

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

RE: LETTER OF NOTIFICATION OF PPL ELECTRIC UTILITIES CORPORATION FILED PURSUANT TO 52 PA. CODE CHAPTER 57, SUBCHAPTER G, WITH RESPECT TO THE PROPOSED WEST HEMPFIELD-McGOVERNVILLE #1 AND #2 138/69 kV TIE LINE TO BE CONSTRUCTED IN EAST HEMPFIELD TOWNSHIP, LANCASTER COUNTY

Docket No. A-110500 F0333

DOCUMENT

APPLICATION OF PPL ELECTRIC UTILITIES CORPORATION UNDER 15 PA. C.S. §1511(C) FOR A FINDING AND DETERMINATION THAT THE SERVICE TO BE FURNISHED BY THE APPLICANT THROUGH ITS PROPOSED EXERCISE OF THE POWER OF EMINENT DOMAIN TO ACQUIRE RIGHT-OF-WAY FOR THE CONSTRUCTION, OPERATION AND MAINTENANCE OF THE PROPOSED WEST HEMPFIELD-MCGOVERNVILLE #1 AND #2 138/69 KV TIE LINE OVER AND ACROSS THE LANDS OF EAST HEMPFIELD TOWNSHIP IN EAST HEMPFIELD TOWNSHIP, LANCASTER COUNTY, IS NECESSARY OR PROPER FOR THE SERVICE, ACCOMMODATION, CONVENIENCE OR SAFETY OF THE PUBLIC

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DOCKETED

SEP 30 2004

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Docket No. A-110500 F0344

DIRECT TESTIMONY
OF GOPI R. KEDIA

ON BEHALF OF PPL ELECTRIC UTILITIES CORPORATION

PPL STATEMENT NO. 1

2/1/04
Hbg JK

Dated: September 1, 2004

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PPL ELECTRIC UTILITIES CORPORATION

DIRECT TESTIMONY OF GOPI R. KEDIA

1 **Q. Please state your full name and business address.**

2 A. My name is Gopi R. Kedia, and my business address is Two North Ninth Street, Allentown,
3 Pennsylvania, 18101.

4 **Q. By whom are you employed and in what capacity?**

5 A. I am employed by PPL Electric Utilities Corporation (“PPL” or the “Company”) as a Senior
6 Engineer..

7 **Q. What is your educational background?**

8 A. I received a Master of Science degree in Electrical Engineering from Lehigh University in
9 1981. Prior to that I received a Bachelor of Science degree in Electrical Engineering from
10 BIT, Ranchi, India, in 1969.

11 **Q Do you hold any professional licenses?**

12 A. I have been a licensed Professional Engineer in the Commonwealth of Pennsylvania since
13 August 16, 1982 (# PE-031897E).

14 **Q. Are you a member of any professional organizations?**

15 A. Yes, I am a member of the Institute of Electrical and Electronics Engineers, Inc. (“IEEE”).

16 **Q. Please describe your background and employment history with PPL.**

17 A. I have been in my current position since 1998. In this position, I am responsible for the
18 planning of PPL’s transmission system for transmission lines 69 kV and greater. Prior to
19 1998, and since I began my employment with PPL, I have held several positions of increasing
20 responsibilities within the Company, as follows:

21 1977 – 1978 Engineer II in Relay and Control Engineering

1 1978 – 1983 Project Engineer in Relay and Control Engineering
2 1984 – 1987 Project Engineer in the Substation Engineering Standard's Section
3 1987 – 1997 Senior Engineer in Substation Engineering

4 **Q. What is the purpose of your testimony?**

5 A. The purpose of my testimony is to describe: (1) the regional transmission planning process;
6 (2) the existing regional transmission supply system in the project area; (3) the problems
7 associated with the existing system; and (4) the proposed solution for those problems.

8 **Q. For what portions of PPL Exhibit No. 1 are you the responsible witness?**

9 A. PPL Exhibit No. 1 consists of the exhibits and appendices (contained in a ring binder) that
10 were filed with, and in support of, PPL's Letter of Notification to the Commission at Docket
11 No. A-110500 F0333. I am responsible for the Necessity Statement, which is identified as
12 Exhibit "A" within PPL Exhibit No. 1. The Necessity Statement sets forth the reasons why
13 the transmission system in northwestern Lancaster County must be reinforced; explains the
14 functional alternatives that were considered; and describes the factors that led to the
15 conclusion that the proposed West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line
16 is the best alternative for the addressing the problem that currently exists.

17 **Q. Briefly summarize the findings and conclusions set forth in the Necessity Statement.**

18 A. The proposed West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line will create a
19 high capacity transmission link, via the Kellogg Tap Lines, between PPL's South Manheim-
20 South Akron #1 and #2 138/69 kV Transmission Lines and PPL's West Hempfield-Donnegal
21 138/69 kV and West Hempfield-South Manheim #3 138/69 kV Transmission Lines. Creating
22 this transmission link will alleviate potential overloading of the South Manheim-South Akron
23 #1 and #2 138/69 kV Transmission Lines under projected summer peak conditions in the

1 event of a single contingency outage of either of the South Manheim-South Akron circuits.
2 (Both the existing transmission lines and the proposed West Hempfield-McGovernville Tie
3 Line are shown in Figures 1 and 2 in Exhibit "A" of PPL Exhibit No. 1.) The inability to
4 survive a single contingency outage would constitute a violation of PPL's applicable
5 reliability criteria. The construction of the West Hempfield-McGovernville Tie Line will
6 provide the additional transmission capacity to eliminate this potential overloading.

7 **Q. Please describe the goals and purposes of the regional system planning process.**

8 A. The planning process assures that the regional power transmission system can supply
9 electricity to all customer load in a reliable, economic and environmentally acceptable
10 manner. The process is designed to assure that the regional power transmission system can
11 sustain probable contingencies and disturbances without a loss of load; adequately serve each
12 customer's needs with regard to capacity, voltage and reliability; and conform to PPL's
13 reliability principles and practices.

14 To meet the goals of the system planning process, the capacity of the regional power
15 transmission system must be expanded from time to time. In developing and implementing
16 capacity expansions, a proper balance must be maintained between service reliability and the
17 cost of providing service. In addition, the societal cost of large-scale, long-term, or frequent
18 interruptions of electrical service – and, in particular, the potential for such interruptions to
19 create hazards to the public – must also be recognized and considered.

20 Applying the principles outlined above, the regional transmission system is planned so
21 that (1) normal operation will not load any facility beyond its normal continuous rating; and
22 (2) the loss of facilities (within a set of likely scenarios detailed in the Necessity Statement)
23 will not cause the facilities remaining in operation to exceed their emergency ratings.

1 **Q. Please explain how the regional planning process is performed?**

2 A. The planning process begins with extensive computer modeling of the system as it is actually
3 constituted and with specific future modifications that are expected to be in service during the
4 prospective study horizon. When the model is complete, power flow simulations are
5 performed to determine the ability of the system to comply with PPL's reliability criteria.
6 This is done by simulating an outage of each regional transmission and bulk power facility.
7 Through this process, all conditions under which the system would not comply with PPL's
8 applicable reliability criteria are identified; the kinds of system reinforcements needed to
9 assure compliance are determined; and the lead-time to implement those changes is
10 calculated.

11 **Q. What are the existing regional transmission facilities in northwestern Lancaster County**
12 **that are relevant to this project?**

13 A. The relevant facilities are depicted in Figure 1 of the Necessity Statement, and are described
14 in Section III of the Necessity Statement. The immediate area of concern is how to alleviate
15 overloading, at summer peak conditions, that would occur in the event of a single contingency
16 outage of either the South Manheim-South Akron #1 or #2 138/69 kV Lines. The ratings of
17 these lines and their loadings, both with and without the load transfer capability that this
18 project provides, are shown in Table 1 of the Necessity Statement. The Necessity Statement
19 (p. 6) also describes three other overloading conditions and associated low voltage problems
20 that would be resolved by this project

21 **Q. What functional alternatives did the Company examine to resolve the problems defined**
22 **above?**

1 A. PPL identified and analyzed five alternatives for providing the needed load transfer capability
2 to its system in the project area. Each alternative was developed based on its ability to
3 eliminate the single contingency overload of one circuit of the South Manheim-South Akron
4 #1 and #2 138/69 kV Lines if the other circuit were lost and, thereby, ensure that customer
5 load in the area could be supplied in accordance with PPL's applicable reliability criteria in a
6 long-range, economic and environmentally acceptable manner. All five alternatives are
7 described in the Necessity Statement (pp. 7-11), along with their respective advantages and
8 disadvantages.

9 **Q. What alternative was chosen?**

10 A. After careful review, it was determined that the best alternative was to construct the proposed
11 West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line, which will run a distance of
12 approximately 1.8 miles to supply the McGovernville and Kellogg 69-12 kV Substations from
13 the West Hempfield 230-69 kV Substation. The new line would be operated at 69 kV until
14 load growth required its conversion to 138 kV operation.

15 **Q. Why was this alternative chosen over the others?**

16 A. The construction of the West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line
17 resolves the capacity problem identified above by relieving the overloading on the South
18 Manheim – South Akron #1 and #2 69 kV Lines and, thereby, facilitating the transfer of
19 approximately 32 MVA of load to the West Hempfield 230-69 kV Substation. It also creates
20 a high capacity link between the West Hempfield and South Manheim Substations that
21 provides needed transfer capability in the event the power transformers at either substation
22 were lost for any reason. In addition, the West Hempfield-McGovernville Tie Line will
23 contribute to the long-term development of PPL's 138/69 kV regional transmission supply

1 system and will facilitate the future conversion of the regional supply system to 138 kV
2 operation, as increases in load will demand. The West Hempfield-McGovernville Tie Line is
3 more economical than the other alternatives because it requires only 1.8 miles of new
4 *transmission line and minimizes right-of-way acquisition by paralleling existing highway and*
5 *railroad right-of-way.* In addition, no extensive transmission line outages will be required to
6 build the line and, therefore, reliable electric service can be maintained to customers during
7 the construction of this project.

8 **Q. Please summarize your conclusions regarding the need for the West Hempfield-**
9 **McGovernville #1 and #2 138/69 kV Tie Line.**

10 A. The West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line is needed to alleviate
11 summer overload conditions on one of the South Manheim – South Akron #1 and #2 69 kV
12 Lines in the event of a single contingency outage of either circuit. The load transfer capability
13 that the project will provide is necessary to comply with PPL's applicable reliability criteria,
14 as explained above. The Company conducted a detailed study of functional alternatives to
15 address capacity expansion needs before selecting the West Hempfield-McGovernville Tie
16 Line as the best alternative, as fully explained in the Necessity Statement.

17 **Q. Does this conclude your direct testimony at this time?**

18 A. Yes, it does.

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Docket No. A-110500 F0344

DIRECT TESTIMONY
OF KENNETH B. KUHNS

ON BEHALF OF PPL ELECTRIC UTILITIES CORPORATION

PPL STATEMENT NO. 2

9/1/04 Hbg rx

Dated: September 1, 2004

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PPL ELECTRIC UTILITIES CORPORATION

DIRECT TESTIMONY OF KENNETH B. KUHN

1 **Q. Please state your full name and business address.**

2 A. My name is Kenneth B. Kuhns, and my business address is Two North Ninth Street,
3 Allentown, Pennsylvania, 18101.

4 **Q. By whom are you employed and in what capacity?**

5 A. I am employed by PPL Electric Utilities Corporation (“PPL” or the “Company”) as the Siting
6 Supervisor in the Transmission and Distribution Engineering Section.

7 **Q. What is your educational background?**

8 A. I received an Associate Degree in Computer Science from the Lehigh County Community
9 College in 1970. My additional continuing education relevant to my current position included
10 the following courses and programs:

- 11 • Decision and Risk Analysis – Stanford Research Institute (1982)
- 12 • EMF Measurement – Electric Power Research Institute (1990)
- 13 • Transmission Line Routing – Burns & McDonnell (1994)
- 14 • Wetlands Identification and Delineation – Pennsylvania State University (1995)
- 15 • Identification of Grasses, Sedges and Rushes – Pennsylvania State University (1996)

16 **Q. Please describe your background and employment history with PPL.**

17 A. I have been employed by PPL for 34 years. I have been in my current position, as a Siting
18 Supervisor, since March 2004. In this position, I supervise the activities of Siting
19 Coordinators and consultants in the siting of high voltage electric facilities. In addition to my
20 supervisory responsibilities, I also act as a Siting Coordinator. I have been fulfilling the
21 responsibilities of a Siting Coordinator in the Transmission and Distribution Engineering

1 Group, since 1991. In this position, I direct the activities of the siting team. Additionally, I
2 am responsible for managing the environmental permitting process for electrical facilities, and
3 I serve as the corporate liaison with the Pennsylvania Historical and Museum Commission.

4 From 1990 to 1991, I was given a special assignment in the Bulk Power Engineering
5 Department for the design and implementation of PPL's Magnetic Field Measurement
6 Program. In addition to conducting actual field measurements and participating in several
7 line siting cases, I gave presentations on magnetic fields to a variety of associations,
8 institutions and organizations. I also served as the Company's representative for the Electric
9 Power Research Institute's National Residential Magnetic Field Study.

10 From 1980 to 1991, I held the title of Systems Analyst in the Bulk
11 Power Engineering Department. In this position I designed, developed and implemented
12 management information systems dealing with work scheduling, manpower planning,
13 performance measurements and trends. I also designed and programmed PC-based data entry
14 systems for cataloguing input and output point data for substation Alarm Management
15 Systems.

16 From 1979 to 1980, I was a Fuel Project Administrator in the Fuels Department. I
17 performed cost/benefit analyses and economic evaluations relating to fuel purchasing and
18 transportation options. I also assisted in fuel contract negotiations.

19 From 1976 to 1979, I was the Coordinator – Fuel and Mining Statistics in the Fuels
20 Department. In this position I was responsible for analyzing Company and industry data on
21 fossil fuel costs, quality, production and consumption. I was also responsible for developing
22 economic and qualitative evaluations of PPL's fuel supplies and the general fuel market.

1 From 1970, when I began my employment with PPL, to 1976, I held various positions
2 of increasing responsibility within the Financial and Engineering Departments of the
3 Company.

4 **Q. Have you participated in other transmission line siting projects for PPL?**

5 A. Yes. I have worked on over twenty projects involving transmission lines greater than 100 kV
6 that have been certified under the Commission's siting regulations at 52 Pa. Code, Chapter 57,
7 Subchapter G.

8 **Q. What is the purpose of your testimony?**

9 A. The purpose of my testimony is to describe the process PPL used to site the proposed West
10 Hempfield-McGovernville #1 and #2 138/69 kV Tie Line. More specifically, I will describe
11 the area designated for detailed study; the inventory the Company conducted of significant
12 features and environmental factors; the alternative route identified for comparative analysis;
13 and the reasons why the preferred route for the West Hempfield-McGovernville #1 and #2
14 138/69 kV Tie Line properly balances functional requirements, environmental factors and
15 cost considerations.

16 **Q. Please identify the exhibits that you are sponsoring.**

17 A. I am sponsoring portions of PPL Exhibit No. 1 and PPL Exhibit No. 2. PPL Exhibit No. 1
18 consists of the exhibits and appendices (contained in a ring binder) that were filed with, and in
19 support of, PPL's Letter of Notification to the Commission at Docket No. A-110500 F0333. I
20 am responsible for the Core Area Environmental Inventory and the Siting Analysis, which are
21 identified as Exhibits "B" and "C," respectively, in PPL Exhibit No. 1. I am also the
22 responsible witness for the Summary and Appendices A through E, G and H of PPL Exhibit
23 No. 1. PPL Exhibit No. 2 consists of eight photographs and a two-page aerial photograph

1 identifying the locations from which each photograph was taken. I will discuss and explain
2 the photographs at a later point in my testimony.

3 **Q. Briefly summarize the process PPL employs to site new or replacement transmission**
4 **lines.**

5 A. First, a "Core Area" is delineated. The Core Area is defined by the supply and destination
6 service points and the natural and man-made boundaries beyond which no reasonable
7 alternative line routes exist. This area is designated for detailed study. The project Study
8 Area extends two miles beyond the Core Area's boundary and is used to map significant
9 archeological resources, historic sites and unique environmental features, as explained in PPL
10 Exhibit No. 1 (Exhibit "B," pp. 2-3).

11 Next, the Company conducts a detailed environmental inventory of the entire Core
12 Area as well as an inventory of other significant features of the Core Area and Study Area to
13 identify factors relevant to siting high tension transmission lines, as explained in PPL Exhibit
14 No. 1 (Exhibit "B," pp. 3-24). The Environmental Inventory Guidelines used to prepare the
15 environmental inventory are contained in Appendix A of PPL Exhibit No. 1. The guidelines
16 list each major and subsidiary environmental factor studied and explain why those factors are
17 part of the environmental inventory (i.e., how each factor would affect, or be affected by, the
18 construction of an overhead transmission line). The inventory data are analyzed and
19 impediments to transmission line construction are identified. This information is then used to
20 select paths that avoid or minimize encounters with these constraints.

21 From these studies, alternative routes for the proposed line are plotted and analyzed
22 quantitatively and qualitatively to select the route that achieves an appropriate balance of
23 relevant functional, environmental and cost factors.

1 **Q. Describe the Core Area for the West Hempfield-McGovernville #1 and #2 138/69 kV Tie**
2 **Line.**

3 A. The eastern and western boundaries are dictated by the functional requirement of locating and
4 constructing the West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line between the
5 West Hempfield-Donegal/West Hempfield-South Manheim #3 Lines and the South
6 Mainheim-South Akron #1 and #2 Transmission Lines (via the Kellogg #1 and #2 Tap Lines),
7 as described in PPL Statement No. 1, the direct testimony of Gopi R. Kedia, and as depicted
8 on Figures 1 and 2 in Exhibit "A" of PPL Exhibit No. 1. The northern and southern
9 boundaries are parallel to, and equidistant from, State Highway 283 and two railroad tracks
10 owned by Amtrak.¹ Specifically, the northern and southern boundaries of the Core Area are
11 approximately three-quarters of a mile on either side of this transportation corridor, as
12 depicted in Map 1 of Exhibit "B" of PPL Exhibit No. 1. The Core Area is approximately 2.5
13 miles long, 1.6 miles wide and encompasses approximately 4.25 square miles in total land
14 area.

15 **Q. Please describe the environmental inventory of the Core Area that PPL conducted.**

16 A. PPL conducted a detailed environmental inventory of the Core Area to identify and locate
17 environmental factors that should be considered when evaluating and selecting transmission
18 line routes, which include:

- 19 • Linear features, such as existing electric transmission lines, roads and highways,
20 railroads and pipelines (Exhibit "B," pp. 4-6 and Map 1).
- 21 • Existing and proposed land use (Exhibit "B," pp. 7-11 and Map 2).

¹ State Highway 283 is a four-lane, limited access freeway that provides a high-speed link between the cities of Lancaster and Harrisburg. The Amtrak railroad tracks run along the south side of State Highway 283. A complete description of the Amtrak tracks and associated railroad spurs within the Core Area is provided in Exhibit "B" (pp. 6-7). State Highway 283 and the railroad tracks can be seen on the aerial photograph provided in the map pocket of Exhibit "C" of PPL Exhibit No. 1.

- 1 • Municipal zoning (Exhibit “B,” pp. 11-13 and Map 3).
- 2 • Geology, soils and floodplains (Exhibit “B,” pp. 13-15 and Map 4).
- 3 • Slopes, grades and natural features (vegetation, wetlands, streams, wildlife and
- 4 wildlife habitat and endangered and threatened species of flora and fauna) (Exhibit
- 5 “B,” pp. 15-21 and Map 5).
- 6 • Farmland preservation areas (farmland within agricultural preservation areas)
- 7 (Exhibit “B,” pp. 21-22 and Map 6).
- 8 • Cultural and other unique features, such as schools, churches, parks, natural and
- 9 recreational areas, historic sites and archeological sites (Exhibit “B,” pp. 22-24 and
- 10 Map 7).

11 **Q. What are the predominant land uses and zoning in the Core Area?**

12 A. Agriculture is the predominant land use in the Core Area. Agricultural uses within this area
13 include corn fields, soybean fields, hay/straw fields, grazing pasture, sod farms and evergreen
14 tree farms. Many of these farms form large contiguous areas of open land, which dominate
15 the area north of State Highway 283. The highway serves as a man-made barrier between
16 contrasting land uses. The area south of State Highway 283 includes the villages of
17 Landisville, part of the village of Salunga and many outlying neighborhoods and subdivisions,
18 as shown on Maps 2 and 3 in Exhibit “B.”

19 **Q. How was the information from the environmental inventory used in the siting analysis?**

20 A. Information gathered from the environmental inventory was recorded on a series of maps
21 (Maps 1-7 in Exhibit “B”). Referencing the Environmental Inventory Guidelines (Appendix
22 A), the constraints and opportunities for transmission line construction were identified and
23 plotted. Line route alternatives were selected to try to minimize impacts on the constraints
24 while meeting the functional and economic goals of the project.

25 **Q. Did PPL consult with governmental officials as part of its siting analysis?**

1 A. Consultation with government officials in the Core Area was an important part of PPL's siting
2 analysis. The project was reviewed with municipal and state officials and agencies. This
3 information was used, in conjunction with the environmental inventory, to identify
4 "constraints," i.e., areas that should be avoided, if possible. For example, East Hempfield
5 Township expressed considerable concern that the proposed line should avoid the historic
6 Amos Herr House, as explained at pages 6-7 of Exhibit "C." (The location of the Amos Herr
7 House is depicted on Map 7 in Exhibit "B.")

8 **Q. Did PPL identify alternative line routes for study?**

9 A. Yes. Using the mapping and analysis procedure described above, PPL identified two line
10 routes to try to take advantage of existing linear features and minimize land use "constraints"
11 to the extent possible. Both alternatives were developed to achieve the functional goal of
12 creating a high capacity transmission link between PPL's South Manheim-South Akron #1
13 and #2 138/69 kV Transmission Lines (via the Kellogg Tap Lines) and PPL's West
14 Hempfield-Donnegal 138/69 kV and West Hempfield-South Manheim #3 138/69 kV
15 Transmission Lines, as described in PPL Statement No. 1.

16 **Alternative 1** is the line route ultimately selected by PPL as its preferred route. It is
17 depicted on the large aerial photograph provided in the map pocket of Exhibit "C" of PPL
18 Exhibit No. 1. It is helpful to use the aerial photograph to visualize the verbal description of
19 the line route that follows. The route begins at the West Hempfield-Donnegal/West
20 Hempfield-South Manheim #3 138/69 kV Transmission Lines approximately 1,650 feet west
21 of Landisville Road. The point of connection lies between State Highway 283 and the
22 Amtrak railroad corridor. (For reference, this point is in the upper left-hand side of the aerial

1 photograph.) The proposed route heads northeast and crosses to the north side of State
2 Highway 283 approximately 315 feet from that connection point.

3 After crossing to the north side of State Highway 283, the line heads southeast,
4 parallel to State Highway 283, a distance of approximately 1.1 miles. The majority of this
5 line route section occupies farmland. A portion of the line crosses property of the former
6 Armstrong World Industries.

7 The last section of the line, approximately 2,890 feet in length, also heads southeast
8 and crosses both State Highway 283 and the Amtrak railroad tracks, such that it is to the south
9 of, and parallel to, both of those linear features. A small segment of this line section occupies
10 undeveloped property owned by East Hempfield Township. The balance of the line route
11 occupies property zoned for industrial use. The proposed line route ties into the Kellogg #1
12 and #2 Tap Lines on the property of Kellogg USA.

13 **Alternative 2** is a route that attempts to locate the proposed line entirely on the south
14 side of State Highway 283 between the highway and the Amtrak railroad tracks.

15 **Q. Which alternative did PPL select as its preferred route?**

16 A. As I previously explained, PPL selected Alternative 1, which is depicted on the aerial
17 photograph in the Exhibit "C" map pocket and is described in detail in Exhibit "C" at pages 1-
18 2.

19 **Q. Why was Alternative 2 rejected?**

20 A. Alternative 2 was rejected for several reasons. First, and most important, is lack of
21 accessibility. If the line were located between State Highway 283 and the Amtrak railroad
22 tracks, the highway and the railroad present obstacles that would make access difficult and
23 potentially unsafe either for initial construction or subsequent operation, maintenance or

1 reconstruction of the line, over most of its length, as can be seen from the aerial photograph in
2 the Exhibit "C" map pocket. What the aerial photograph does not show, because it is two-
3 dimensional, is the grade of railroad, relative to the surrounding ground. The elevation of the
4 Amtrak railroad tracks creates a major physical barrier to access in addition to the obstacles
5 created simply by hemming in the line between a high-speed limited access highway and a
6 major, heavily-trafficked, high-speed rail line. This is shown in Photograph 5 of PPL Exhibit
7 No. 2, which shows the embankment at the top of which the railroad tracks are located. This
8 problem is compounded in the area west of Landisville Road, because Landisville Road,
9 which bisects, via overpasses, both the railroad tracks and the highway, presents a barrier that
10 impedes access to the ground between the highway and the tracks. This is shown in
11 Photographs 1, 2 and 3 of PPL Exhibit No. 2, which were taken from the overpasses.
12 (Photograph No. 1 is looking west over State Highway Route 283. Photograph No. 2 is
13 looking east over State Highway 283. Photograph No. 3 is looking east over the railroad
14 tracks.) Similarly, the bridge carrying State Route 722 across both the railroad and the
15 highway impedes access from the east. Access is critically important, because, for a line of
16 the size and voltage of the proposed line, large, heavy equipment must get to the site, and
17 operate there, to construct the line and to maintain and repair it in the future.

