that no further archaeological work is necessary within the Project area. PPL Electric will continue to coordinate with the National Park Service regarding any cultural resource concerns related to crossing the Appalachian Trail and work on federal lands. PPL Electric will continue to consult with the SHPO to minimize any potential impact on above-ground resources.

FIGURE 3-1: Aerial Map of the Project

ID	Owner
1	KATHLEEN J WANAMAKER
2	PPL ELECTRIC UTILITIES CORP
3	CHASTITY CORVINO & SHAUN FRANO
4	JOSEPH & LYNNETTE FRIES
5	JOHN & DIXIE GROSS



Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- Existing ROW
- ROW Parcel
- Future Transmission Line

Existing Transmission

- 69 kV
- River or Stream
- Municipality Boundary
- State Gameland

Sources:
Imagery (NAIP), Trails (PASDA)
Muncipalities/Counties (PASDA)
Parcels (Lehigh/Carbon County)
Parks/Gamelands (PASDA)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

Figure 3-1a: Aerial Exhibit

Split - East Palmerton 138/69 kV Transmission Line Rebuild Project

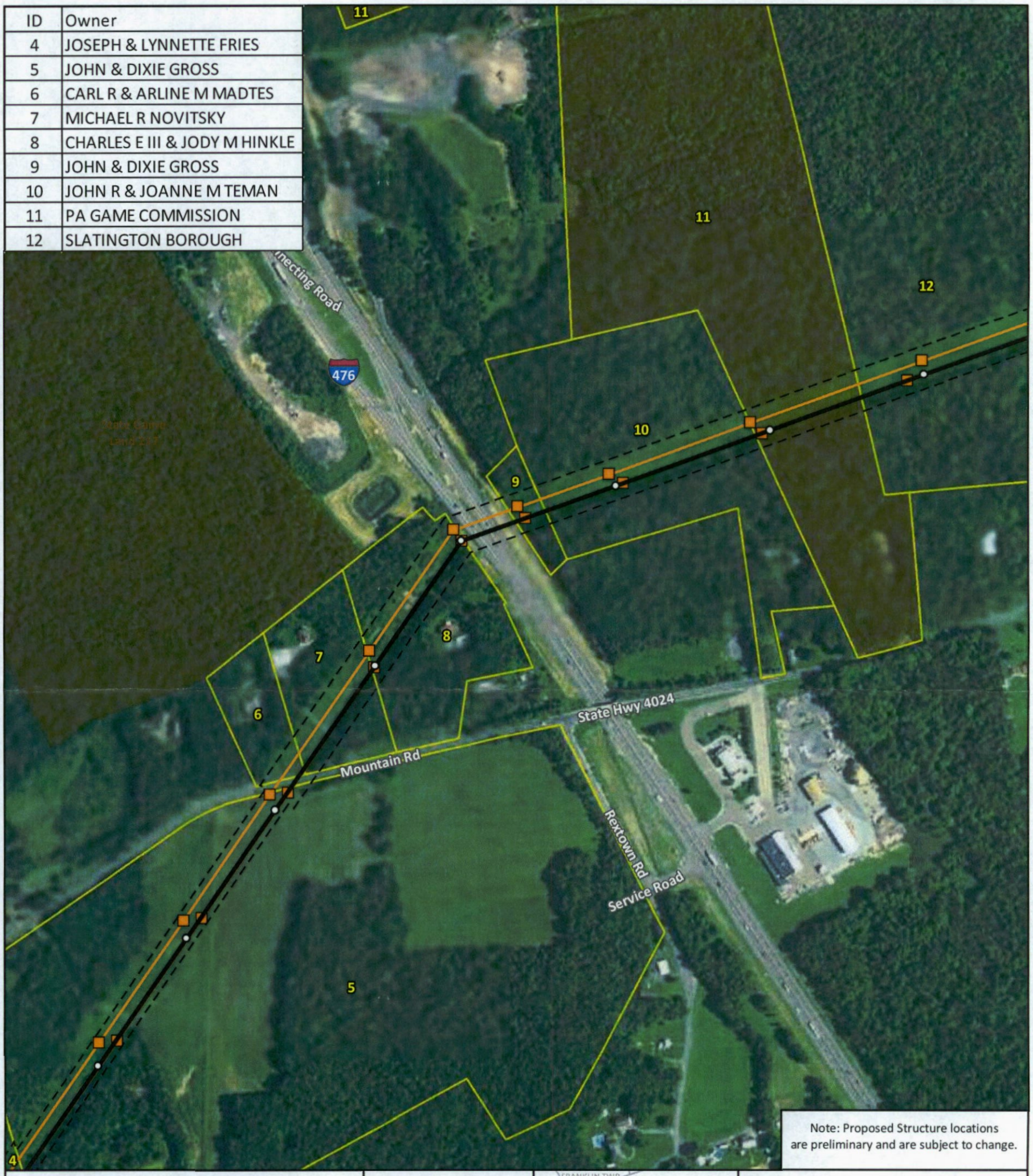
ppl
PPL Electric Utilities

Louis Berger

N

0 125 250 500 Feet

ID	Owner
4	JOSEPH & LYNNETTE FRIES
5	JOHN & DIXIE GROSS
6	CARL R & ARLINE M MADTES
7	MICHAEL R NOVITSKY
8	CHARLES E III & JODY M HINKLE
9	JOHN & DIXIE GROSS
10	JOHN R & JOANNE M TEMAN
11	PA GAME COMMISSION
12	SLATINGTON BOROUGH



Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- Existing ROW
- ROW Parcel

Existing Transmission

- 69 kV

- River or Stream
- Municipality Boundary
- State Gameland

Sources:
Imagery (NAIP), Trails (PASDA)
Muncipalities/Counties (PASDA)
Parcels (Lehigh/Carbon County)
Parks/Gamelands (PASDA)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

Figure 3-1b: Aerial Exhibit

Split - East Palmerton 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet

ID	Owner
11	PA GAME COMMISSION
12	SLATINGTON BOROUGH
13	ERICH R & LINDA L KLEIN
14	DENNIS R & DONNA F SCHOLTIS

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- Existing ROW
- ROW Parcel

Existing Transmission

- 69 kV
- River or Stream
- Municipality Boundary
- State Gameland

Sources:
Imagery (NAIP), Trails (PASDA)
Muncipalities/Counties (PASDA)
Parcels (Lehigh/Carbon County)
Parks/Gamelands (PASDA)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

Figure 3-1c: Aerial Exhibit

Split - East Palmerton 138/69 kV Transmission Line Rebuild Project

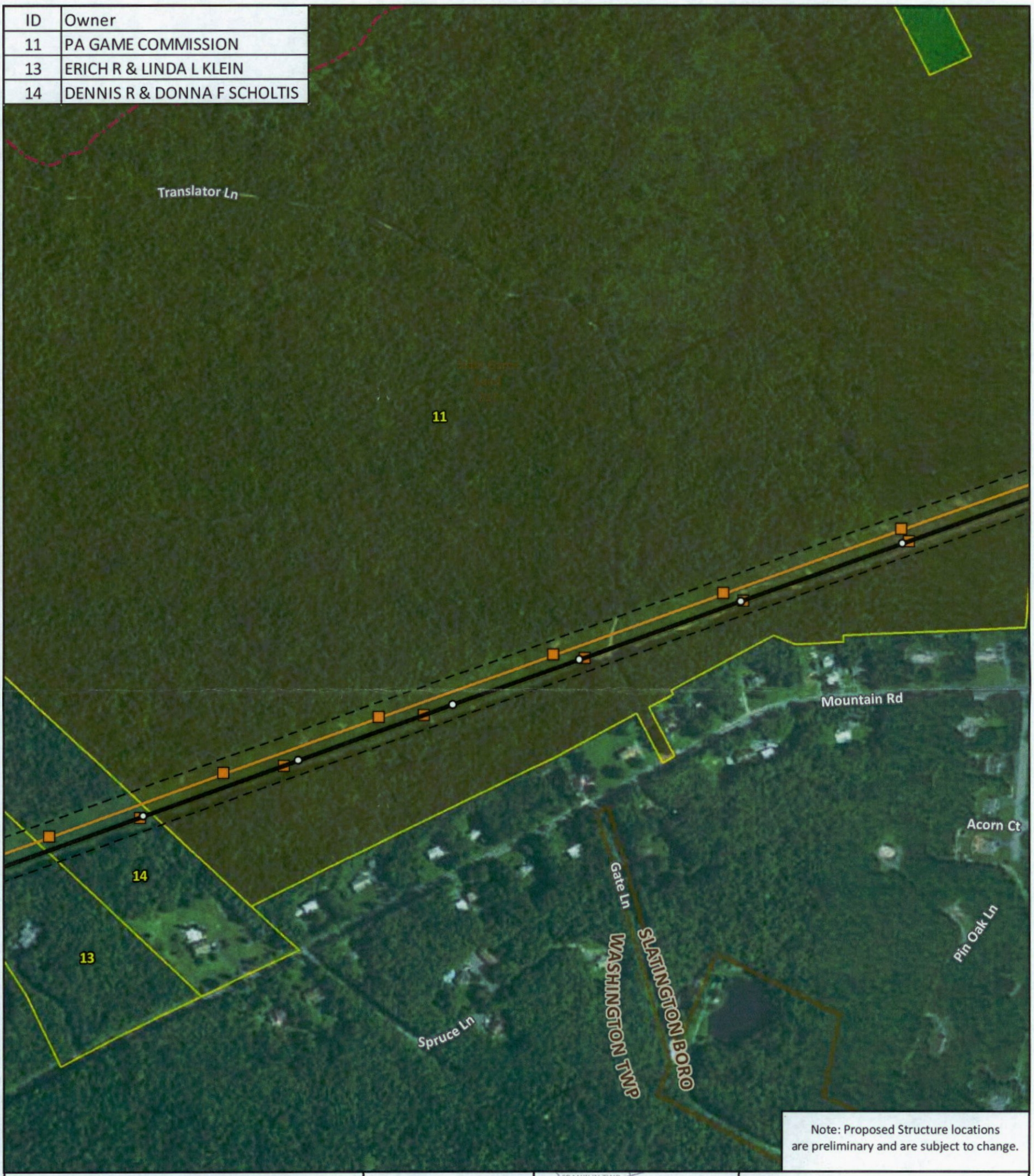
ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet

ID	Owner
11	PA GAME COMMISSION
13	ERICH R & LINDA L KLEIN
14	DENNIS R & DONNA F SCHOLTIS



Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- Existing ROW
- ROW Parcel

Existing Transmission

- 69 kV
- River or Stream
- Municipality Boundary
- Appalachian Trail
- State Gameland
- Federal Land

Sources:
Imagery (NAIP), Trails (PASDA)
Muncipalities/Counties (PASDA)
Parcels (Lehigh/Carbon County)
Parks/Gamelands (PASDA)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

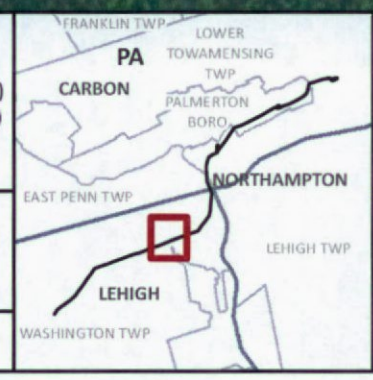


Figure 3-1d: Aerial Exhibit

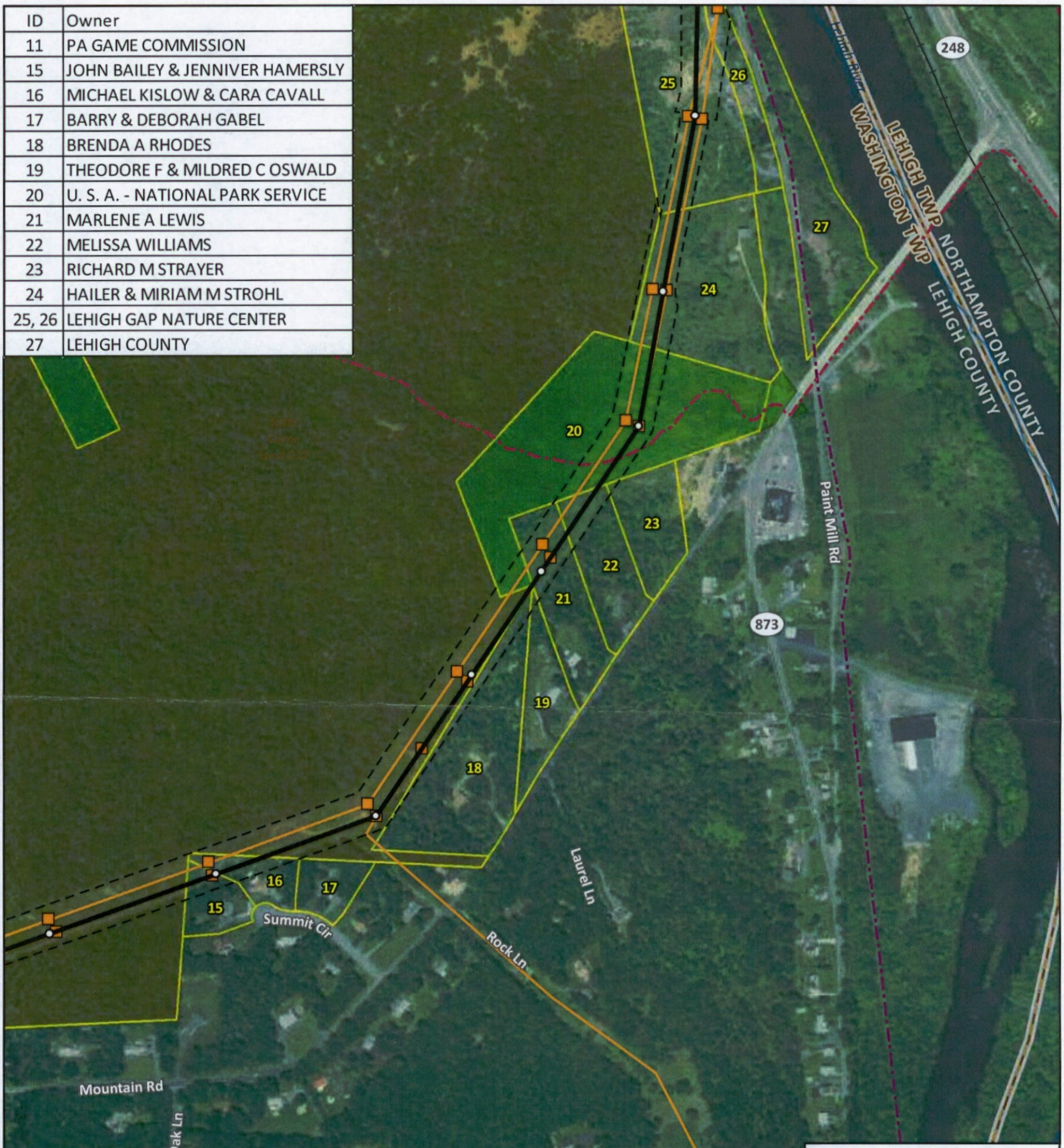
Split - East Palmerton 138/69 kV Transmission Line Rebuild Project

ppl PPL Electric Utilities

Louis Berger

0 125 250 500 Feet

ID	Owner
11	PA GAME COMMISSION
15	JOHN BAILEY & JENNIVER HAMERSLY
16	MICHAEL KISLOW & CARA CAVALL
17	BARRY & DEBORAH GABEL
18	BRENDA A RHODES
19	THEODORE F & MILDRED C OSWALD
20	U. S. A. - NATIONAL PARK SERVICE
21	MARLENE A LEWIS
22	MELISSA WILLIAMS
23	RICHARD M STRAYER
24	HAILER & MIRIAM M STROHL
25, 26	LEHIGH GAP NATURE CENTER
27	LEHIGH COUNTY



Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- Existing ROW
- ROW Parcel
- Railroad

Existing Transmission

- 69 kV

- Municipality Boundary
- County Boundary
- Appalachian Trail
- Delaware & Lehigh Trail
- State Gameland
- Federal Land

Sources:
Imagery (NAIP), Trails (PASDA)
Muncipalities/Counties (PASDA)
Parcels (Lehigh/Carbon County)
Parks/Gamelands (PASDA)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

Figure 3-1e: Aerial Exhibit

Split - East Palmerton 138/69 kV Transmission Line Rebuild Project

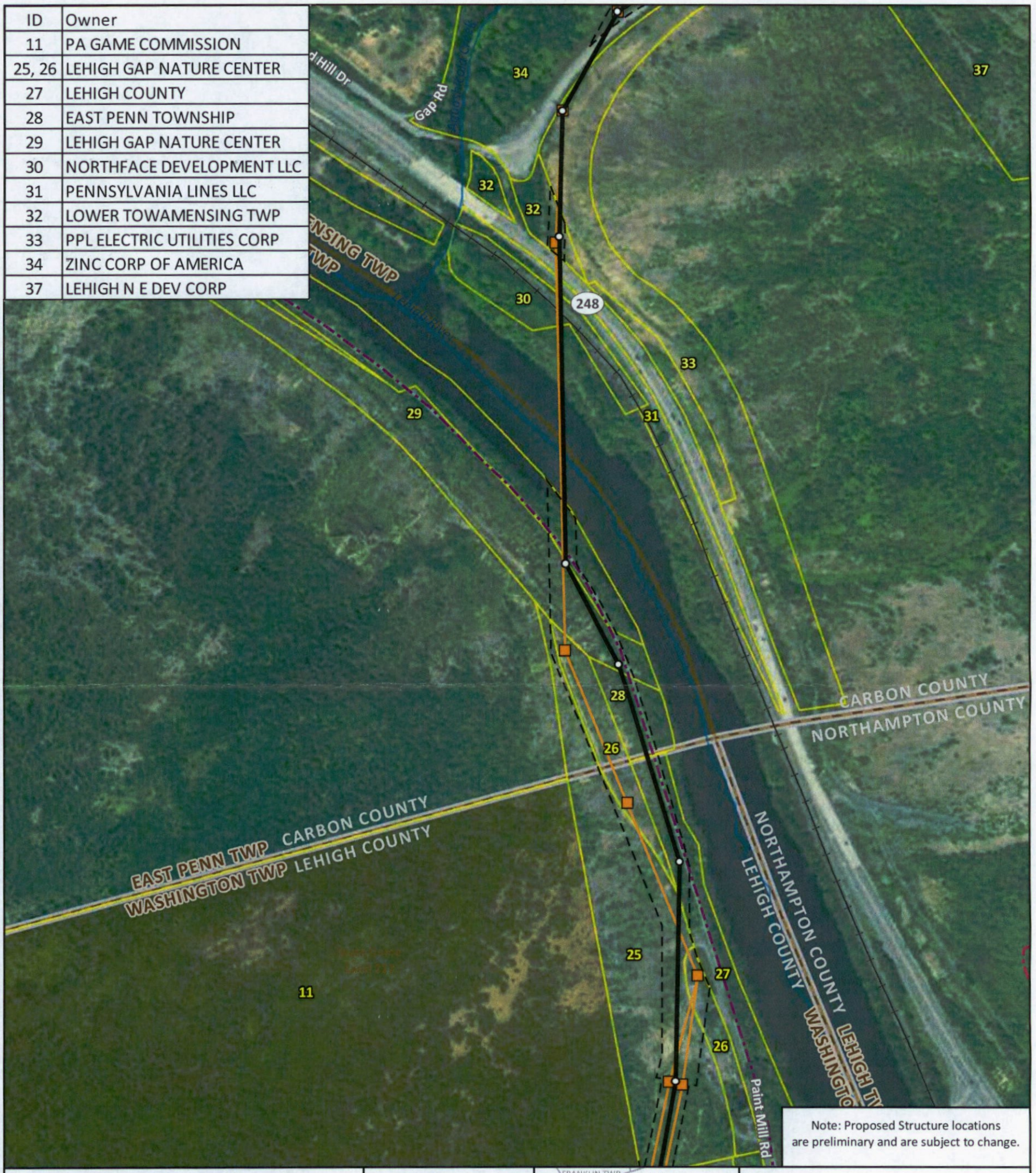
ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet

ID	Owner
11	PA GAME COMMISSION
25, 26	LEHIGH GAP NATURE CENTER
27	LEHIGH COUNTY
28	EAST PENN TOWNSHIP
29	LEHIGH GAP NATURE CENTER
30	NORTHFACE DEVELOPMENT LLC
31	PENNSYLVANIA LINES LLC
32	LOWER TOWAMENSING TWP
33	PPL ELECTRIC UTILITIES CORP
34	ZINC CORP OF AMERICA
37	LEHIGH N E DEV CORP



Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- Existing ROW
- ROW Parcel
- Railroad

Existing Transmission

- 69 kV
- River or Stream
- Municipality Boundary
- County Boundary
- Appalachian Trail
- Delaware & Lehigh Trail
- State Gameland

Sources:
Imagery (NAIP), Trails (PASDA)
Muncipalities/Counties (PASDA)
Parcels (Lehigh/Carbon County)
Parks/Gamelands (PASDA)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

Figure 3-1f: Aerial Exhibit

Split - East Palmerton 138/69 kV Transmission Line Rebuild Project

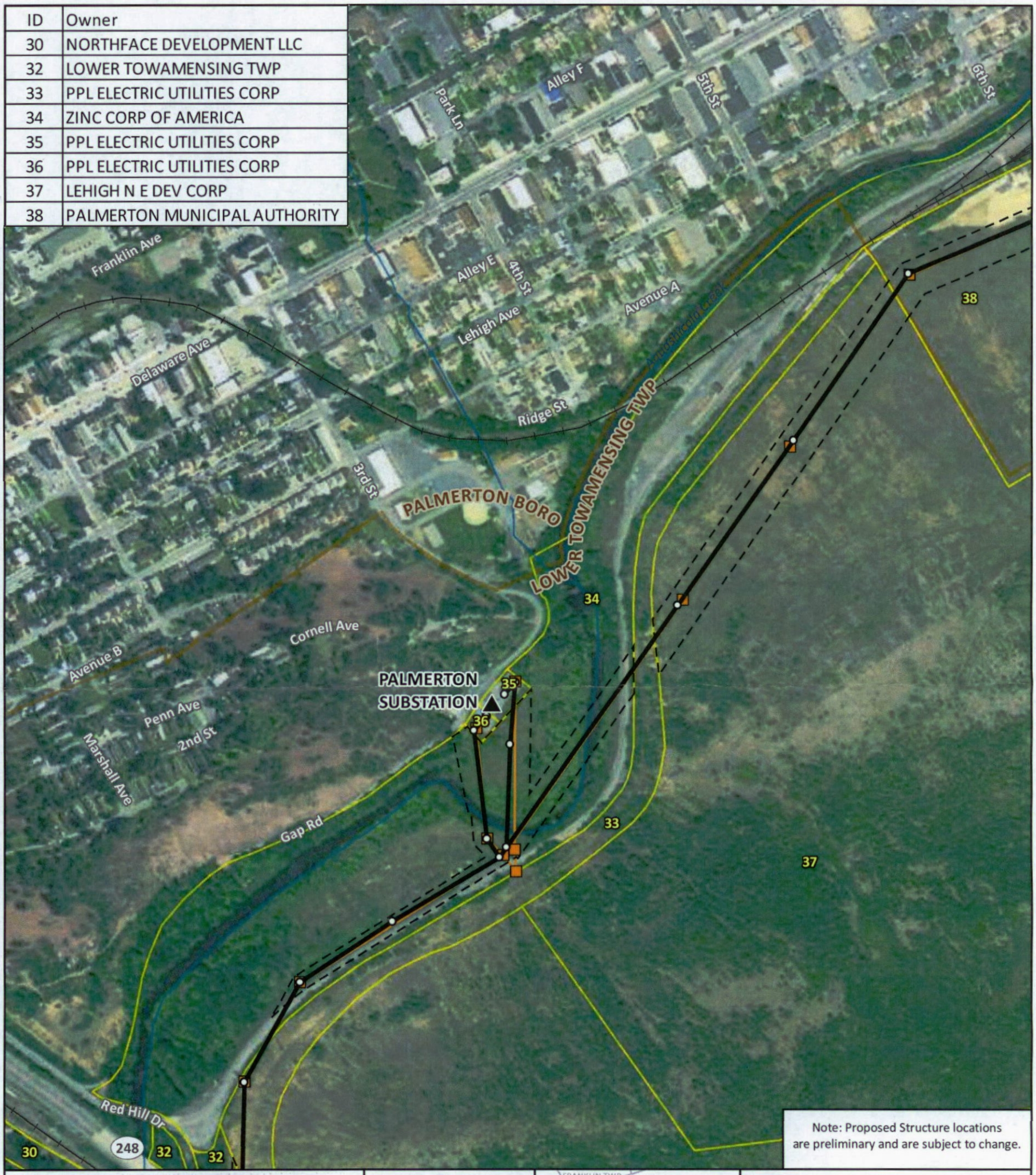
ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet

ID	Owner
30	NORTHFACE DEVELOPMENT LLC
32	LOWER TOWAMENSING TWP
33	PPL ELECTRIC UTILITIES CORP
34	ZINC CORP OF AMERICA
35	PPL ELECTRIC UTILITIES CORP
36	PPL ELECTRIC UTILITIES CORP
37	LEHIGH N E DEV CORP
38	PALMERTON MUNICIPAL AUTHORITY



Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Substation
- Rebuild Centerline
- Existing ROW
- ROW Parcel
- Railroad

Existing Transmission

- 69 kV
- River or Stream
- Municipality Boundary

Sources:
Imagery (NAIP), Trails (PASDA)
Muncipalities/Counties (PASDA)
Parcels (Lehigh/Carbon County)
Parks/Gamelands (PASDA)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

Figure 3-1g: Aerial Exhibit

Split - East Palmerton 138/69 kV Transmission Line Rebuild Project

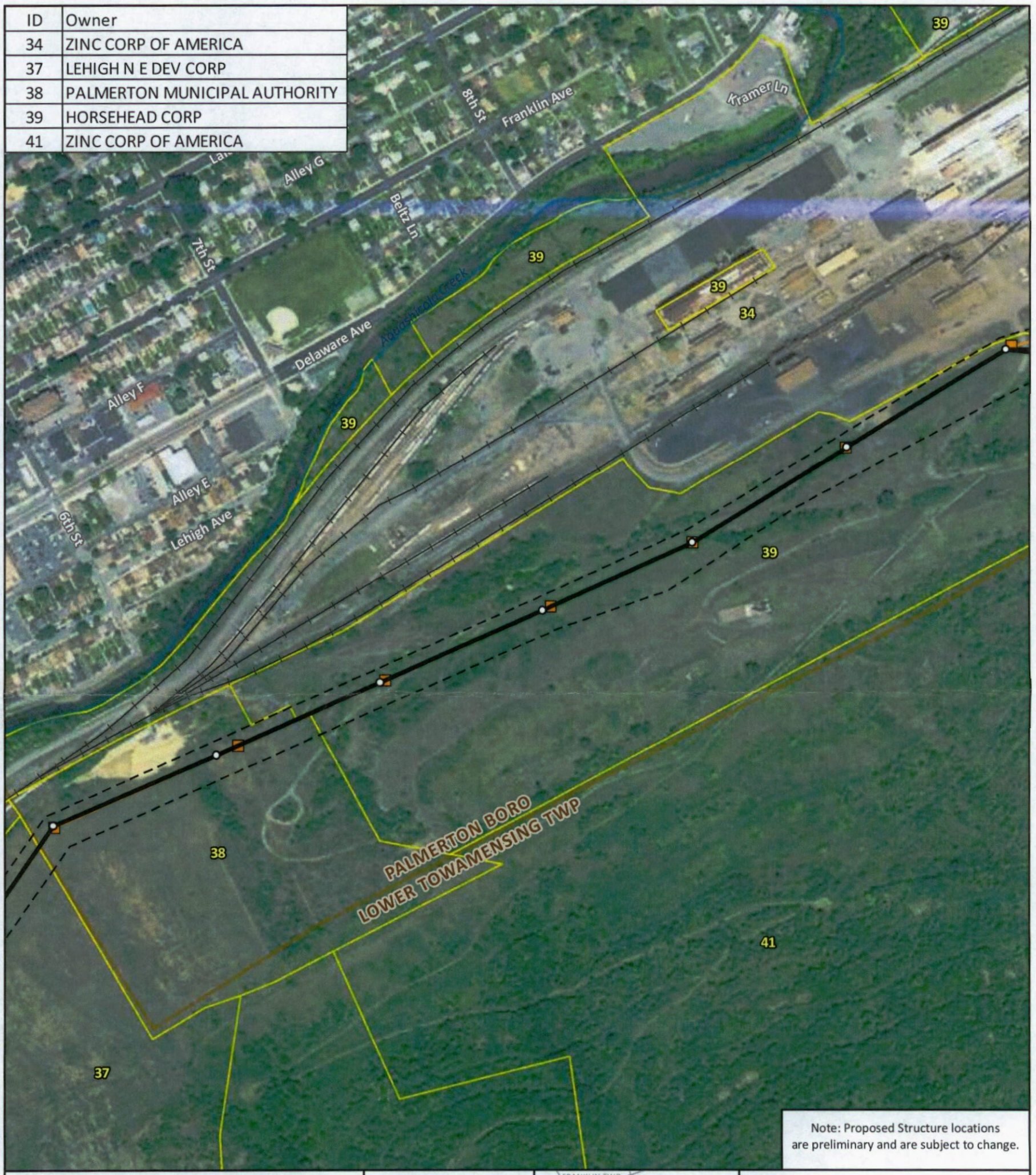
ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet

ID	Owner
34	ZINC CORP OF AMERICA
37	LEHIGH N E DEV CORP
38	PALMERTON MUNICIPAL AUTHORITY
39	HORSEHEAD CORP
41	ZINC CORP OF AMERICA



Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- Existing ROW
- ROW Parcel
- Railroad

Existing Transmission

- 69 kV
- River or Stream
- Municipality Boundary

Sources:
Imagery (NAIP), Trails (PASDA)
Muncipalities/Counties (PASDA)
Parcels (Lehigh/Carbon County)
Parks/Gamelands (PASDA)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

Figure 3-1h: Aerial Exhibit

Split - East Palmerton 138/69 kV Transmission Line Rebuild Project

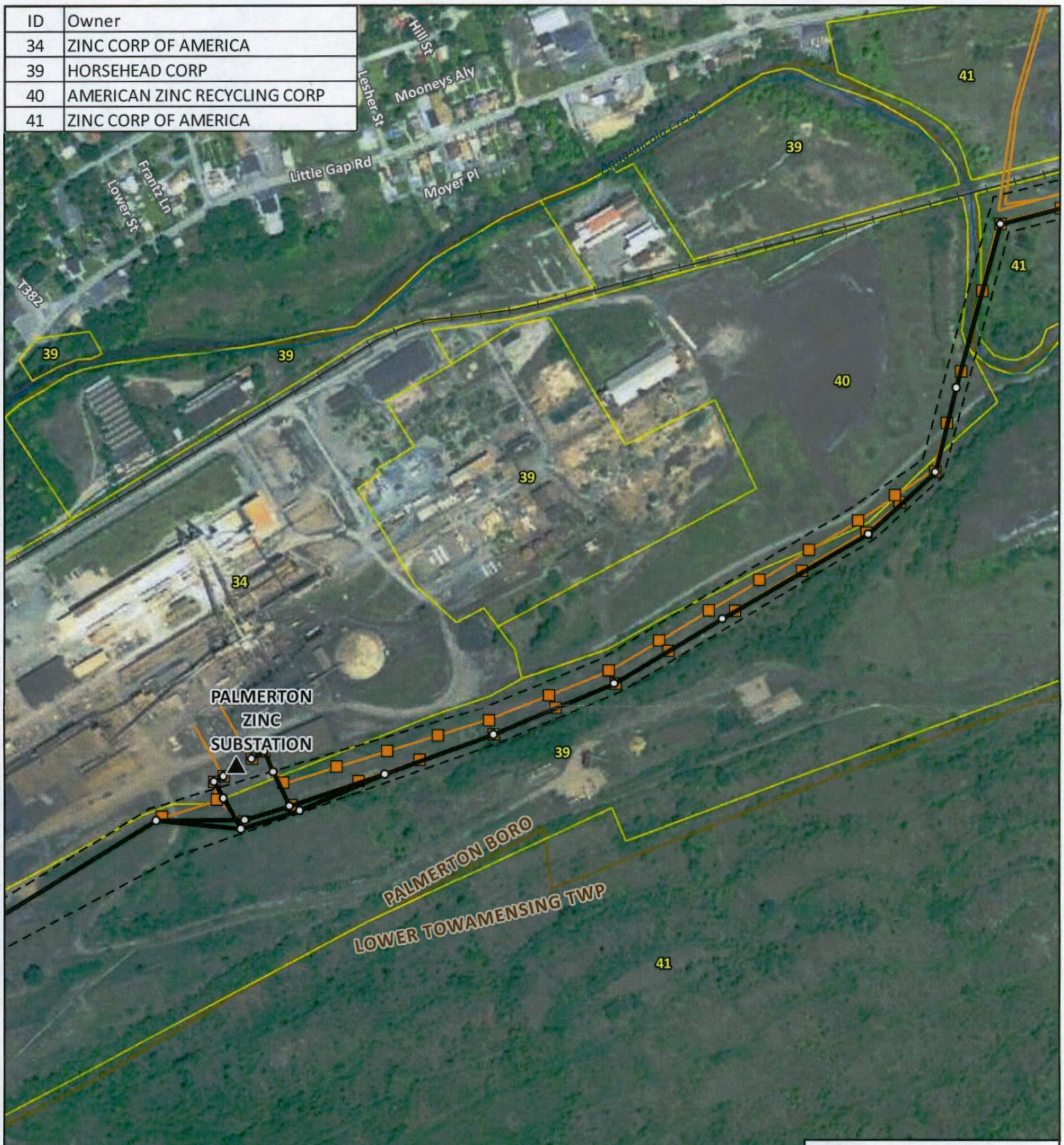
ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet

ID	Owner
34	ZINC CORP OF AMERICA
39	HORSEHEAD CORP
40	AMERICAN ZINC RECYCLING CORP
41	ZINC CORP OF AMERICA



Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Substation
- Rebuild Centerline
- Existing ROW
- ROW Parcel
- Railroad

Existing Transmission

- 69 kV
- River or Stream
- Municipality Boundary

Sources:
Imagery (NAIP), Trails (PASDA)
Muncipalities/Counties (PASDA)
Parcels (Lehigh/Carbon County)
Parks/Gamelands (PASDA)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

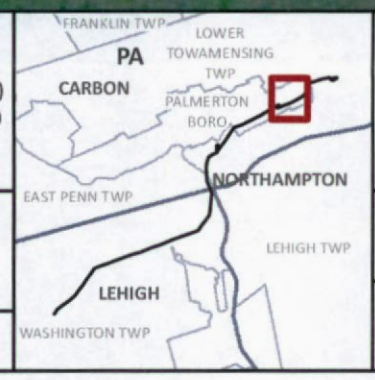


Figure 3-1i: Aerial Exhibit

Split - East Palmerton 138/69 kV Transmission Line Rebuild Project

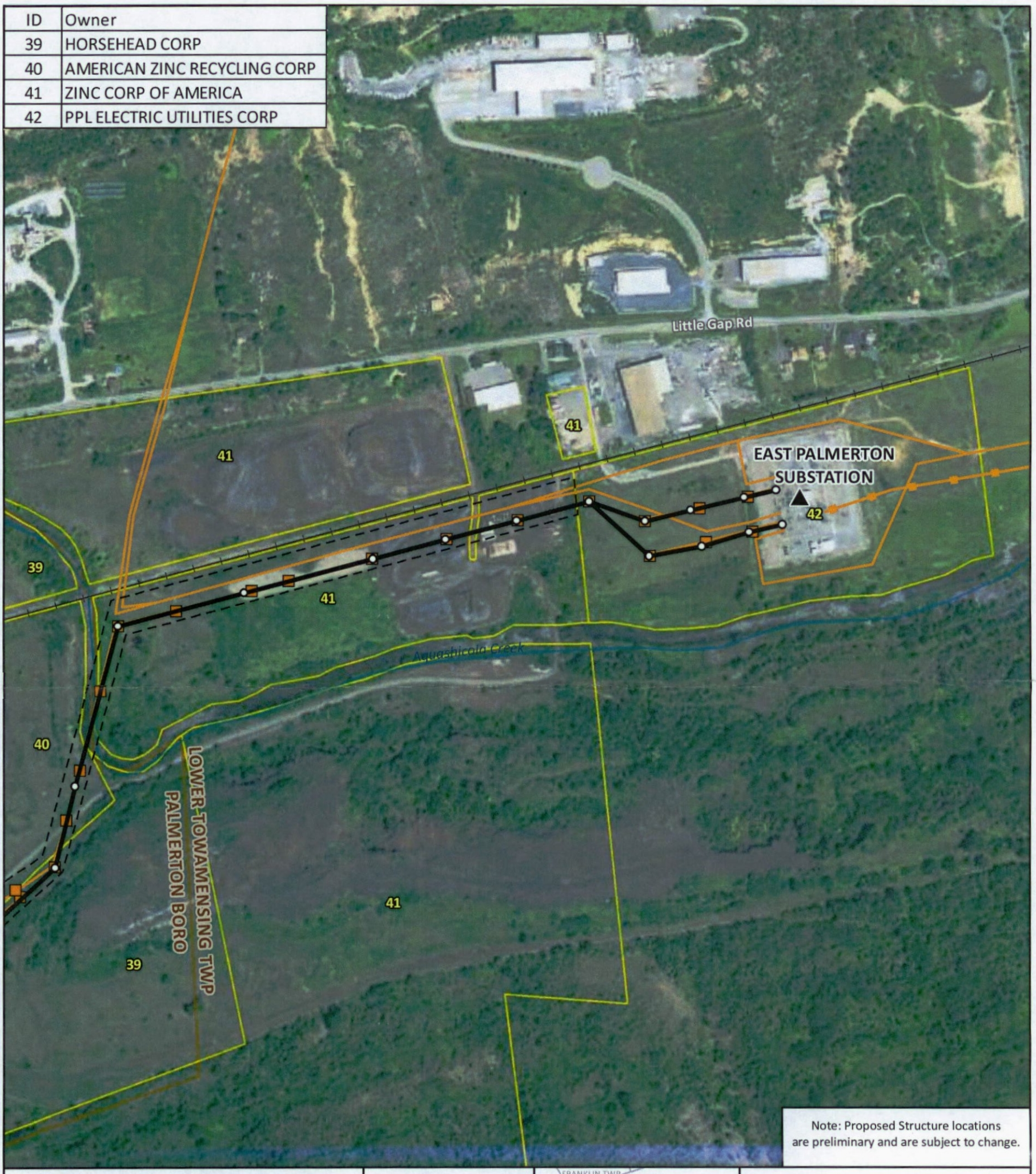
ppl Electric Utilities

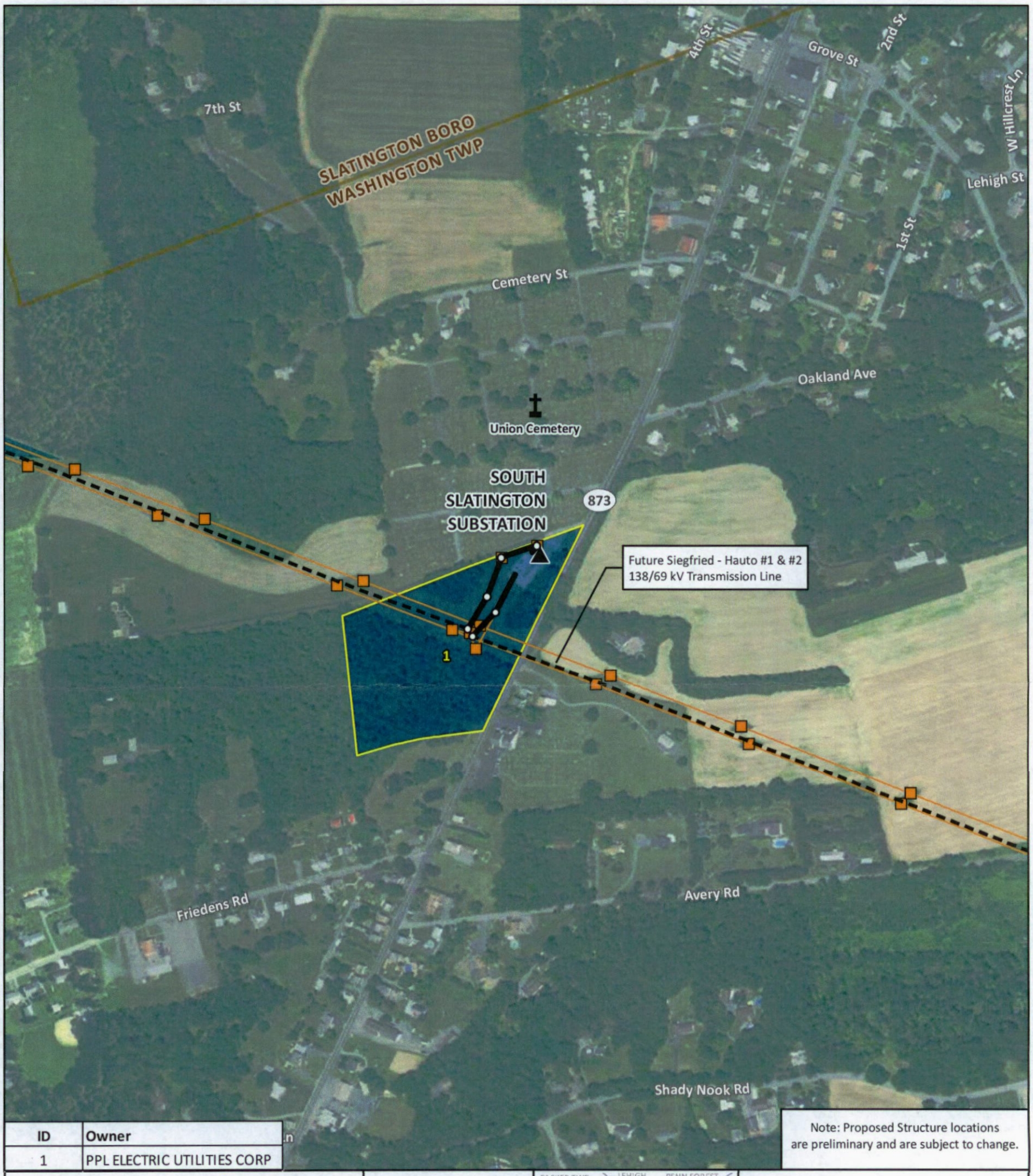
Louis Berger

N

0 125 250 500 Feet

ID	Owner
39	HORSEHEAD CORP
40	AMERICAN ZINC RECYCLING CORP
41	ZINC CORP OF AMERICA
42	PPL ELECTRIC UTILITIES CORP





ID	Owner
1	PPL ELECTRIC UTILITIES CORP

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Substation
- Rebuild Centerline
- Future Transmission Line

Existing Transmission Line

- 69kV

- ROW Parcel
- PPL-Owned
- Municipality Boundary

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

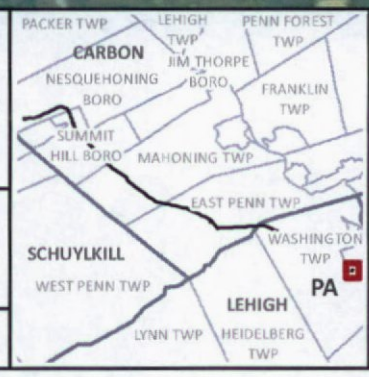


Figure 3k: Aerial Exhibit

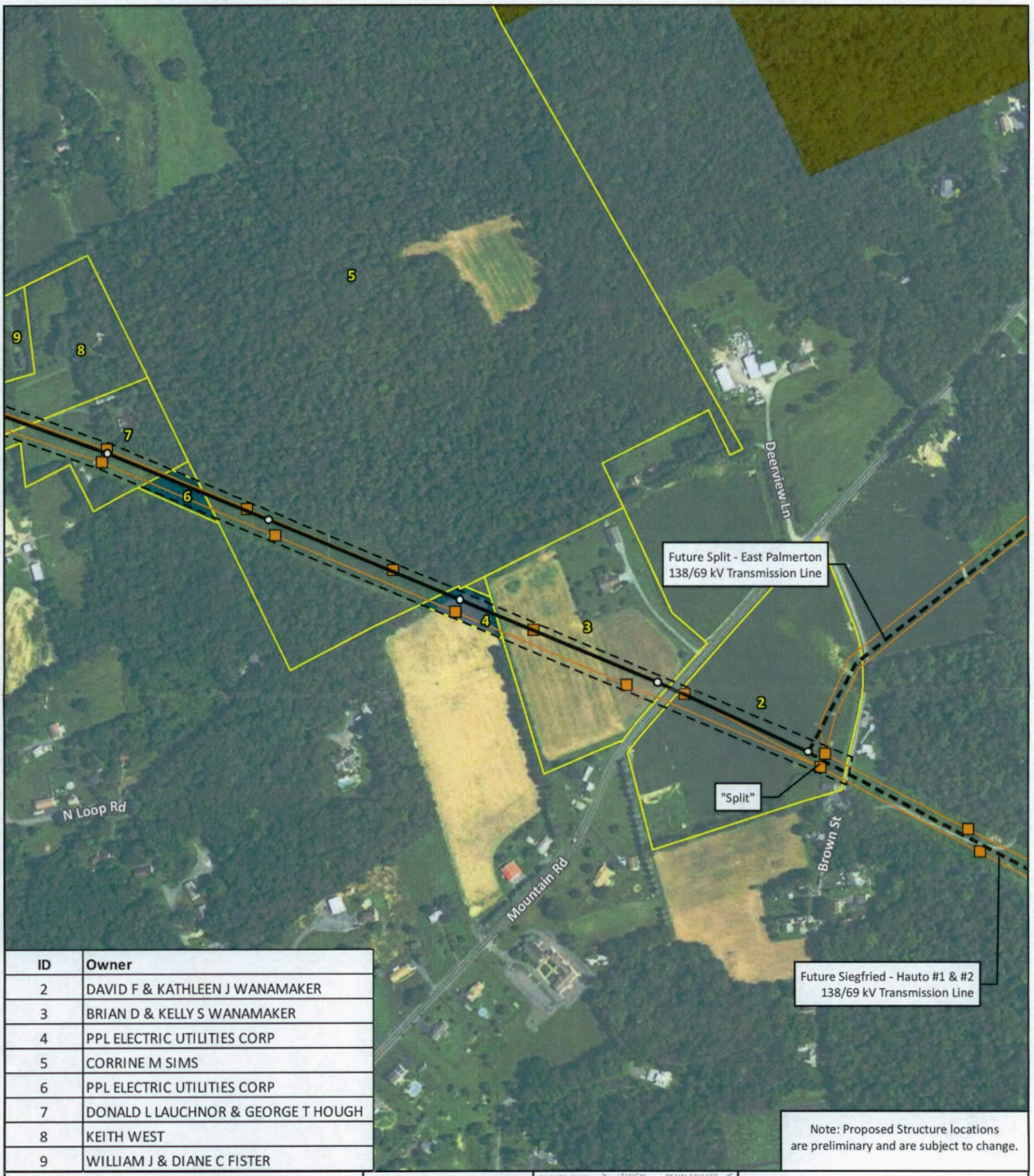
South Slatington Tap 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
2	DAVID F & KATHLEEN J WANAMAKER
3	BRIAN D & KELLY S WANAMAKER
4	PPL ELECTRIC UTILITIES CORP
5	CORRINE M SIMS
6	PPL ELECTRIC UTILITIES CORP
7	DONALD L LAUCHNOR & GEORGE T HOUGH
8	KEITH WEST
9	WILLIAM J & DIANE C FISTER