18 The second major problem derives from the fact that the area between the highway
19 and the railroad tracks consists of land that is either owned by the railroad or is subject to the
20 Pennsylvania Department of Transportation's ("PennDOT") right-of-way easement for State
21 Highway 283. In communications with PennDOT regarding this project, PennDOT personnel
22 indicated that permits for custom-designed steel poles supporting high-tension, high-voltage
23 electric lines would likely not be issued to allow construction on PennDOT's right-of-way

1 because the steel poles are more unyielding and present a greater risk in the event of impact
2 by out-of-control vehicles than wood poles utilized for distribution class electric lines.
3 Furthermore, even if PennDOT would permit construction of this transmission line within its
4 right-of-way, PPL would then be responsible for the cost of relocating the line should
5 PennDOT decide to widen the highway or alter its route. Consequently, if Alternative 2 were
6 to be pursued, it would be necessary to locate the line on Amtrak property. As I previously
7 explained, this is a heavily trafficked line (it is the Amtrak route between the Northeast
8 Corridor and Harrisburg, Pittsburgh and Chicago and also handles Norfolk & Southern freight
9 trains). The present Amtrak train schedule shows that approximately eight passenger trains
10 would traverse the work area during week days when construction personnel would be
11 expected to be on site. (Photograph 4 of PPL Exhibit No. 2 shows an Amtrak passenger train
12 on the tracks.) It is also likely that some freight trains would use the tracks during work hours
13 as well. Amtrak regulations would require the presence of an Amtrak flagman on site at all
14 time and, more significantly, would require PPL to stop work and clear the site each time a
15 train passed. This would severely limit the duration of the periods when construction crews
16 could work on line construction and would increase the time and cost of construction because
17 of the need to stop, clear the area, and then reassemble and restart work. Those frequent
18 disruptions would increase the time needed for construction and, as a consequence, would
19 materially increase the cost of construction. Of course, the same problems would arise
20 whenever maintenance had to be done on the line. Those delays would create material
21 increases in the time needed to restore or repair the line in the event of a failure or accident,
22 which, in turn, would increase the duration and severity of any interruption of customer

1 service. That is a significant factor, when it is considered that the purpose for constructing
2 this line is to increase the reliability of the regional transmission system.

3 Third, if the transmission line were to occupy Amtrak property, PPL would have to
4 use taller structures to support the line in order to meet Occupational Safety and Health
5 Administration (OSHA) and National Electrical Safety Code (NESC) clearance requirements
6 relative to the overhead railroad catenaries. (Photographs 7 and 8 of PPL Exhibit No. 2 show
7 the railroad catenaries.) This would also add to the cost of the project.

8 Fourth, East Hempfield Township is opposed to this line route because the tree line
9 separating the railroad from the highway would need to be removed. The tree line provides a
10 natural backdrop to the Township park and the historic Amos Herr House, which screens
11 these areas from the visual and other impacts of State Highway 283. Photograph 6 in PPL
12 Exhibit No. 2 shows the historic Amos Herr House and barn.

13 Fifth, forested habitat within the Core Area is almost non-existent. The most
14 significant area of woodland is concentrated in the strip of land between the highway and the
15 railroad. (See Photographs 1, 2, 3, 4, 7 and 8 of PPL Exhibit No. 2.) The forested habitat that
16 does exist in the Core Area becomes more important because of its scarcity. Consequently,
17 because of the need to remove trees to construct Alternative 2, it has greater environmental
18 impact than PPL's preferred route.

19 **Q. How does PPL's preferred line route compare to the other alternative studied?**

20 A. First, and most importantly, PPL's preferred route provides the necessary access for
21 construction and maintenance of the line. The preferred route, being located north of State
22 Highway 283, is fully accessible from the north without the need for construction and
23 maintenance personnel and equipment to cross either a railroad or a limited access highway.

1 In addition, the land is level and there are not abrupt changes in grade to create physical
2 barriers to access.

3 Second, the route is located on agricultural land, which is compatible with
4 transmission line construction. The only land that will be physically occupied is the
5 “footprint” of the single-shaft steel poles, which is minimal. There will be a total of 17
6 structures over the entire length of the line, with average span lengths between the poles of
7 605 feet. The agricultural land located under the line, apart from the “footprint” of the poles,
8 can continue to be farmed and need not be removed from agricultural production.

9 Third, most of the farms traversed by the proposed line route are in an Agricultural
10 Security Zone. This means that the line would not restrict an area of future development.

11 Fourth, the route closely parallels existing linear features and, in particular, the north
12 side of State Highway 283.

13 Fifth, unlike the route south of State Highway 283, the preferred route will require
14 minimal tree clearing.

15 **Q. Will the construction, operation or maintenance of the proposed line have any
16 significant environmental or land use impacts?**

17 **A.** The construction, operation and maintenance of the West Hempfield-McGovernville #1 and
18 #2 138/69 kV Tie Line will not have any significant environmental or land use impacts:

- 19 • The proposed line will have no adverse impact on the operation of communications
20 or cellular telephone towers, and no other utilities will be affected by the proposed
21 line (Exhibit “C,” p. 3).
- 22 • The proposed line will not affect any airports (Exhibit “C,” p. 3).
- 23 • No endangered or threatened plant or animal species will be affected because
24 federal and state reviews show it is unlikely any exist in the Core Area. Habitat that
25 might be conducive to “species of concern” will not be affected by the proposed
26 line. The impact on common plant and animal species and habitat is minimal. Only
27 minor tree clearing will be necessary (Exhibit “C,” p. 3-4).

- 1 • No lakes, ponds or major bodies of water will be affected. The proposed line
2 crosses three small unnamed tributaries of Swarr Run. The three stream crossings
3 required will be easily spanned. Structures will be located well away from the
4 streams, and no impacts will occur (Exhibit "C," p. 3).

- 5 • Wetlands along the line will be delineated and all necessary permits will be obtained
6 from the Pennsylvania Department of Environmental Protection and U.S. Army
7 Corps of Engineers if there is any potential for wetlands to be affected (Exhibit "C,"
8 p. 3).

- 9 • No encroachment on flood-prone areas will occur because no flood-prone areas
10 were identified along the proposed route (Exhibit "C," p. 4).

- 11 • Several National Register Historic Sites are located within the Core and Study
12 Areas (PPL Exhibit No. 1, Appendix D). The only site close enough to the two
13 alternative line routes studied by PPL to be potentially affected is the Amos Herr
14 House. PPL's preferred route keeps the transmission line approximately 500 feet
15 from the Amos Herr House. The impact on the Amos Herr House site will be
16 minimal because PPL's preferred route is separated from the historic site by both
17 State Highway 283 and the Amtrak railroad corridor. The tree line located between
18 the highway and the railroad (which will remain in tact under PPL's preferred route)
19 will screen the Herr House from any potential visual intrusion. After the line
20 crosses State Highway 283 and is on the same side of the highway as the Herr
21 House, it will be more than 1,100 feet from the historic site. Visual intrusion in that
22 direction will not be significant because the line will be on, or skirt, existing
23 industrial property (Exhibit "C," p. 4-5).

- 24 • PPL also reviewed the proposed line route with the Pennsylvania Historical and
25 Museum Commission ("PHMC") to determine if any significant archeological sites
26 are present. PHMC informed PPL that there are no known sites along the proposed
27 line route and it is unlikely that any unknown site would exist in the immediate area
28 (Exhibit "C," p. 5).

- 29 • No schools, churches, cemeteries, parks or recreational areas will be affected
30 (Exhibit "C," p. 5).

31 **Q. Please describe the mitigating measures PPL will employ to minimize land use and**
32 **environmental impacts.**

33 A. PPL will comply with all of the permitting and associated environmental regulatory
34 requirements that may be implicated by this project, as fully explained in Exhibit "C" (p. 2).
35 PPL's standard mitigating measures are set forth in formal Company program documents
36 entitled (1) "Transmission Line Right-Of-Way Program for Vegetation Management" and (2)

1 “Specifications for Soil Erosion and Sedimentation Control on Transmission Line Rights-of-
2 Way.” These measures have been effectively and successfully applied in many Company
3 transmission line projects, and they will be followed in the construction and operation of the
4 proposed line.

5 Other mitigating factors include PPL’s use of the “long-span” construction technique,
6 which minimizes the number of structures that must be built, and the use of single-shaft steel
7 poles, which minimizes visual impacts.

8 **Q. Please summarize your conclusions regarding the siting of the West Hempfield-
9 McGovernville #1 and #2 138/69 kV Tie Line.**

10 A. PPL has used an extensive, multi-faceted technical analysis to site the West Hempfield-
11 McGovernville #1 and #2 138/69 kV Tie Line, which fully complies with the filing and
12 information requirements of the Commission’s regulations for Letters of Notification and, in
13 fact, provides all of the same information that would be required in a full siting application.
14 Moreover, the same type of siting analysis has been used, with PUC approval, in numerous
15 siting applications by PPL. The proposed location for the West Hempfield-McGovernville #1
16 and #2 138/69 kV Tie Line uses existing linear features to the extent feasible and, thereby,
17 reduces any associated impacts to a minimum. The preferred route is superior to the
18 alternative route studied by PPL, which would pose significant obstacles to the construction
19 and subsequent operation and maintenance of the line as well as having greater environmental
20 and other impacts and being opposed by the municipality were the line would be located. For
21 all of the reasons set forth above and in Exhibit “C” of PPL Exhibit No. 1, PPL’s preferred
22 route constitutes the appropriate balance of environmental and land use considerations,
23 functional requirements and cost considerations.

1 Q. Does this conclude your direct testimony at this time?

2 A. Yes, it does.

DOCUMENT BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DOCKETED

SEP 30 2004

RE: LETTER OF NOTIFICATION OF PPL ELECTRIC UTILITIES CORPORATION FILED PURSUANT TO 52 PA. CODE CHAPTER 57, SUBCHAPTER G, WITH RESPECT TO THE PROPOSED WEST HEMPFIELD-McGOVERNVILLE #1 AND #2 138/69 KV TIE LINE TO BE CONSTRUCTED IN EAST HEMPFIELD TOWNSHIP, LANCASTER COUNTY

Docket No. A-110500 F0333

APPLICATION OF PPL ELECTRIC UTILITIES CORPORATION UNDER 15 PA. C.S. §1511(C) FOR A FINDING AND DETERMINATION THAT THE SERVICE TO BE FURNISHED BY THE APPLICANT THROUGH ITS PROPOSED EXERCISE OF THE POWER OF EMINENT DOMAIN TO ACQUIRE RIGHT-OF-WAY FOR THE CONSTRUCTION, OPERATION AND MAINTENANCE OF THE PROPOSED WEST HEMPFIELD-MCGOVERNVILLE #1 AND #2 138/69 KV TIE LINE OVER AND ACROSS THE LANDS OF EAST HEMPFIELD TOWNSHIP IN EAST HEMPFIELD TOWNSHIP, LANCASTER COUNTY, IS NECESSARY OR PROPER FOR THE SERVICE, ACCOMMODATION, CONVENIENCE OR SAFETY OF THE PUBLIC

Docket No. A-110500 F0343

APPLICATION OF PPL ELECTRIC UTILITIES CORPORATION UNDER 15 PA. C.S. §1511(C) FOR A FINDING AND DETERMINATION THAT THE SERVICE TO BE FURNISHED BY THE APPLICANT THROUGH ITS PROPOSED EXERCISE OF THE POWER OF EMINENT DOMAIN TO ACQUIRE RIGHT-OF-WAY FOR THE CONSTRUCTION, OPERATION AND MAINTENANCE OF THE PROPOSED WEST HEMPFIELD-MCGOVERNVILLE #1 AND #2 138/69 KV TIE LINE OVER AND ACROSS THE LANDS OF JOHN E. LANDIS IN EAST HEMPFIELD TOWNSHIP, LANCASTER COUNTY, IS NECESSARY OR PROPER FOR THE SERVICE, ACCOMMODATION, CONVENIENCE OR SAFETY OF THE PUBLIC

Docket No. A-110500 F0344

DIRECT TESTIMONY
OF JAY ALAN KEELER

ON BEHALF OF PPL ELECTRIC UTILITIES CORPORATION

PPL STATEMENT NO. 3

9/1/04 Hbg

Dated: September 1, 2004

RECEIVED
2004 SEP - 8 AM 9:23
SECRETARY'S BUREAU

PPL ELECTRIC UTILITIES CORPORATION

DIRECT TESTIMONY OF JAY ALAN KEELER

1 **Q. Please state your full name and business address.**

2 A. My name is Jay Alan Keeler, and my business address is Two North Ninth Street, Allentown,
3 Pennsylvania, 18101.

4 **Q. By whom are you employed and in what capacity?**

5 A. I am employed by PPL Electric Utilities Corporation ("PPL" or the "Company") as
6 Supervising Engineer in Transmission and Distribution Design.

7 **Q. What is your educational background?**

8 A. I have a Bachelor of Science degree in Electrical Engineering from Lehigh University,
9 Bethlehem, Pennsylvania, which I received in 1972.

10 **Q. Do you hold any professional licenses?**

11 A. Yes, I am a Licensed Profession Engineer in the Commonwealth of Pennsylvania. My license
12 number is PE-035252-E.

13 **Q. Are you a member of any professional organizations?**

14 A. Yes, I am a member of the Institute of Electrical and Electronic Engineers, Inc. (IEEE) and of
15 the Edison Electric Institute (EEI).

16 **Q. Please describe your background and employment history with PPL.**

17 A. I have worked for PPL for over 30 years. Presently, I am a Supervising Engineer in
18 Transmission and Distribution Design. I supervise, or perform, the design of transmission
19 and distribution projects throughout the PPL service area. I have 25 years of experience in the
20 design of transmission lines as an Engineer, Project Engineer and Senior Project Engineer in

1 the Transmission Design Section of PPL. Prior to that time, I was an Engineer in PPL's
2 Construction Department.

3 **Q. What is the purpose of your testimony?**

4 A. The purpose of my testimony is to describe the major design and safety features of the West
5 Hempfield-McGovernville #1 and #2 138/69 kV Tie Line.

6 **Q. For what portions of PPL Exhibit No. 1, the Company's Certification Application, are
7 you the responsible witness?**

8 A. PPL Exhibit No. 1 consists of the exhibits and appendices (contained in a ring binder) that
9 were filed with, and in support of, PPL's Letter of Notification to the Commission at Docket
10 No. A-110500 F0333. I am responsible for the Engineering Description, which is identified
11 as Exhibit "D" within PPL Exhibit No. 1, and Appendix F (PPL Design Criteria and Safety
12 Practices). As its name implies, the Engineering Description sets forth a detailed description
13 of the structures, conductors, and ground wire that comprise the proposed transmission line.
14 It also identifies the safety criteria that the line is designed to meet, including minimum
15 conductor ground clearances and thermal ratings (Table 1).

16 **Q. Please describe the major design features of the West Hempfield-McGovernville #1 and
17 #2 138/69 kV Tie Line.**

18 A. The West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line will be 1.8 miles in
19 length and will be designed and constructed for double circuit 138 kV operation. However,
20 the line will initially be operated at 69 kV until load growth projected for this area requires
21 increasing the voltage of the regional transmission system to 138 kV. The West Hempfield-
22 McGovernville Tie Line will connect the existing South Manheim-South Akron #1 and #2
23 138/69 kV Transmission Lines, via the existing Kellogg #1 and #2 Taps, to the existing West

1 Hempfield-Donegal and West Hempfield-South Manheim #3 138/69 kV Lines, thereby
2 creating a high-capacity link between those two lines and providing load transfer capability,
3 as more fully explained in PPL Statement No. 1, the direct testimony of Gopi R. Kedia.
4 Additionally, six switches will be added to existing and proposed facilities to enhance
5 operating flexibility.

6 The West Hempfield-McGovernville Tie Line will consist of single shaft steel poles
7 with steel upswept conductor support arms. Tangent poles will be direct embedded, and angle
8 poles will be installed on concrete foundations. The line will have approximately 17
9 structures averaging 95 feet in height. Average span lengths will be 605 feet. The proposed
10 structures are depicted in Figures 1 and 2 of Exhibit D.

11 The West Hempfield-McGovernville Tie Line will consist of six power conductors,
12 three on each side of the poles, and one overhead ground wire (OHGW). The power
13 conductors will be 556.5 KCMIL 24/7 stranding ACSR. The OHGW will be 3/8-inch extra
14 high strength steel.

15 **Q. Please describe the safety standards to which the West Hempfield-McGovernville Tie**
16 **Line will conform.**

17 **A.** The West Hempfield-McGovernville Tie Line will be designed, constructed, operated and
18 maintained in accordance with the *National Electrical Safety Code* (“NESC”) and will include
19 such further design, construction and maintenance features as are required by PPL standards
20 and by law. Appendix F contains a detailed discussion of PPL Design Criteria and Safety
21 Practices. The complete Engineering Description is set forth in Exhibit “D” of PPL Exhibit
22 No. 1. Table 1 within the Engineering Description sets forth the minimum conductor-to-
23 ground clearances and the thermal ratings for which the line is being designed and will be

1 built. The clearances and thermal ratings meet, or are better than, the requirements of the
2 *NESC*.

3 **Q. What is the estimated cost and scheduled dates for starting construction and placing the**
4 **line in service?**

5 A. The estimated cost to design and construct the West Hempfield-McGovernville Tie Line is
6 \$2.844 million. At the time PPL's Letter of Notification was filed, the scheduled in-service
7 date was May 2004, which has been delayed because of the inability to acquire the necessary
8 right-of-way.

9 **Q. Does this conclude your direct testimony at this time?**

10 A. Yes, it does.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

RE: LETTER OF NOTIFICATION OF PPL ELECTRIC UTILITIES CORPORATION FILED PURSUANT TO 52 PA. CODE CHAPTER 57, SUBCHAPTER G, WITH RESPECT TO THE PROPOSED WEST HEMPFIELD-McGOVERNVILLE #1 AND #2 138/69 kV TIE LINE TO BE CONSTRUCTED IN EAST HEMPFIELD TOWNSHIP, LANCASTER COUNTY

Docket No. A-110500 F0333

APPLICATION OF PPL ELECTRIC UTILITIES CORPORATION UNDER 15 PA. C.S. §1511(C) FOR A FINDING AND DETERMINATION THAT THE SERVICE TO BE FURNISHED BY THE APPLICANT THROUGH ITS PROPOSED EXERCISE OF THE POWER OF EMINENT DOMAIN TO ACQUIRE RIGHT-OF-WAY FOR THE CONSTRUCTION, OPERATION AND MAINTENANCE OF THE PROPOSED WEST HEMPFIELD-MCGOVERNVILLE #1 AND #2 138/69 KV TIE LINE OVER AND ACROSS THE LANDS OF EAST HEMPFIELD TOWNSHIP IN EAST HEMPFIELD TOWNSHIP, LANCASTER COUNTY, IS NECESSARY OR PROPER FOR THE SERVICE, ACCOMMODATION, CONVENIENCE OR SAFETY OF THE PUBLIC

Docket No. A-110500 F0343

APPLICATION OF PPL ELECTRIC UTILITIES CORPORATION UNDER 15 PA. C.S. §1511(C) FOR A FINDING AND DETERMINATION THAT THE SERVICE TO BE FURNISHED BY THE APPLICANT THROUGH ITS PROPOSED EXERCISE OF THE POWER OF EMINENT DOMAIN TO ACQUIRE RIGHT-OF-WAY FOR THE CONSTRUCTION, OPERATION AND MAINTENANCE OF THE PROPOSED WEST HEMPFIELD-MCGOVERNVILLE #1 AND #2 138/69 KV TIE LINE OVER AND ACROSS THE LANDS OF JOHN E. LANDIS IN EAST HEMPFIELD TOWNSHIP, LANCASTER COUNTY, IS NECESSARY OR PROPER FOR THE SERVICE, ACCOMMODATION, CONVENIENCE OR SAFETY OF THE PUBLIC

Docket No. A-110500 F0344

DOCUMENT

DOCKETED

SEP 30 2004

DIRECT TESTIMONY
OF BARRY L. GEBHARD

ON BEHALF OF PPL ELECTRIC UTILITIES CORPORATION

PPL STATEMENT NO. 4
(Revised)

9/1/04 Hbg dx

Dated: September 1, 2004

RECEIVED
2004 SEP - 8 AM 9: 23
SECRETARY'S BUREAU

PPL ELECTRIC UTILITIES CORPORATION

DIRECT TESTIMONY OF BARRY L. GEBHARD

1 **Q. Please state your full name and business address.**

2 A. My name is Barry L. Gebhard, and my business address is Two North Ninth Street,
3 Allentown, Pennsylvania, 18101.

4 **Q. By whom are you employed and in what capacity?**

5 A. I am employed by PPL Electric Utilities Corporation (“PPL” or the “Company”) as a System
6 Property/Land Manager in Real Estate Services.

7 **Q. Please explain your background and training in the area of real estate and right-of-way
8 acquisitions?**

9 A. I have take nineteen courses on the subjects of real estate and rights-of-way through the
10 Pennsylvania State University (Capital Campus), the Harrisburg Area Community College
11 and the International Right-Of-Way Association. In addition, I completed the requirements
12 for, and received, a Pennsylvania realtor’s license.

13 **Q. Please describe your background and employment history with PPL.**

14 A. I have been employed by PPL for 41 years. I have been in my current position as System
15 Property/Land Manager since 1999. In this position, I both direct, and participate in, all
16 phases of the process for purchasing rights-of-way for transmission lines and purchasing land
17 for substations. Additionally, I serve as a member of the Siting Team for all transmission line
18 and substation projects

19 From 1993 to 1999, I had the primary responsibility for right-of-way negotiations for
20 all transmission line projects.

1 From 1978 to 1993, I worked as a right-of-way agent, where my duties included
2 acquiring rights-of-way for distribution lines as well as transmission line rights-of-way and
3 the land needed for substations.

4 From 1963 to 1978 I worked in various positions in the Line Construction
5 Department, advancing to the position of 1st Class Lineman.

6 **Q. What is the purpose of your testimony?**

7 A. The purpose of my testimony is two-fold. First, I will identify and describe PPL Exhibit Nos.
8 3 and 4. Second, I will explain the status of PPL's right-of-way acquisition for the West
9 Hempfield-McGovernville #1 and #2 138/69 kV Tie Line.

10 **Q. Please identify PPL Exhibit No. 3.**

11 A. PPL Exhibit No. 3 consists of the exhibits (contained in a bound presentation folder) that were
12 filed in support of PPL's Application at Docket No. A-110500 F0344 for the findings and
13 determinations by the Pennsylvania Public Utility Commission required for PPL to exercise
14 the power of eminent domain over and across the land of John E. Landis.

15 **Q. Please describe what is contained in PPL Exhibit No. 3?**

16 A. PPL Exhibit No. 3 contains five parts, identified as Exhibits "A" through "E," which are
17 separated by side tabs:

18 **Exhibit "A"** is an electrical system map of PPL's service territory showing all facilities that
19 operate at or above 69 kilovolts (kV).

20 **Exhibit "B"** consists of three pages that set forth the metes and bounds descriptions of three
21 tracts of land that comprise Mr. Landis' property in the project area. The right-of-way PPL
22 proposes to obtain will cross only two of those three tracts, as noted in Exhibit "B."

1 **Exhibit “C”** is the metes and bounds description of the right-of-way easement that PPL
2 proposes to obtain across the Landis property. The easement consists of a strip of land
3 between 63 and 68 feet in width and approximately 3,710 feet in length that abuts the right-of-
4 way of State Highway 283, a four-lane freeway. The total area of the proposed easement is
5 4.6 acres.

6 **Exhibit “D”** is a drawing showing the location of the proposed easement.

7 **Exhibit “E”** is a copy of the certified resolutions of the Board of Directs of PPL authorizing
8 the condemnation of the proposed easement across the Landis property.

9 **Q. Please identify PPL Exhibit No. 4.**

10 A. PPL Exhibit No. 4 consists of the exhibits (contained in a bound presentation folder) that were
11 filed in support of PPL’s Application at Docket No. A-110500 F0343 for the findings and
12 determinations by the Pennsylvania Public Utility Commission required for PPL to exercise
13 the power of eminent domain over and across the land of East Hempfield Township.

14 **Q. Please describe what is contained in PPL Exhibit No. 4?**

15 A. PPL Exhibit No. 4 contains five parts, identified as Exhibits “A” through “E,” which are
16 separated by side tabs:

17 **Exhibit “A”** is an electrical system map of PPL’s service territory showing all facilities that
18 operate at or above 69 kilovolts (kV).