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- Future Transmission Line

Existing Transmission Line

- 69kV

- ROW
- ROW Parcel
- State Land
- PPL-Owned

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

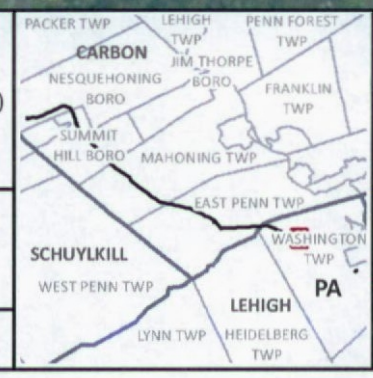


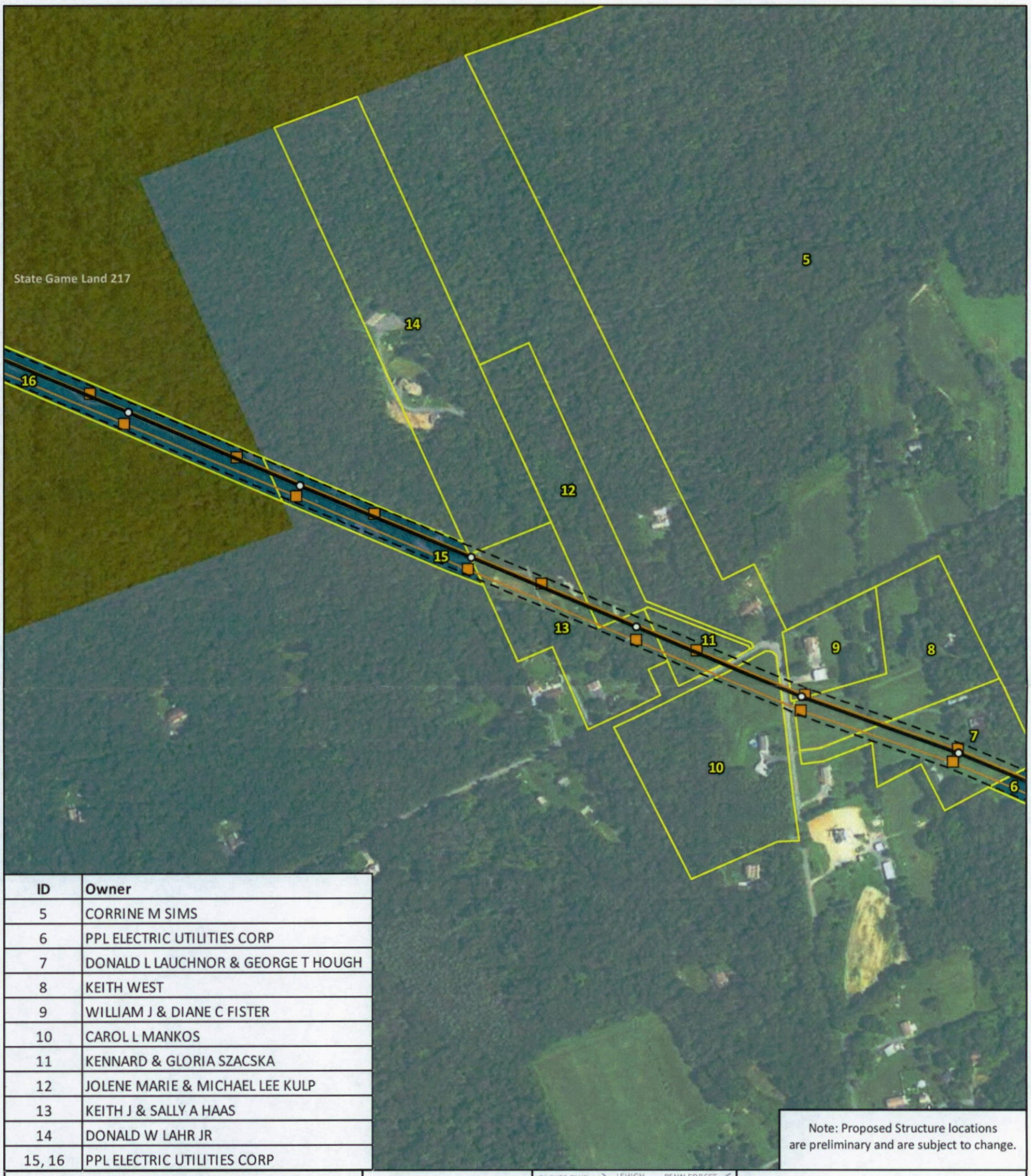
Figure 3l: Aerial Exhibit

Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

0 125 250 500 Feet



ID	Owner
5	CORRINE M SIMS
6	PPL ELECTRIC UTILITIES CORP
7	DONALD L LAUCHNOR & GEORGE T HOUGH
8	KEITH WEST
9	WILLIAM J & DIANE C FISTER
10	CAROL L MANKOS
11	KENNARD & GLORIA SZACSKA
12	JOLENE MARIE & MICHAEL LEE KULP
13	KEITH J & SALLY A HAAS
14	DONALD W LAHR JR
15, 16	PPL ELECTRIC UTILITIES CORP

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- State Land
- PPL-Owned

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

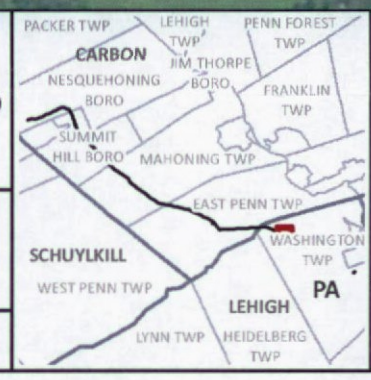


Figure 3m: Aerial Exhibit

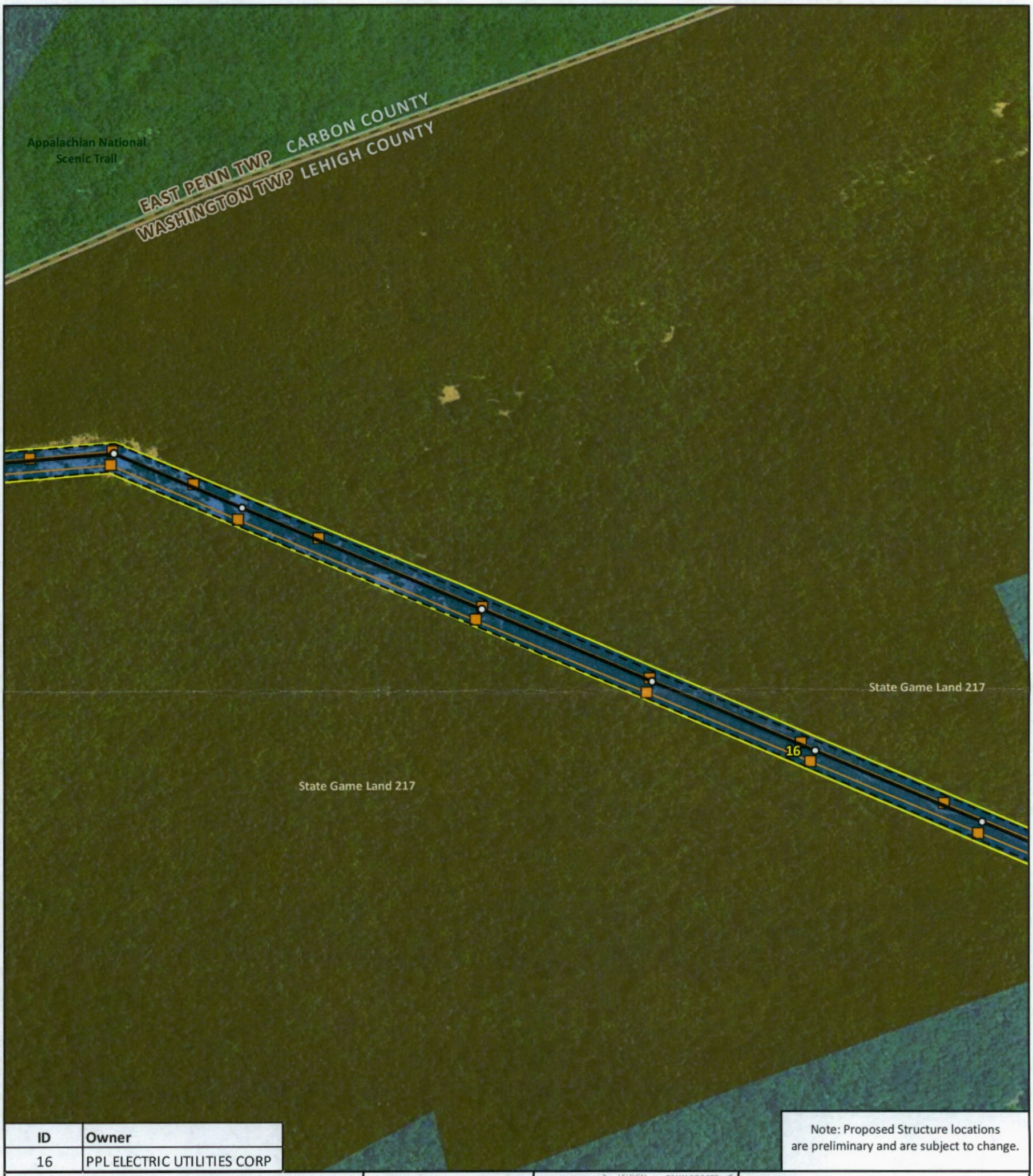
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl PPL Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
16	PPL ELECTRIC UTILITIES CORP

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW

Existing Transmission Line

- 69kV

- ROW Parcel
- Federal Land
- State Land
- PPL-Owned
- Municipality Boundary
- County Boundary

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

Figure 3n: Aerial Exhibit

Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet

ID	Owner
16	PPL ELECTRIC UTILITIES CORP
17	PENNA GAME COMMISSION
18	PPL ELECTRIC UTILITIES CORP

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW

Existing Transmission Line

- 69kV

- ROW Parcel
- Federal Land
- State Land
- PPL-Owned
- Municipality Boundary
- County Boundary

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

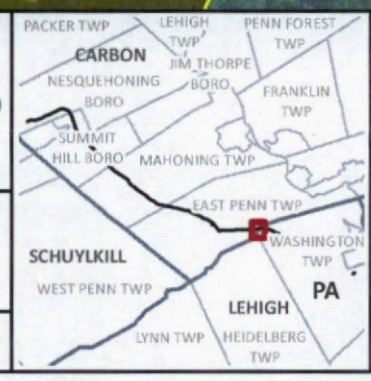


Figure 3o: Aerial Exhibit

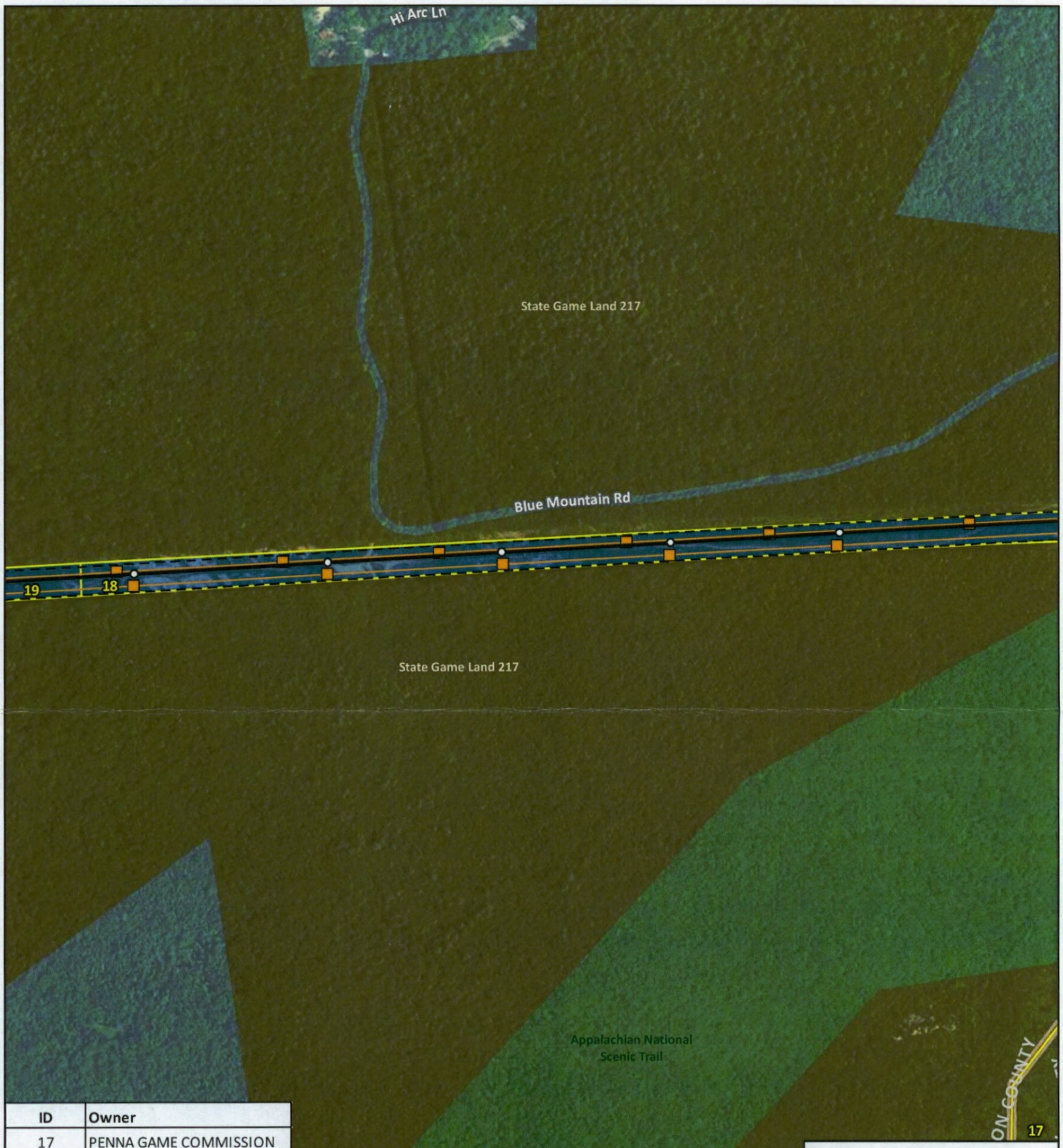
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl
PPL Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
17	PENNA GAME COMMISSION
18	PPL ELECTRIC UTILITIES CORP
19	PPL ELECTRIC UTILITIES CORP

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW

Existing Transmission Line

- 69kV

- ROW Parcel
- Federal Land
- State Land
- PPL-Owned
- Municipality Boundary
- County Boundary

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

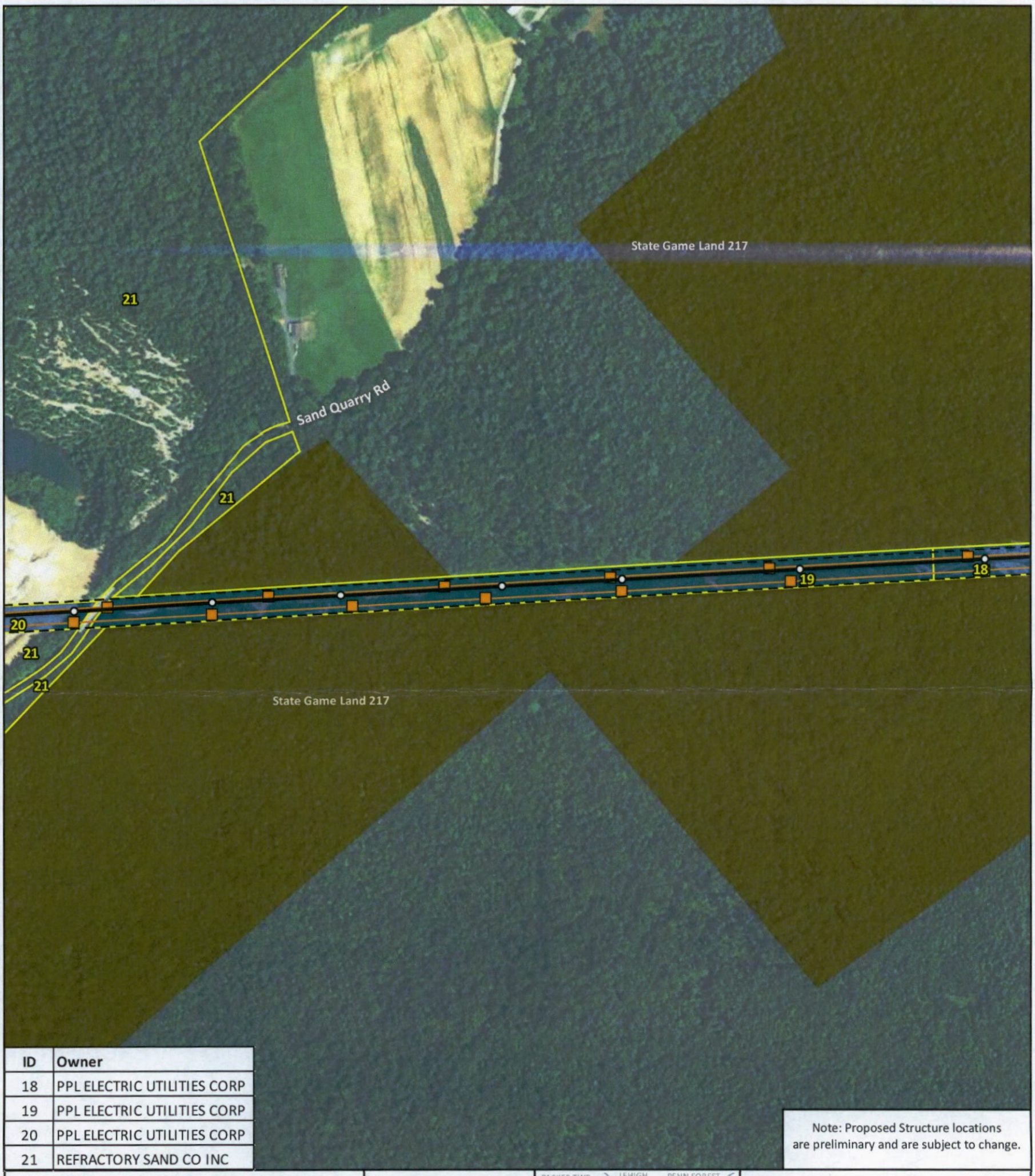
Figure 3p: Aerial Exhibit

Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl PPL Electric Utilities

Louis Berger

0 125 250 500 Feet



ID	Owner
18	PPL ELECTRIC UTILITIES CORP
19	PPL ELECTRIC UTILITIES CORP
20	PPL ELECTRIC UTILITIES CORP
21	REFRACTORY SAND CO INC

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- State Land
- PPL-Owned

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

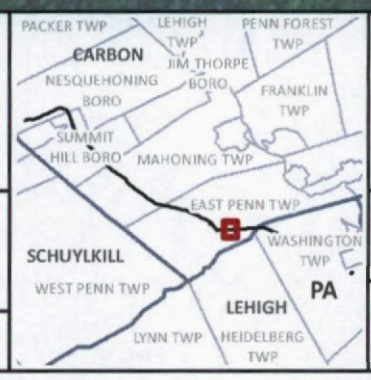


Figure 3q: Aerial Exhibit

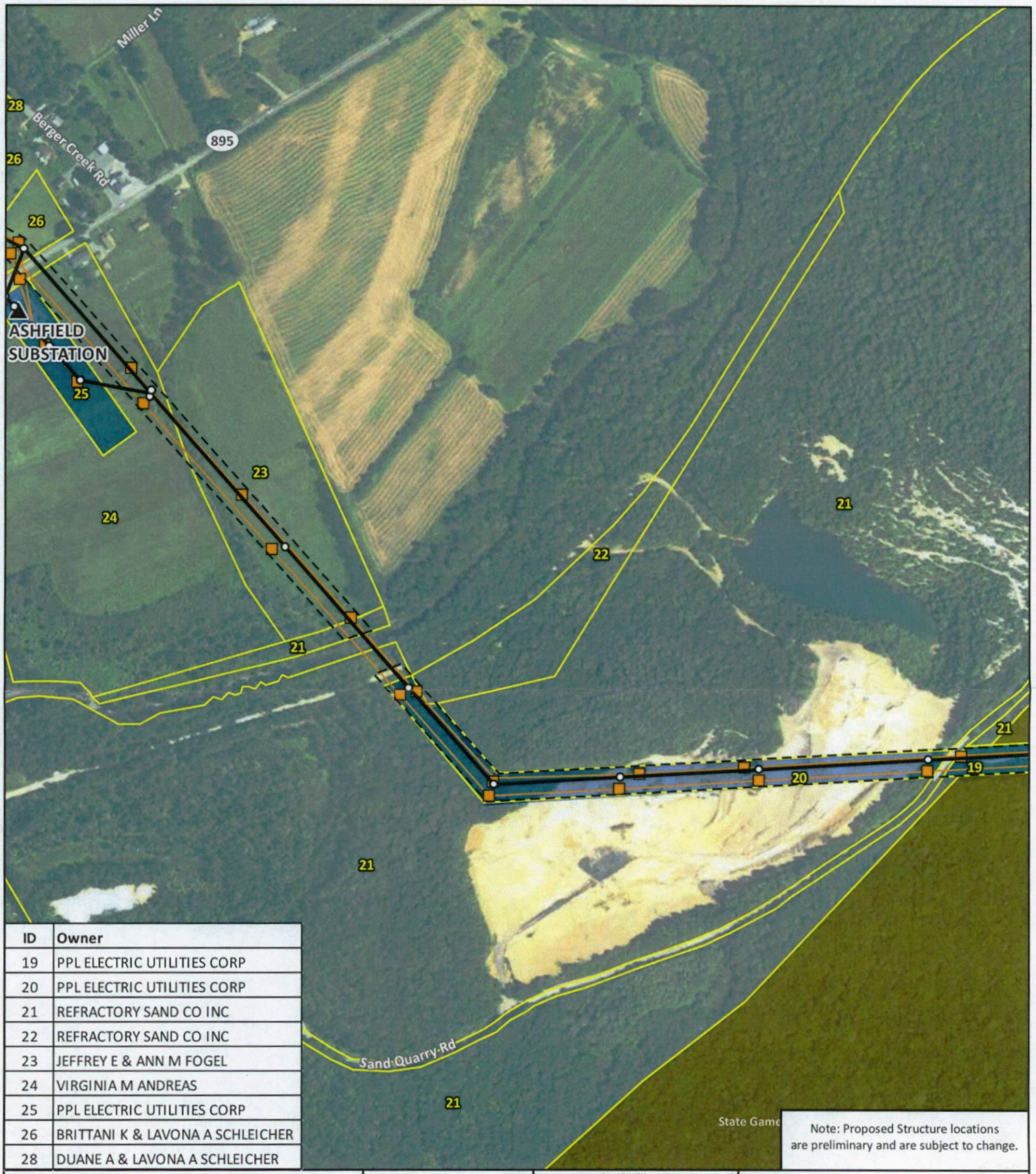
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl
PPL Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
19	PPL ELECTRIC UTILITIES CORP
20	PPL ELECTRIC UTILITIES CORP
21	REFRACTORY SAND CO INC
22	REFRACTORY SAND CO INC
23	JEFFREY E & ANN M FOGEL
24	VIRGINIA M ANDREAS
25	PPL ELECTRIC UTILITIES CORP
26	BRITTANI K & LAVONA A SCHLEICHER
28	DUANE A & LAVONA A SCHLEICHER

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Substation
- Rebuild Centerline
- ROW
- ROW Parcel
- State Land
- PPL-Owned

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

Figure 3r: Aerial Exhibit

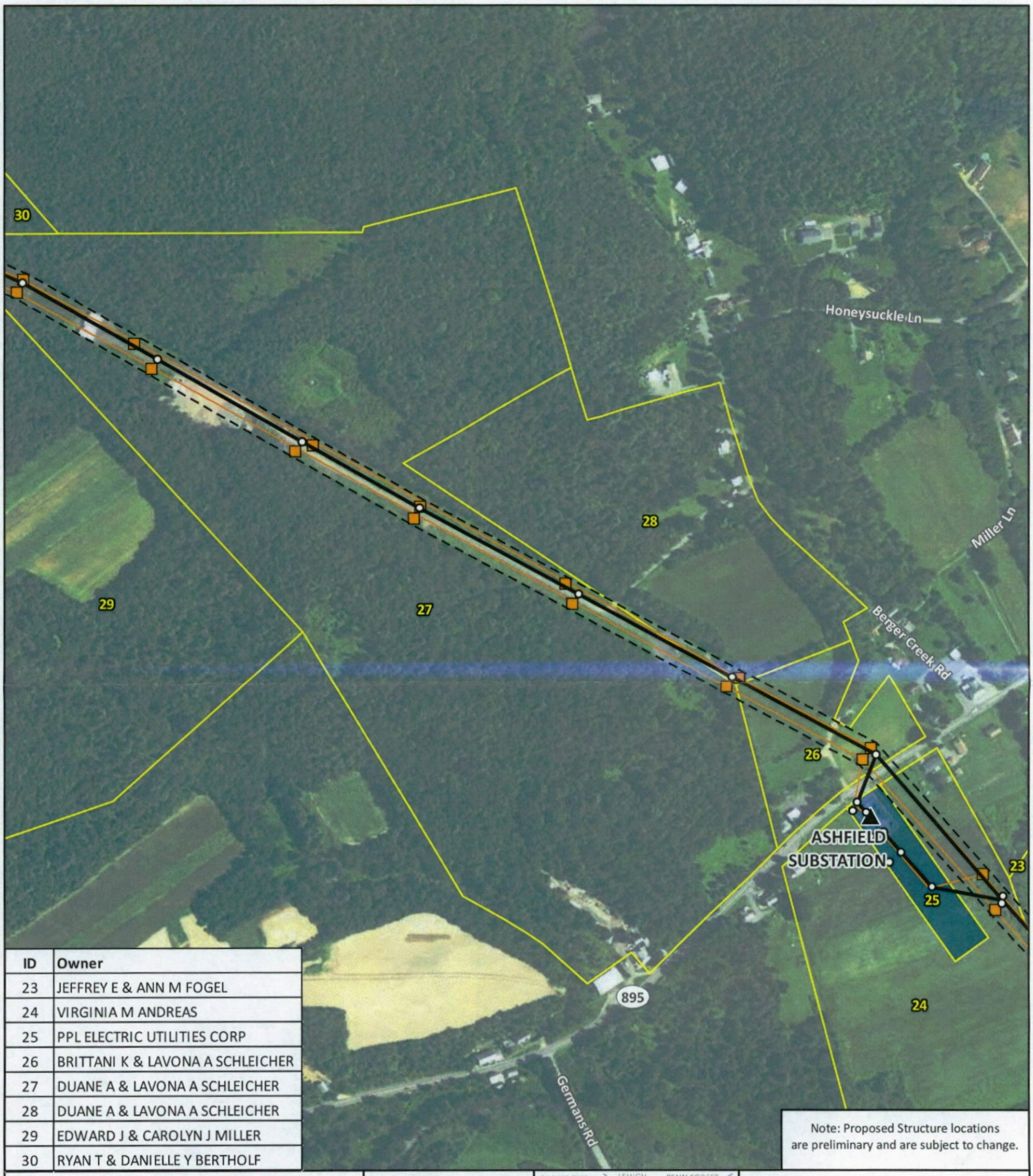
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
23	JEFFREY E & ANN M FOGEL
24	VIRGINIA M ANDREAS
25	PPL ELECTRIC UTILITIES CORP
26	BRITTANI K & LAVONA A SCHLEICHER
27	DUANE A & LAVONA A SCHLEICHER
28	DUANE A & LAVONA A SCHLEICHER
29	EDWARD J & CAROLYN J MILLER
30	RYAN T & DANIELLE Y BERTHOLF

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Substation
- Rebuild Centerline
- ROW
- ROW Parcel
- PPL-Owned

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

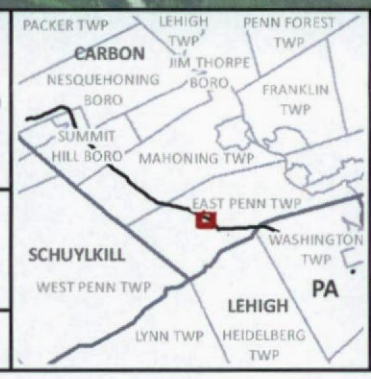


Figure 3s: Aerial Exhibit

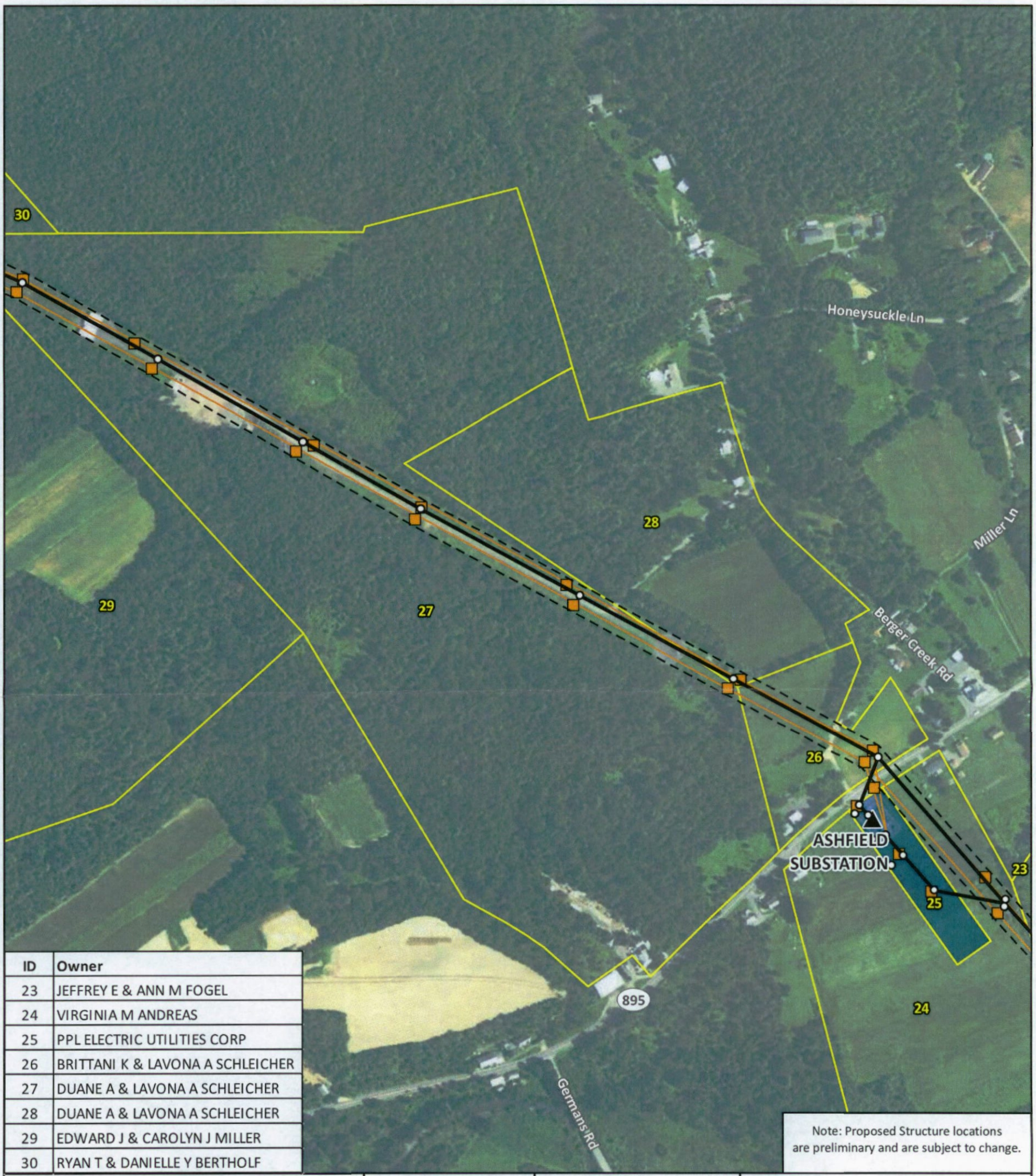
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
23	JEFFREY E & ANN M FOGEL
24	VIRGINIA M ANDREAS
25	PPL ELECTRIC UTILITIES CORP
26	BRITTANI K & LAVONA A SCHLEICHER
27	DUANE A & LAVONA A SCHLEICHER
28	DUANE A & LAVONA A SCHLEICHER
29	EDWARD J & CAROLYN J MILLER
30	RYAN T & DANIELLE Y BERTHOLF

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Substation
- Rebuild Centerline
- ROW
- ROW Parcel
- PPL-Owned

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

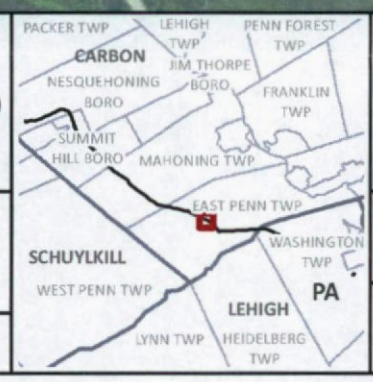


Figure 3s: Aerial Exhibit

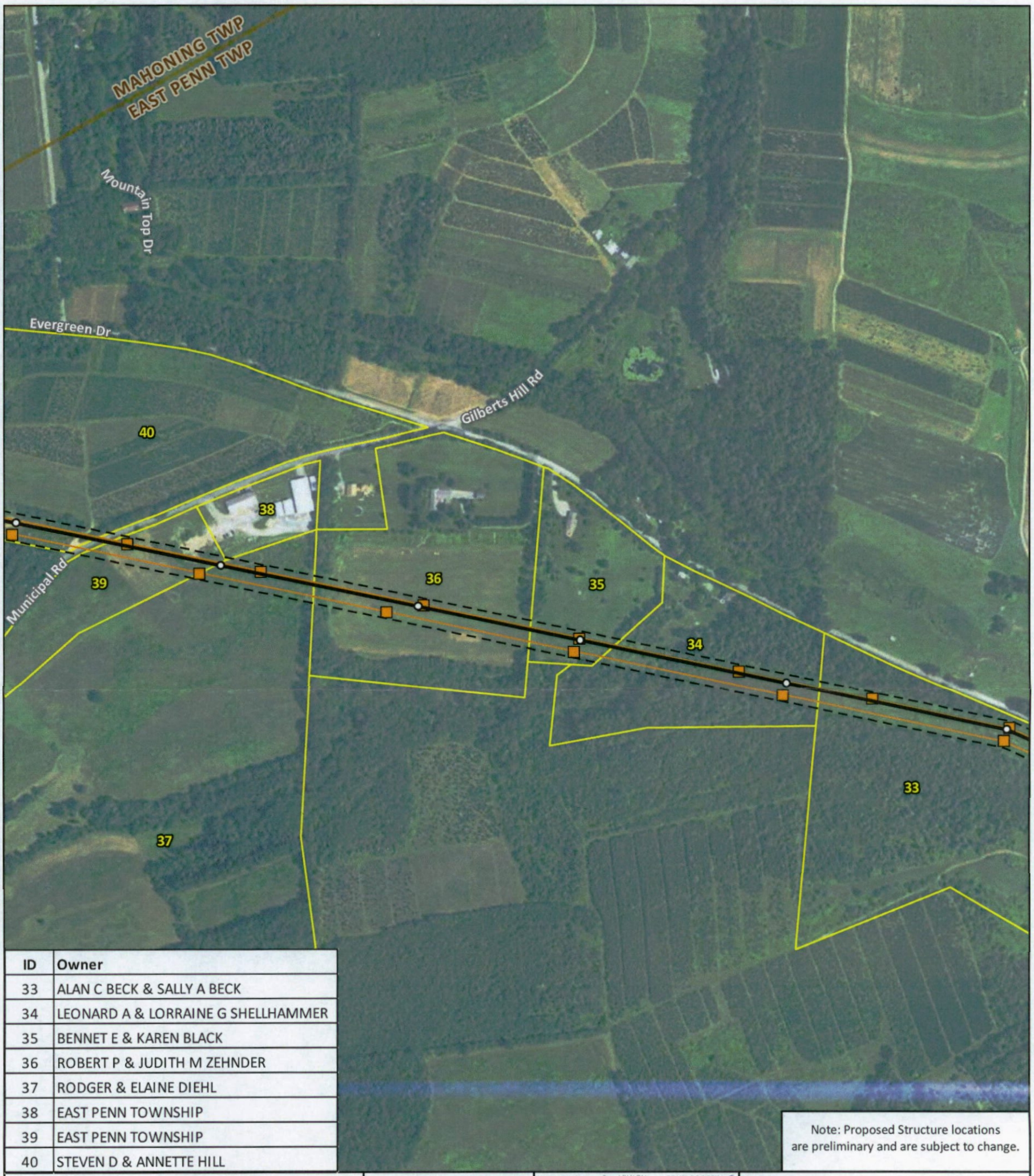
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
33	ALAN C BECK & SALLY A BECK
34	LEONARD A & LORRAINE G SHELLHAMMER
35	BENNET E & KAREN BLACK
36	ROBERT P & JUDITH M ZEHNDER
37	RODGER & ELAINE DIEHL
38	EAST PENN TOWNSHIP
39	EAST PENN TOWNSHIP
40	STEVEN D & ANNETTE HILL

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- Municipality Boundary

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

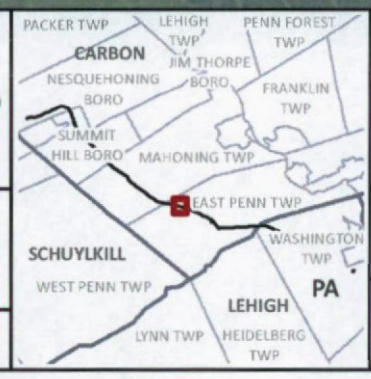


Figure 3u: Aerial Exhibit

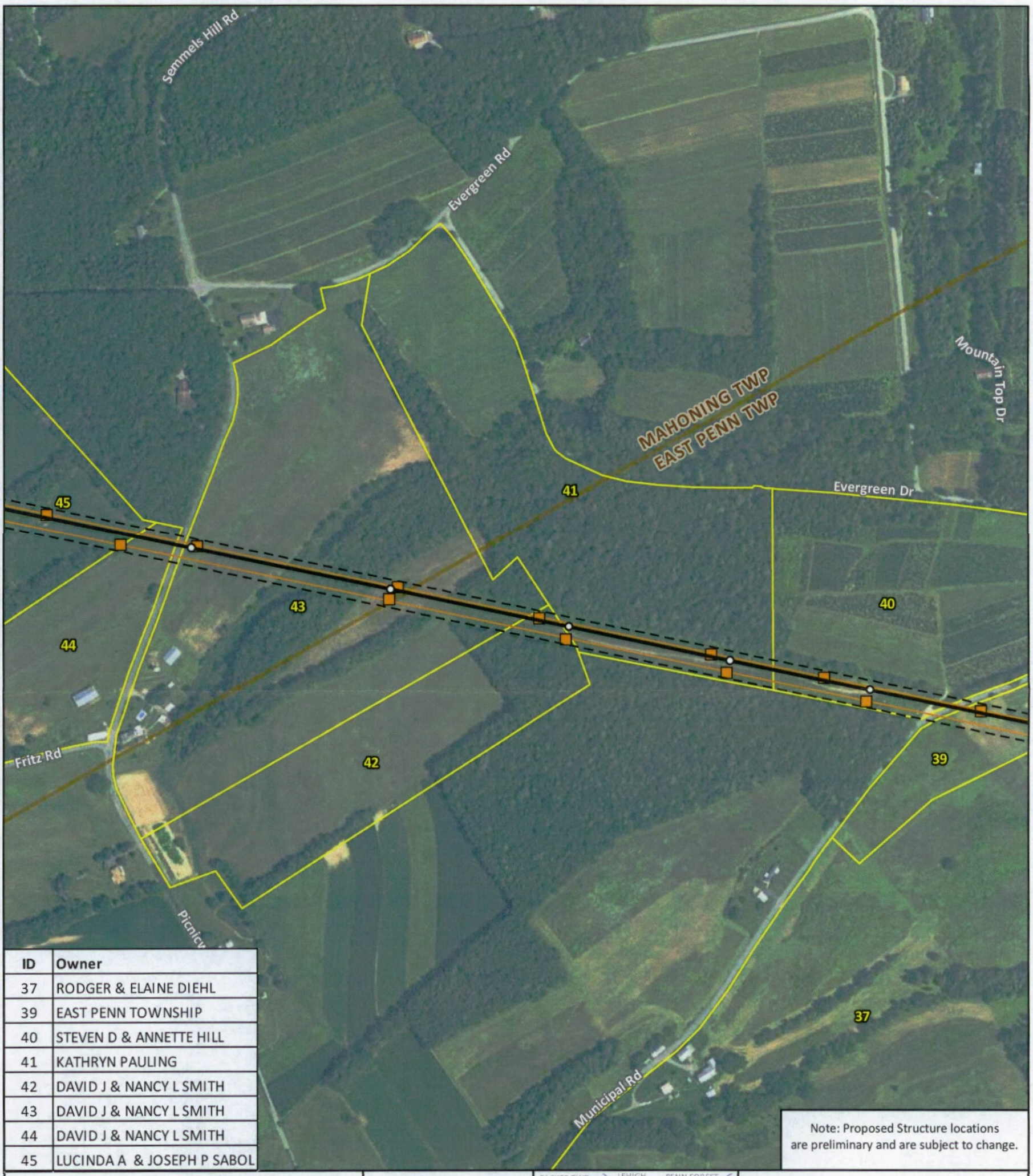
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
37	RODGER & ELAINE DIEHL
39	EAST PENN TOWNSHIP
40	STEVEN D & ANNETTE HILL
41	KATHRYN PAULING
42	DAVID J & NANCY L SMITH
43	DAVID J & NANCY L SMITH
44	DAVID J & NANCY L SMITH
45	LUCINDA A & JOSEPH P SABOL