19 **Exhibit “B”** consists of four pages that set forth the metes and bounds description of the two
20 tracts of land that comprises East Hempfield Township’s property in the project area. The
21 right-of-way PPL proposes to obtain will cross only one of those two three tracts, as noted in
22 Exhibit “B.”

1 **Exhibit “C”** is the metes and bounds description of the right-of-way easement that PPL
2 proposes to obtain across the Township’s property. The easement consists of a strip of land
3 that abuts the right-of-way of Amtrak. The total area of the proposed easement is
4 approximately 0.77 acre.

5 **Exhibit “D”** is a drawing showing the location of the proposed easement.

6 **Exhibit “E”** is a copy of the certified resolutions of the Board of Directs of PPL authorizing
7 the condemnation of the proposed easement across the property of East Hempfield Township.

8 **Q. Please describe the current status of PPL’s right-of-way acquisition for the West
9 Hempfield-McGovernville #1 and #2 138/69 kV Tie Line.**

10 **A.** For its preferred line route, which is described in PPL Statement No. 2 (the direct testimony
11 of Kenneth B. Kuhns), PPL needed to obtain right-of-way from nine landowners. Eight of the
12 nine are private (individual or corporate) landowners. One is a municipality – East Hempfield
13 Township. In addition, PPL must obtain permits from the Pennsylvania Department of
14 Transportation (“PennDOT”) and Amtrak for its line to cross State Highway 283 and
15 Amtrak’s railroad tracks. PPL has obtained the necessary right-of-way from seven of the
16 eight private landowners. PPL is in the process of obtaining crossing permits from PennDOT
17 and Amtrak. PPL has routinely obtained permits of this kind in the past.

18 East Hempfield Township initially agreed to convey the necessary right-of-way across
19 the property it owns by accepting an outstanding purchase offer made by PPL. (The
20 Township’s willingness to accept PPL’s offer was noted by counsel for the Township at the
21 Prehearing Conference.) PPL sent the necessary documentation to the Township to complete
22 the purchase, as the Township requested, but received no response for some time. On August
23 26, 2004, the Township Manager informed PPL that he was rescinding the Township’s prior

1 acceptance of PPL's offer. However, the next day, the Township Manager indicated to PPL
2 that the documentation could be executed by the Township at its meeting to be held on
3 September 1, 2004.

4 As indicated by counsel for Mr. Landis in his letter of July 30, 2004, which was sent
5 to counsel for PPL and to Administrative Law Judge Colwell, Mr. Landis accepted an
6 outstanding offer by PPL to purchase its required right-of-way across his property. PPL
7 drafted an agreement to set forth the agreed terms, which was sent to counsel for Mr. Landis.
8 That agreement has not yet been executed. Once the agreement is executed and the
9 conditions for conveying the easement are met, the transfer can be completed by the delivery
10 and recording of the necessary Grant of Easement and the associated documentation for lien
11 subordination.

12 **Q. Does this conclude your direct testimony at this time?**

13 **A.** Yes, it does.

DOCUMENT

DOCKETED

SEP 30 2004



Before the
Pennsylvania Public Utility Commission

**West Hempfield –
McGovernville #1 & #2
138/69 kV Tie**

Letter of Notification

Application Docket No. A-110500 F0333

Submitted by: PPL Electric Utilities Corp.

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

**RE: LETTER OF NOTIFICATION OF
PPL ELECTRIC UTILITIES
CORPORATION FILED PURSUANT TO
52 PA. CODE CHAPTER 57,
SUBCHAPTER G, WITH RESPECT TO
THE PROPOSED WEST HEMPFIELD-
McGOVERNVILLE #1 AND #2 138/69 kV
TIE LINE TO BE CONSTRUCTED IN
EAST HEMPFIELD TOWNSHIP,
LANCASTER COUNTY**

Docket No. A-110500 F0333

LETTER OF NOTIFICATION

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2004 SEP - 8 AM 9: 24
SECRETARY'S BUREAU

TO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:

I. INTRODUCTION AND OVERVIEW

1. This Letter of Notification is filed by PPL Electric Utilities Corporation ("PPL"), Two North Ninth Street, Allentown, Pennsylvania 18101, a public utility incorporated in Pennsylvania for the purpose of supplying light, heat and power to the public by means of electricity in all or portions of twenty-nine counties in eastern-central Pennsylvania.

2. PPL's attorneys are:

David B. MacGregor	Paul E. Russell
Anthony C. DeCusatis	PPL Electric Utilities Corporation
Morgan, Lewis & Bockius LLP	Two North Ninth Street
1701 Market Street	Allentown, PA 18101
Philadelphia, PA 19103	610.774.4254
215.963.5448	610.774.6726 (fax)
215.963.5034	
215.963.5001 (fax)	

PPL's attorneys are authorized to receive all notices and communications regarding this Letter of Notification.

3. This Letter of Notification is filed pursuant to 52 Pa. Code § 57.72(d)(1)(vi) for approval of the Pennsylvania Public Utility Commission (“Commission” or “PUC”) to construct, operate and maintain the proposed West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line in East Hempfield Township, Lancaster County.

4. The West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line will be approximately 1.8 miles in length and will connect PPL’s South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines, via the existing Kellogg #1 and #2 Taps, to the existing West Hempfield-Donnegal 138/69 kV Line and the West Hempfield-South Manheim #3 138/69 kV Line in order to relieve a potential overloading of the South Manheim-South Akron #1 and #2 Transmission Lines.

5. The route PPL has selected for the West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line parallels existing linear features consisting of a limited access highway and a railroad corridor. As a consequence, the proposed route overlaps highway and railroad easements, thereby reducing the amount of new right-of-way needed for the line.

6. The estimated cost to design and construct the West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line is \$2,844,000. Construction is scheduled to begin as soon as the necessary approval is obtained from the PUC in order to support an in-service date in May 2004.

7. Accompanying this Letter of Notification is a separate ring binder containing Exhibits A - D and Appendices A - H, which provide additional information about the project. This Letter of Notification and the accompanying Exhibits and Appendices, which are incorporated herein by reference, contain all of the information required by 52 Pa. Code § 57.72(d)(4). In addition, the supporting information contains a full siting analysis, including an environmental inventory and aerial photographs. Although such additional information is not required for a Letter of Notification, PPL has included all of the information specified by the

Commission's regulations for a full siting application because, as explained in Section VI, *infra*, it may become necessary to seek PUC approval to acquire a portion of the needed right-of-way by condemnation.

II. DESCRIPTION OF THE PROJECT

8. PPL's South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines are supplied from PPL's South Manheim 230-69 kV Substation. The Kellogg #1 and #2 Taps are 69 kV tap lines from the South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines. The Kellogg Taps supply the Kellogg and McGovernville 69/12 kV Substations, which, in turn supply customer load. This arrangement is depicted in the upper right quadrant of Figure 1 in Exhibit A.

9. PPL's West Hempfield-Donegal 138/69 kV and West Hempfield-South Manheim #3 138/69 kV Transmission Lines are supplied from PPL's West Hempfield 230-69 kV Substation, as depicted in the lower left quadrant of Figure 1 in Exhibit A.

10. The proposed West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line will create a high capacity transmission link, via the Kellogg Tap Lines, between PPL's South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines and PPL's West Hempfield-Donegal 138/69 kV and West Hempfield-South Manheim #3 138/69 kV Transmission Lines. Creating this transmission link will alleviate potential overloading of the South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines under projected 2003 summer peak conditions in the event of a single contingency outage of either of the South Manheim-South Akron circuits. The proposed facility is depicted on Figure 2 in Exhibit A.

III. NECESSITY FOR THE PROPOSED TIE LINE

11. PPL is confronted with the serious problem of alleviating overload constraints on the South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines in the event of a

single contingency outage of either of the circuits on that line. The details of the potential overloading are discussed in Exhibit A, and projected 2003 summer loadings of those circuits under normal and single contingency conditions are set forth in Table 1 of Exhibit A. Another factor that contributes to the need for the proposed Tie Line is the current inability to shift the supply of load between the existing South Manheim and West Hempfield Substations in the event of the loss of all the transformers at either location, as more specifically described in Exhibit A (p. 6).

12. PPL carefully reviewed five possible alternatives for alleviating the overloading condition described above. The analysis of each alternative is described in detail in Exhibit A. As explained therein, the proposed West Hempfield-McGovernville Tie Line was selected as the best functional alternative based on its ability to alleviate the overloading condition, provide capacity to transfer load between the two 230-69 kV substations and facilitate the conversion of PPL's regional transmission system to 138 kV operation when projected increases in load justify that conversion.

IV. ENVIRONMENTAL ASSESSMENT AND SITING ANALYSES

13. PPL conducted an extensive, multi-faceted analysis to select a route for the proposed transmission line that best balances functional requirements, environmental factors and cost considerations.

14. Initially, a "Core Area" was delineated for detailed study. The Core Area is defined by the supply and destination service points and the natural and manmade boundaries beyond which no reasonable alternative line routes exist. The Core Area for this project is approximately 2.5 miles long, 1.6 miles wide, and encompasses 4.25 square miles in total land area. The Core Area is depicted on Map 1 in Exhibit B.

15. PPL conducted a detailed environmental inventory of the Core Area to identify and locate environmental factors that need to be considered when evaluating and selecting transmission line routes, which include:

- Linear features, such as existing electric transmission lines, roads and highways, and railroads.
- Existing land use.
- Municipal zoning.
- Soils and floodplains.
- Slopes and grades.
- Natural and physical features (vegetation, wetlands, streams, wildlife and wildlife habitat and endangered and threatened species of flora and fauna).
- Farmland preservation areas.
- Cultural and other unique features, such as schools, churches, parks, natural and recreational areas, historic sites, and archeological sites.

16. The information gathered from the environmental inventory was recorded on a series of maps, which are provided as Maps 1 - 7 in Exhibit B. The maps can be viewed together to identify areas that provide the most appropriate route for a proposed line considering environmental impact, functional requirements and economics. A detailed description of the environmental inventory and mapping is provided in Exhibit B.

17. Consultation with governmental officials in the Core Area is an important part of PPL's siting analysis. The proposed project was reviewed with municipal and state officials and agencies. This information was used, in conjunction with the environmental inventory, to identify "constraints," i.e., areas that should be avoided, if possible.

18. Using the aforementioned mapping and analysis procedure, PPL identified the proposed line route, which takes advantage of existing linear features and minimizes land use "constraints" to the extent possible. PPL also identified an alternative route that, after thorough

analysis, was rejected because of its greater visual and environmental impacts and higher construction and operating costs, as fully explained in Exhibit C (pp. 6-7).

19. PPL's proposed line route, for which approval is requested herein, is plotted on the aerial map in the Exhibit C map pocket and is described in detail in Exhibit C at pages 1-2. The proposed line route is 1.8 miles long and, for virtually its entire length, parallels existing linear features (a limited access highway and a rail corridor) such that the line's right-of-way will overlap existing highway and railroad easements. The proposed line route begins at its point of interconnection with the West Hempfield-Donnegal and West Hempfield-South Manheim #3 138/69 kV Lines, which lies between Route 283 and the Amtrak railroad corridor, approximately 1,650 feet west of Landisville Road. The proposed route then heads northeast and crosses Route 283 approximately 315 feet from that connection point. After crossing Route 283, the line heads southeast, parallel to Route 283, a distance of approximately 1.1 miles. Most of this segment of the route lies over agricultural land, and a portion crosses property formerly owned by Armstrong World Industries. The last segment of the line, approximately 2,890 feet in length, also heads southeast, crosses Route 283 and the Amtrak railroad tracks, and connects to the Kellogg #1 and #2 Taps on the property of Kellogg USA. A small segment of this line section crosses property owned by East Hempfield Township. This undeveloped parcel is presently being farmed but is zoned for Suburban - Residential land use. The balance of this section of the line occupies industrial-zoned property. Agricultural and industrial lands uses are both compatible with transmission line siting.

20. The construction, operation and maintenance of the West Hempfield-McGovernville Tie Line will not have any significant environmental or land use impacts:

- For most of its length, the proposed line will parallel an existing limited access highway and existing Amtrak railroad tracks. By paralleling these linear features,

the amount of right-of-way needed for the transmission line is reduced (Exhibit C, p. 2).

- The proposed line will not affect any airports (Exhibit C, p. 3).
- No endangered or threatened plant or animal species will be affected because state and federal agency reviews indicate that it is unlikely any exist in the entire Core Area and no compatible habitat will be disturbed by the proposed line (Exhibit C, p. 4).
- No lakes, ponds or major bodies of water will be affected. The stream crossings required will be easily spanned. Structures will be located well away from the streams, and no impacts will occur (Exhibit C, p. 4).
- Wetlands along the line will be delineated, and all necessary permits will be obtained from the Pennsylvania Department of Environmental Protection and U.S. Army Corps of Engineers if there is any potential for wetlands to be affected (Exhibit C, p. 3).
- No encroachment on flood-prone areas will occur (Exhibit C, p. 4).
- No landmarks, historic districts or sites of historical or cultural significance will be affected (Exhibit C, p. 5).
- The Pennsylvania Historical and Museum Commission determined that there is no evidence of any archeological sites along the preferred route (Exhibit C, p. 5).
- No schools, churches, cemeteries, parks or recreational areas will be affected (Exhibit C, p. 5).
- The crossings of Route 283 and the Amtrak corridor will not affect adversely either the highway or the railroad because the line will be designed to span these facilities. All appropriate crossing permits will be obtained before construction is commenced (Exhibit C, p. 5)

21. The preferred line route was designed to avoid as many impacts as practical.

Where impacts are unavoidable, PPL will employ mitigating measures to minimize such impacts.

Examples of such mitigating measures include PPL's "Transmission Line Right-of-Way

Program For Vegetation Management" and "Specifications for Soil Erosion and Sedimentation

Control on Transmission Line Rights-Of-Way."

V. ENGINEERING DESCRIPTION

22. The 1.8 mile West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line will be designed and constructed for double circuit 138 kV operation. However, the line will initially be operated at 69 kV until load growth projected for this area requires increasing the voltage of the regional transmission system to 138 kV. The West Hempfield-McGovernville Tie Line will connect the existing South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines, via the existing Kellogg #1 and #2 Taps, to the existing West Hempfield-Donegal and West Hempfield-South Manheim #3 138/69 kV Lines. Additionally, six switches will be added to existing and proposed facilities to enhance operating flexibility.

23. The West Hempfield-McGovernville Tie Line will consist of single shaft steel poles with steel upswept conductor support arms. Tangent poles will be direct embedded, and angle poles will be installed on concrete foundations. The line will have approximately 17 structures averaging 95 feet in height. Average span lengths will be 605 feet. The proposed structures are depicted in Figures 1 and 2 of Exhibit D.

24. The West Hempfield-McGovernville Tie Line will consist of six power conductors, three on each side of the poles, and one overhead ground wire (OHGW). The power conductors will be 556.5 KCMIL 24/7 stranding ACSR. The OHGW will be 3/8-inch extra high strength steel.

25. Table 1 of Exhibit D shows the designed minimum conductor-to-ground clearances and the conductor thermal ratings for the proposed line.

26. The West Hempfield-McGovernville Tie Line will be designed, constructed, operated and maintained in accordance with the *National Electrical Safety Code* ("NESC") and will include such further design, construction and maintenance features as are required by PPL

standards and by law. Appendix F contains a detailed discussion of PPL Design Criteria and Safety Practices. The complete Engineering Description is set forth in Exhibit D.

VI. RIGHT OF WAY

27. PPL's standard right-of-way width for 138/69 kV transmission lines is 100 feet. The right-of-way width is determined by structure type, design tensions, span length and the distance that conductors may be moved by cross-winds. Because the proposed line parallels Pennsylvania Department of Transportation ("PaDOT") and Amtrak rights-of-way, the proposed transmission line easement overlaps the highway and railroad easements. The overlapping easements allow PPL to acquire less than the standard 100-foot easement for the majority of the proposed line route. Where easements overlap, the right-of-way width varies between 65 and 85 feet, as shown on the cross-sections provided as Figures 1 and 2 in Exhibit C. The aerial photograph (Exhibit C map pocket) shows the proposed line route, identifies the properties that will be traversed by the proposed line, and denotes right-of-way widths.

28. PPL has acquired right-of-way from five of nine private property owners. Negotiations are progressing with three of the four outstanding property owners. To date, PPL has been unsuccessful in its efforts to negotiate the required easements over the property of John Landis. There is no reasonable alternative routing that would avoid the Landis property. Thus, PPL may have to request that the Commission grant approval for the Company to condemn an easement across the Landis property.

29. Crossing agreements with both PaDOT and Amtrak will be entered into prior to construction of the proposed line.

VII. COST AND COMPLETION DATE

30. The estimated cost to design and construct the West Hempfield-McGovernville Tie Line is \$2,844,000. Construction is scheduled to begin as soon as PUC siting approval is obtained to support an in-service date in May of 2004.

VIII. MISCELLANEOUS

31. No litigation has been concluded or is in progress concerning any aspect of the project.

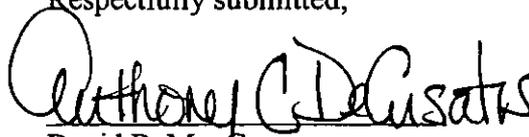
32. Copies of this Application are being served in accordance with the provisions of 52 Pa. Code § 57.72(d)(3).

33. As soon as practicable after the filing of this Letter of Notification, PPL will publish notice of the filing in two newspapers of general circulation in the area of the line. This notice will: (a) note the filing with the Commission; (b) provide a brief description of the project and its location; (c) provide area locations where the complete Letter of Notification and accompanying Exhibits and Appendices may be reviewed by the public; and (d) instruct that any party who wishes to participate in this proceeding should contact the Commission's Secretary, Mr. James J. McNulty, within 15 days, at the Commission's Harrisburg address.

IX. CONCLUSION

PPL respectfully requests that the Commission approve the construction of the West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line as proposed in this Letter of Notification.

Respectfully submitted,



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Dated: July 10, 2003

SUMMARY

This Application is submitted by PPL Electric Utilities Corp. (PPL, or the Company) pursuant to the Pennsylvania Public Utility Commission's (PUC, or the Commission) regulations at 52 Pennsylvania Code, Chapter 57, Subchapter G, for approval to construct the West Hempfield – McGovernville #1 and #2 138/69 kV Transmission Tie Line. The proposed line route is located in East Hempfield Township, Lancaster County.

The proposed West Hempfield – McGovernville #1 and #2 138/69 kV Transmission Tie Line will be approximately 1.8 miles long. It will connect the Kellogg #1 and #2 Taps off the South Manheim - South Akron #1 and #2 138/69 kV Lines with the existing West Hempfield - Donegal and West Hempfield - South Manheim #3 138/69 kV Lines. The proposed double circuit line will be constructed for future 138 kV operation although it will operate initially at 69 kV. The estimated cost of this project is \$2.844 million.

This project has a required in-service date of May 2003. (A project's required in-service date is defined as the date the proposed facility needs to be placed in-service to prevent existing facilities from violating the Company's planning principles.) However, the scheduled in-service date has slipped to May 2004 because of right-of-way acquisition problems. Construction of the facility described herein is required to alleviate a forecasted overload on the South Manheim - South Akron #1 and #2 69 kV lines for a single contingency outage of either line.

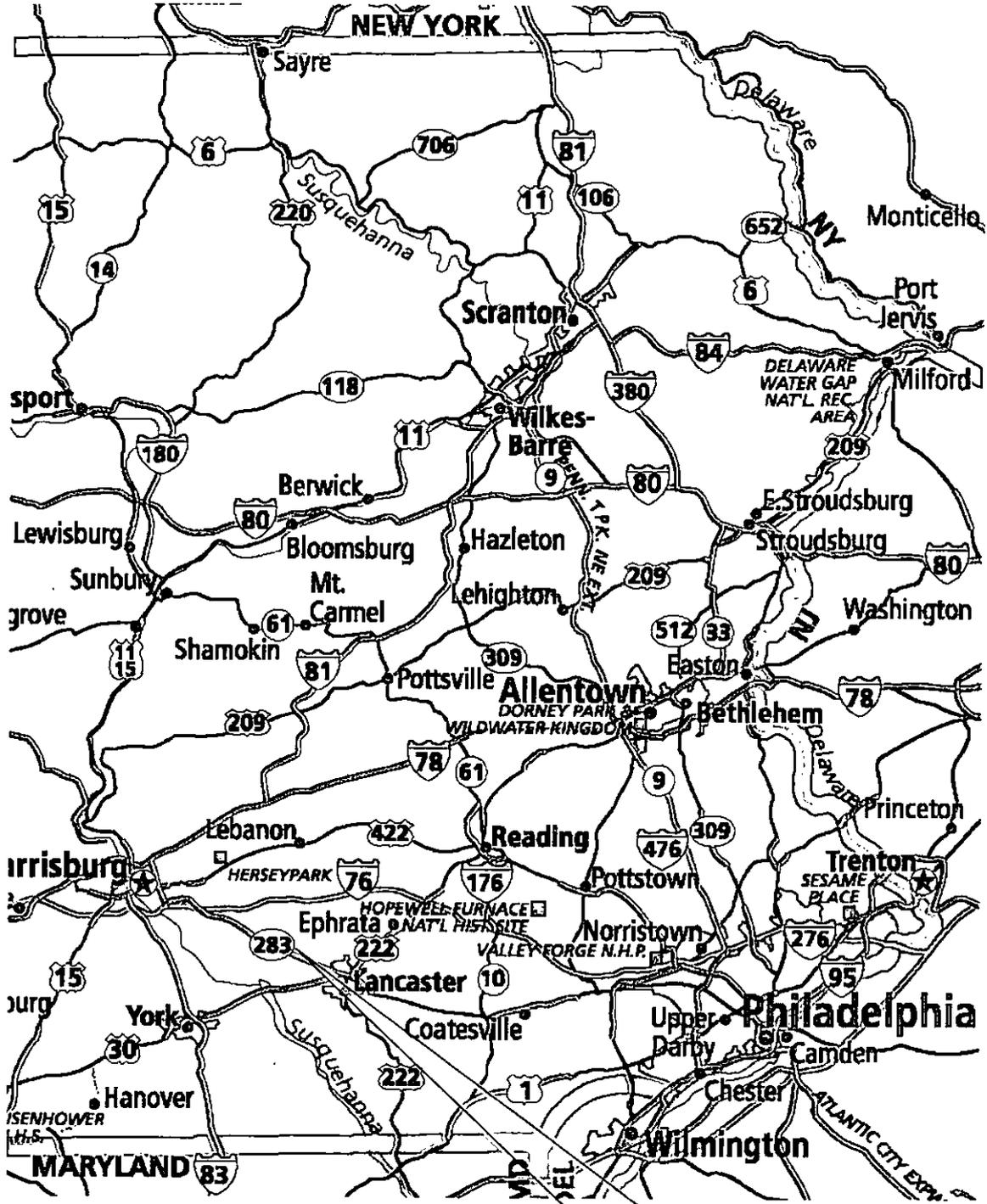
This document sets forth the necessity statement, siting analysis, and engineering description for the proposed West Hempfield – McGovernville #1 and #2 138/69 kV Transmission Tie Line and is comprised of the following exhibits and appendices:

- Exhibit "A" - Necessity Statement
- Exhibit "B" - Core Area Environment
- Exhibit "C" - Siting Analysis
- Exhibit "D" - Engineering Description

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Appendix A	Environmental Inventory Guidelines
Appendix B	Exhibit "B" Bibliography
Appendix C	Governmental Agencies, Municipalities and Other Public Entities Contacted
Appendix D	Lancaster County Historic Sites
Appendix E	List of Property Owners Within the Proposed Right-of-Way
Appendix F	PPL Design Criteria and Safety Practices
Appendix G	PPL Magnetic Field Program
Appendix H	List of Governmental Agencies, Municipalities and Other PPL Entities Receiving Applications

LOCATION MAP



WEST HEMPFIELD -
McGOVERNVILLE
PROJECT AREA

EXHIBIT "A"
WEST HEMPFIELD - McGOVERNVILLE #1 & #2 138/69 kV TIE
NECESSITY STATEMENT

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FIGURE 1	FUNCTIONAL ONE-LINE DIAGRAM OF EXISTING FACILITIES
FIGURE 2	FUNCTIONAL ONE-LINE DIAGRAM OF PROPOSED FACILITIES

MAP

MAP 1	PPL TRANSMISSION SYSTEM MAP	EXHIBIT "A" MAP POCKET
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EXHIBIT "A"

WEST HEMPFIELD - McGOVERNVILLE #1 & #2 138/69 kV TIE

NECESSITY STATEMENT

I. INTRODUCTION

PPL proposes to construct a new 1.8-mile double circuit 138/69 kV transmission line. The proposed new West Hempfield - McGovernville #1 and #2 Tie Line will connect the Kellogg #1 and #2 Taps off the South Manheim - South Akron #1 and #2 138/69 kV Lines with the existing West Hempfield - Donegal and West Hempfield - South Manheim #3 138/69 kV Lines. The proposed double circuit transmission line will be operated initially at 69 kV until load growth requires its conversion to 138 kV operation. The proposed 1.8 miles of new transmission line will extend existing transmission line facilities and will transfer supply of the McGovernville and Kellogg 69-12 kV Substations from the South Manheim 230-69 kV Substation to the West Hempfield 230-69kV Substation.