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- Municipality Boundary

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

Figure 3v: Aerial Exhibit

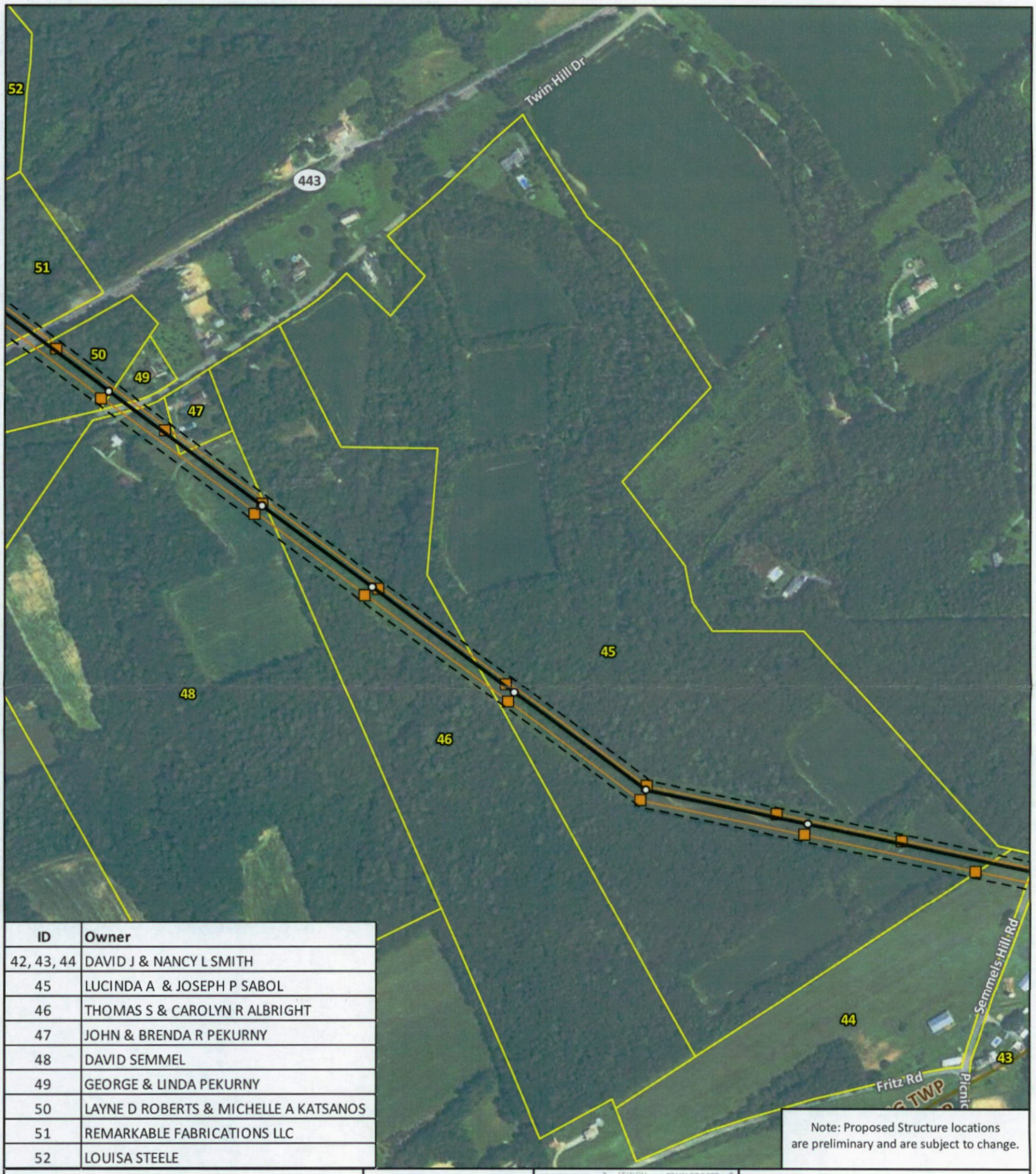
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
42, 43, 44	DAVID J & NANCY L SMITH
45	LUCINDA A & JOSEPH P SABOL
46	THOMAS S & CAROLYN R ALBRIGHT
47	JOHN & BRENDA R PEKURNY
48	DAVID SEMMEL
49	GEORGE & LINDA PEKURNY
50	LAYNE D ROBERTS & MICHELLE A KATSANOS
51	REMARKABLE FABRICATIONS LLC
52	LOUISA STEELE

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- Municipality Boundary

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

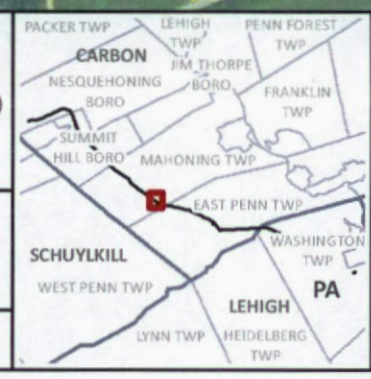


Figure 3w: Aerial Exhibit

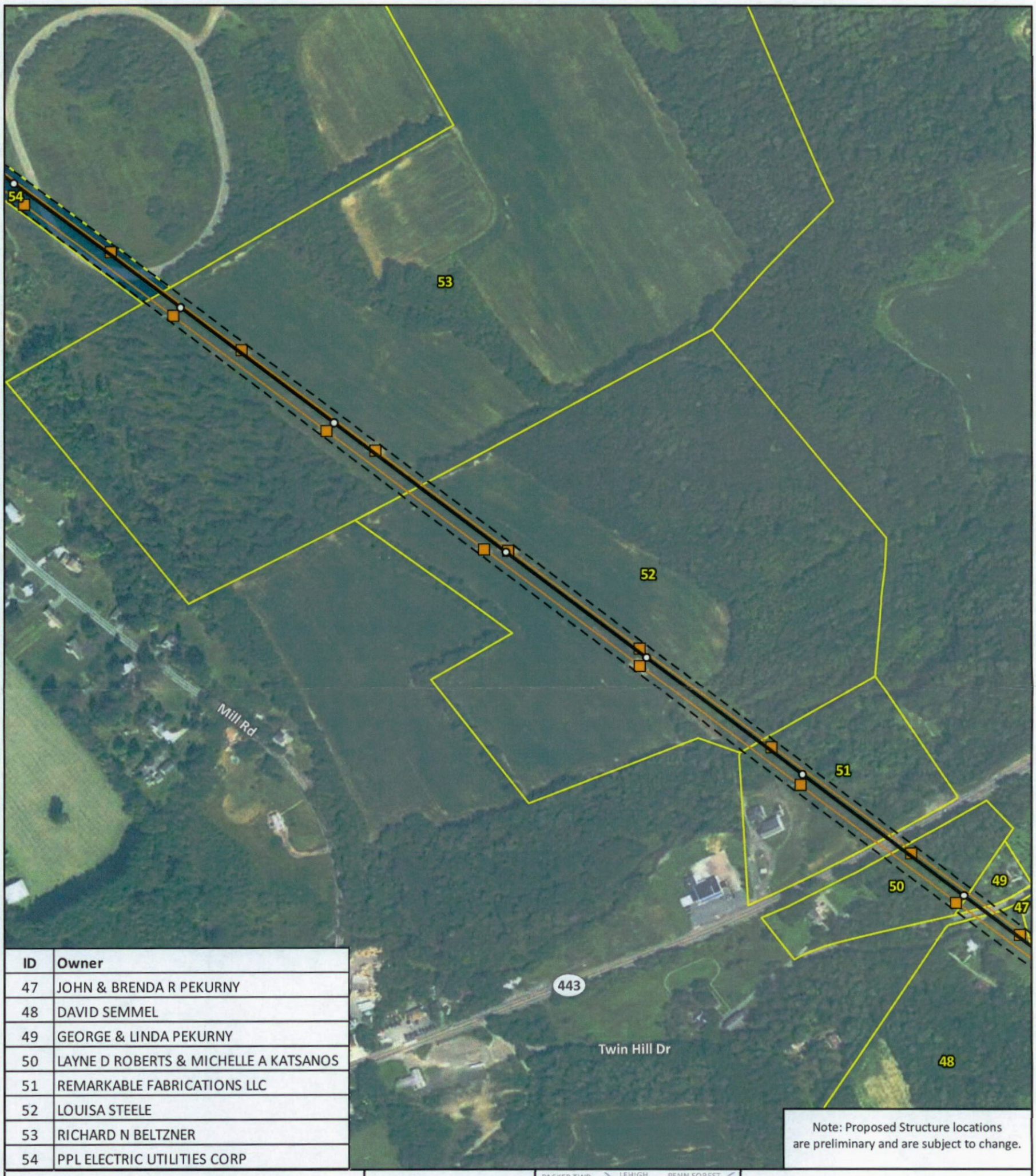
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
47	JOHN & BRENDA R PEKURNY
48	DAVID SEMMEL
49	GEORGE & LINDA PEKURNY
50	LAYNE D ROBERTS & MICHELLE A KATSANOS
51	REMARKABLE FABRICATIONS LLC
52	LOUISA STEELE
53	RICHARD N BELTZNER
54	PPL ELECTRIC UTILITIES CORP

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- PPL-Owned

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

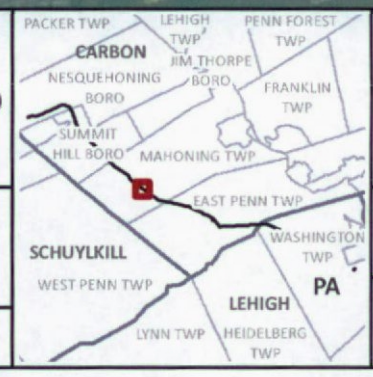


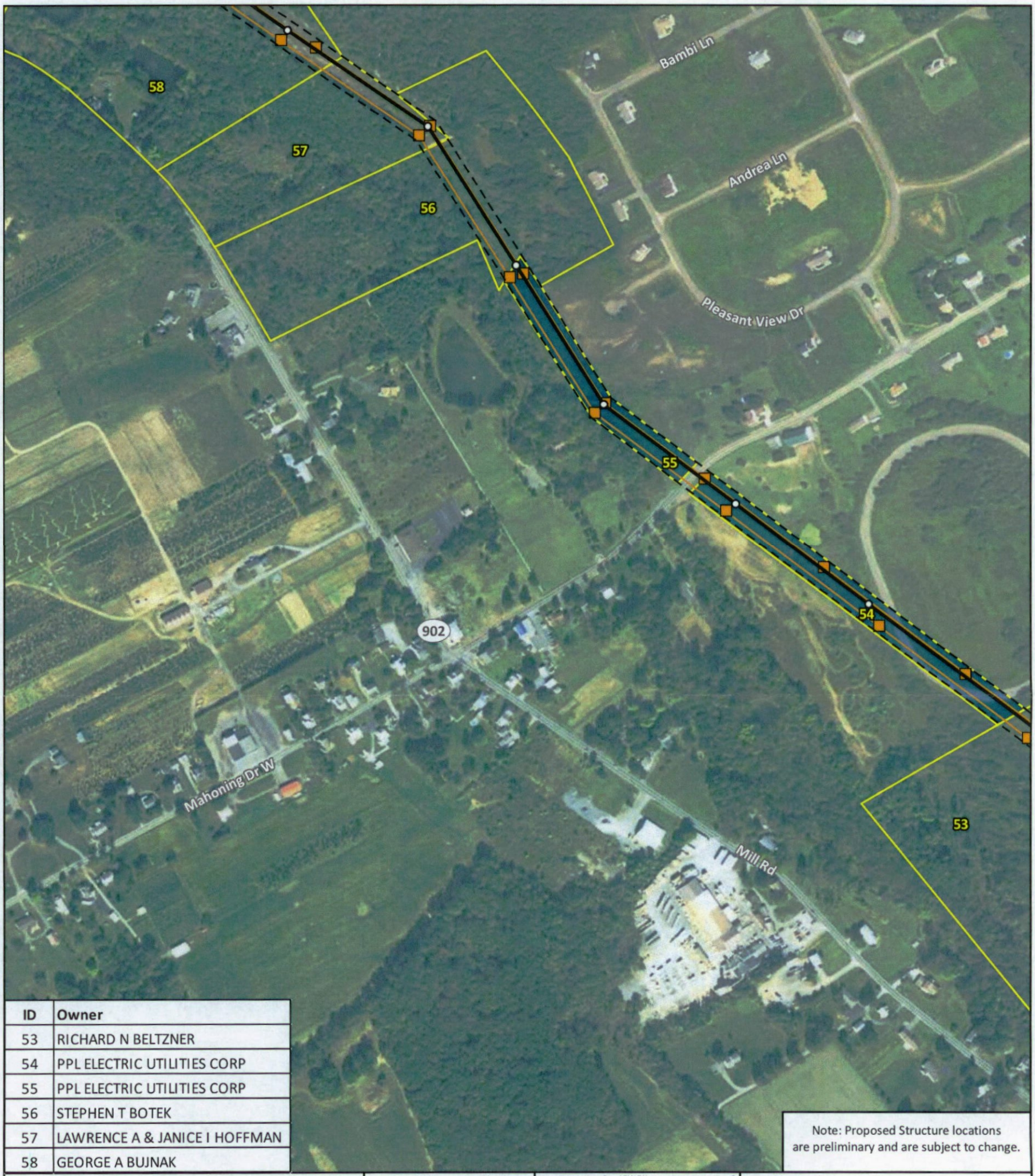
Figure 3x: Aerial Exhibit

Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

0 125 250 500 Feet



ID	Owner
53	RICHARD N BELTZNER
54	PPL ELECTRIC UTILITIES CORP
55	PPL ELECTRIC UTILITIES CORP
56	STEPHEN T BOTEK
57	LAWRENCE A & JANICE I HOFFMAN
58	GEORGE A BUJNAK

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- PPL-Owned

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

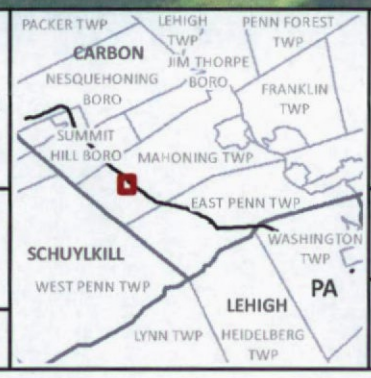


Figure 3y: Aerial Exhibit

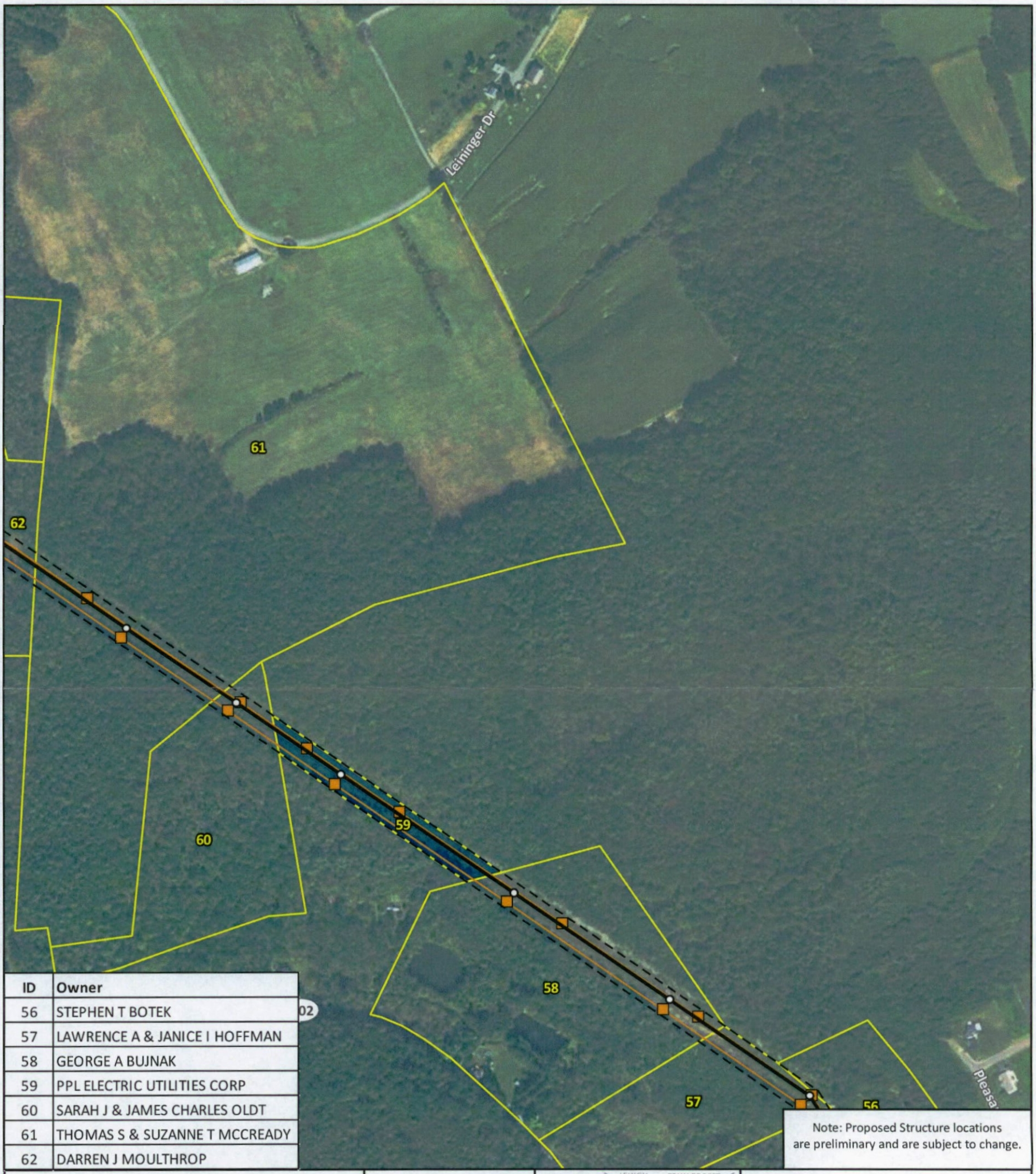
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
56	STEPHEN T BOTEK
57	LAWRENCE A & JANICE I HOFFMAN
58	GEORGE A BUJNAK
59	PPL ELECTRIC UTILITIES CORP
60	SARAH J & JAMES CHARLES OLDT
61	THOMAS S & SUZANNE T MCCREADY
62	DARREN J MOULTHROP

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- PPL-Owned

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

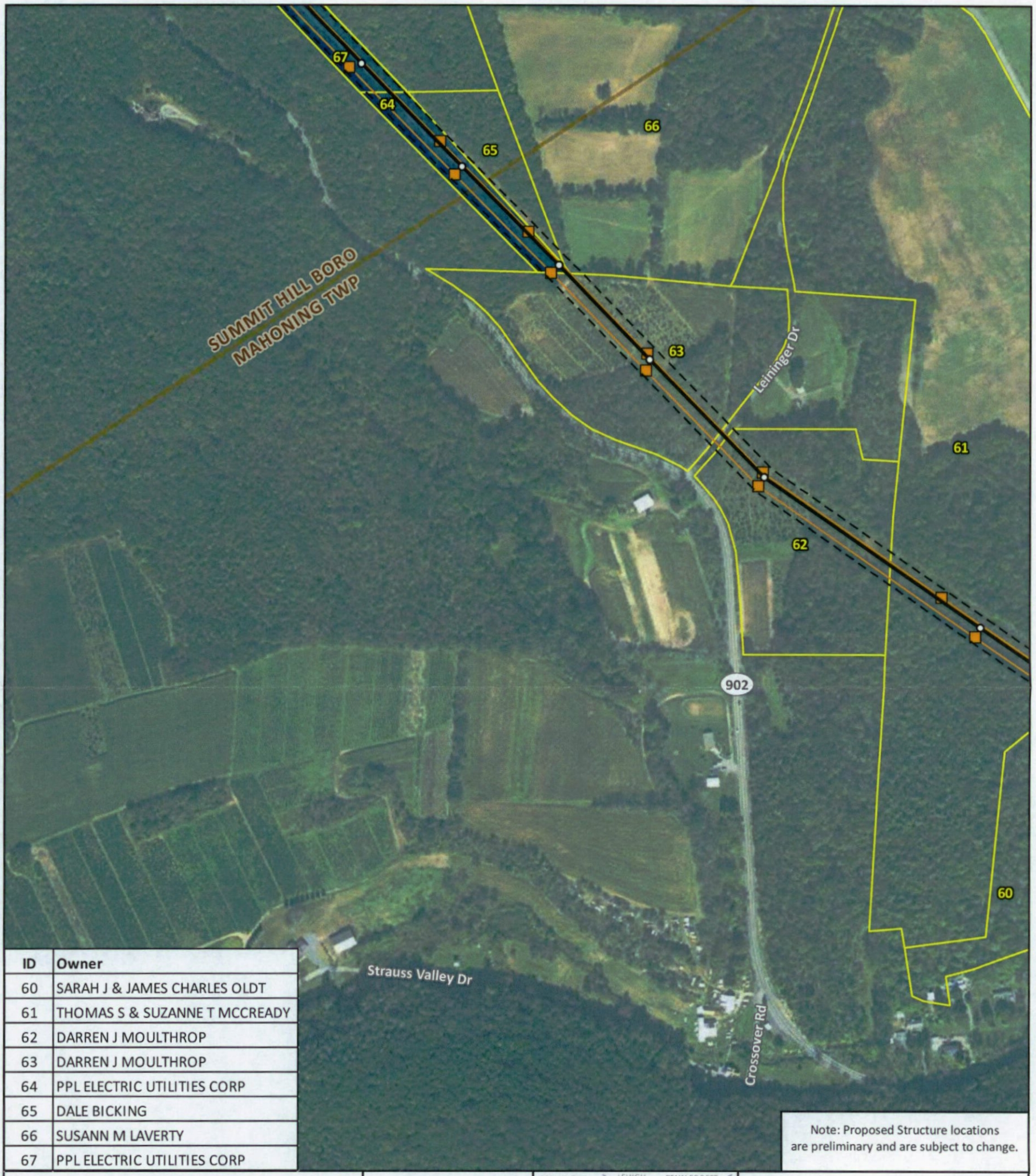
Figure 3z: Aerial Exhibit

Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl
PPL Electric Utilities

Louis Berger

0 125 250 500 Feet



ID	Owner
60	SARAH J & JAMES CHARLES OLDT
61	THOMAS S & SUZANNE T MCCREADY
62	DARREN J MOULTHROP
63	DARREN J MOULTHROP
64	PPL ELECTRIC UTILITIES CORP
65	DALE BICKING
66	SUSANN M LAVERTY
67	PPL ELECTRIC UTILITIES CORP

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- PPL-Owned
- Municipality Boundary