A PPL system map showing the existing transmission line facilities with a design voltage of 35 kV or greater is included as Map 1 in the Exhibit "A" map pocket. This filing addresses only the existing and proposed 138/69 kV system in northwestern Lancaster County.

The estimated cost to design and construct this project is \$2.844 million including the cost to acquire rights-of-way. The project's required in-service date is May 2003. The required in-service date is defined as the date the proposed facility needs to be placed in-service to prevent existing facilities from violating the Company's planning guidelines (see discussion below). The current scheduled in-service date has been delayed to May 2004.

II. SYSTEM PLANNING PROCESS AND GUIDELINES

System planning is the process PPL employs to assure that its 69 kV and 138 kV transmission lines (also referred to as the regional system) can supply electricity to all customer load in a reliable, economic and environmentally acceptable manner. The goal of this process is to assure that PPL's regional transmission system is planned and constructed so that:

- It can sustain probable contingencies and disturbances with no loss of load;
- It can adequately serve each customer's needs with regard to capacity, voltage and reliability; and
- It is in conformance with the applicable PPL reliability principles and practices.

The reliable and economical operation of the PPL regional transmission system requires conformity to planning guidelines for system expansion. The principles upon which these planning guidelines are based recognize that:

- System expansion should be coordinated to achieve the most economical balance of construction and operating expenditures;
- System expansion should maintain a proper balance between the degree of risk, amount and type of load interrupted, and the cost of providing the needed expansion; and
- System reliability should be maintained to prevent large scale, long term, or frequent service interruptions and, thereby, avoid the adverse effects and hazards to the public of such interruptions.

In accordance with these guidelines and the PPL Reliability Criteria, PPL's regional transmission system is planned so that:

1. Normal operation of the system will not load any electric facility beyond its normal continuous rating.

2. The loss of a single transmission line, double circuit line (due to the loss or failure of a single tower or pole), generating unit connected to the regional transmission system, power transformer, substation bus, or circuit breaker, does not result in any system electric facility being operated beyond its applicable emergency rating.
3. No customer load should be interrupted for routine maintenance of regional transmission facilities.
4. The loss of any single facility should not result in a voltage drop of more than 5% on the regional transmission system.

The planning process begins with development of a computer model of the future system. A specific study year is chosen, and the future system model is developed using the existing system plus any planned modifications to the transmission system scheduled to be in service prior to the study year. Load levels used in the system model are based on the latest forecast prepared within the Asset Operations Evaluation Department of PPL. The load forecast is based on recent and past summer peak loads and on normal and high temperature and humidity indices.

Once the system model is complete, comprehensive power flow simulations are performed to determine the ability of the system to comply with the PPL Reliability Criteria. This is accomplished by simulating an outage of each regional transmission and bulk power facility. All conditions under which the system is not in conformity with the PPL Reliability Criteria are identified, and system reinforcements are added to bring the system into conformity. Estimated costs and lead-times to implement the required reinforcement are also identified. Computer simulations of the system are developed incorporating the identified reinforcement alternatives in order to ascertain the best overall alternative to meet the needs of the region in a reliable, economic and environmentally acceptable manner.

III. EXISTING REGIONAL TRANSMISSION SUPPLY SYSTEM: WEST HEMPFIELD AND SOUTH MANHEIM AREA

Figure 1 shows the relevant existing 138/69 kV transmission lines in the part of northwestern Lancaster County served by the South Manheim and West Hempfield 230-69 kV Substations. The 230-69 kV power transformers at South Manheim are primarily supplied from the Brunner Island–South Manheim 230 kV Line, part of the PPL bulk power system. The West Hempfield 230-69 kV power transformers are supplied primarily from the Brunner Island–West Hempfield 230 kV Line and, to a lesser degree, from the West Hempfield – Manor 230 kV Line. The 69 kV transmission lines that exit from the South Manheim and West Hempfield 230-69 kV Substations provide electrical supply to 25 69-12kV distribution substations, and are projected to serve a total load in excess of 400 MW by the 2003 summer peak period.

Table 1, below, shows the 69 kV transmission line ratings and expected loading under projected 2003 summer peak conditions.

TABLE 1

SOUTH MANHEIM-SOUTH AKRON #1 AND #2 138/69kV LINE

RATING/LOAD TABLE– SUPPLIED BY SOUTH MANHEIM 230/69 kV SUBSTATION

TABLE OF 2003 SUMMER LOADING VERSUS RATINGS FOR NORMAL AND SINGLE CONTINGENCY CONDITIONS

Substations and 69kV Lines	Line Summer Rating		Without load transfer to West Hempfield Substation		With transfer of approximately 32 MVA to West Hempfield Substation	
	System Normal	First Cont. ¹	System Normal	First Cont. ¹	System Normal	First Cont. ¹
	MVA Rating	MVA Rating	MVA LOAD	MVA LOAD	MVA LOAD	MVA LOAD
SOUTH MANHEIM 230/69KV SUBSTATION						
S. Manheim – S. Akron #1 69kv line	97	120	69	129 107% overload	48	94
S. Manheim – S. Akron #2 69kv line	97	120	53	129 107% overload	42	94

¹“First contingency rating” is a short-term rating when one or the other 69 kV line is out.

IV. DEFINITION OF THE PROBLEM

The problem presented is how to alleviate summer 2003 overload constraints on the South Manheim - South Akron #1 and #2 69 kV lines for a single contingency outage of either line. The proposed West Hempfield – McGovernville #1 and #2 138/69 kV Tie Line would address the problem by providing sufficient load transfer capability to alleviate these overloads in a manner consistent with the PPL Reliability Criteria. This project is part of a coordinated effort to provide load transfer capability, as explained below, and facilitates future conversion of the regional transmission system to 138 kV operation. In addition, construction of the proposed line will eliminate concerns with the following conditions that will cause overloads and associated low-voltages in excess of PPL's system expansion planning criteria:

- A loss of the South Manheim 69 kV Bus No. 1 would cause the South Manheim – South Akron #2 69 kV Line to overload and would cause voltage drops exceeding 7.5% on the Homet and Dillerville/Armstrong 69 kV Buses.
- A loss of the South Manheim 69 kV Bus No. 3 would cause the South Manheim – South Akron #1 69 kV Line to overload and would cause voltage drops exceeding 7.5% on the Homet and Dillerville/Armstrong 69 kV Buses.
- In the event of the loss of all 230-69 kV power transformers at either the West Hempfield or South Manheim 230-69 kV Substations, the proposed line will provide a high capacity transmission tie path for quick restoration of service to customers.

V. 138 kV SYSTEM CONVERSION

The conversion to 138 kV operation is expected to occur around the 2011/12 time frame when demand is projected to exceed the capability of the 69 kV transmission lines in this area. Constructing the proposed transmission line for 138 kV operation will facilitate

future conversion of the regional transmission system in this area to 138 kV while minimizing interruptions to customer service during the conversion.

VI. PROPOSED SYSTEM

The proposed system addition will consist of a 1.8-mile double circuit, high-capacity 138/69 kV transmission tie line. The proposed line will provide the link in the regional transmission system that will transfer load between the West Hempfield and South Manheim 230-69 kV Substations under various outage scenarios. Specifically, the proposed line will prevent overloading of the South Manheim – South Akron #1 and #2 69 kV Transmission Lines by transferring the supply of approximately 32 MVA of load from the South Manheim 230-69 kV Substation to the West Hempfield 230-69 kV Substation. Additionally, the proposed line will provide a high capacity 138/69 kV regional transmission tie to accommodate future load growth, allow load transfers between the West Hempfield and South Manheim 230-69 kV Substations for the loss of 230-69 kV power transformers at either substation, and provide improved operating flexibility as compared to the existing system.

A one-line diagram depicting the proposed system additions is shown in Figure 2 at the end of Exhibit “A”.

VII. ALTERNATIVES CONSIDERED

Five alternatives were considered for providing the needed reinforcement to northwestern Lancaster County. Each alternative was designed to eliminate the single contingency overload of one circuit of the South Manheim –South Akron 138/69 kV Line if the other circuit were lost and, thereby, ensure that customer load in the region could be supplied in accordance with PPL’s reliability criteria in an economic and environmentally acceptable manner. Each of the five alternatives are identified and described below:

Alternative 1 - Construct a 1.8 mile, double circuit 138/69 kV line from the Kellogg #1 and #2 Taps off the South Manheim - South Akron #1 and #2 138/69 kV Lines to the existing West Hempfield - Donegal and West Hempfield - South Manheim #3 138/69 kV lines (Preferred Option).

Alternative 1 would construct a new double circuit 138/69 kV transmission line of approximately 1.8 miles in length to be operated at 69 kV until load growth requires conversion to 138 kV operation. The proposed transmission line will extend the existing transmission facilities to supply the McGovernville and Kellogg 69-12 kV Substations from the West Hempfield 230-69kv Substation.

The transmission line will be constructed with 556.5 KCMIL ACSR conductors to provide a high capacity transmission tie between PPL's West Hempfield and South Manheim 230-69 kV Substations. The lines will connect to the West Hempfield – Donegal and West Hempfield – South Manheim #3 69 kV Lines in the vicinity of the Landisville 69-12 kV Substation on the West Hempfield side and in the vicinity of the McGovernville 69-12 kV Substation on the South Manheim side. The estimated cost to design and construct this project is \$2.844 million including the cost to acquire rights-of-way.

This reinforcement alternative resolves the short-term capacity concerns and contributes to the long-term development of the 138/69 kV regional transmission supply system. It will relieve overloading on the South Manheim – South Akron #1 and #2 69 kV Lines by facilitating the transfer of approximately 32 MVA of load to the West Hempfield 230-69 kV Substation. Additionally, it will facilitate the future conversion to 138 kV operation. Additionally, it will establish a high capacity tie line between the West Hempfield and South Manheim Substations to provide transfer capability for the loss of power transformers at either of these substations.

This alternative is more economical because it requires the construction of only 1.8 miles of new transmission line and minimizes right-of-way acquisition by paralleling and overlapping existing state highway and railroad right-of-way. No extensive outages of existing facilities would be required to construct the new transmission line, thus

maintaining the reliable supply to customers in this area. In addition, no substation construction work would be required for this option. For the reasons cited above, this option is the preferred alternative.

Alternative 2 - Construct a new double circuit 69 kV transmission line of approximately 5 mile in length from the South Manheim 230-69 kV Substation to the McGovernville/Kellogg Taps.

Alternative 2 would establish a new double circuit 69 kV transmission line, utilizing 556.5 KCMIL ACSR conductors, from the South Manheim 230/69 kV Substation, a distance of approximately 5 miles, to the McGovernville/Kellogg 69 kV Taps on the South Manheim – South Akron #1 and #2 69 kV lines. This project would eliminate the single contingency overload conditions on the South Manheim-South Akron #1 & #2 69 kV Line by carrying approximately 35 MVA of load to supply the McGovernville and Kellogg Substations. By creating another transmission link between the South Manheim 230-69 kV Substation and the McGovernville/Kellogg Substations, reliability would be improved and customer outages and low voltage concerns would be minimized. This alternative is estimated to cost \$8.4 million.

This reinforcement alternative would resolve the short-term capacity concerns and would contribute to the long term development of the 69 kV regional transmission supply system by providing additional transmission lines to the region supplied by the South Manheim 230-69 kV Substation. However, this alternative is less economical, would require more construction lead-time, and would encumber more land because of the greater length of the new transmission line. The lead-time required to acquire right-of-way and construct this alternative would be significantly longer than for the preferred option, and the need to obtain more right-of-way would add uncertainty. In addition, the new transmission line would not facilitate future conversion to 138 kV operation. Finally, this alternative would not connect the West Hempfield and South Manheim 230-69 kV Substations, thereby limiting operating flexibility by preventing load transfers during planned and unplanned outages at either substation. Due to all of these limitations, this alternative was eliminated in favor of Alternative 1.

Alternative 3 – Install a 138-69 kV substation between the existing 138 kV system and the 69 kV System

Alternative 3 would require PPL to construct a new 138-69 kV substation with two 138-69 kV 75 MVA power transformers. In addition, PPL would have to construct the associated transmission line and protection and control facilities to interconnect the existing 69 kV and 138 kV systems. This alternative is estimated to cost approximately \$8.35 million.

This reinforcement alternative would resolve the short-term overload concerns. However, it would not provide increased reliability during planned and forced outages of the 138-69 kV transformers. Furthermore, the 138 kV system, when in network operation, is subjected to heavy power transfers during an outage of the Brunner Island – South Manheim 230 kV Line. These heavy power flows cause capacity constraints in the 138 kV system resulting in overloads requiring additional reinforcement of the existing 138 kV system. Additionally, the prospect of finding a suitable site to build a new 138-69 kV substation near a point where the existing 69 and 138 kV systems converge in a congested area would be difficult. Due to all of these limitations, this alternative was eliminated in favor of Alternative 1.

Alternative 4 – Convert the Dillerville and Armstrong Cork 69-12 kV Substations to 138 kV operation

Alternative 4 would require PPL to convert the Dillerville and Armstrong Cork 69-12 kV Substations and their associated transmission line connections to 138 kV operation. This conversion would transfer approximately 50 MVA of summer peak load from the South Manheim – South Akron #1 and #2 69 kV Lines to the 138 kV system. The estimated cost of this alternative is approximately \$4.7 million.

This reinforcement alternative would resolve the short-term overload concerns by transferring approximately 50 MVA of load from the South Manheim - South Akron #1 and #2 69 kV Lines to the 138 kV system. However, the conversion of these substations and associated load transfer would cause overloads in the 138 kV system by

approximately the summer of 2006. Therefore, the 138 kV system would also have to be upgraded, at an additional cost of \$1 million. Furthermore, conversion of the substations to 138 kV and connecting them to the 138 kV system would require considerably more construction time than the preferred option. Reliability of service to customers supplied by the Dillerville and Armstrong Cork Substations would be affected during the conversion because of limited load transfer capability to adjacent transmission lines. Due to all of these limitations, this alternative was eliminated in favor of Alternative 1.

Alternative 5- Rebuild and reconductor approximately 4 miles of the existing double circuit South Manheim – South Akron #1 & #2 69 kV Lines from the South Manheim Substation to the Kellogg/McGovernville Tap

Alternative 5 would rebuild the existing double circuit 69 kV transmission line with 795 KCMIL ACSR conductors for a distance of approximately four miles from the South Manheim 230-69 kV Substation to the McGovernville/Kellogg 69 kV Taps. This project would eliminate the single contingency overload conditions on the South Manheim - South Akron #1 & #2 69 kV Line. This alternative is estimated to cost \$4.6 million

Alternative 5 would resolve the short-term capacity concerns but would not contribute to the long-term development of the 69 kV transmission supply system by providing additional transmission lines to the area supplied by South Manheim Substation. This alternative is less economical, would require rebuilding 4 miles of existing double circuit transmission line and could disrupt service to customers during construction. In addition, rebuilding of the existing transmission lines does not facilitate future conversion to 138 kV and does not provide load transfer capability between the West Hempfield and South Manheim Substations for the loss of transformation at either of these substations. Due to all of these limitations, this alternative was eliminated in favor of Alternative 1.

Conclusion

Based upon the analysis summarized above, PPL determined that Alternative 1 was the best solution to the problem identified in Section IV, above.

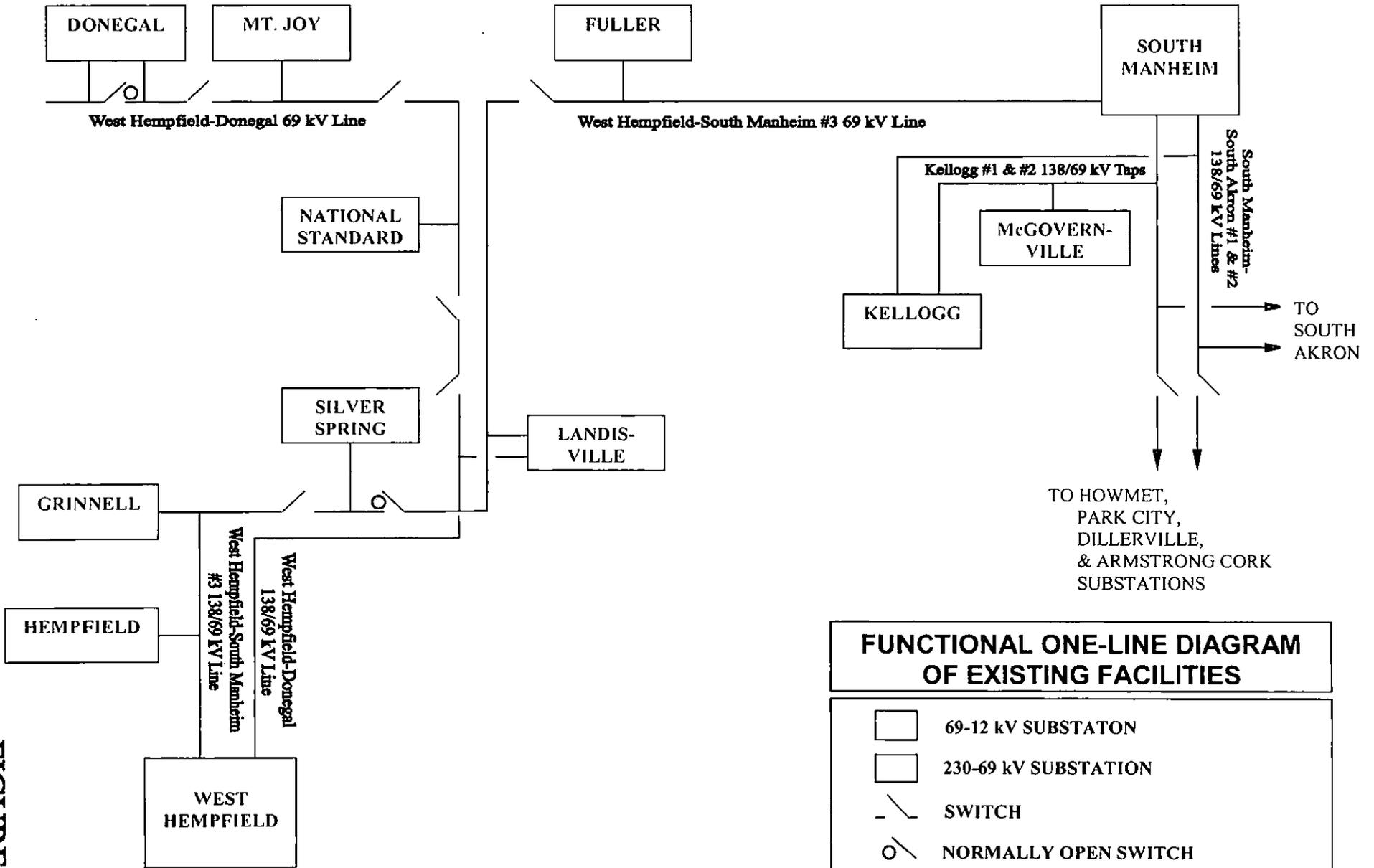


FIGURE 1

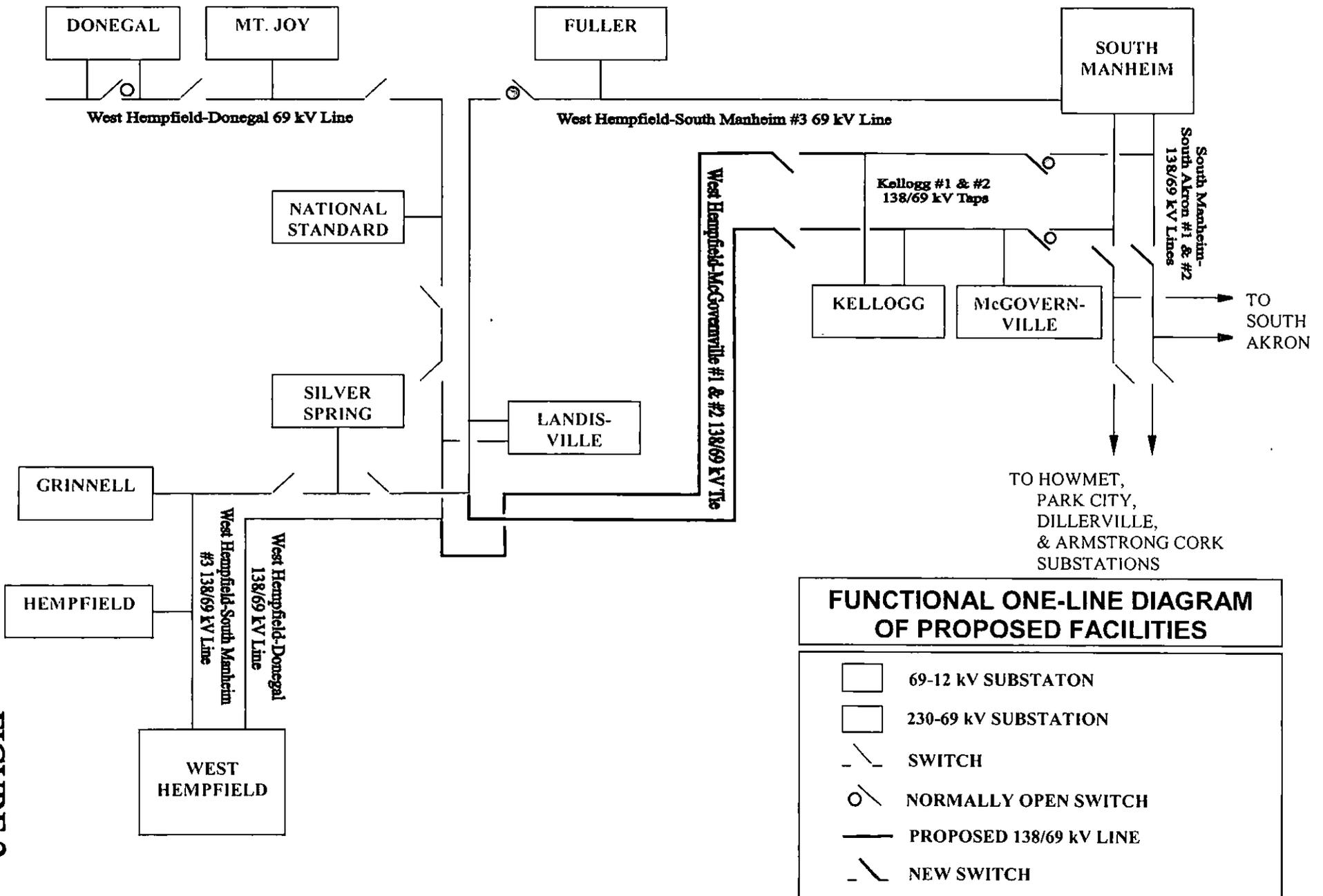


FIGURE 2

EXHIBIT "B"
WEST HEMPFIELD - McGOVERNVILLE #1 & #2 138/69 kV TIE
STUDY AREA ENVIRONMENT

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EXHIBIT “B” MAPS

Map 1	Linear Features
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EXHIBIT "B"

WEST HEMPFIELD – McGOVERNVILLE #1 & #2 138/69 kV TIE STUDY AREA ENVIRONMENT

I. INTRODUCTION

Exhibit "B" provides an environmental inventory of the West Hempfield-McGovernville Transmission Line Project Core Area and Study Area. The information contained in this report was gathered from several sources, including: black and white aerial photography; field reconnaissance surveys; meetings and discussions with environmental specialists, planners and other individuals familiar with the area; information supplied by public agencies; and appropriate publications. References used and contacts made to gather this environmental information are listed in Appendices "B" (Bibliography) and "C" (Governmental Agencies, Municipalities and Other Public Entities Contacted).

II. PROJECT AREA LOCATION AND DESCRIPTION

The project area is located approximately six miles northwest of the City of Lancaster in Lancaster County. The Core Area is situated entirely within East Hempfield Township and surrounds the village of Landisville.



Physiographically, the project area lies in the Piedmont province, characterized by low, rolling hills. Elevations throughout the Study Area are generally near 400 feet above sea level. Farmland is a prominent landscape of the Study Area, interspersed with occasional tree or shrub rows. In the Core Area, State Highway 283 serves as a dividing line between contrasting land uses. To the south, the villages of Landisville and Salunga dominate, featuring residential areas of varying age, as well as several industrial and commercial

operations. The area north of Highway 283 is largely agricultural. Homes are few, and with the exception of farmsteads, are generally found along local township roads.

III. DELINEATION OF CORE AREA AND STUDY AREA

PPL conducted a detailed siting analysis to determine the most acceptable location for the West Hempfield-McGovernville Transmission Line. These studies included the determination of a Core Area, the compilation of an environmental inventory, and selection and analysis of the proposed line route corridor. Because of the short line length, as well as the physical limitations of existing development and land use patterns, no reasonable alternatives to the proposed line route were identified.

The Core Area for the project is shown on Map 1 – Linear Features. The core area is that territory in which line route alternatives can be sited to feasibly meet the project's functional requirements and, at the same time, minimize environmental impacts and project costs.

The boundaries of the West Hempfield-McGovernville Transmission Line Project Core Area were determined by the potential supply and destination service points viewed with consideration for man-made and natural boundaries beyond which line route alternatives would not be reasonable.

The eastern and western boundaries are dictated by the functional requirement of locating and constructing the West Hempfield-McGovernville Transmission Line between the West Hempfield-Donegal/West Hempfield-South Manheim #3 138/69 kV Transmission Lines and the Kellogg #1 and #2 Tap Lines. The northern and southern boundaries are parallel to and equidistant from State Highway 283 and the Amtrak lines and approximately three-quarters of a mile on either side of this transportation corridor. The boundary lines were established to evaluate potential line route alternatives and impacts on nearby areas.

The Core Area is approximately 2.5 miles long, 1.6 miles wide, and about 4.25 square miles in total land area.

The project Study Area, shown on Map 7 - Cultural and Unique Features, includes a nearly two-mile area beyond the Core Area boundaries. The Study Area, although relatively remote from the proposed line route, is used for the inventory and mapping of significant archaeological resources, historic sites and unique environmental features.

IV. ENVIRONMENTAL INVENTORY GUIDELINES

An environmental inventory lists environmental factors considered when evaluating and selecting transmission line routes and substation sites. These factors can be either adversely affected by, or compatible with, transmission facilities.

Major environmental factors and the reasons why they are inventoried are listed in Appendix A - Environmental Inventory Guidelines.

V. ENVIRONMENTAL INVENTORY

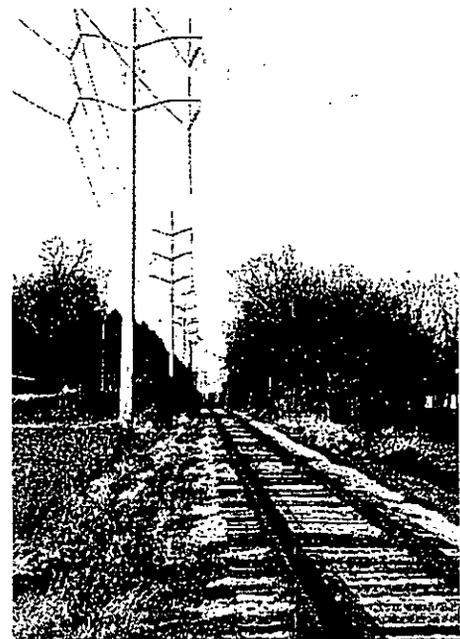
Accurate base maps are used to identify and record environmental data. The maps for the project Core Area have been developed by digitally compiling the most recent United States Geologic Survey (USGS) 1:24,000 scale maps of the area, in conjunction with digital Geographic Information System (GIS) data provided by the Lancaster County GIS Department. The County GIS Department provides information-linked map data for land use, zoning, land and water features, and man-made features, such as roads, buildings and railroads. Additional data, such as soil and floodplain maps, have been acquired from the Pennsylvania State University via the internet. This compilation of data has been manipulated in a GIS program to provide the necessary graphic and informational results. Finally, the resultant maps have been checked and confirmed by field investigations and meetings with local officials.

The environmental inventory data are collected from in-the-field surveys, numerous published and unpublished reports, plans, studies and personal contacts. The environmental data collected included the following subjects:

- Linear Features (Map 1)
- Existing Land Use (Map 2)
- Municipal Zoning (Map 3)
- Soils and 100-Year Floodplains (Map 4)
- Natural Features and Slope (Map 5)
- Agricultural Preservation Areas (Map 6)
- Cultural and Unique Features (Map 7)

A. LINEAR FEATURES – MAP 1

Roadways, railroads, pipelines and transmission lines are examples of linear features. In many situations, it may be desirable for a proposed transmission line to parallel existing linear features. This paralleling approach can eliminate the need for a new corridor and, thereby, reduce land use and environmental impacts, as a new line creates only incremental impacts when added to an existing linear feature.



The following linear features, which are found within the Core Area, appear on all of the Environmental Inventory Maps:

ELECTRIC TRANSMISSION LINES AND SUBSTATIONS

There are several existing transmission lines in the Core Area, all of which will be functionally linked by the proposed line. The names of the existing lines are as follows:

- West Hempfield – Donegal 138/69 kV Transmission Line
- West Hempfield – South Manheim #3 138/69 kV Transmission Line
- Kellogg #1 and #2 138/69 kV Taps

In addition to these transmission line facilities, the McGovernville 69-12 kV Substation is located within the Core Area, on the southeast side of the Route 722/Amtrak overpass.

HIGHWAYS AND ROADS

The area's transportation network is comprised of one major highway and several lesser roads, including the following:

- State Highway 283 (right), a limited-access four-lane freeway, connects the nearby cities of Lancaster and Harrisburg. Interchanges on each side of Landisville provide access to the project area.



- State Route 722, a two-lane road, connects Landisville with East Petersburg Borough to the northeast.
- Old Harrisburg Pike, the original Harrisburg-Lancaster link, now acts as a "business route" through the towns along the Route 283 corridor. In Landisville, this road is known as Main Street.

- Landisville Road, known as Church Street to the south of Route 283, provides access to residential and agricultural areas to the north and south of Landisville, as well a connection to nearby State Routes 72 and 23.

Three smaller roads provide important access to the proposed transmission line location. Champ Boulevard, an access road found off the Spooky Nook Road exit of Route 283, leads to the proposed western terminus of the line. McFarland Drive and Yellow Goose Road, on the north side of Old Harrisburg Pike one mile east of Landisville, serve properties that abut the eastern terminus.

PIPELINES

The Columbia Gas Transmission Company owns an underground gas line that traverses East Hempfield Township approximately 1.6 miles south of Landisville. However, the line does not enter the Core Area.

RAILROADS

Amtrak owns two parallel railroad tracks next to State Highway 283. This east-west line sees heavy train traffic daily, as it is the conveyor of several Amtrak routes carrying passengers from



Philadelphia and New York westward to Harrisburg, Pittsburgh and Chicago. Overhead transmission lines provide electricity for the Amtrak trains. The route is occasionally used by Norfolk & Southern freight trains, usually limited to 3-6 trains per week. A spur railroad line stems from the main line in the village of

Landisville, heading in a southerly direction. This single line, owned by the Landisville Railroad Company, originally connected with railroads along the Susquehanna River near Columbia, but now ends just short of Stony Battery Road (2 miles south of Landisville). At the southern terminus, Amherst Industries unloads and stores large lumber wares from freight trains, primarily for lumberyard clients in the Landisville vicinity. Freight activity attracts three trains per week on this line. The same route once continued north from Landisville, but has since been converted to the Lancaster Junction Recreation Trail.

B. LAND USE – MAP 2

Identifying existing land use is important in the siting of electric transmission lines and related facilities. Each type of land use activity varies in the significance of impact from a transmission line. Land uses are mapped to provide an understanding of the wide variety of land activities found in the Core Area and to evaluate the potential impact of a transmission line upon them.

Existing land use data were obtained from the Lancaster County GIS Department's Land Cover/Land Use digital map layer. This data set assigns a land use code to individual areas digitized from aerial photography. Boundaries and sizes of these areas were determined by natural visual breaks in the imagery (this was performed by the Lancaster County GIS Department). Field surveys were undertaken throughout the Core Area to verify and/or update these land use designations.

The land uses inventoried are described below.

- **Agricultural/Pasture** – includes land used exclusively for farming, including cropland, pasture and hay/straw fields.
- **Commercial/Office Park** – includes shopping centers, restaurants, retail, wholesale, service and /or related establishments.

- **Farmstead** – includes a building or group of buildings that may contain a residence, barn and accessory buildings associated with farming and agricultural uses.
- **Feed Operations** – includes land and structures used for the large scale feeding of farm animals.
- **Industrial** – includes uses such as manufacturing plants, warehousing and related production facilities and offices.
- **Orchards/Tree Farms** – includes land used for vineyards, the cultivation of fruit trees and for the growing of Christmas trees.
- **Public/Semi-Public** – includes schools, churches, cemeteries and other related land uses.
- **Recreation** – includes public and private outdoor recreational areas such as campgrounds, bicycling and hiking trails and active and passive parkland.
- **Residential** – includes land used for residential dwellings, residential clusters and manufactured home developments.
- **Transportation/Utilities** – includes transportation corridors (including 4-lane divided highways and railroads), highway departments, electrical substations, water towers/tanks and sewage treatment plants.
- **Undeveloped** – includes woodlands and/or other types of open areas, which are presently undeveloped.

EXISTING LAND USE

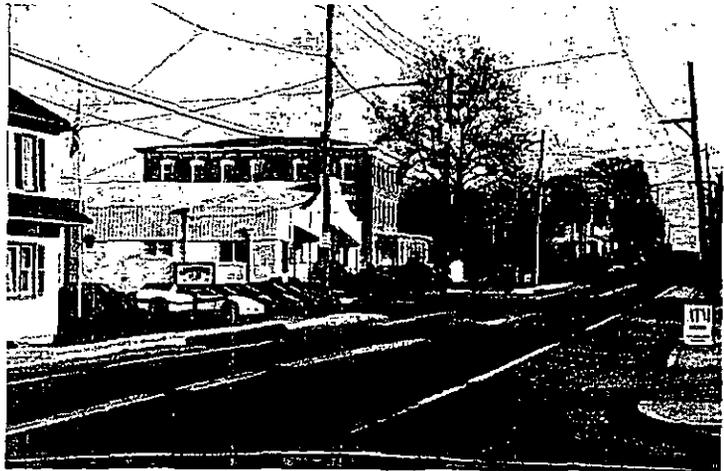
A geographical analysis reveals that the project area has many suitable land uses. While there is significant residential development in the Core Area, agriculture is the dominant land use by area. This is especially true in the areas north of State Highway 283, which serves as a man-made barrier between contrasting land uses. Agriculture uses in this area include cornfields, soybean fields, hay/straw fields, grazing pastures, sod farms and evergreen tree farms.

Residential land uses are spotty in the northern half of the Core Area. Many residences are in the form of farmsteads situated in the middle of large agricultural tracts.



Other homes are found along roads, mainly on multiple-acre parcels, though some occur in linear clusters on small lots. The southern area is comprised of the village of Landisville, part of the village of Salunga, and many outlying neighborhoods and subdivisions. Residential neighborhoods in this area display varying age and lot size. The village area features many early 20th Century homes on small lots. South of Elizabeth Street, homes date from the post-war era, with many single-story brick structures. The newest homes in the Core Area are found in subdivisions east of the village on both sides of Old Harrisburg Pike (above). Lot sizes here are slightly larger. Also in this area, on Old Harrisburg Pike, is the Oak Leaf Manor Assisted Living Home, a new facility of considerable size. An isolated pocket of farmstead and agriculture exists in the extreme southern portion of the Core Area, between Church Street and Nissley Road.

Commercial land uses, while not a major land use type in the Core Area, can be found in Landisville's village center (right) and near the Route 283/722 interchange. The main intersection in



Landisville (Church and Main Streets) is surrounded by two gas stations, a convenience store and a small strip mall. The north side of the highway interchange features a gas station/convenience store, car dealer, and farm market. The major industrial uses in the Core Area include the Kellogg plant on Route 722 and Yellow Goose Road, the Armstrong Floor Products Distribution Center on Spooky Nook Road, and a large lumber yard along the railroad tracks in the village center.

Major public/semi-public land uses in the Core Area include the campus of public schools on the west side of Church Street in Landisville, the East Hempfield Township Administration Building at the north end of Nissley Road, as well as various churches and the Salunga Fire Station. A police/fire training facility is currently under construction on Champ Boulevard, adjacent to the proposed western terminus of the transmission line.

Recreation uses include Amos Herr Park on Nissley Road (right), the Hempfield Recreation Center in central Landisville, a



golf driving range on Spooky Nook Road, and the Landisville Junction Recreation Trail, extending north from Champ Boulevard. In addition, the expanses of school-owned athletic fields comprise much of the total recreation land.

PROPOSED LAND USE

Proposed land uses are grouped with current land use in this study due to the rare occurrence of large-scale new construction in the Core Area. Residential development is functionally capped in the area, due to full subdivisions and zoning restrictions elsewhere. Construction projects in progress as of November 2002 include a county-operated police and fire training facility on Champ Boulevard, and a house on Colebrook Road. Potential for future construction exists on lands that are zoned industrial or commercial and are now vacant. These include lots in the McFarland Drive industrial park, the large parcel east of Route 722 along the Amtrak line, and the commercial parcel east of the Turkey Hill on Route 722.

AIRPORTS/LANDING STRIPS

The United States Department of Transportation (Federal Aviation Administration) and State Department of Transportation (Bureau of Aviation) have established structure height guidelines that apply in areas near airports. The nearest airports, intended primarily for private use, are located in Columbia and Lititz. Both are situated six miles from the Core Area and will not be impacted by the proposed transmission line.

C. MUNICIPAL ZONING – MAP 3

Local zoning is often an indicator of the potential type and location of future community development. The West Hempfield – McGovernville Transmission Line Project is located in East Hempfield Township, which has adopted an official

zoning ordinance of its own design. The following zoning districts are shown on Map 3:

- Agricultural
- Agricultural Holding
- Suburban Residential
- High Density Residential
- Village Residential
- Local Commercial
- Highway Commercial
- Light Industrial
- General Industrial

Most land zoned for agriculture lies to the north of State Highway 283. In fact, the entire section of Core Area north of Route 283 and east of the Lancaster Junction Recreation Trail is zoned agricultural with the exception of the Route 722 interchange area. Agricultural zoning allows residential construction on a specified minimum lot size. Isolated tracts of agricultural zoning exist in the southern part of the Core Area, near the intersection of Bowman and Nissley Roads, and also near the intersection of Old Harrisburg Pike and Route 722. These particular parcels are all zoned as Agricultural Holding.

Zoning intended for residential development occurs in housing subdivisions spurring from Old Harrisburg Pike, Nissley Road and Bowman Road. Although the central area of Landisville also contains medium to high density residential neighborhoods, this area is considered Village Residential, a zoning designation that allows for a variety of land uses that preserve the historic characteristics of the area. East Hempfield Township has adopted ordinances to restrict growth north of Route 283, maintaining the agricultural character of the land. Furthermore, there are no plans to extend public water or sewer service into this area.

Industrial zoning is intentionally clustered in two locations. The eastern cluster, zoned "Light Industrial", consists of the large Kellogg plant, a popcorn factory, and a small industrial park on McFarland Drive. This "park" is presently 50% occupied. A large parcel east of Route 722 is zoned light industrial but remains vacant. The western cluster of industrial zoning is given "General Industrial" status and is situated along the two railroad corridors that intersect in Landisville, and north of Route 283. Industrial tracts in the village, due to their small size, tend to house smaller operations than the large tracts north of Route 283 that house giants such as Armstrong.

Commercial zoning occurs in three locations within the Core Area. One cluster, designated as Local Commercial, occurs at the intersection of Church and Main Streets in Landisville and contains the Hempfield Shopping Center and several other businesses. A second area of local commercial zoned land is located at the intersection of Old Harrisburg Pike and Yellow Goose Road, where several small, family-owned businesses operate. Another commercial area designated Highway Commercial is located on Route 722 just north of the Route 283 interchange, encompassing the Turkey Hill store, Kelly car dealership, and a vacant lot.

D. SOILS AND 100-YEAR FLOODPLAINS – MAP 4

The characteristics of soils are an important determinant in transmission line siting. Some soil or rock conditions can pose difficult problems in engineering and construction of foundations. Environmental impacts can also occur with erosive soils and with re-vegetation of the right-of-way if droughty soils are found. Using U.S.D.A. Soil Conservation Service (SCS) soils maps for Lancaster County and use classifications, the Core Area was analyzed and mapped to identify the most significant soil problem areas.

Only one soil characteristic was identified in the Core Area as significant to transmission line siting, including construction, operation and maintenance and that is:

- High / Seasonally High Water Table Soils

High / seasonally high water table soils, with a water table at a depth of 36 inches or less, are largely confined to the intermittent stream valleys, natural drainageways and depressions found throughout the Core Area. A large, continuous area of such soil is found along Swarr Run and its feeder brooks. The middle third of the proposed transmission line traverses this area, a factor that may affect structure excavation.

Other soils that were identified and mapped within the Core Area include Class I and Class II prime agricultural soils. The United States Department of Agriculture (USDA) defines prime farmland soils as the land best suited to food, feed, forage, fiber, and oilseed crops. Prime farmland produces the highest yields with minimal inputs of energy and economic resources, and farming these soils results in the least damage to the environment. Much of the area is comprised of these soils and they exhibit few constraints for the construction of transmission lines.

PPL has developed standard procedures for dealing with soil problems. These procedures are set forth in the PPL's "Specifications for Soil Erosion and Sedimentation Control on Transmission Line Rights-of-Way" manual.

100-YEAR FLOODPLAINS

The 100-year floodplain boundaries were acquired digitally from Penn State University and were originally derived from Flood Insurance Rate Maps (FIRM) and SCS County Soil Surveys. In the Core Area, these floodplains are confined to the portion of Swarr Run that lies south of the Kellogg rail yards. The proposed

transmission line traverses Swarr Run but does not fall within the 100-year floodplain.

BEDROCK AND KARST TOPOGRAPHY

Soils with shallow depth to bedrock (36" or less) can pose problems in the construction of transmission line structures. According to the Soil Conservation Service maps and related data, there are no such regions in the Core Area.

Karst topography is land with a prevalence of caves, sinkholes, and other ground features associated with porous limestone geology. In Lancaster County, karst topography is common, especially in areas directly northwest of the Core Area. Sinkholes are known to exist in the Route 283 corridor between Mount Joy and Harrisburg, and at least two known caves lie in nearby Mount Joy Township. While no source identifies any karst features in the Core Area, the underlying limestone geology poses the possibility for them to exist. If encountered in proposed tower locations, karst topography could present a challenge for construction.

E. SLOPES AND NATURAL FEATURES – MAP 5

SLOPES

Identification of steep slopes is important to transmission line siting. The steeper the slope, the more difficult it is to clear vegetation, maneuver construction equipment, handle, haul and erect transmission structures and grade access roads and structure sites. Also drainage, erosion control and vegetation management problems generally increase with more severe slopes, especially when a line crosses perpendicular to the slope.

The U.S.G.S. topographic maps of the Landisville area provide the basis for the following three slope classifications:

- 0-15 percent
- 16-24 percent
- 25 percent and greater

Nearly all of the Core Area exhibits flat to gently rolling terrain, which will not pose a problem for transmission line construction. Both the 16 percent to 24 percent and the 25 percent and greater slope classifications are generally found adjacent to each other. These steep slope areas are located mostly in the southeastern section of the Core Area along a hillside. In addition, small areas of man-made steep slope occur on the embankments leading to highway and railroad overpasses. These are found on Landisville Road and Route 722 where they cross Route 283. The proposed transmission line is designed to span these areas. Other insignificant slopes exist near creeks, drainage ponds and swales.

NATURAL FEATURES

The natural features inventory and map represent a compilation of those natural elements in the environment that are considered to be significant to transmission line siting and construction. Elements include terrestrial and aquatic features, as well as visually prominent and scenic features.

Map 5 shows major natural features in the Core Area, including natural vegetation, streams, wetlands and open water. Wildlife habitat, both terrestrial and aquatic, are confined largely to these resources.

STREAMS AND OPEN WATER

Two minor watersheds drain the Core Area. Chickies Creek collects water exclusively from the northwestern portion of the Core Area. The remaining land is

drained by Swarr Run and its small, unnamed tributaries. Swarr Run flows southeasterly and feeds the larger Conestoga Creek. Both Chickies and Conestoga Creeks are first-order streams flowing directly into the Susquehanna River. These streams, as well as several small ponds, are shown on Map 5.

At its closest point, the Susquehanna River is located approximately 7 miles to the southwest of the Core Area. The Lower Susquehanna River Sub-basin, of which the Landisville region is a part, has a drainage area of 5,809 square miles. The northern portion of the Lower Susquehanna River Sub-basin contains ridges trending southwest to northeast and valleys of moderate width. The Susquehanna River cuts through these series of ridges and widens as it flows south to southeast through rolling hills and broad valleys of the central portion of the sub-basin. The Core Area lies within the southern portion of the sub-basin and is characterized by metamorphosed sediments that have been intensely folded and faulted. This material caused the river to carve a deep gorge into the bedrock in a narrowing river valley. The Susquehanna River flows into the Chesapeake Bay at Havre de Grace, Maryland, providing over 50 percent of the freshwater inflow to the bay.

Of the six sub-basins in the Susquehanna River Basin, the Lower Susquehanna Sub-basin is the most developed. The steep river slope and narrow valley of the Lower Susquehanna gorge provide areas for hydropower development. This part of the sub-basin is a major production area for electricity. Some of the most productive agricultural lands and largest population centers of the Susquehanna River Basin are located in the Lower Susquehanna Sub-basin. Intense agricultural development occurs in many of the fertile limestone-type soils throughout the sub-basin.

The Susquehanna River is used for public water supply, recreation, waterpower, irrigation, mining, and other industrial purposes. Most of the river water requires only moderate treatment for industrial use and public distribution throughout the

region. The Susquehanna River in this section of Lancaster County is classified as a warm water fishery by Chapter 93 Water Quality Standards. Fish species that occur in the Susquehanna River include American shad, striped bass, and smallmouth bass. Chickies Creek also has warm water fishery status, while Swarr Run is labeled as a trout stocking fishery.

Many of the water-quality issues in the Susquehanna River Basin can be related to the high human population density in the area and related activities associated with urban, industrial, and agricultural land use. Most concerns are related to human health (the quality of domestic water supply, the safety of water contact recreation, and the safety of eating game fish) and the health of ecological communities.

WETLANDS

Wetlands fulfill an essential role in our landscapes by maintaining water quality, stabilizing shores and stream banks, controlling floods and erosion, and providing critical habitat to many plant and animal species. Wetlands can vary considerably in their vegetation makeup, depending on the system and class to which they are identified. Wetlands in the Core Area include PEM and PUB classifications by the National Wetlands Inventory. The former signifies Palustrine, Persistent Emergent wetlands, the latter, Palustrine Unconsolidated-Bottom wetlands. One area of PEM wetlands is a series of springs between the northern ends of Nissley Road and McFarland Drive, along the Amtrak railroad. While these wetlands do not fall directly in the path of the proposed transmission line, they are within 200 feet.

NATURAL VEGETATION

The Core Area contains a variety of vegetation, ranging from urban/suburban open land and scrubland to mature woodlands. The Core Area is within the Northern Piedmont Section of the Appalachian Oak Forest Region of Pennsylvania. The major vegetation types depicted on Map 5 are discussed below.

The predominant cover in the Core Area consists of urban/suburban/agricultural cover types, including agricultural fields, open fields and areas overgrown with weeds and brush, often referred to as "scrubland". Ground cover in scrubland areas usually consists of a variety of grasses, herbaceous plants, briars, and brambles.



Larger trees can be found in fencerows and in woodlots located throughout the Core Area. A woodland area of particular significance to the project is a strip of mixed hardwood and

occasional white pine trees found between Route 283 and the Amtrak railway (above). The woodland strip ranges between 150 and 300 feet in width and runs parallel to the entire length of the proposed transmission line route. This tree row provides a visual backdrop for visitors to Amos Herr Park and Historic Site, as well as for residents of Landisville's northern fringe. The trees also serve as a visual barrier between these areas and busy Route 283, especially during the summer. Only one other area of continuous woodlands exists in the Core Area, on a hillside south of Old Harrisburg Pike in the extreme southeast corner.

Common tree species in the woodland areas include oak, hickory, maple, poplar and beech. Planted trees are common in the Study Area, with weeping willow being an apparent favorite among agricultural landowners north of Route 283. In Landisville, residential lots often feature flowering trees such as dogwood and cherry, as well as Norway spruces and other imported evergreens.

PHYSICAL FEATURES

Physiographic or major natural features are typically inventoried to identify those features that should be considered in determining the visual aspects of alternative routes. Routes crossing prominent physiographic features could create greater visual impacts. Major physiographic features include visually prominent slopes, high points and ridgelines. Investigations and field surveys identified the following physiographic features:

- Gradual south-facing slope from Long Road to Route 283, featuring agricultural fields and few trees.
- Visually prominent north-facing slope in extreme southeastern portion of Core Area (primarily wooded).

WILDLIFE, ENDANGERED AND THREATENED SPECIES

The Pennsylvania Fish and Boat Commission performed a review of the Core Area using the Pennsylvania Natural Diversity Inventory (PNDI) database in conjunction with their own informational resources. While no endangered, threatened or candidate endangered or threatened species are known to exist in the Core Area, several "species of concern" may inhabit the area. A rare invertebrate species called Price's Cave Isopod (*Caecidotea pricei*) is known in the vicinity of the project site. Isopods inhabit cold water springs, seeps and caves, and are threatened by habitat destruction and poor water quality. It is possible that Price's Cave Isopod may be listed as rare or threatened in the near future.