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

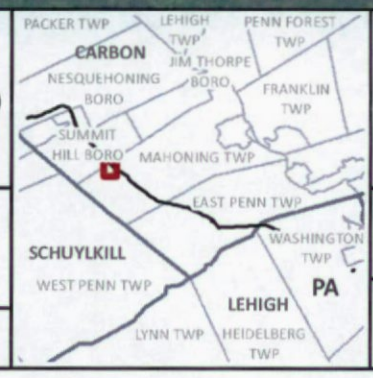


Figure 3aa: Aerial Exhibit

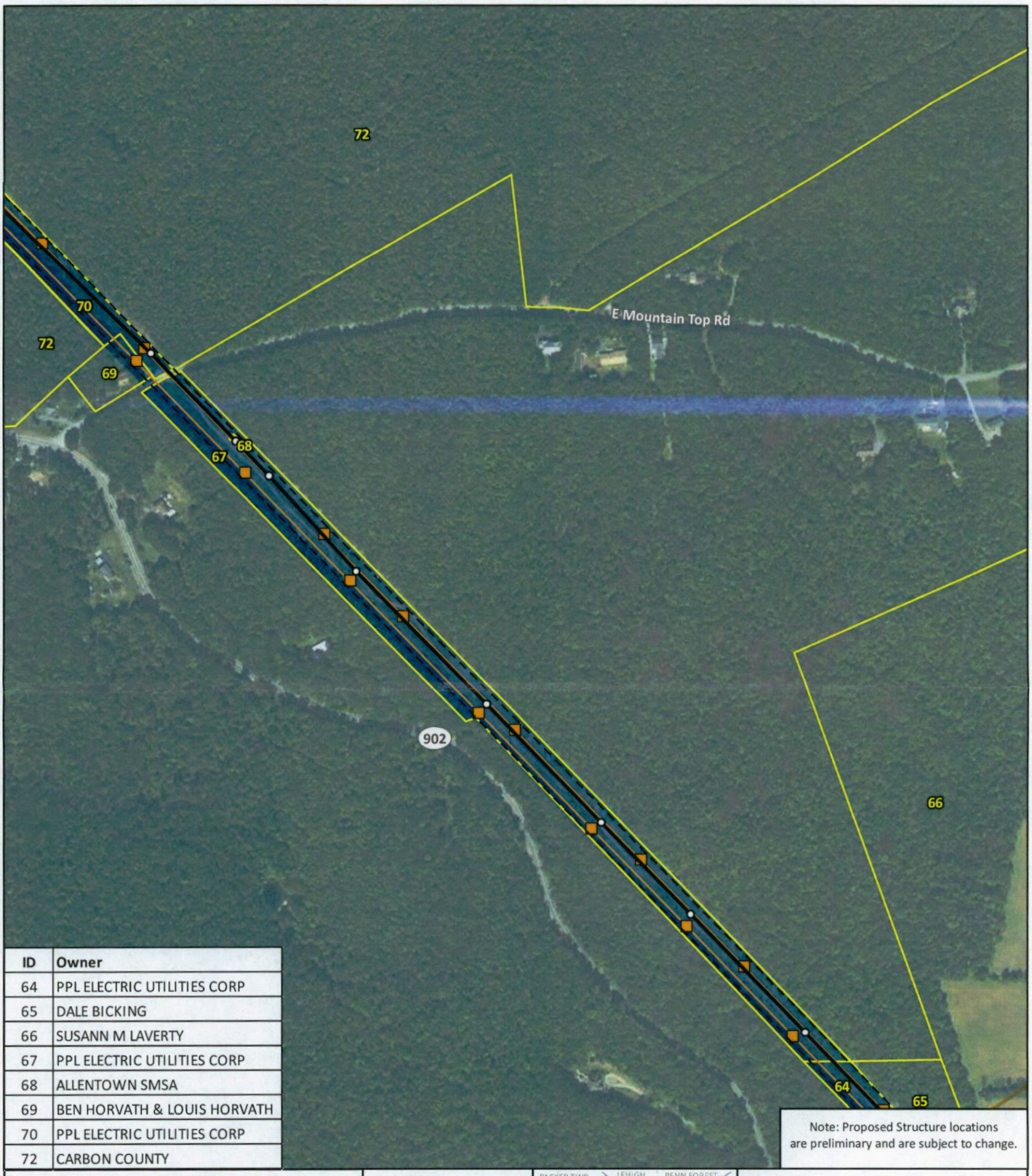
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl PPL Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
64	PPL ELECTRIC UTILITIES CORP
65	DALE BICKING
66	SUSANN M LAVERTY
67	PPL ELECTRIC UTILITIES CORP
68	ALLENTOWN SMSA
69	BEN HORVATH & LOUIS HORVATH
70	PPL ELECTRIC UTILITIES CORP
72	CARBON COUNTY

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- PPL-Owned
- Municipality Boundary

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

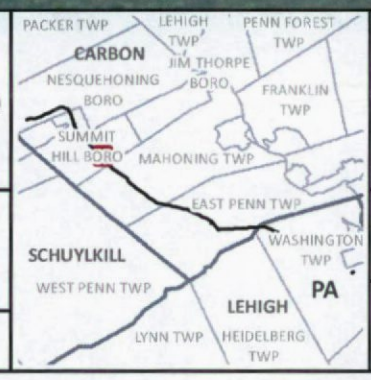


Figure 3ab: Aerial Exhibit

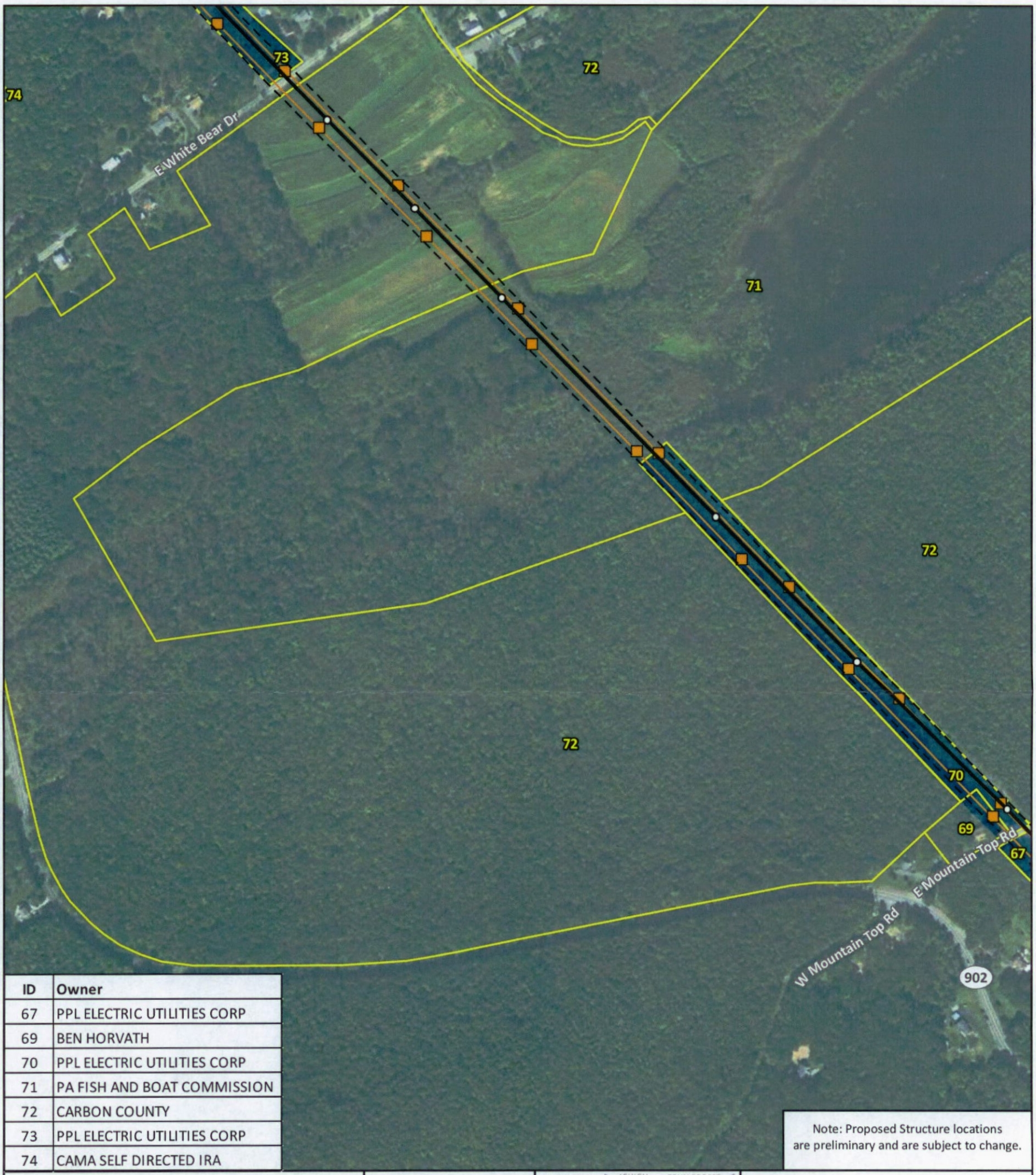
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl
PPL Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
67	PPL ELECTRIC UTILITIES CORP
69	BEN HORVATH
70	PPL ELECTRIC UTILITIES CORP
71	PA FISH AND BOAT COMMISSION
72	CARBON COUNTY
73	PPL ELECTRIC UTILITIES CORP
74	CAMA SELF DIRECTED IRA

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- PPL-Owned

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

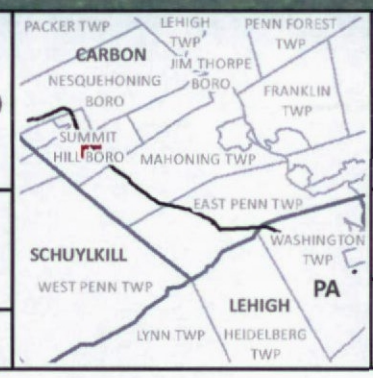


Figure 3ac: Aerial Exhibit

Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet

ID	Owner
72	CARBON COUNTY
73	PPL ELECTRIC UTILITIES CORP
74	CAMA SELF DIRECTED IRA
75	BET LEHIGH REAL ESTATE LLC

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- PPL-Owned
- Municipality Boundary

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

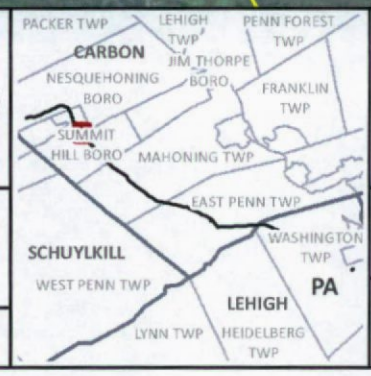


Figure 3ad: Aerial Exhibit

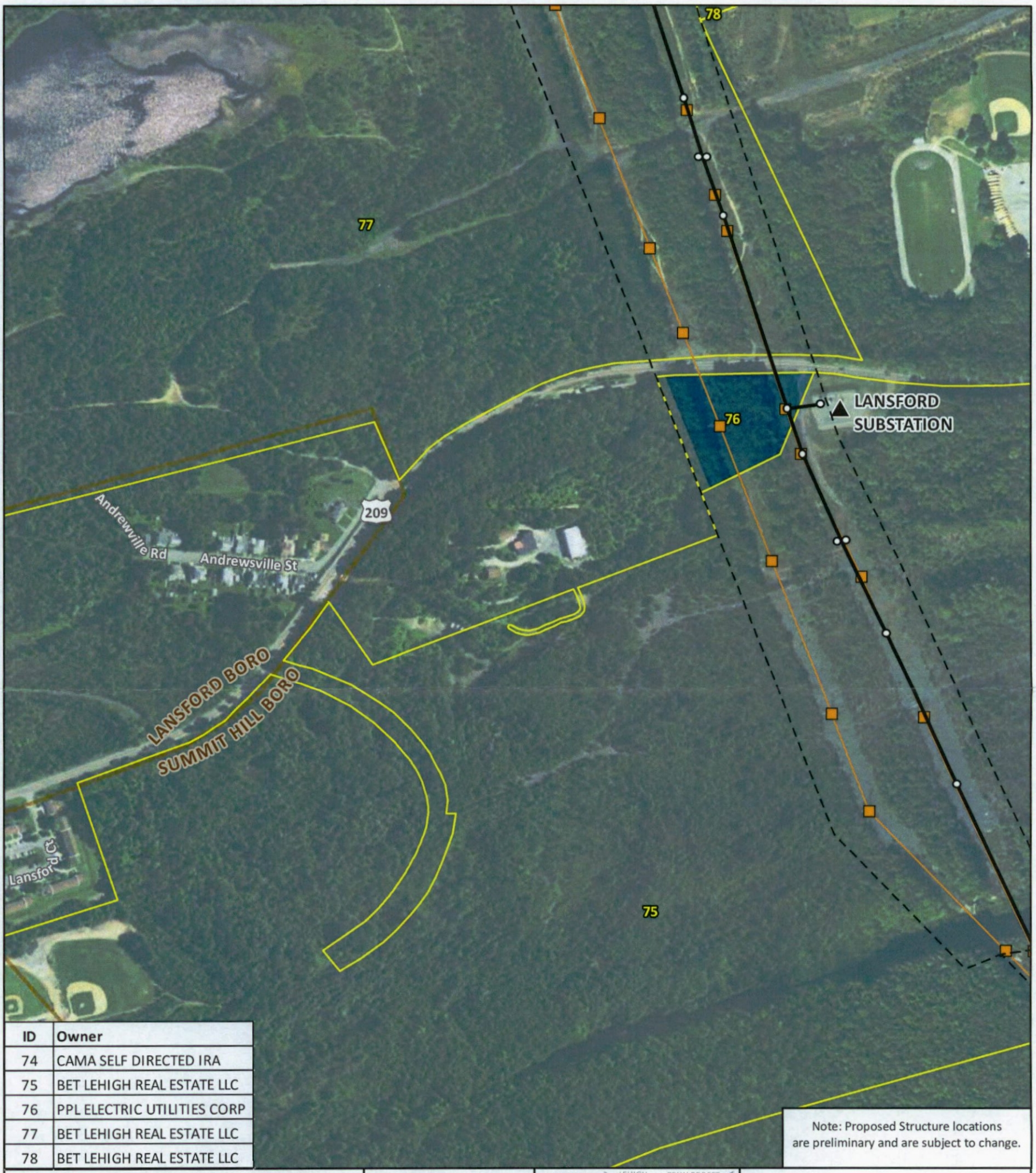
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
74	CAMA SELF DIRECTED IRA
75	BET LEHIGH REAL ESTATE LLC
76	PPL ELECTRIC UTILITIES CORP
77	BET LEHIGH REAL ESTATE LLC
78	BET LEHIGH REAL ESTATE LLC

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Substation
- Rebuild Centerline
- ROW

Existing Transmission Line

- 69kV

- ROW Parcel
- PPL-Owned
- Municipality Boundary

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

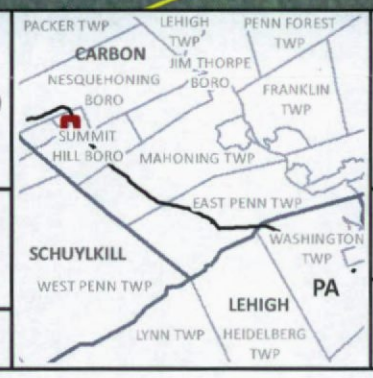


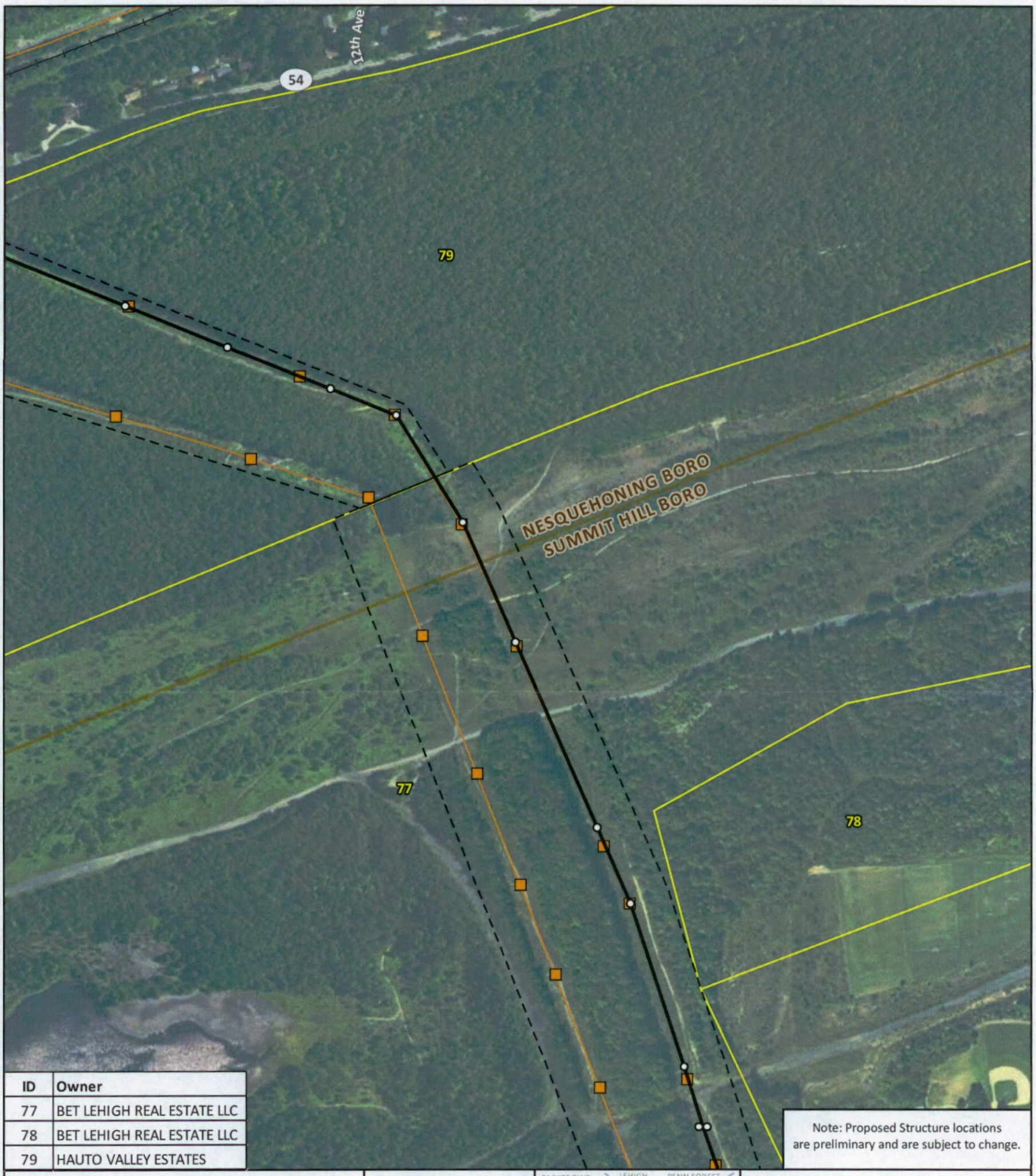
Figure 3ae: Aerial Exhibit

Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

0 125 250 500 Feet



ID	Owner
77	BET LEHIGH REAL ESTATE LLC
78	BET LEHIGH REAL ESTATE LLC
79	HAUTO VALLEY ESTATES

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- Municipality Boundary

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

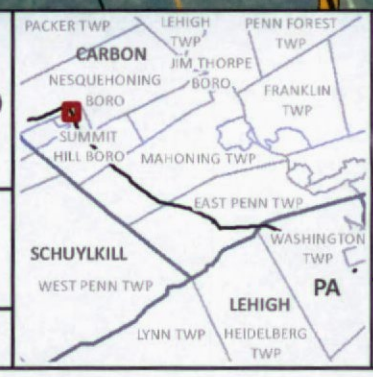


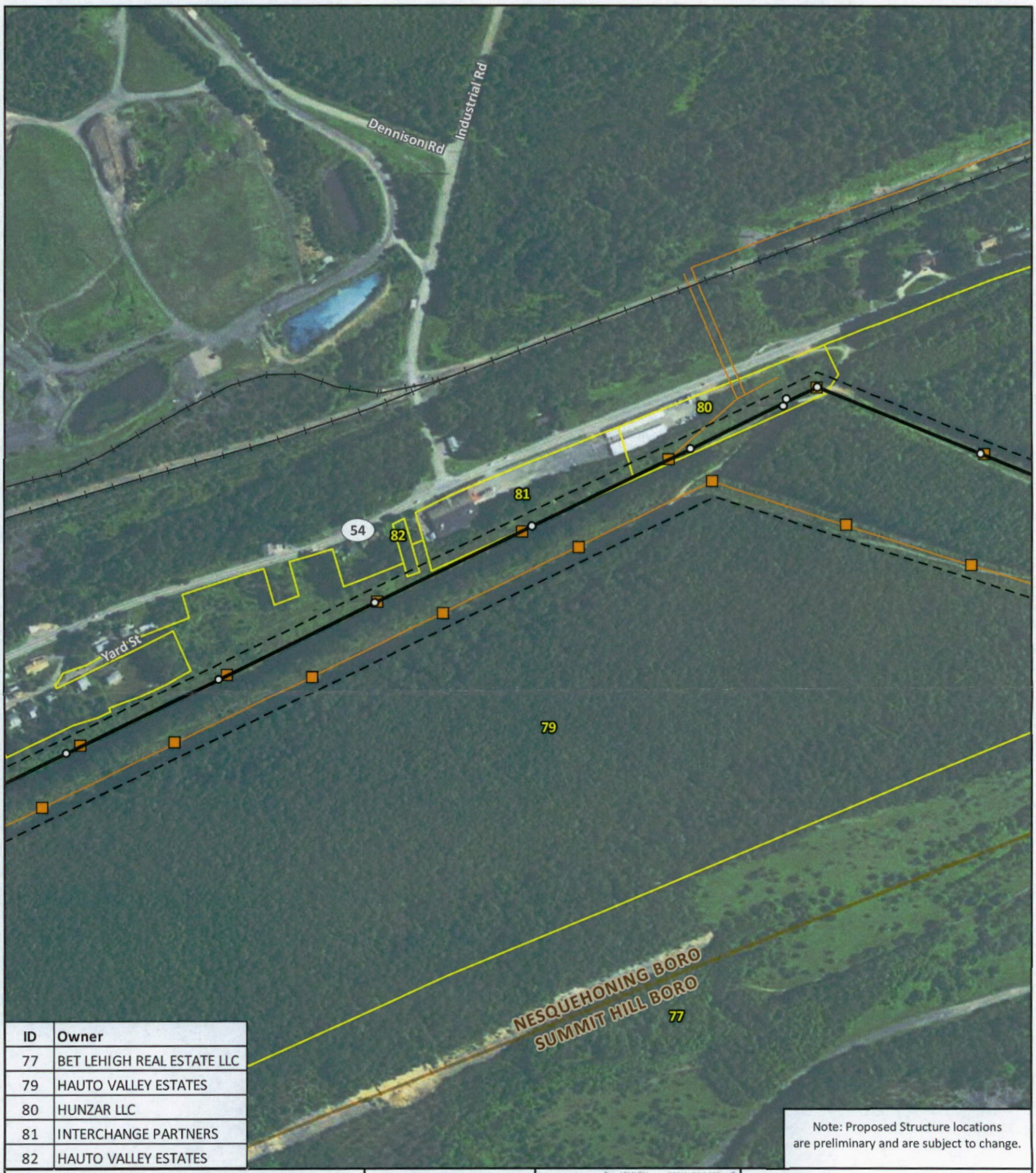
Figure 3af: Aerial Exhibit

Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

0 125 250 500 Feet



ID	Owner
77	BET LEHIGH REAL ESTATE LLC
79	HAUTO VALLEY ESTATES
80	HUNZAR LLC
81	INTERCHANGE PARTNERS
82	HAUTO VALLEY ESTATES