Two other species of concern that are known to exist in Lancaster County are the Bog Turtle (*Clemmys muhlenbergii*) and the Red-Bellied Turtle (*Pseudemys rubriventris*). The former is a small, semi-aquatic turtle that prefers open marshy wetlands associated with springs and groundwater, specific vegetative

communities and mucky soils for burrowing. Due to the lack of pristine habitat, however, the bog turtle has adapted to disturbed, low-quality wetland areas with semi-closed canopies. In addition, the bog turtle is known to use wooded wetland areas as corridors between more open wetland areas. The red-bellied turtle is a large, basking, herbivorous aquatic turtle found in lakes, ponds, and nearby streams and wetlands with open water content. These turtles nest on silty or sandy terrestrial habitats adjacent to their aquatic habitats. Both turtles are threatened by habitat destruction and poor water quality, though they do not appear on official endangered/threatened lists.

The area of wetlands near the northern terminus of Nissley Road in the Core Area may exhibit characteristics similar to the known habitats of the aforementioned organisms. However, Fish and Boat Commission officials do not foresee any significant impacts to these species of concern, or to any other rare or protected species, provided that best management practices are employed and siltation/erosion control measures are upheld.

F. FARMLAND PRESERVATION AREAS – MAP 6

As recognized by the American Farmland Trust, Pennsylvania leads the nation in the number of farms and acres of farmland protected, and Lancaster County is no exception.

The Lancaster County Agricultural Preserve Board oversees the Commonwealth's program to purchase agricultural easements and administers legislative programs designed to preserve farmland through the State Agricultural Preservation Board.



As shown on Map 6, Agricultural Security Areas and Agricultural Easements cover a large portion of the Core Area, especially to the north of Route 283.

G. CULTURAL AND UNIQUE FEATURES – MAP 7

As required by the Commission's siting regulations, Map 7 depicts the location of significant cultural areas and historic and archaeological resources within two miles of the preferred transmission line route. The resources identified within the Study Area are described below:

Historic Structures/Districts – the following is a list of historic structures/districts within the Study Area listed on the National Register of Historic Places. (Source: National Register Information System)

- Shenck's Mill Covered Bridge – Shenck Road at Chickies Creek (border with Rapho Township)
- Landis Mill Covered Bridge – Reiner Station Road at Conestoga Creek (border with Manheim Township)
- Samuel N. Mumma Tobacco Warehouse – Elizabeth Street at Barbara Avenue, Landisville



The Amos Herr House, located at the northern end of Nissley Road in Landisville, is a farmhouse dating from 1845 (left). While the municipally owned property is not included in the National Historic Register, East Hempfield

Township conducts tours and operates a craft store in the house. At its closest point, the proposed transmission line is located approximately 500 feet from The Herr House. However, the Rt. 283 and Amtrak rail corridor lie between the proposed line route and the Amos Herr House.

Recreation Opportunities - Several opportunities exist for recreation on public grounds within the Study Area as shown in the following list:

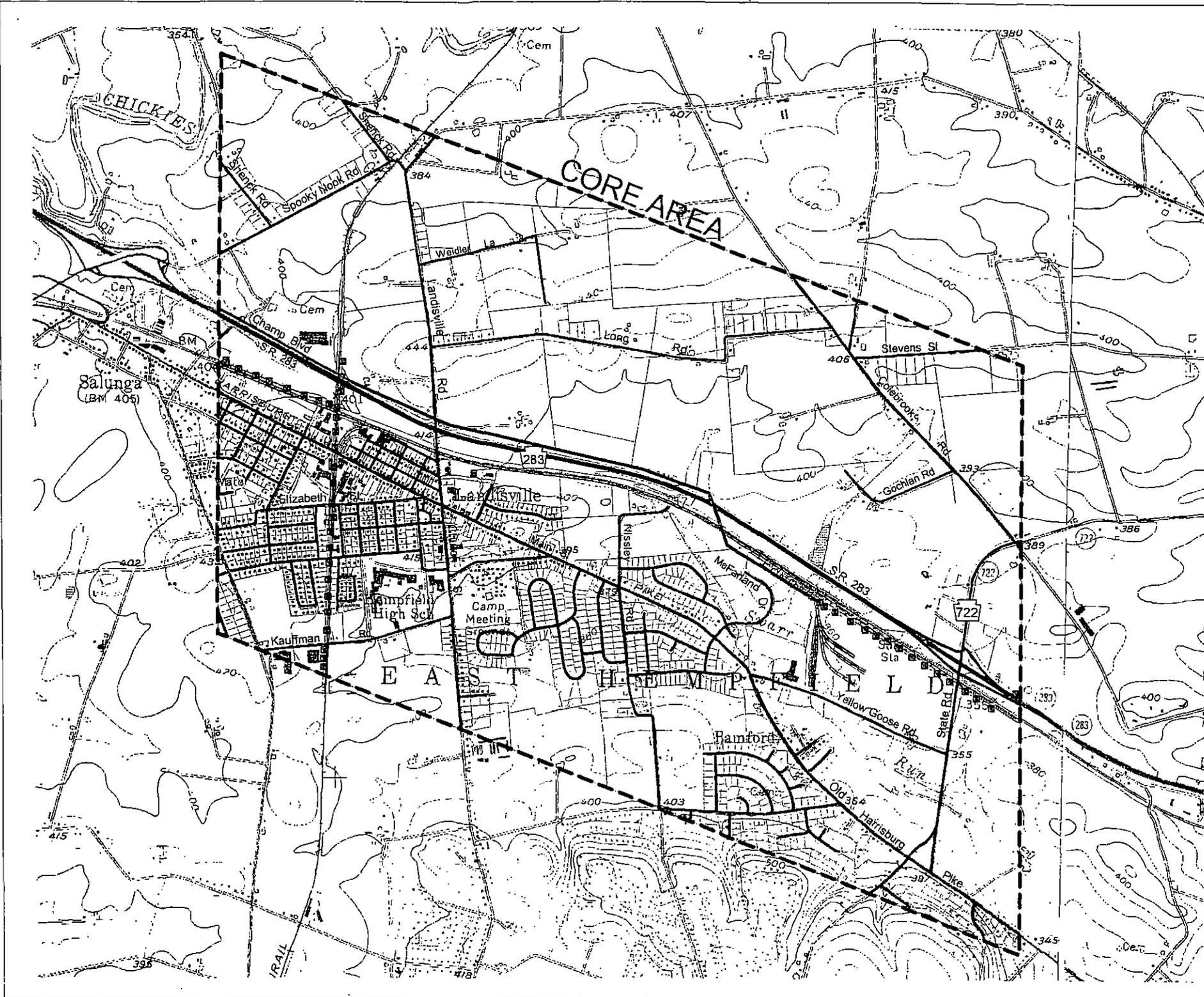
- Amos Herr Park – A township park on Nissley Avenue featuring expansive grassy areas, a picnic pavilion, tennis court, softball field, and the aforementioned Amos Herr historic farmhouse.
- East Hempfield Sports Complex – An extensive recreation facility on South Church Street serving several municipalities. Numerous coordinated indoor and outdoor athletic activities take place here.

- Lancaster Junction Recreation Trail (below) – A former railroad bed now intended for walkers, bikers and joggers. The 2.5-mile route allows users to travel from the northern edge of Landisville through agricultural areas to the banks of Chickies Creek.



- **Cemeteries** - 25 listed cemeteries dot the landscape of the Study Area. Many of these are historical resources, as many gravestones date from the 18th and 19th centuries.

The information compiled in this environmental assessment was used in developing the proposed line route, as explained in Exhibit “C”.

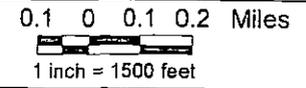


Map 1

Exhibit B

Linear Features

West Hempfield - McGovernville
Transmission Line Project



Prepared By:
PPL Electric Utilities Corporation



Linear Features

-  Preferred Line Route
-  Transmission Lines
-  Railroads
-  Township Boundary

Legend

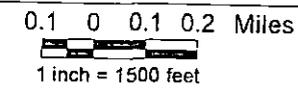
-  Parcels Boundaries

Map 2

Exhibit B

Land Use

West Hempfield - McGovernville
Transmission Line Project



Prepared By:
PPL Electric Utilities Corporation.

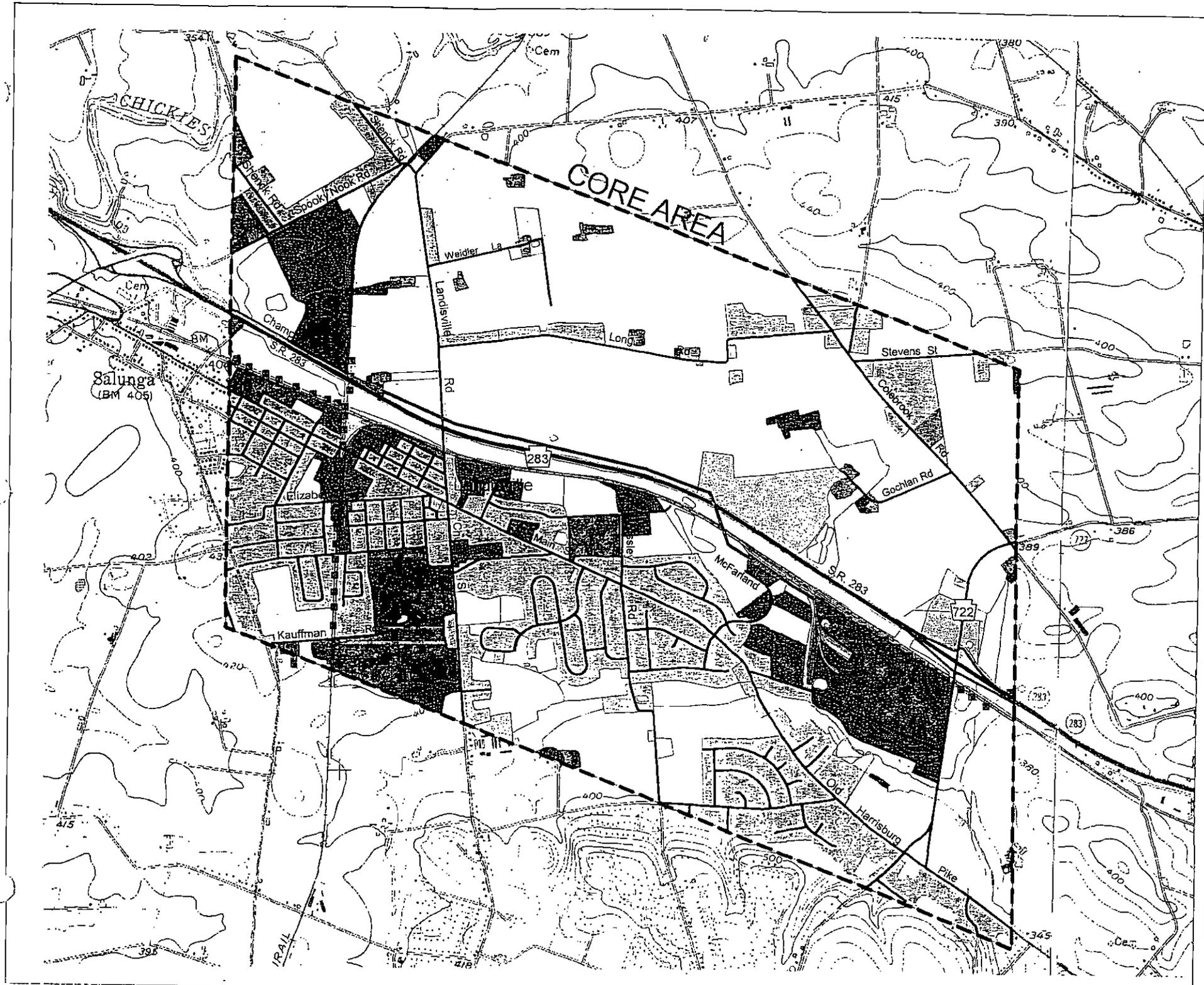


Linear Features

- Preferred Line Route
- - - - - Transmission Lines
- Railroads
- - - - - Township Boundary

Legend

- Agricultural/Pasture
- ▨ Commercial/Office Park
- ▩ Farmstead
- Feed Operations
- Industrial
- ▨ Orchar ds/Tree Farms
- Public/Semi-Public
- Recreation
- ▨ Residential
- Transportation/Utilities
- Undeveloped



Map 3

Exhibit B

Municipal Zoning

West Hempfield - McGovernville Transmission Line Project

0.1 0 0.1 0.2 Miles
1 inch = 1500 feet

Prepared By:
PPL Electric Utilities Corporation

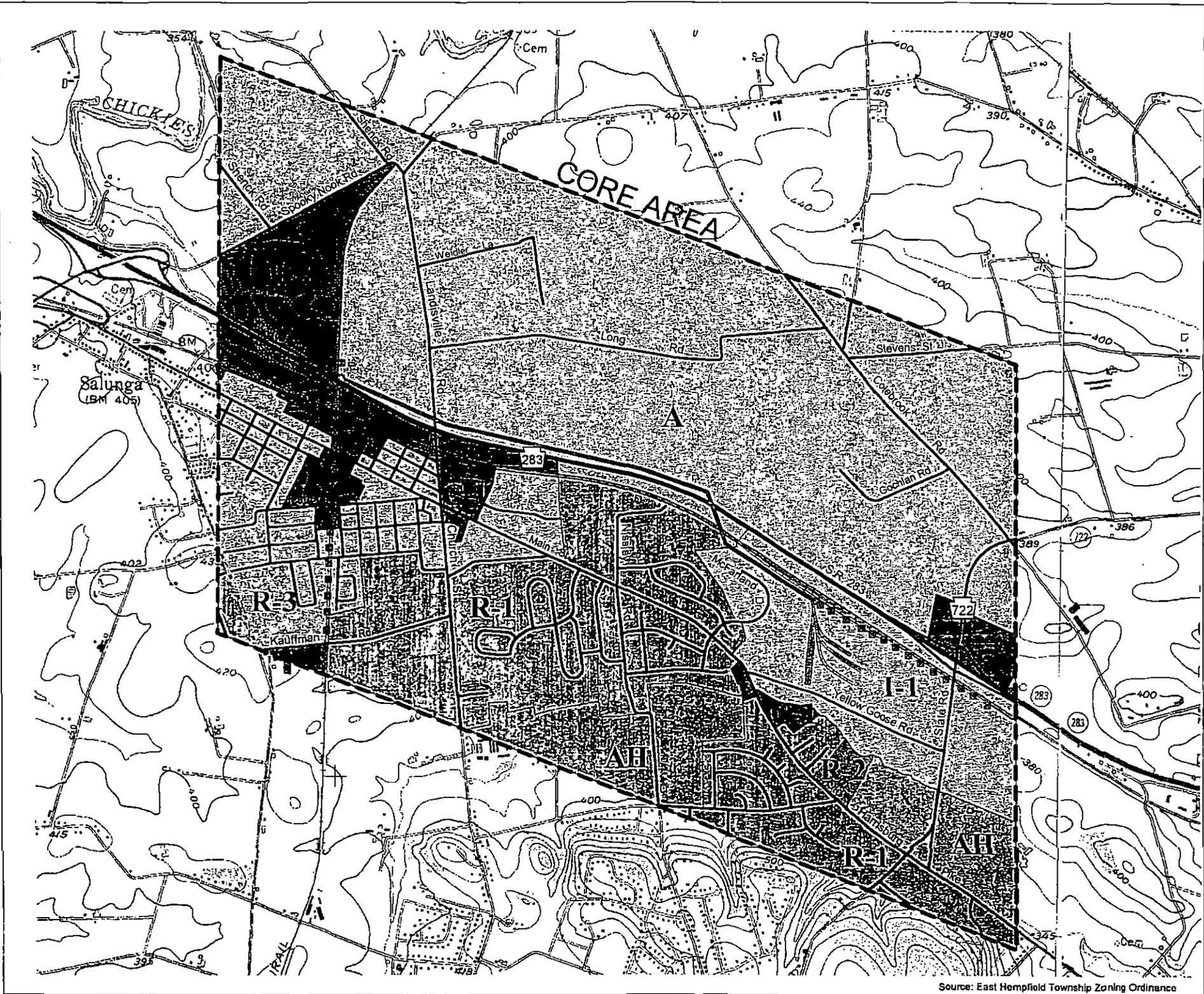


Linear Features

- Preferred Line Route
- - - ■ Transmission Lines
- Railroads
- Township Boundary

Legend

- Agricultural
- Agricultural Holding
- Suburban Residential
- High Density Residential
- Village Residential
- Local Commercial
- Highway Commercial
- Light Industrial
- General Industrial



Source: East Hempfield Township Zoning Ordinance

Map 4

Exhibit B

Soils

West Hempfield - McGovernville
Transmission Line Project

0.1 0 0.1 0.2 Miles



1 inch = 1500 feet

Prepared By:
PPL Electric Utilities Corporation



Linear Features

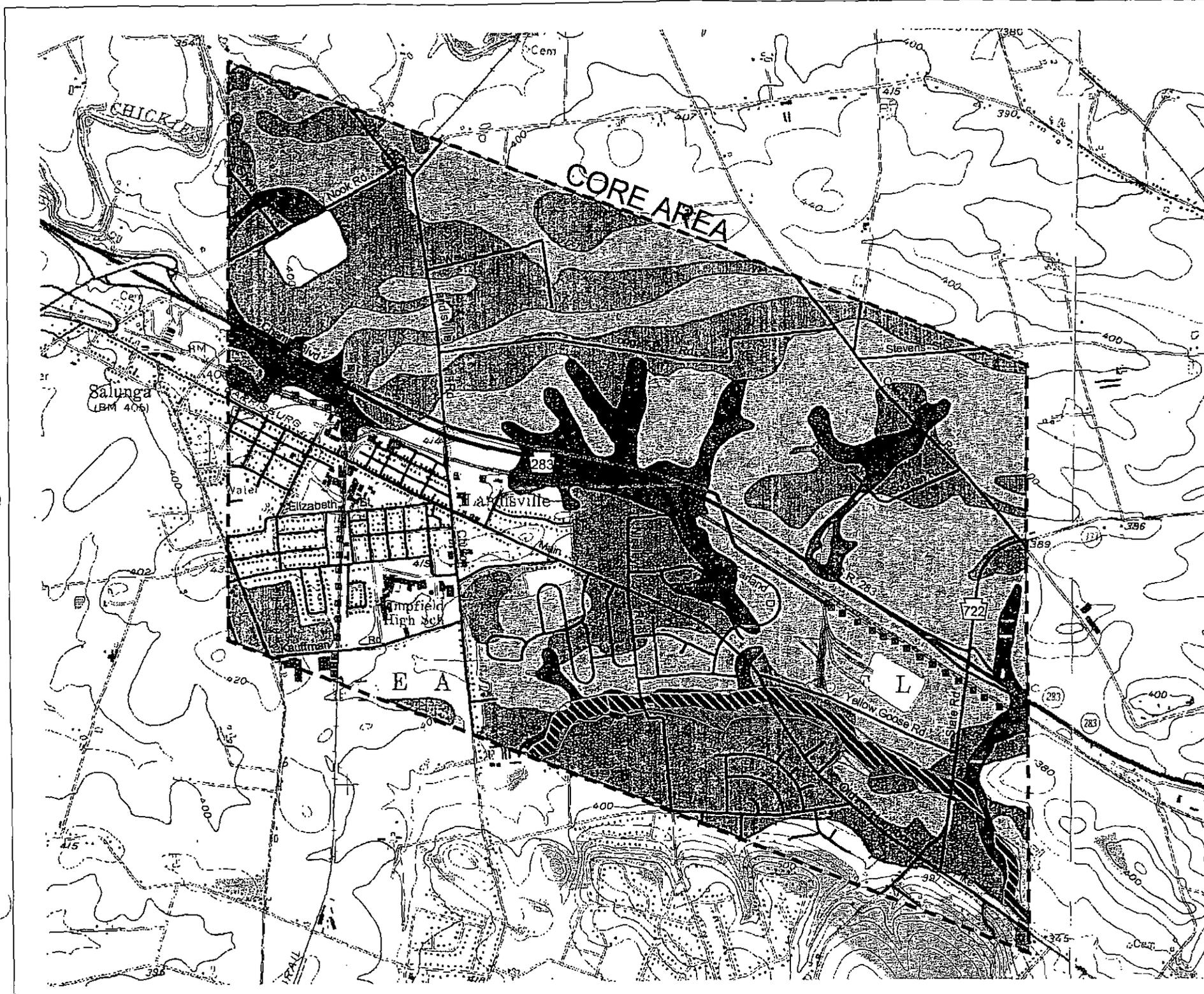
- Preferred Line Route
- Transmission Lines
- Railroads
- Township Boundary

Legend

- Prime Agricultural-Class I
- Prime Agricultural-Class II
- 100-year Floodplain
- High/Seasonally High Water Table Soils
(Water Table At A Depth Of 36" Or Less)



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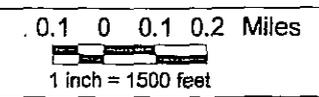


Map 5

Exhibit B

Natural & Physical Features
and Slope

West Hempfield - McGovernville
Transmission Line Project



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PPL Electric Utilities Corporation

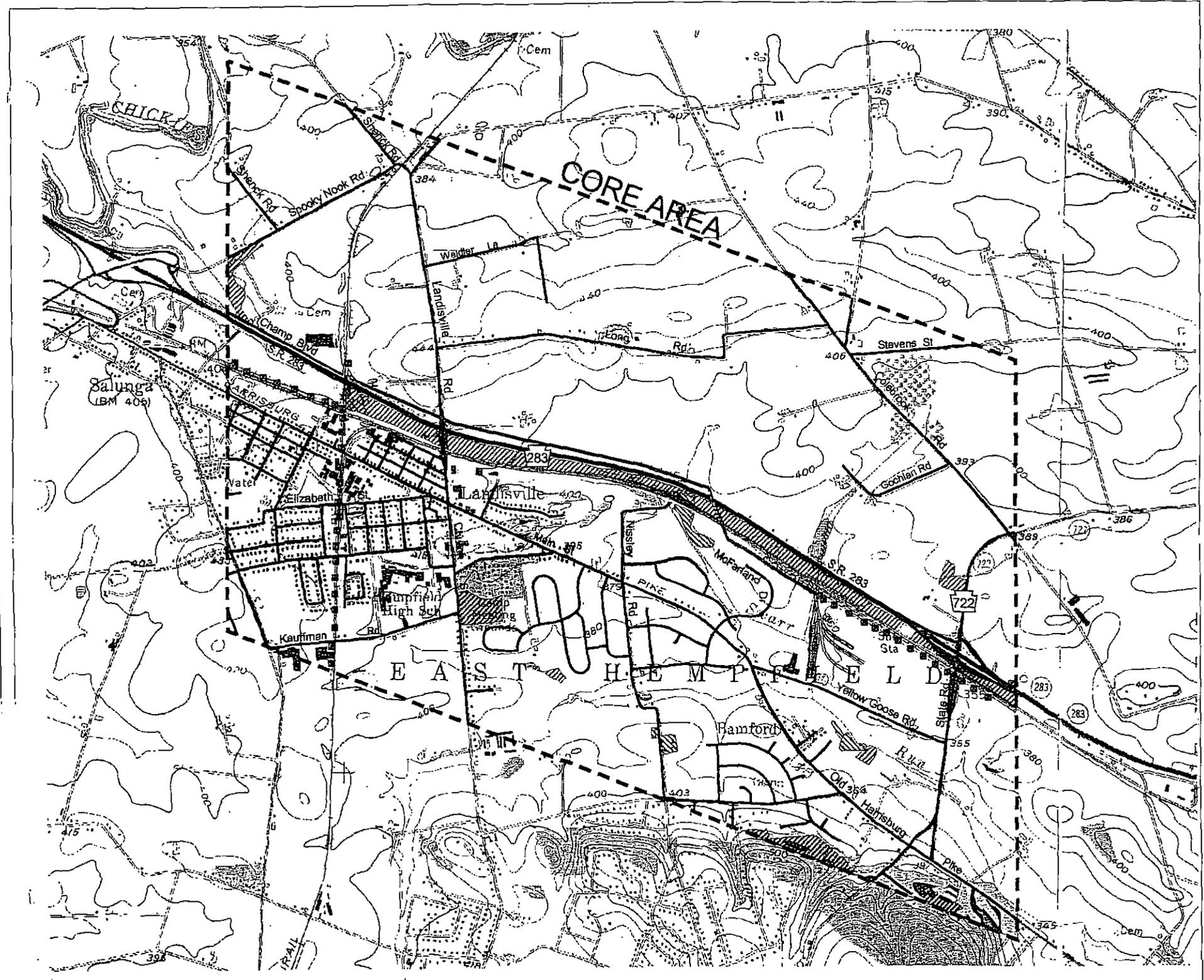


Linear Features

- Preferred Line Route
- Transmission Lines
- Railroads
- Gas Pipelines

Legend

- Woodlands
- Wetlands
- Streams
- Lakes
- Slope
 - 0-15%
 - 16-24%
 - 25% and Greater

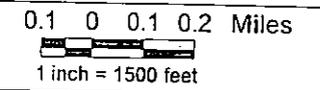


Map 6

Exhibit B

Farmland Preservation Areas

West Hempfield - McGovernville Transmission Line Project



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PPL Electric Utilities Corporation

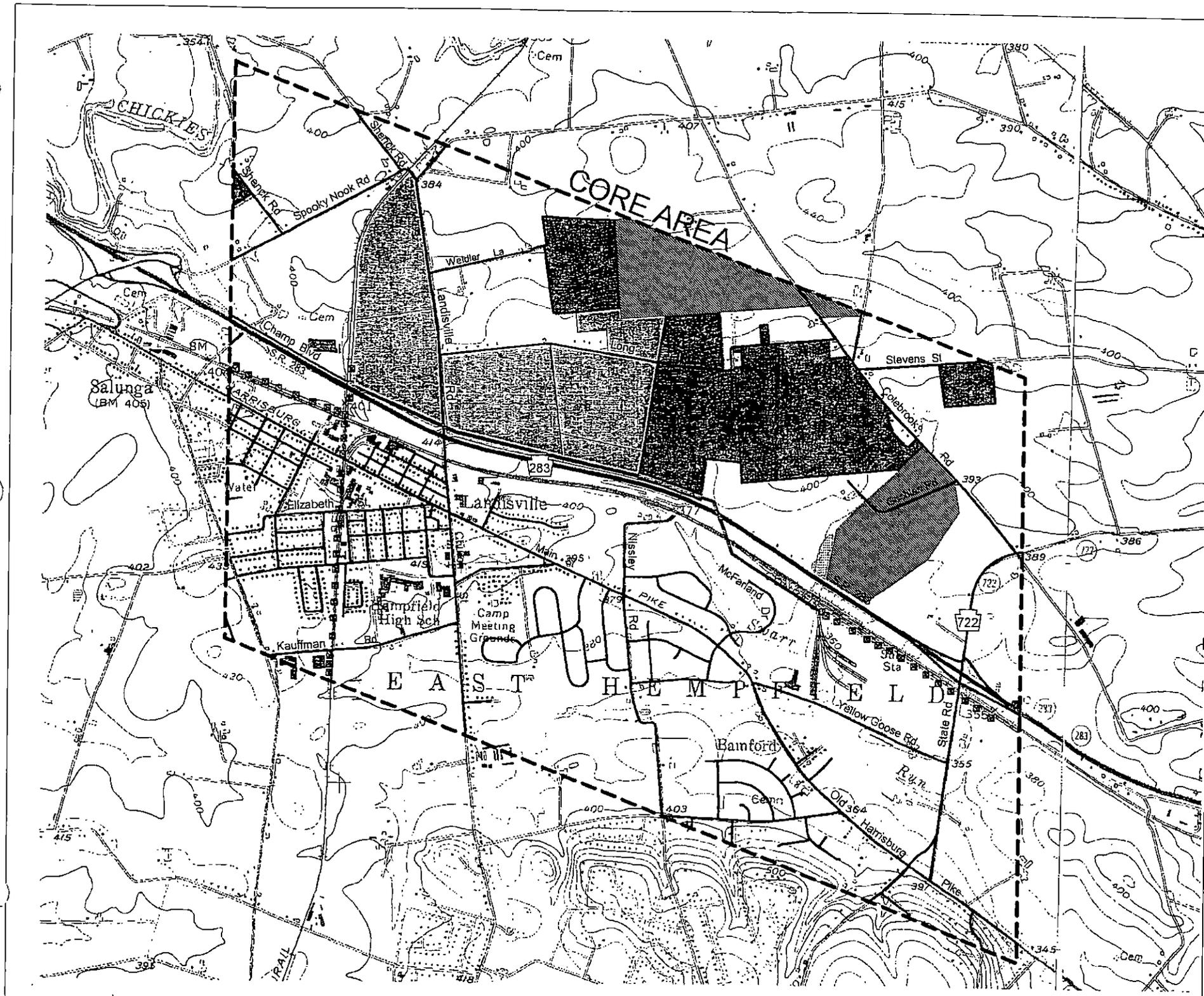


Linear Features

- Preferred Line Route
- Transmission Lines
- Railroads
- - - Township Boundary

Legend

- Agricultural Easements
- Agricultural Security Areas
- Both



Cultural & Unique Features

West Hempfield - McGovernville Transmission Line Project

0.2 0 0.2 0.4 0.6 Miles



1 inch = 3000 feet

Prepared By:
PPL Electric Utilities Corporation



Legend

-  National Register Historic Sites
 1. Shenck's Mill Covered Bridge
 2. Samuel N. Mumma Tobacco Warehouse
 3. Landis Mill Covered Bridge
-  Municipal Parks
 1. Amos Herr Park
 2. East Hempfield Sports Complex
-  Amos Herr House
-  Cemeteries
-  Lancaster Junction Recreation Trail
-  Preferred Transmission Line Route
-  Municipal Boundaries

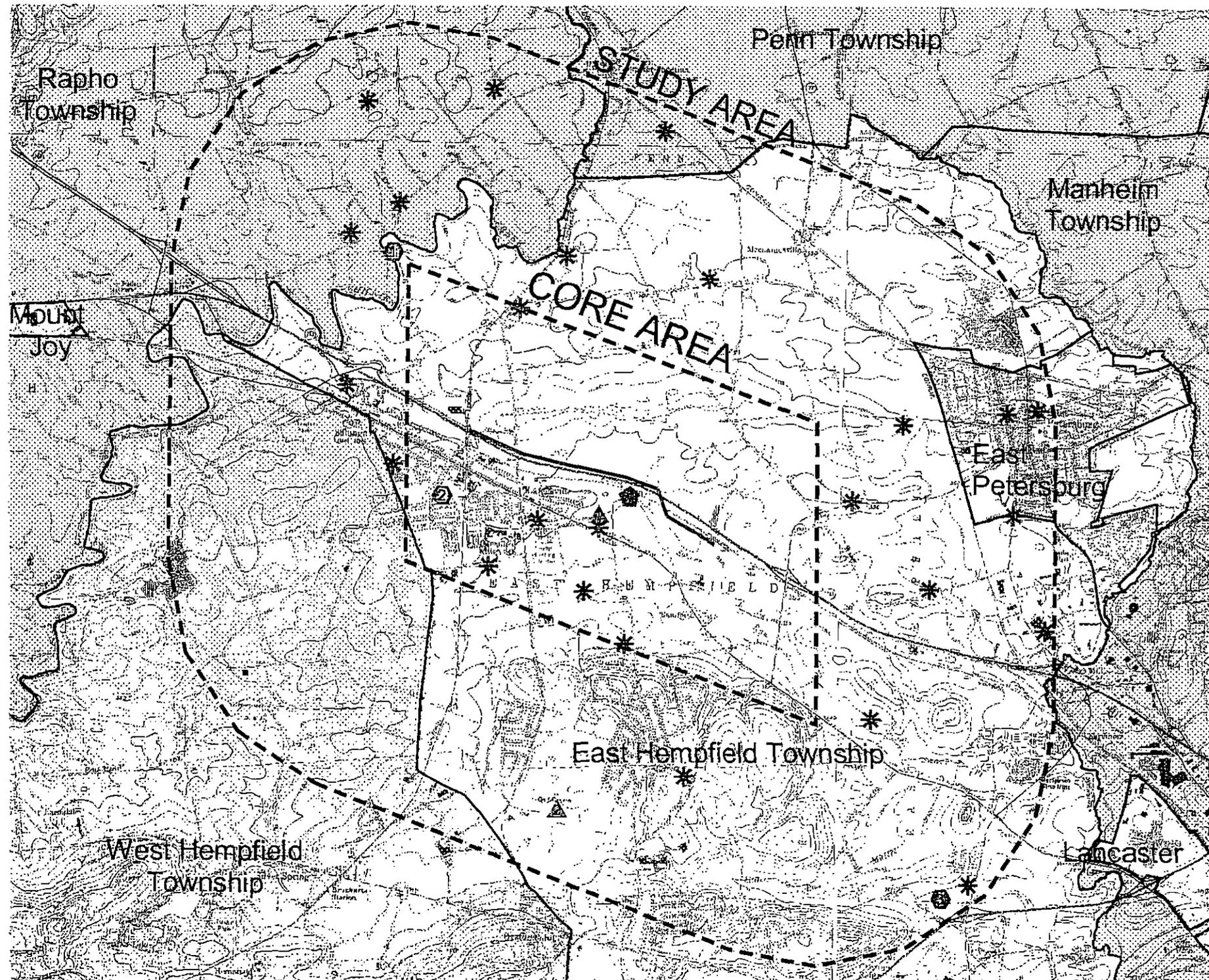


EXHIBIT "C"
WEST HEMPFIELD - McGOVERNVILLE #1 & #2 138/69 kV TIE
ENVIRONMENTAL ASSESSMENT

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MAPS

AERIAL EXHIBIT.....	EXHIBIT "C" MAP POCKET
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EXHIBIT C
WEST HEMPFIELD – McGOVERNVILLE #1 & #2 138/69 kV TIE
ENVIRONMENTAL ASSESSMENT

I. LINE ROUTE SELECTION

A. INTRODUCTION

PPL conducted detailed studies to determine the most reasonable route to construct the proposed double circuit 138/69 kV transmission line. The proposed line route was based on the functional requirements, which are described in detail in Exhibit “A”, the environmental analysis provided in Exhibit “B”, as well as discussions with the local municipality.

B. DESCRIPTION OF PROPOSED LINE ROUTE

The proposed line route begins at the West Hempfield - Donegal and West Hempfield - South Manheim #3 138/69 kV lines approximately 1,650 feet west of Landisville Road. The point of connection lies between Rt. 283 and the Amtrak railroad corridor. The proposed route heads northeast and crosses Rt. 283 approximately 315 feet from that connection point.

After crossing Rt. 283, the line heads southeast, paralleling Rt. 283, a distance of approximately 1.1 miles. The majority of this line route section occupies farmland. A portion of the line crosses former Armstrong World Industries property. An old farmhouse on this 48-acre parcel has been sold to a private party and is being converted into a residence.

The last section of line, approximately 2,890 feet long, also heads southeast and crosses both Rt. 283 and the Amtrak railroad tracks. A small segment of this line section occupies property owned by East Hempfield Township. This

undeveloped parcel is presently being farmed but is zoned for Suburban Residential land use. The balance of this section of the line occupies industrial-zoned property. The proposed line route ties into the existing Kellogg #1 and #2 Taps on the property of Kellogg USA.

II. PREDICTED IMPACTS AND MITIGATING MEASURES OF THE PROPOSED LINE ROUTE

The proposed line was routed to avoid as many impacts as practical. Where impacts are unavoidable, mitigating measures will be employed. PPL's standard mitigating measures are set forth in its "Transmission Line Right-of-Way Program for Vegetation Management" and "Specifications for Soil Erosion and Sedimentation Control on Transmission Line Rights-of-Way". For a full understanding of the impacts, refer to the appropriate inventory maps and discussions in Exhibit "B."

A. LAND USE

The proposed line route was analyzed in relation to current and future land use. The route will not create a significant adverse impact on existing or potential land use. By paralleling existing linear features, the amount of right-of-way required for the proposed transmission line is reduced. This reduction in easement width is due to the fact that the transmission line right-of-way overlaps highway or railroad property. Also, because the proposed line route abuts highway or railroad property, the majority of the transmission line right-of-way falls within the building setback area, and, under local zoning regulations, would not be available for development. Finally, approximately 0.9 miles of the proposed line route crosses farmland preserved by an agricultural security easement. Transmission line construction across preserved farmland is expressly permitted by the statutes authorizing agricultural security easements and, thus, is not inconsistent with this land classification.

The nearest residence is approximately 260 feet from the centerline of the proposed transmission line. Impacts to the residence are minimal due to the distance from the proposed line and because the property owner is installing dirt mounds to reduce highway noise between the proposed line and the home.

No pipelines, communication towers, or other utilities will be affected by the proposed line. The nearest airport (Lancaster Airport) is more than 4.8 miles away and, because of its distance from the line, will not be impacted.

The right-of-way required for the proposed transmission line will preclude certain uses, such as locating buildings or swimming pools within the easement. Because the majority of land being crossed is agricultural, these impacts, if any, will be minimal. Property owners will be reimbursed for the right-of-way. Additionally, PPL's Encroachment Policy allows for future compatible land uses on transmission line easements.

B. NATURAL FEATURES

The impact to terrestrial and aquatic resources will be minimal and incremental because the majority of the line route utilizes existing linear features. Only minor tree clearing will be necessary. Any herbicides used on the right-of-way will be EPA-approved and will be applied selectively in accordance with label instructions.

The proposed line will not impact any lakes, ponds, or other major water bodies. The proposed line crosses three unnamed tributaries of Swarr Run. The stream crossings are easily spanned, and no impacts to the streams are expected. A consultant will be retained to delineate any wetlands along the proposed line route. Permits, as required, will be obtained from the Pennsylvania Department of Environmental Protection and the United States Army Corps of Engineers

prior to the start of construction. No flood prone areas were noted along the proposed line route.

The proposed line will not impact any endangered or threatened plant or animal species because, according to the appropriate state and federal agency reviews, it is unlikely that any exist in the Core Area. As mentioned in Exhibit "B", several "species of concern" may inhabit the Core Area. The wetland at the northern terminus of Nissley Road exhibits habitat characteristics that may be attractive to these "species of concern". However, the proposed line route places the transmission line on the opposite side of the highway and railroad corridor from the wetland area. Thus, impacts to these species are not anticipated. Lastly, paralleling existing linear features and crossing agricultural land will minimize any impacts to common plants and animals.

C. CULTURAL FEATURES

As noted in Exhibit "B," several National Register Historic Sites are located within both the Core and Study Areas. The Samuel N. Mumma Tobacco Warehouse is the closest site to the preferred line route. The warehouse is located in Landisville, approximately 1,700 feet from the proposed line. There will not be any impacts to this historic site because of its distance from the proposed line and the development that has occurred between it and the project site.

Also, the Amos Herr House, which is locally significant, is located approximately 500 feet from the proposed transmission line. Impacts to the Herr House will be minimal, if any. Rt. 283 and the Amtrak railroad corridor separate the Herr House from the proposed transmission line. The treeline located between the highway and the railroad will screen the Herr House from any potential visual intrusion from the proposed line. Eventually, the proposed line will cross the highway and the railroad and will be on the same side of the

transportation corridor as the Herr House. However, even the crossing point will be more than 1,100 feet from the Herr House. Visual intrusion in this location will not be significant because the proposed structures will blend with the Kellogg plant, which provides a backdrop to the proposed line when viewed from the Herr House.

PPL also reviewed the proposed line routing with the Pennsylvania Historical and Museum Commission (PHMC) to determine if any significant archaeological sites were present. PHMC informed PPL that there were no known sites along the proposed line route, and further, it was unlikely that unknown sites exist in the immediate area.

D. COMMUNITY FEATURES

Several recreational areas are located within the project Core Area. The closest to the proposed line route is Amos Herr Park. The park is separated from the propose line by Rt. 283 and the Amtrak railroad corridor. A tree line between the highway and the railroad will provide screening from the visual impacts of the line.

Numerous cemeteries are located within the Study and Core Areas. However, none of them are close enough to be impacted by the proposed transmission line.

E. MISCELLANEOUS ITEMS

The proposed transmission line will cross both Rt. 283 and the Amtrak railroad corridor. There will be no impact to these facilities because the line will be designed to span these features. All appropriate crossing permits will be obtained prior to the start of construction. All other roads and utilities are easily spanned and will not be impacted. A PA 1-Call will be performed during

engineering and again prior to construction to determine the location of all underground utilities.

Soil and subsurface geology found within the Core Area will have no significant impact on the proposed line.

F. CONCLUSIONS

Land use south of the highway/rail corridor is highly developed with a mix of industrial, commercial, residential, and recreational land uses. The largest tract of open space is the Amos Herr Park. The park is a mixture of playground, soccer, tennis, baseball fields and open space. The park also includes the historic Amos Herr House. For these reasons, no attempt was made to route the proposed line in this area.

Only one other alternative was studied. This alternative attempted to locate the proposed line between Rt. 283 and the Amtrak railroad tracks. This alternative was rejected for the following reasons:

- Poor access for construction and maintenance of the line.
- East Hempfield Township is opposed to this line route because the tree line separating the railroad from the highway would need to be removed. The tree line provides a backdrop to the township park and the historic Herr House and screens these areas from the visual impacts of Rt. 283.
- Heavy traffic on the railroad would require a flagman and would limit the continuous periods available for construction, thus, increasing the amount of time required for construction and driving up project cost.
- Overhead railroad catenary would require taller structures increasing project cost.

- PennDOT does not allow steel poles on limited access highways. This would introduce more angle structures for the transmission line also driving up project cost.

In contrast, the proposed line route has the following advantages:

- Has the support of East Hempfield Township.
- Agricultural land use is highly compatible with transmission line construction.
- Parallels existing linear feature where easements overlap reducing the amount of required right-of-way.
- Minimal tree clearing.
- Most of the farms are in an Agricultural Security Zone that restricts future development.

III. SPECIFIC RIGHT-OF-WAY REQUIREMENTS

A. DESCRIPTION OF RIGHT-OF-WAY REQUIREMENTS

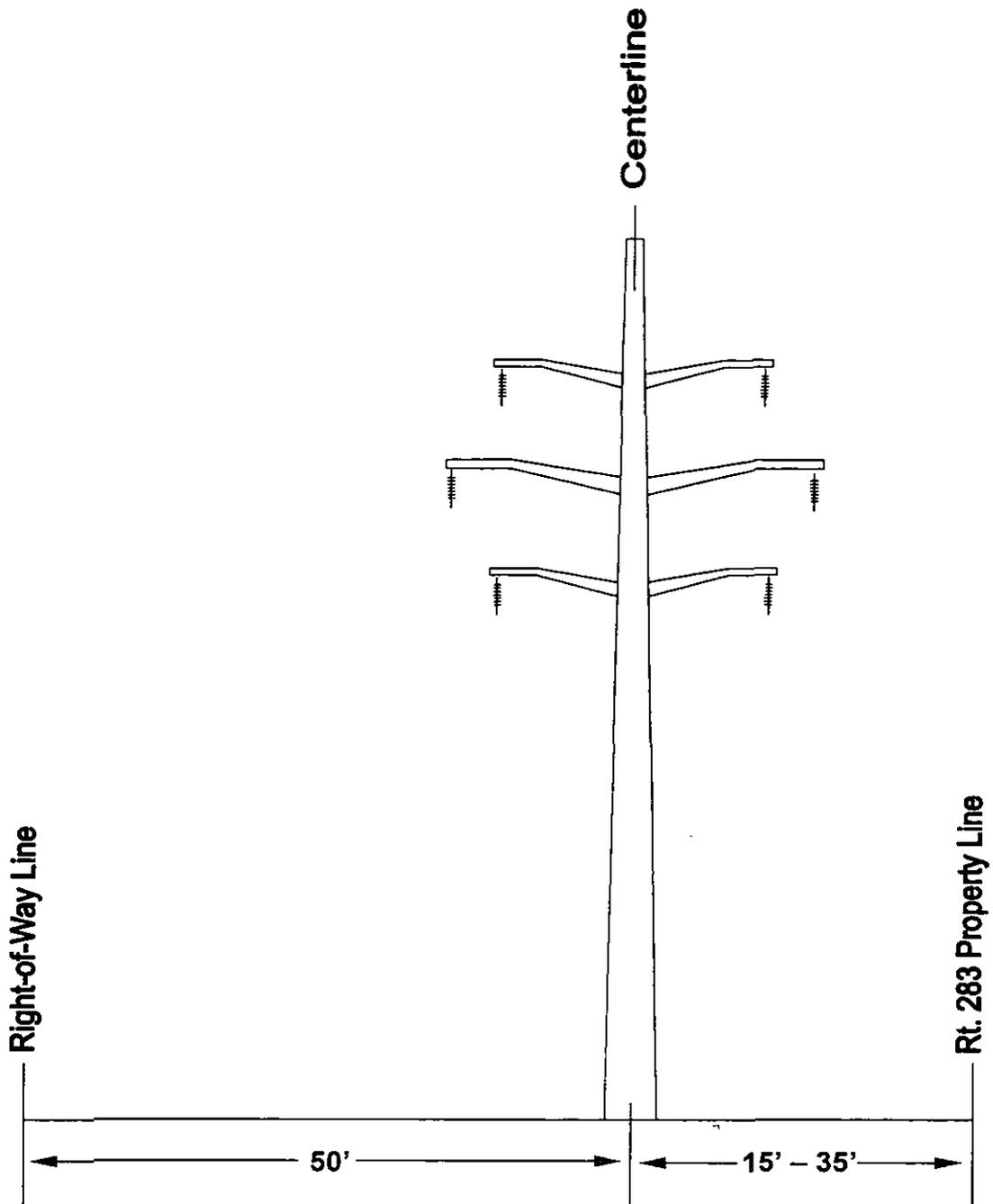
PPL's standard right-of-way width for 138/69 kV transmission lines is 100 feet. The right-of-way width is determined by structure type, design tensions, span length and conductor "blowout" (the distance the wires are moved by a crosswind). Because the proposed transmission line parallels PennDOT and Amtrak rights-of-way, the proposed transmission line easement overlaps the highway and railroad easements. The overlapping easements allow acquisition of less than the standard 100-foot easement for the majority of the proposed line. Where these easements overlap, the right-of-way width varies between approximately 65 and 85 feet.

Cross-sections of the rights-of-way discussed above are illustrated in Figures 1 and 2. The aerial exhibit (see Exhibit "C" map pocket) shows the location of the proposed line route, identifies the properties that are traversed by the proposed line, and denotes right-of-way widths.

B. STATUS OF RIGHT-OF-WAY NEGOTIATIONS

Right-of-way has been acquired from five of nine private property owners. Negotiations are progressing with three of the four outstanding property owners. PPL has been unsuccessful in its efforts to negotiate the required easements over the property of John E. Landis. There is no reasonable alternative routing that would avoid the Landis property. Thus, PPL will request that the commission grant the authority for the Company to condemn an easement across the Landis property.

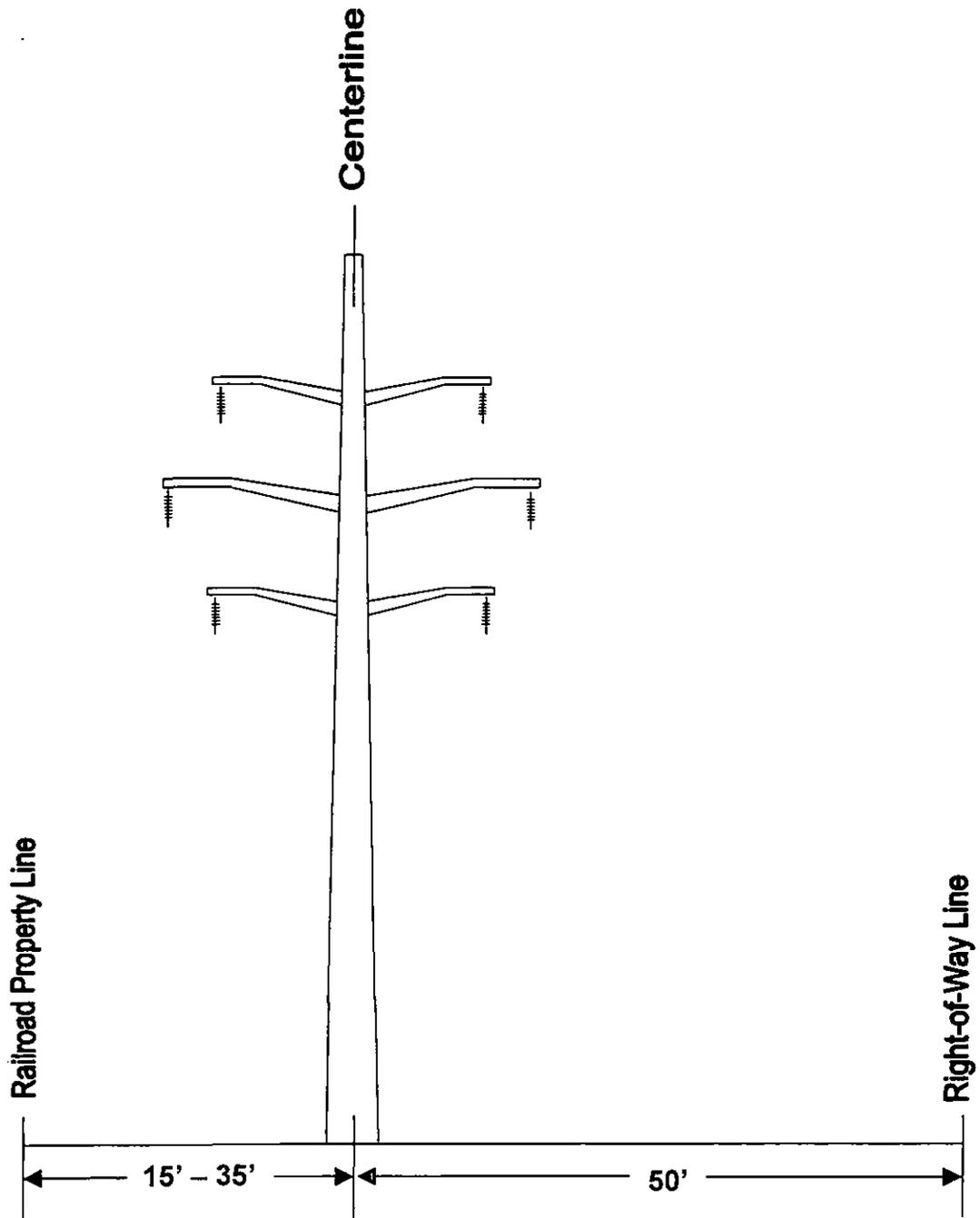
Crossing agreements from both PennDOT and Amtrak will be secured prior to construction.