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- Municipality Boundary

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

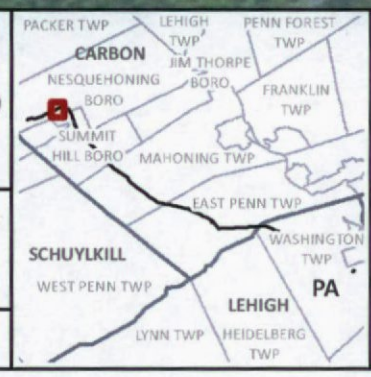


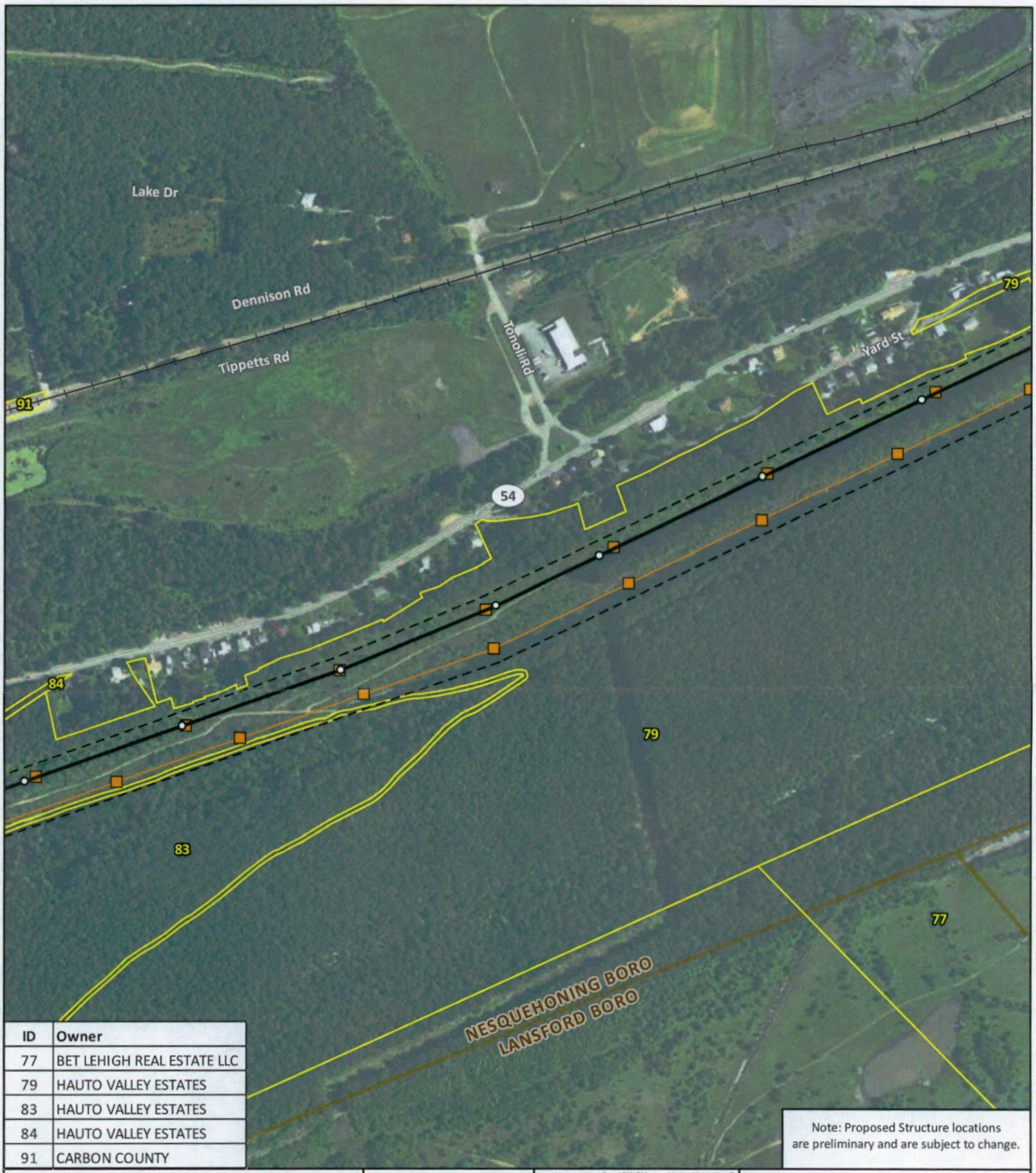
Figure 3ag: Aerial Exhibit

Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

0 125 250 500 Feet



ID	Owner
77	BET LEHIGH REAL ESTATE LLC
79	HAUTO VALLEY ESTATES
83	HAUTO VALLEY ESTATES
84	HAUTO VALLEY ESTATES
91	CARBON COUNTY

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Rebuild Centerline
- ROW
- ROW Parcel
- Municipality Boundary

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

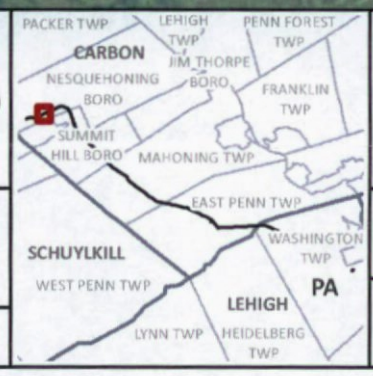


Figure 3ah: Aerial Exhibit

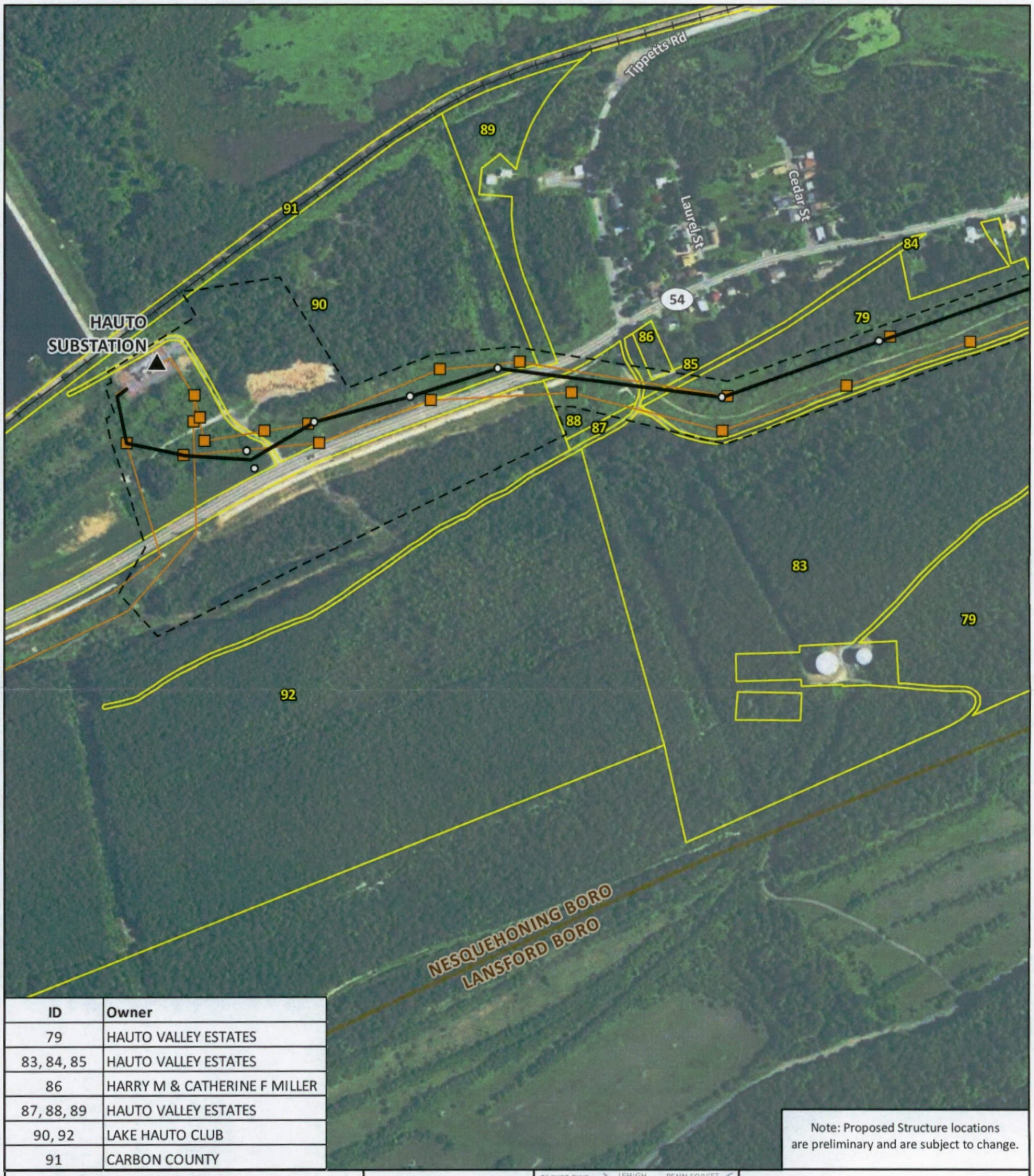
Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

N

0 125 250 500 Feet



ID	Owner
79	HAUTO VALLEY ESTATES
83, 84, 85	HAUTO VALLEY ESTATES
86	HARRY M & CATHERINE F MILLER
87, 88, 89	HAUTO VALLEY ESTATES
90, 92	LAKE HAUTO CLUB
91	CARBON COUNTY

Note: Proposed Structure locations are preliminary and are subject to change.

- Proposed Structure
- Existing Structure
- Substation
- Rebuild Centerline
- ROW
- ROW Parcel
- Municipality Boundary

Existing Transmission Line

- 69kV

Sources:
Imagery (NAIP 2017),
Muncipalities/Counties (PASDA)
Parcels (Lehigh County)
Roads (ESRI), Streams (USGS)

Coordinate System:
State Plane PA South
NAD 1983

February 15, 2019

Figure 3ai: Aerial Exhibit

Siegfried - Hauto #1 & #4 138/69 kV Transmission Line Rebuild Project

ppl Electric Utilities

Louis Berger

0 125 250 500 Feet

Attachment 4

Table of Contents

List of Tables

1.0 DESIGN CONSIDERATIONS

PPL Electric's new and rebuilt transmission lines are designed according to, and generally exceed, all NESC minimum standards. The NESC is a set of rules to safeguard people during the installation, operation, and maintenance of electric power lines. The NESC contains the basic provisions considered necessary for the safety of employees and the public. Although it is not intended as a design specification, its provisions establish minimum design requirements. PPL Electric has developed design specifications and safety rules which meet or surpass all requirements specified by the NESC.

The NESC includes loading requirements and clearances for the design, construction, and operation of power lines. The "loads" on conductors and supporting structures are the mechanical forces that develop from the weight of the conductors, the weight of ice on the conductors, plus wind pressure on the conductors and supporting structures. Loading requirements are the loads on the conductors and structures that are anticipated assuming certain ice and wind conditions. Loading requirements always contain "safety factors" to allow for unknown or unanticipated contingencies. The clearances and loading requirements contained in the NESC are designed to maintain public safety.

PPL Electric's transmission line design standards meet or surpass the NESC clearances and loading requirements.

For example, the NESC specifies strength and loading rules based on three different "grades of construction" for conductors and supporting structures:

- Grade B – This grade of construction provides the highest margin of safety and is required when the pole supports spans that cross limited access highways, railroads, and waterways.
- Grade C – This grade of construction is most common and provides a basic margin of safety. It is often utilized for the typical power and joint-use distribution pole.
- Grade N – This is the lowest grade of construction and is most often used for emergency and temporary construction.

PPL Electric designs all of its transmission lines for Grade B construction. The use of Grade B design and construction translates to higher levels of structural reliability and safety to withstand the environmental conditions of ice and/or wind loading, which provides a higher margin of safety.

Another example of PPL Electric's rigorous design standards are the parameters utilized to account for ice and wind loadings on the wires and structure. Structure loading and line designs must accommodate a variety of operating conditions as different ice and wind combinations can impact the conductor sags and tensions of the line. PPL Electric's transmission lines are designed to exceed NESC requirements by accounting for additional load cases due to various ice and wind loading conditions not required by NESC. This means that PPL Electric lines are designed to operate safely and reliably during extreme inclement weather. In addition, PPL Electric design standards include a clearance to ground buffer in excess of NESC required clearances to account for construction and design tolerances and the filling or grading of land within the right of way by property owners. This buffer also significantly reduces the risk of a property owner inadvertently contacting a transmission line. This has occurred on PPL's system in the past and higher clearances minimize the likelihood of future occurrences.

TABLE 4-1: 69 kV Vertical Clearance to Ground

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, alleys	19.2 Ft.	30 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	19.2 Ft.	30 Ft.
Spaces accessible to pedestrians only	15.2 Ft.	30 Ft.
Railroad tracks	27.2 Ft.	31.5 Ft.

TABLE 4-2: 138 kV Vertical Clearance to Ground

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, alleys	20.6 Ft.	31 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	20.6 Ft.	31 Ft.
Spaces accessible to pedestrians only	16.6 Ft.	31 Ft.
Railroad tracks	28.6 Ft.	35 Ft.

TABLE 4-3: 230 kV Vertical Clearance to Ground

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, alleys	22.4 Ft.	33 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	22.4 Ft.	33 Ft.
Spaces accessible to pedestrians only	18.4 Ft.	33 Ft.
Railroad tracks	30.4 Ft.	35 Ft.

TABLE 4-4: 500 kV Vertical Clearance to Ground

Surface Underneath Conductors	NESC Standard Clearance	PPL Conductor Clearances
Roads, streets, alleys	28.4 Ft.	40 Ft.
Other land traversed by vehicles (such as cultivated field, forest, etc.)	28.4 Ft.	40 Ft.
Spaces accessible to pedestrians only	24.4 Ft.	40 Ft.
Railroad tracks	36.4 Ft.	53 Ft.

A relay protection system is also used on PPL Electric's transmission lines to protect the public safety, as well as the equipment on the transmission system. Relay protection is installed for all transmission lines to automatically de-energize the line in the unlikely event that the line or supporting structure fails and the line contacts the ground.

2.0 PERIODIC MAINTENANCE PROGRAM ON ALL TRANSMISSION LINES

To ensure continued public safety and integrity of service, a periodic maintenance and inspection program is implemented for every transmission line. The program is administered through the use of helicopter patrols, with supplemental foot patrols as needed. Helicopter patrols are performed

on all lines on a predetermined frequency, depending on voltage level. The two-man helicopter crew flies parallel and above the line so that the observer can look for signs of line damage or deterioration and observe clearances between vegetation and conductors. The observations are included in a report that is forwarded to the appropriate department for corrective action.

3.0 PERSONNEL SAFETY RULES

Overall PPL Electric designs and constructs projects with high regard for both public and employee safety, and follows or exceeds all codes and requirements. The following are a few, but not all, of the PPL Electric safety rules that demonstrate the Company's dedication to employee and contractor safety:

- Work procedures have been developed to allow work to be performed on energized facilities in a safe manner. When lines or apparatus are removed from service to be worked on, the Energy Control Process system is applied. This system provides that a red tag must be physically placed on the control handle of the de-energized equipment.
- The red tag may be removed only after proper authorization to energize the equipment.
- Various other tags are used for limited operations and informational purposes.
- Employees or contractors will not apply or remove a tag or change the status of tagged equipment unless authorized.
- Temporary safety grounds are used on de-energized facilities for employee lineman safety during maintenance, construction, or reconstruction work. Safety grounds are wires connecting the de-energized facility to an electrical ground. If the facility should be energized, the safety grounds will divert the current directly to ground and reduce the likelihood of personal injury.
- Before applying grounds, a test is done to confirm that the line is de-energized. The voltage test device is checked before and after use to assure reliability.
- Poles or structures are inspected and examined for structural integrity before climbing. If there is any reason to believe that a pole is unsafe, it is stabilized before work is performed.

Appropriate safety gear in the form of body belts, safety straps, hard hats, gloves, etc., is worn by linemen during line work activity.

4.0 MAGNETIC FIELD MANAGEMENT PLAN

PPL Electric's Magnetic Field Management Program is applied to new and reconstructed transmission line projects. In order to lower magnetic field exposures, the program generally prescribes the use of a line design that provides ground clearances higher than the required minimum NESC ground clearance and reverse phasing of new double circuit lines where it is feasible to do so at low or no cost. The implementation of additional modifications to reduce magnetic field levels, are considered, provided those modifications can be made at low or no cost and will not interfere with the operation of the line.

Attachment 5

ATTACHMENT 5

Siegfried – East Palmerton #1 and #2 138/69 kV, the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines, and Associated Tap Lines

LIST OF OWNERS OF PROPERTY WITHIN THE RIGHT-OF-WAY

1. American Zinc Recycling Corp
   C/O Gary Whitaker, General Counsel
   4955 Steubenville Pike, Suite 405
   Pittsburgh, PA 15025

2. Barry & Deborah Gabel
   8723 Summit Circle
   Slatington, PA 18080-3568

3. Board of Supervisors
   Lower Towamensing Township
   RD 2 Box 211A
   Palmerton, PA 18071

4. Brenda A Rhodes
   2059 Mountain Road
   Slatington, PA 18080-3541

5. Carl R & Arline M Madtes
   3273 Mountain Road
   Slatington, PA 18080-3581

6. Charles E III & Jody M Hinkle
   3269 Mountain Road
   Slatington, PA 18080-3581

7. Chastity Corvino & Shaun Frano
   4961 Mountain Road
   Slatington, PA 18080-4337

8. Dennis R & Donna F Scholtis
   PO Box 369
   Laurys Station, PA 18059

9. East Penn Township
   167 Municipal Road
   Lehighton, PA 18235

10. Erich R & Linda L Klein
    2649 Mountain Road
    Slatington, PA 18080-3547

11. Hailer & Miriam M Strohl
    8832 PA Route 873
    Slatington, PA 18080-3516

12. Horsehead Corp
    4955 Steubenville Pike, Suite 405
    Pittsburgh, PA 15205

13. John & Dixie Gross
    4140 Hilldale Road
    Slatington, PA 18080-3733

14. John Bailey & Jennifer Hamersly
    8739 Summit Circle
    Slatington, PA 18080-3568

15. John R & Joanne M Teman
    3037 Mountain Road
    Slatington, PA 18080-3549

16. Joseph & Lynnette Fries
    3446 Mountain Road
    Slatington, PA 18080-3550

17. Kathleen J Wanamaker
8951 Deerview Lane
Slatington, PA 18080-2559

18. Lehigh County
17 S 7th Street
Allentown, PA 18101-2401

19. Lehigh Gap Nature Center
PO Box 198
Slatington, PA 18080

20. Lehigh N E Dev Corp
PO Box 334
Albertson, NY 11507

21. Marlene A Lewis
1939 Mountain Road
Slatington, PA 18080-3541

22. Melissa Williams
8036 Rextown Road
Slatington, PA 18080-3464

23. Michael Kislow & Cara Cavall
162 30th Street
Northampton, PA 18067-1053

24. Michael R Novitsky
3271 Mountain Road
Slatington, PA 18080-3581

25. Northface Development LLC
1120 Mauch Chunk Road
Palmerton, PA 18071

26. PA Game Commission
Dept of General Services
505 N Office Building
Harrisburg, PA 17120-0109

27. Palmerton Municipal Authority
443 Delaware Avenue
Palmerton, PA 18071

28. Pennsylvania Lines LLC
C/O Norfolk Southern Railway Co
110 Franklin Road SE
Roanoke, VA 24042

29. Richard M Strayer
8808 PA Route 873
Slatington, PA 18080-3516

30. Slatington Borough
125 S Walnut Street
Slatington, PA 18080

31. Theodore F & Mildred C Oswald
2019 Mountain Road
Slatington, PA 18080-3541

32. National Park Service
Appalachian National Historic Trail
PO Box 50
Harpers Ferry, WV 25425

33. Zinc Corp of America
C/O Controller
300 Frankfort Road
Monaca, PA 15061

Siegfried – Hauto #1 & #4 138/69 kV Transmission Line[1]

1. Alan C Beck & Sally A Beck
   1093 Evergreen Drive
   Lehighton, PA 18235-3908

2. Allentown SMSA
   PO Box 2549
   Addison, TX 75001

3. Ben Horvath
   24 East Mountaintop Road
   Summit Hill, PA 18250-1709

4. Bennet E & Karen Black
   758 Evergreen Dr
   Lehighton, PA 18235-3900

5. BET Lehigh Real Estate LLC
   200 Dryden Rd Ste 2000
   Dresher, PA 19025-1048

6. Brian D & Kelly S Wanamaker
   3767 Mountain Rd
   Slatington, PA 18080-3579

7. Brittani K & Lavona A Schleicher
   459 Schleicher Ln
   Lehighton, PA 18235-4015

8. Cama Self Directed IRA
   10 Churchill Rd
   Elverson, PA 19520-9242

9. Carbon County
   Courthouse Annex
   Jim Thorpe, PA 18229

10. Carol L Mankos
    9040 N Loop Rd
    Slatington, PA 18080-3610

11. Corrine M Sims
    C/O Robert Evans
    3939 Mountain Rd
    Slatington, PA 18080-3670

12. Carbon County
    Courthouse Annex
    Jim Thorpe, PA 18229

13. Dale Bicking
    3693 Mountain View Dr
    Danielsville, PA 18038-9758

14. Darren J Moulthrop
    2354 Fairyland Rd
    Lehighton, PA 18235-8901

15. David F & Kathleen J Wanamaker
    8951 Deerview Ln
    Slatington, PA 18080-3559

16. David J & Nancy L Smith
    1157 Semmels Hill Rd
    Lehighton, PA 18235-9767

17. David Semmel
    108 Sonny Dr
    Warner Robins, GA 31093-1044

18. Donald L Lauchnor & George T Hough
    9033 N Loop Rd
    Slatington, PA 18080-3611

[1] South Slatington 138/69 kV Tap and Ashfield 69 kV Tap Transmission Lines are located entirely on property owned by PPL Electric.

19. Donald W Lahr Jr
9127 N Loop Rd
Slatington, PA 18080-3612

20. Duane A & Lavona A Schleicher
182 William Ln
Lehighton, PA 18235-4016

21. East Penn Township
167 Municipal Rd
Lehighton, PA 18235-3916

22. Edward J & Carolyn J Miller
569 Ben Salem Rd
Lehighton, PA 18235-3902

23. George & Linda Pekurny
432 Twin Hill Dr
Lehighton, PA 18235-9122

24. George A Bujnak
1274 Mill Rd
Lehighton, PA 18235-9502

25. Glenn C & Joan M Troutman
384 Ben Salem Rd
Lehighton, PA 18235-3903

26. Harry M & Catherine F Miller
265 Stock St
Nesquehoning, PA 18240-2316

27. Hauto Valley Estates
420 W Railroad St
Nesquehoning, PA 1824-1414

28. Hunzar LLC
4 Alpine Ln
Jim Thorpe, PA 18229-1740

29. Interchange Partners
167 Stock St
Nesquehoning, PA 18240-2241

30. Jeffrey E & Ann M Fogel
401 Germans Rd
Lehighton, PA 18235-4104

31. John & Brenda R Pekurny
411 Twin Hill Dr
Lehighton, PA 18235-9122

32. Jolene Marie & Michael Lee Kulp
9111 N Loop Rd
Slatington, PA 18080-3612

33. Kathryn Pauling
1482 State Rd
Coopersburg, PA 18036-9008

34. Keith J & Sally A Haas
9123 N Loop Rd
Slatington, PA 18080-3612

35. Keith West
9041 N Loop Rd
Slatington, PA 18080-3611

36. Kennard & Gloria Szacska
9111 N Loop Rd
Slatington, PA 18080-3612

37. Lake Hauto Club
140 Maple Terrace
Nesquehoning, PA 18240-2128

38. Lawrence A & Janice I Hoffman
243 Ashtown Dr
Lehighton, PA 18235-8758

39. Layne D Roberts & Michelle A Katsanos
558 Twin Hill Dr
Lehighton, PA 18235-9121

40. Leonard A & Lorraine G Shellhammer
860 Evergreen Dr
Lehighton, PA 18235-3907

41. Louisa Steele
668 Twin Hill Dr
Lehighton, PA 18235-9126

42. Lucinda A & Joseph P Sabol
141 Twin Hill Dr
Lehighton, PA 18235-9125

43. PA Fish & Boat Commission
1601 Elmerton Ave
Harrisburg, PA 17110

44. PA Game Commission
2001 Elmerton Ave
Harrisburg, PA 17110-9762

45. Refractory Sand Co Inc
PO Box 549
Tamaqua, PA 18252

46. Remarkable Fabrications LLC
10 Victoria Ln
Glen Cove, NY 11542-3133

47. Richard N Beltzner
1507 Mahoning Dr W
Lehighton, PA 18235-8855

48. Robert P & Judith M Zehnder
11 Municipal Rd
Lehighton, PA 18235-3916

49. Rodger & Elaine Diehl
1054 Municipal Rd
Lehighton, PA 18235-4319

50. Ryan T & Danielle Y Bertholf
271 Ben Salem Rd
Lehighton, PA 18235-3919

51. Sarah J & James Charles Oldt
1556 Mill Rd
Lehighton, PA 18235-9502

52. Stephen T Botek
435 W 119Th #7C
New York, NY 10027-7110

53. Steven D & Annette Hill
264 Mountain Top Dr
Lehighton, PA 18235-9233

54. Susann M Laverty
PO Box 96
Summit Hill, PA 18250

55. Thomas S & Carolyn R Albright
1415 W Linden St
Allentown, PA 18102-4226

56. Thomas S & Suzanne T McCready
PO Box 96
Summit Hill, PA 18250

57. Virginia M Andreas
1475 W Lizard Creek Rd
Lehighton, PA 1823-4112

58. William B Harris
289 Ridgeview Dr
Alburtis, PA 18011-9345

59. William J & Diane C Fister
9067 N Loop Rd
Slatington, PA 18080-3611

Attachment 6

ATTACHMENT 6

Siegfried – East Palmerton #1 and #2 138/69 kV, the Hauto – Siegfried #1 and #4 138/69 kV Transmission Lines, and Associated Tap Lines

LIST OF INVOLVED GOVERNMENTAL AGENCIES, MUNICIPALITIES AND OTHER PUBLIC ENTITIES RECEIVING APPLICATIONS

---

1. Pennsylvania State Historic Preservation Office
   Commonwealth Keystone Building
   400 North Street, 2nd Floor
   Harrisburg, PA 17120
   Attn: Douglas C. McLearen, Chief

2. Pennsylvania Department of Transportation
   Commonwealth Keystone Building
   400 North Street, 8th Floor
   Harrisburg, PA 17120
   Attn: Jason Sharp, Acting Chief Counsel

3. Pennsylvania Department of Environmental Protection
   PO Box 2063
   Market Street State Office Building
   Harrisburg, PA 17105
   Attn: Office of Field Operations

4. PA Department of Conservation and
   Natural Resources
   Rachel Carson State Office Building
   PO Box 8767
   400 Market Street
   Harrisburg, PA 17105-8767
   Attn: Rebecca Bowen, Section Chief

5. Pennsylvania Game Commission
   2001 Elmerton Avenue
   Harrisburg, PA 17110-9797
   Attn: Olivia Mowery

6. PA Fish and Boat Commission
   595 E. Rolling Ridge Drive
   Bellefonte, PA 16823-9620
   Attn: Christopher A. Urban

7. Pennsylvania Office of Consumer Advocate
555 Walnut Street
5th Floor Forum Place
Harrisburg, PA 17101-1923
Attn: Tanya J. McCloskey

8. Pennsylvania Office of Small Business Advocate
300 North Second Street – Suite 202
Harrisburg, PA 17101
Attn: John R. Evans

9. Pennsylvania Bureau of Enforcement and Investigation
Penn Center, 2601 N. 3rd Street
Harrisburg, PA 17110
Attn: Francis Peirce

10. U.S. Army Corps of Engineers
Philadelphia District
Regulatory Branch
Wanamaker Building, 100 Penn Square East
Philadelphia, PA 19107-3390
Attn: Planning Division

11. U.S. Fish and Wildlife Service
Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, PA 16801
Attn: Lesa Lindsay

12. National Park Service
Appalachian National Scenic Trail
P.O. Box 50
Harpers Ferry, WV 25425
Attn: Denise Nelson, Environmental Protection Specialist

13. Lehigh County Conservation District
Lehigh County Agricultural Center
4184 Dorney Park Road, Suite 105
Allentown, PA 18104
Attn: William McFadden. District Manager

14. Lehigh Valley Planning Commission
961 Marcon Boulevard, Suite 310
Allentown, PA 18109
Attn: Becky A. Bradley, AICP, Executive Director

14. Lehigh County Board of Commissioners
961 Marcon Boulevard, Suite 310

Lower Towamensing Township Board of Supervisors
Municipal Building
595 Hahns Dairy Road
Palmerton, PA 18071
Attn: Ronald A. Walbert, Chairman

Lower Towamensing Township
Municipal Building
595 Hahns Dairy Road
Palmerton, PA 18071
Attn: Christine Wentz, Secretary

Palmerton Borough Planning Commission
443 Delaware Avenue
Palmerton, PA 18071

Palmerton Borough Council
443 Delaware Avenue
Palmerton, PA 18071
Attn: Terry Costenbader, Council President

Palmerton Borough
443 Delaware Avenue
Palmerton, PA 18071
Attn: Rodger P. Danielson, Manager/Secretary

Nesquehoning Borough Planning Commission
114 W. Catawissa Street
Nesquehoning, PA 18240
Attn: Gerald Heffelfinger, Chairperson

Nesquehoning Borough Board of Council
114 W. Catawissa Street
Nesquehoning, PA 18240
Attn: Samuel Kitchko, Mayor

Nesquehoning Borough
114 W. Catawissa Street
Nesquehoning, PA 18240
Attn: RoniSue Ahner, Secretary/Treasurer

Summit Hill Borough Planning Commission
40 West Amidon Street, Suite 3
Summit Hill, PA 18250
Attn: Jodi McAndrew, President

Summit Hill Borough Board of Council
40 West Amidon Street, Suite 3
Summit Hill, PA 18250
Attn: Paul McArdle, Mayor

Summit Hill Borough
40 West Amidon Street, Suite 3
Summit Hill, PA 18250
Attn: Kira Steber, Secretary/Treasurer

Mahoning Township Planning Commission
2685 Mahoning Drive East
Lehighton, PA 18235
Attn: Robert Slaw, Jr., Chairman

Mahoning Township Board of Supervisors
2685 Mahoning Drive East
Lehighton, PA 18235
Attn: Franklin Ruch, Chairman

Mahoning Township
2685 Mahoning Drive East
Lehighton, PA 18235
Attn: Natalie D. Haggerty, Secretary/Treasurer

American Zinc Recycling Corp
C/O Gary Whitaker, General Counsel
4955 Steubenville Pike, Suite 405
Pittsburgh, PA 15025

Barry & Deborah Gabel
8723 Summit Circle
Slatington, PA 18080-3568

23. East Penn Township
167 Municipal Road
Lehighton, PA 18235
Attn: Jillyan A. Sterling, Township Secretary and Open Records Officer.

24. Lower Towamensing Township Planning Commission
Municipal Building
595 Hahns Dairy Road
Palmerton, PA 18071
Attn: Jyneal Kalmonka-Green, Chairperson

25. Lower Towamensing Township Board of Supervisors
Municipal Building
595 Hahns Dairy Road
Palmerton, PA 18071
Attn: Ronald A. Walbert, Chairman

26. Lower Towamensing Township
Municipal Building
595 Hahns Dairy Road
Palmerton, PA 18071
Attn: Christine Wentz, Secretary

27. Palmerton Borough Planning Commission
443 Delaware Avenue
Palmerton, PA 18071

28. Palmerton Borough Council
443 Delaware Avenue
Palmerton, PA 18071
Attn: Terry Costenbader, Council President

29. Palmerton Borough
443 Delaware Avenue
Palmerton, PA 18071
Attn: Rodger P. Danielson, Manager/Secretary

30. Nesquehoning Borough Planning Commission
114 W. Catawissa Street
Nesquehoning, PA 18240
Attn: Gerald Heffelfinger, Chairperson

31. Nesquehoning Borough Board of Council
114 W. Catawissa Street
Nesquehoning, PA 18240
Attn: Samuel Kitchko, Mayor

32. Nesquehoning Borough

114 W. Catawissa Street
Nesquehoning, PA 18240
Attn: RoniSue Ahner, Secretary/Treasurer

33. Summit Hill Borough Planning Commission
40 West Amidon Street, Suite 3
Summit Hill, PA 18250
Attn: Jodi McAndrew, President

34. Summit Hill Borough Board of Council
40 West Amidon Street, Suite 3
Summit Hill, PA 18250
Attn: Paul McArdle, Mayor

35. Summit Hill Borough
40 West Amidon Street, Suite 3
Summit Hill, PA 18250
Attn: Kira Steber, Secretary/Treasurer

36. Mahoning Township Planning Commission
2685 Mahoning Drive East
Lehighton, PA 18235
Attn: Robert Slaw, Jr., Chairman

37. Mahoning Township Board of Supervisors
2685 Mahoning Drive East
Lehighton, PA 18235
Attn: Franklin Ruch, Chairman

38. Mahoning Township
2685 Mahoning Drive East
Lehighton, PA 18235
Attn: Natalie D. Haggerty, Secretary/Treasurer

VERIFICATION

I, DAVID A. QUIER, being the Director of Asset Management at PPL Electric Utilities Corporation, hereby state that the facts above set forth are true and correct to the best of my knowledge, information and belief and that I expect PPL Electric Utilities Corporation to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 relating to unsworn falsification to authorities.

Date: 4/9/19

David A. Quier

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing has been served upon the following persons, in the manner indicated, in accordance with the requirements of 52 Pa. Code § 1.54 (relating to service by a participant).

VIA CERTIFIED MAIL, RETURN RECEIPT REQUESTED

Pennsylvania State Historic Preservation Office
Commonwealth Keystone Building
400 North Street, 2nd Floor
Harrisburg, PA 17120
Attn: Douglas C. McLearen, Chief

Pennsylvania Department of Transportation
Commonwealth Keystone Building
400 North Street, 8th Floor
Harrisburg, PA 17120
Attn: Jason Sharp, Acting Chief Counsel

Pennsylvania Department of Environmental Protection
PO Box 2063
Market Street State Office Building
Harrisburg, PA 17105
Attn: Office of Field Operations

PA Department of Conservation and Natural Resources
Rachel Carson State Office Building
PO Box 8767
400 Market Street
Harrisburg, PA 17105-8767
Attn: Rebecca Bowen, Section Chief

Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, PA 17110-9797
Attn: Olivia Mowery

U.S. Army Corps of Engineers
Philadelphia District
Regulatory Branch
Wanamaker Building, 100 Penn Square East
Philadelphia, PA 19107-3390
Attn: Planning Division

U.S. Fish and Wildlife Service
Pennsylvania Field Office
110 Radnor Road, Suite 101
State College, PA 16801
Attn: Lesa Lindsay

National Park Service
Appalachian National Scenic Trail
P.O. Box 50
Harpers Ferry, WV 25425
Attn: Denise Nelson, Environmental Protection Specialist

Lehigh County Conservation District
Lehigh County Agricultural Center
4184 Dorney Park Road, Suite 105
Allentown, PA 18104
Attn: William McFadden. District Manager

Lehigh Valley Planning Commission
961 Marcon Boulevard, Suite 310
Allentown, PA 18109
Attn: Becky A. Bradley, AICP, Executive Director

Pennsylvania Office of Consumer Advocate
555 Walnut Street
5th Floor Forum Place
Harrisburg, PA 17101-1923
Attn: Tanya J. McCloskey

Pennsylvania Office of Small Business Advocate
300 North Second Street – Suite 202
Harrisburg, PA 17101
Attn: John R. Evans

Pennsylvania Bureau of Enforcement and Investigation
Penn Center, 2601 N. 3rd Street
Harrisburg, PA 17110
Attn: Francis Peirce

Washington Township Board of Supervisors
7951 Center Street
Emerald, PA 18080
Attn: C. Josh B. Friebolin, Chairman

Carbon County Conservation District
5664 Interchange Road
Lehighton, PA 18235
Attn: Chris Storm, District Manager

Carbon County Planning Department
P.O. Box 210
Jim Thorpe, PA 18229-0210
Attn: David Bodnar, Director

East Penn Township Board of Supervisors
167 Municipal Road
Lehighton, PA 18235
Attn: William G. Schwab, Chairman

East Penn Township
167 Municipal Road
Lehighton, PA 18235
Attn: Jillyan A. Sterling, Township Secretary and Open Records Officer

Lehigh County Board of Commissioners
961 Marcon Boulevard, Suite 310
Allentown, PA 18109
Attn: Liesel Dreisbach, Chair

Lehigh County Planning Department
961 Marcon Boulevard, Suite 310
Allentown, PA 18109
Attn: Becky A. Bradley, AICP, Executive Director

Washington Township Planning Commission
7951 Center Street
Emerald, PA 18080
Attn: Erin Stenger-Guth, Secretary/Treasurer

Washington Township
7951 Center Street
Emerald, PA 18080
Attn: Todd Weidman, Manager/Zoning Officer

Carbon County Board of Commissioners
P.O. Box 129
Jim Thorpe, PA 18229
Attn: Wayne E. Nothstein, Chairman

PA Fish and Boat Commission
595 E. Rolling Ridge Drive
Bellefonte, PA 16823-9620
Attn: Christopher A. Urban

East Penn Township Planning Commission
167 Municipal Road
Lehighton, PA 18235
Attn: Gary Kuehner, Chairman

Lower Towamensing Township Planning Commission
Municipal Building
595 Hahns Dairy Road
Palmerton, PA 18071
Attn: Jyneal Kalmonka-Green, Chairperson

Lower Towamensing Township Board of Supervisors
Municipal Building
595 Hahns Dairy Road
Palmerton, PA 18071
Attn: Ronald A. Walbert, Chairman

Lower Towamensing Township
Municipal Building
595 Hahns Dairy Road
Palmerton, PA 18071
Attn: Christine Wentz, Secretary

Palmerton Borough Planning Commission
443 Delaware Avenue
Palmerton, PA 18071

Palmerton Borough Council
443 Delaware Avenue
Palmerton, PA 18071
Attn: Terry Costenbader, Council President

Palmerton Borough
443 Delaware Avenue
Palmerton, PA 18071
Attn: Rodger P. Danielson, Manager/Secretary

Nesquehoning Borough Planning Commission
114 W. Catawissa Street
Nesquehoning, PA 18240
Attn: Gerald Heffelfinger, Chairperson

Nesquehoning Borough Board of Council
114 W. Catawissa Street
Nesquehoning, PA 18240
Attn: Samuel Kitchko, Mayor

Nesquehoning Borough
114 W. Catawissa Street
Nesquehoning, PA 18240
Attn: RoniSue Ahner, Secretary/Treasurer

Summit Hill Borough Planning Commission
40 West Amidon Street, Suite 3
Summit Hill, PA 18250
Attn: Jodi McAndrew, President

Summit Hill Borough Board of Council
40 West Amidon Street, Suite 3
Summit Hill, PA 18250
Attn: Paul McArdle, Mayor

Summit Hill Borough
40 West Amidon Street, Suite 3
Summit Hill, PA 18250
Attn: Kira Steber, Secretary/Treasurer

Mahoning Township Planning Commission
2685 Mahoning Drive East
Lehighton, PA 18235
Attn: Robert Slaw, Jr., Chairman

Mahoning Township Board of Supervisors
2685 Mahoning Drive East
Lehighton, PA 18235
Attn: Franklin Ruch, Chairman

Mahoning Township
2685 Mahoning Drive East
Lehighton, PA 18235
Attn: Natalie D. Haggerty, Secretary/Treasurer

American Zinc Recycling Corp
C/O Gary Whitaker, General Counsel
4955 Steubenville Pike, Suite 405
Pittsburgh, PA 15025

Barry & Deborah Gabel
8723 Summit Circle
Slatington, PA 18080-3568

Board of Supervisors
Lower Towamensing Township
RD 2 Box 211A
Palmerton, PA 18071

Brenda A Rhodes
2059 Mountain Road
Slatington, PA 18080-3541

Carl R & Arline M Madtes
3273 Mountain Road
Slatington, PA 18080-3581

Charles E III & Jody M Hinkle
3269 Mountain Road
Slatington, PA 18080-3581

Chastity Corvino & Shaun Frano
4961 Mountain Road
Slatington, PA 18080-4337

Dennis R & Donna F Scholtis
PO Box 369
Laurys Station, PA 18059

East Penn Township
167 Municipal Road
Lehighton, PA 18235

Erich R & Linda L Klein
2649 Mountain Road
Slatington, PA 18080-3547

Hailer & Miriam M Strohl
8832 PA Route 873
Slatington, PA 18080-3516

Horsehead Corp
4955 Steubenville Pike, Suite 405
Pittsburgh, PA 15205

John & Dixie Gross
4140 Hilldale Road
Slatington, PA 18080-3733

John Bailey & Jennifer Hamersly
8739 Summit Circle
Slatington, PA 18080-3568

John R & Joanne M Teman
3037 Mountain Road
Slatington, PA 18080-3549

Joseph & Lynnette Fries
3446 Mountain Road
Slatington, PA 18080-3550

Kathleen J Wanamaker
8951 Deerview Lane
Slatington, PA 18080-2559

Lehigh County
17 S 7th Street
Allentown, PA 18101-2401

Lehigh Gap Nature Center
PO Box 198
Slatington, PA 18080

Lehigh N E Dev Corp
PO Box 334
Albertson, NY 11507

Marlene A Lewis
1939 Mountain Road
Slatington, PA 18080-3541

Melissa Williams
8036 Rextown Road
Slatington, PA 18080-3464

Michael Kislow & Cara Cavall
162 30th Street
Northampton, PA 18067-1053

Michael R Novitsky
3271 Mountain Road
Slatington, PA 18080-3581

Northface Development LLC
1120 Mauch Chunk Road
Palmerton, PA 18071

Palmerton Municipal Authority
443 Delaware Avenue
Palmerton, PA 18071

Richard M Strayer
8808 PA Route 873
Slatington, PA 18080-3516

Theodore F & Mildred C Oswald
2019 Mountain Road
Slatington, PA 18080-3541

Zinc Corp of America
C/O Controller
300 Frankfort Road
Monaca, PA 15061

Alan C Beck & Sally A Beck
1093 Evergreen Drive
Lehighton, PA 18235-3908

Ben Horvath
24 East Mountaintop Road
Summit Hill, PA 18250-1709

BET Lehigh Real Estate LLC
200 Dryden Rd Ste 2000
Dresher, PA 19025-1048

Brittani K & Lavona A Schleicher
459 Schleicher Ln
Lehighton, PA 18235-4015

Carbon County
Courthouse Annex
Jim Thorpe, PA 18229

PA Game Commission
Dept of General Services
505 N Office Building
Harrisburg, PA 17120-0109

Pennsylvania Lines LLC
C/O Norfolk Southern Railway Co
110 Franklin Road SE
Roanoke, VA 24042

Slatington Borough
125 S Walnut Street
Slatington, PA 18080

National Park Service
Appalachian National Historic Trail
PO Box 50
Harpers Ferry, WV 25425

William J & Diane C Fister
9067 N Loop Rd
Slatington, PA 18080-3611

Allentown SMSA
PO Box 2549
Addison, TX 75001

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758 Evergreen Dr
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Elverson, PA 19520-9242

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C/O Robert Evans
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Warner Robins, GA 31093-1044

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East Penn Township
167 Municipal Rd
Lehighton, PA 18235-3916

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432 Twin Hill Dr
Lehighton, PA 18235-9122

Glenn C & Joan M Troutman
384 Ben Salem Rd
Lehighton, PA 18235-3903

Hauto Valley Estates
420 W Railroad St
Nesquehoning, PA 1824-1414

Interchange Partners
167 Stock St
Nesquehoning, PA 18240-2241

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411 Twin Hill Dr
Lehighton, PA 18235-9122

Carbon County
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Lehighton, PA 18235-9767

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9033 N Loop Rd
Slatington, PA 18080-3611

Duane A & Lavona A Schleicher
182 William Ln
Lehighton, PA 18235-4016

Edward J & Carolyn J Miller
569 Ben Salem Rd
Lehighton, PA 18235-3902

George A Bujnak
1274 Mill Rd
Lehighton, PA 18235-9502

Harry M & Catherine F Miller
265 Stock St
Nesquehoning, PA 18240-2316

Hunzar LLC
4 Alpine Ln
Jim Thorpe, PA 18229-1740

Jeffrey E & Ann M Fogel
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Lehighton, PA 18235-4104

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9111 N Loop Rd
Slatington, PA 18080-3612

Kathryn Pauling
1482 State Rd
Coopersburg, PA 18036-9008

Keith West
9041 N Loop Rd
Slatington, PA 18080-3611

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140 Maple Terrace
Nesquehoning, PA 18240-2128

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558 Twin Hill Dr
Lehighton, PA 18235-9121

Louisa Steele
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PA Fish & Boat Commission
1601 Elmerton Ave
Harrisburg, PA 17110

Refractory Sand Co Inc
PO Box 549
Tamaqua, PA 18252

Richard N Beltzner
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Lehighton, PA 18235-8855

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Lehighton, PA 18235-4319

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Lehighton, PA 18235-9233

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Lehighton, PA 18235-3907

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141 Twin Hill Dr
Lehighton, PA 18235-9125

PA Game Commission
2001 Elmerton Ave
Harrisburg, PA 17110-9762

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10 Victoria Ln
Glen Cove, NY 11542-3133

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William B Harris
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Alburtis, PA 18011-9345

Date: April 10, 2019

Jessica R. Rogers