Typical Right-of-Way Cross Section, Long Span Construction Adjacent to Rt. 283. Due to shifting property lines, right-of-way requirements vary. Widths falling within the ranges shown above are common.

Not to Scale

FIGURE 1



Typical Right-of-Way Cross Section, Long Span Construction Adjacent to Amtrak. Due to shifting property lines, right-of-way requirements vary. Widths falling within the ranges shown above are common.

Not to Scale

FIGURE 2

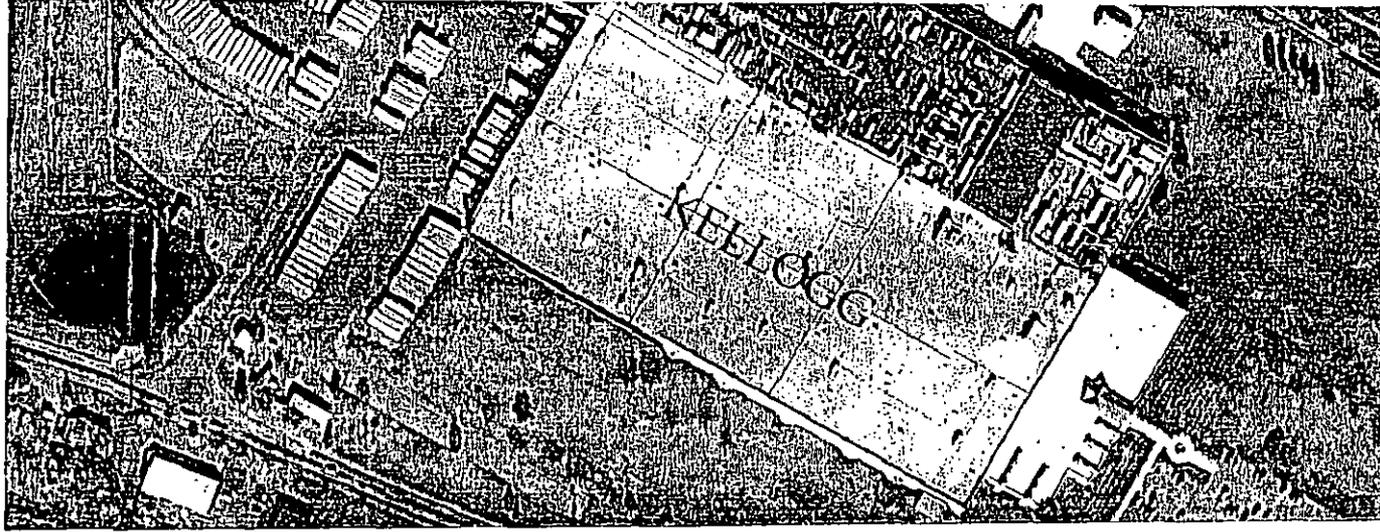
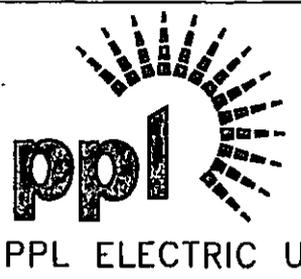
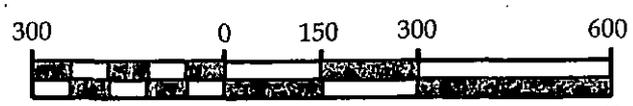


EXHIBIT C

AERIAL EXHIBIT SHEET 1 OF 1

**WEST HEMPFIELD - MCGOVERNVILLE
138/69 KV TIE LINE**
EAST HEMPFIELD TOWNSHIP
LANCASTER COUNTY

SCALE 1" = 300'



PREPARED BY:
PPL ELECTRIC UTILITIES CORP.

PPL ELECTRIC UTILITIES

ACCT-169857
SCALE-AS SHOWN
BY-CDW

WEST HEMPFIELD-MCGOVERNVILLE
138 KV LINE AND RIGHT-OF-WAY

REVIEWED

APPROVEI

OVER SIZED DOCUMENTS

LITIES

PPL DRAWING NO.

SHEET NO.

1 0

F
MF

G

PC CAD

EXHIBIT "D"
WEST HEMPFIELD - McGOVERNVILLE #1 & #2 138/69 kV TIE
ENGINEERING DESCRIPTION

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FIGURE 2	PROPOSED 138 kV, DOUBLE CIRCUIT, SELF-SUPPORTING ANGLE STRUCTURE	

EXHIBIT D

WEST HEMPFIELD – McGOVERNVILLE #1 & #2 138/69 kV TIE ENGINEERING DESCRIPTION

I. PROPOSED LINE DESIGN

PPL proposes to construct a new double circuit 138/69 kV transmission line to connect the existing Kellogg #1 and #2 138/69 kV Taps off the South Manheim - South Akron #1 and #2 138/69 kV Lines with the existing West Hempfield - Donegal and West Hempfield - South Manheim #3 138/69 kV Lines. Additionally, six switches will be added to existing and proposed facilities to enhance operating flexibility. The line will be designed and built for 138 kV operation, but will initially be operated at 69 kV until load growth justifies increasing the operating voltage to 138 kV. The proposed project is located in East Hempfield Township, Lancaster County.

The proposed line is approximately 1.8 miles long. It will consist of single steel poles equipped with steel upswept conductor support arms. Tangent poles will be direct embedded, and angle poles will be installed on concrete foundations. The line will have approximately 17 structures averaging 95 feet high. Average span lengths will be 605 feet. The proposed structures are shown in Figures 1 and 2.

The proposed new line construction described above will be designed according to, and will meet, all National Electrical Safety Code standards. Design specifications and safety rules practiced by PPL are included in Appendix F. The proposed West Hempfield - McGovernville Line will consist of six power conductors, three on each side of the poles, and one overhead ground wire (OHGW). The power conductors will be 556.5 KCMIL 24/7 stranding ACSR. The OHGW will be 3/8-inch extra high strength steel.

Table 1 shows the designed minimum conductor ground clearances and the conductor thermal ratings of the proposed line.

TABLE 1
DESIGN MINIMUM CONDUCTOR CLEARANCES
FOR 556.5 KCMIL 24/7 STRANDING ACSR*
WEST HEMPFIELD – McGOVERNVILLE #1 & #2 138/69 kV LINE

<u>Condition</u>	<u>Transmission Double-Circuit Design Clearance-to-Rail</u>	<u>Transmission Double-Circuit Design Clearance-to-Ground</u>
Normal load average weather (16°C ambient temperature)	64 feet	37 feet
Predicted extreme thermal load (125°C conductor temperature)	60 feet	30 feet
Predicted extreme weather conditions (1/2 inch ice, 0 lb. Wind, -18°C)	64 feet	35 feet

*Clearances based on a maximum tension of 9,000 pounds and a ruling span of 750 feet.

CONDUCTOR THERMAL RATING
556.5 KCMIL 24/7 STRANDING ACSR
125°C MAXIMUM CONDUCTOR TEMPERATURE

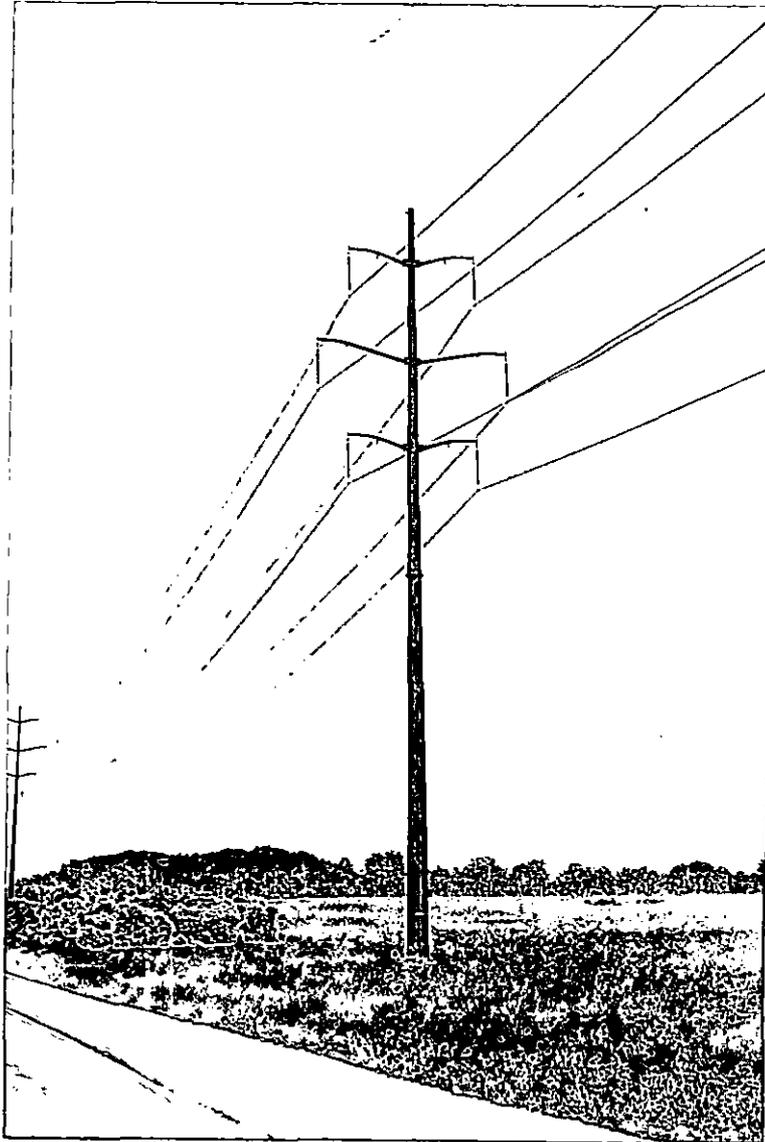
<u>Condition</u>	<u>Ambient Temperature °C</u>	<u>Wind Speed Knots</u>	<u>Ampacity Amps</u>
Summer Normal	35	0	815
Winter Normal	10	0	926
Summer Emergency	35	1-1/2	1041
Winter Emergency	10	1-1/2	1163

II. MAGNETIC FIELD MANAGEMENT PLAN

PPL has instituted a Magnetic Field Management Program for new and rebuilt transmission lines, which is set forth in Appendix G to this Application. The Company does not believe that the current scientific evidence demonstrates that magnetic fields cause any adverse health effects or pose a health or safety danger to the public. Nevertheless, PPL has determined, as a matter of policy, to design its new and rebuilt transmission lines to reduce magnetic fields when that can be done at low or no cost and consistent with functional requirements. PPL's Magnetic Field Management Program has been developed to implement that policy decision.

Because this line is being constructed for double-circuit operation, PPL engineers investigated the possibility of reverse phasing to mitigate magnetic fields. In order to employ reverse phasing on the proposed line, two transposition structures would have to be installed at each end of the line. However, the existing and proposed railroad infrastructure on Kellogg property at the eastern terminus of the line does not provide sufficient room to install of the transposition structures. Therefore, reverse phasing on this line cannot be employed without incurring expenditures beyond the scope of PPL's EMF policy.

**Proposed 138 kV Double Circuit
Tangent Structure**



POLE STATISTICS

Average Height – 95 Feet
Arm Length (Top & Bottom) – 7 Feet
Arm Length (Middle) – 11 Feet

Conductor Spacing:
Overhead Groundwire to Top Phase – 12 Feet
Phase to Phase – 12 Feet

FIGURE 1

**Proposed 138 kV Double Circuit
Self-Supporting Angle Structure**



POLE STATISTICS

Average Height – 95 Feet
Arm Length (Top & Bottom) – 7 Feet
Arm Length (Middle) – 11 Feet

Conductor Spacing:
Overhead Groundwire to Top Phase – 12 Feet
Phase to Phase – 12 Feet

FIGURE 2

LIST OF APPENDICIES

Appendix	Topic
A	Environmental Inventory Guidelines
B	Exhibit "B" Bibliography
C	Governmental Agencies, Municipalities and Other Public Entities Contacted
D	Lancaster County Historic Sites
E	List of Property Owners Within the Proposed Right-of-Way
F	PPL Design Criteria and Safety Practices
G	PPL Magnetic Field Program
H	List of Governmental Agencies, Municipalities and Other PPL Entities Receiving Applications

APPENDIX A

ENVIRONMENTAL INVENTORY GUIDELINES

An environmental inventory lists environmental factors considered when evaluating and selecting transmission line routes. These factors can be adversely affected by, or be compatible with, transmission facilities.

Major factors and the reasons why they are inventoried are listed in the following table:

CATEGORY

WHY INVENTORIED

A. Linear Features

1. Turnpikes, Interstate Highways, Major U.S., Pennsylvania, and Legislative Routes (LR)
2. Pipelines
3. Railroads
4. Floodwalls, Levees
5. Communication Facilities
6. Property Lines
7. Vacant Right-of-Way
8. Power Lines
9. Tree Rows

Paralleling existing linear features, particularly transmission lines, is often desirable for several reasons. Paralleling usually adds only incrementally to existing impacts, rather than creating new impacts. Narrower rights-of-way are needed because maximum utilization is made of land already encumbered. Existing access roads can be used, less tree clearing is needed, and, from a community planning perspective, the combination of linear features into a common corridor is desirable.

B. Land Use

1. Residential
 - a. Dwellings
 - b. Subdivisions
 - c. Developments
 - d. Future Developments
 - e. Urbanized Areas

Whenever possible, avoiding present and proposed residential development is desirable because land use impacts, potential visual intrusions and costs are minimized. Compatible joint uses of land are also explored.

CATEGORY

WHY INVENTORIED

2. Commercial and Industrial

Because these areas are generally compatible with transmission facilities, the possibility of routing through these areas is explored.

3. Interference Zones

These are usually avoided, if feasible. If this is not feasible, undergrounding or mitigating measures are considered.

- a. Radio Stations
- b. Microwave Towers
- c. Airports

4. Agricultural

Generally, this is a compatible land use. There is minimal impact at the borders of these areas. The number of structures is kept to a minimum, and irrigation equipment is avoided.

- a. Cropland
- b. Pasture

5. Public Areas

Visual intrusions into these areas are avoided where possible.

- a. Cemeteries
- b. Churches
- c. Hospitals
- d. Schools

6. Recreational Areas

Visual intrusions into these areas are avoided where possible.

- a. Parks
- b. Golf Courses
- c. Ski Areas
- d. Preserves and Game Lands
- e. Tourist Recreational Facilities

CATEGORY

WHY INVENTORIED

7. Extractive

- a. Coal
- b. Limestone
- c. Peat Bogs

Areas where significant mineral resources can be economically extracted are generally avoided.

Where practical, lines span small areas and are routed along boundaries.

8. Orchards and Nurseries

Removal of productive trees and interference with orchard maintenance (spraying, irrigating, etc.) are avoided where possible.

C. Visual and Scenic Features

1. Unique Scenic Areas

It is preferable to avoid these areas.

2. Highpoints

- Prominent Slopes
- Ridge Lines
- Panoramic Views
- Scenic Highways
- Residential Areas

These features are avoided where practical to eliminate or minimize visual intrusion in areas of potentially high visual exposure and scenic quality. Views from residential areas are avoided, if possible.

D. Soils and Slopes

1. Soils

- a. Shallow Bedrock
- b. Stony Soils
- c. Wet Soils
- d. Erodible Soils

These soil types are generally avoided due to both construction and environmental constraints. High construction costs and disruption to the area may result from blasting, road construction, structure grading and setting, and material handling and hauling.

2. Slopes

Steep slopes (15 percent to 25 percent or greater) are avoided where possible to minimize the potential for soil erosion and slower revegetation.

CATEGORY

WHY INVENTORIED

3. 100-Year Floodplain

Again, increased construction costs and environmental damage may occur when building on slopes due to road construction, vegetation clearing, and the handling, hauling and setting of structures.

These areas are generally avoided to prevent potential disruption of floodplains and flood control facilities. Construction costs necessary to maintain reliability also are higher.

E. Cultural Features

1. Historic Sites

Visual intrusions on historic sites are avoided where possible.

2. Archaeological Areas

Known sites and areas of high potential are avoided to prevent damage to resources.

F. Geology

Bedrock type is determined to predict the potential presence of endangered species and other wildlife, and mineral resources are identified. Special attention is given to certain bedrock types with particular characteristics or problems. Caves, springs, and sinkholes are avoided.

1. Unique Geological Areas

Visual intrusions on unique formations and destruction of collection sites are avoided where practical.

CATEGORY

WHY INVENTORIED

G. Natural Features

1. Aquatic Resources, Water Bodies, Streams, Rivers and Wetlands

a. Water Quality

The potential for siltation or obstruction with silt or mud, and temperature increases due to removal of bank vegetation are avoided to the greatest extent possible. Special caution is exercised near waters recognized for exceptional quality. Measures used to mitigate effects of crossing water bodies may result in reduced reliability or increased maintenance costs.

b. Fish, Aquatic Life

Major aquatic organisms present in potentially affected water bodies are identified to determine potential impacts.

Widely used fisheries are avoided. If this is not practical, caution is exercised in crossing to prevent decrease in water quality, especially due to siltation.

The presence or likely occurrence of endangered or threatened aquatic species is determined, and known locations of such species are avoided or impacts are mitigated.

2. Terrestrial Resources

a. Vegetation Types

Major types of vegetation are identified to characterize area habitats and predict the occurrence of wildlife species and potential impacts of removing these vegetation types. Important areas are identified, especially vegetation not common in the area, and attempts

CATEGORY

WHY INVENTORIED

are made to avoid them where possible (e.g., coniferous growth in a primarily deciduous woodland; trees in an urban area, etc.).

An attempt is made to minimize clearing of wooded areas, which is considered a constraint due to disruption of existing environment, costs of clearing, future maintenance, and reduced liability. However, clearing through areas of heavy woodland can benefit wildlife as open areas resprout and are widely used as browse and cover areas.

Attempts are made to avoid or minimize interference with commercially-used vegetation and tree plantations, lumbering operations, etc.

b. Wildlife

Positive and negative impacts on area species are predicted.

The presence or likely occurrence of endangered or threatened animal species or their critical habitat requirements are considered. Known areas of occurrence are avoided or impacts are mitigated.

c. Unique Natural Wilderness Areas

Visual intrusion and disruption of the natural environment should be avoided where possible.

APPENDIX B

BIBLIOGRAPHY FOR EXHIBIT 'B'

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Shipe, John Mark. Owner, Landisville Terminal and Transfer Station. Phone interview. 22 November 2002.

US Department of Agriculture Soil Conservation Service. Soil Survey of Lancaster County. National Cooperative Soil Survey, 1985.

APPENDIX C

GOVERNMENTAL AGENCIES, MUNICIPALITIES AND OTHER PUBLIC ENTITIES CONTACTED

Federal

United States Department of the Interior
Fish and Wildlife Service
Pennsylvania Field Office
315 S. Allen Street, Suite 322
State College, PA 16801-4850
CONTACT: David Densmore, Supervisor

State

Pennsylvania Fish and Boat Commission
Division of Environmental Services
450 Robinson Lane
Bellefonte, PA 16823
CONTACT: John Arway, Chief

Pennsylvania Game Commission
2001 Elmerton Avenue
Harrisburg, PA 17110-9797
CONTACT: Gary R. Camus, Game Land Office Manager

Pennsylvania Natural Diversity Inventory
Bureau of Forestry Division of Forest Advisory Services
P. O. Box 8552
Harrisburg, PA 17105-8552
CONTACT: Andrew Gorman, Environmental Review Assistant

County

Lancaster County GIS Department
50 North Duke Street
Lancaster, PA 17608
CONTACT: Steve Gochenaur, Director

Lancaster County Engineering Office
50 North Duke Street
Lancaster, PA 17603
CONTACT: Dave McCudden

Local

East Hempfield Township
1700 Nissley Road
Landisville, PA 17538
CONTACT: Ronald Kissler, Zoning Officer

East Hempfield Township Manager
1700 Nissley Road
Landisville, PA 17538
CONTACT: George Marcinko

Landisville Terminal and Transfer Company
A Division of Amherst Industries
3900 Nolt Road
Landisville, PA 17538
CONTACT: Mark Shipe, Owner

APPENDIX D
NATIONAL HISTORIC REGISTER
LISTED AND ELIGIBLE PROPERTIES

Pennsylvania Historical and Museum Commission
August 2002

MUNICIPALITY	ID #	HISTORIC NAME	ADDRESS / LOCATION	STATUS	LIST DATE
East Hempfield Twp.	081806	Building	2345 Old Harrisburg Pike	Eligible	5/18/1992
East Hempfield Twp.	105435	Bamford, Charles, Farmstead	Yellow Goose Road	Eligible	12/20/1993
East Hempfield Twp.	103079	Bassier Farm	1366 Colebrook Road	Eligible	3/7/1995
East Hempfield Twp.	081773	Baughman, Michael & Elizabeth, House	1790 Kauffman Road, Landisville	Eligible	2/12/1987
East Hempfield Twp.	081791	Brubaker House	1836 Marietta Pike	Eligible	4/8/1994
East Hempfield Twp.	083690	Colebrook Road Bridge	Colebrook Road (T-374)	Eligible	5/9/1984
East Hempfield Twp.	102201	Eshleman, John, Farm	2352 Marietta Pike	Eligible	4/6/1994
East Hempfield Twp.	101682	Habecker, Christian, Farm	2301 Spring Valley Road	Listed	8/30/1994
East Hempfield Twp.	103081	Kolb Dairy Farm	Dairy Road/Rohrerstown Road	Eligible	3/7/1995
East Hempfield Twp.	101914	Landis Mill	1048 W. Roseville Road	Eligible	11/3/1993
East Hempfield Twp.	050797	Landis Mill Covered Bridge	Shreiner Station Road, West of Oreville	Listed	12/10/1980
East Hempfield Twp.	121467	Miller Property	2348 Harrisburg Pike	Eligible	7/5/2002
East Hempfield Twp.	104608	Mumma, Samuel N., Tobacco Warehouse	Elizabeth Street, southeast corner of Barbara Avenue	Listed	5/30/1997
East Hempfield Twp.	050812	Shenk's Mill Covered Bridge	T-372, northwest corner of Landisville	Listed	12/10/1980

MUNICIPALITY	ID #	HISTORIC NAME	ADDRESS / LOCATION	STATUS	LIST DATE
East Hempfield Twp.	105446	Structures on Proposed Hechinger Site	North of Harrisburg Pike	Eligible	12/31/1993
Penn Twp.	120373	Cornwall Fire Tower	Valley Forge State Forest	Eligible	5/29/2002
Penn Twp.	050805	Kaufman's Distillery Covered Bridge	T-889, northeast of Sporting Hill	Listed	12/10/1980
Penn Twp.	096846	Mount Hope Estate (Boundary Increase)	Route 72, ½ mile south of Pennsylvania Turnpike	Listed	9/6/1991
Penn Twp.	050804	Shearer's Covered Bridge	High School Memorial Park	Listed	12/10/1980
Rapho Twp.	001526	Hossler School House	Hossler Road	Eligible	5/6/1994
Rapho Twp.	050805	Kaufman's Distillery Covered Bridge	T-889, northeast of Sporting Hill	Listed	12/10/1980
Rapho Twp.	104653	Lindemuth, Jacob, Property	Longenecker Road	Eligible	2/1/1996
Rapho Twp.	104652	Lindenmuth, Peter, Property	East side of S. R. 4003	Eligible	2/1/1996
Rapho Twp.	001078	Mount Hope Estate	Route 72, ½ mile south of Pennsylvania Turnpike	Listed	12/01/1980
Rapho Twp.	096846	Mount Hope Estate (Boundary Increase)	Route 72, ½ mile south of Pennsylvania Turnpike	Listed	9/6/1991
Rapho Twp.	082054	Old Harrisburg Pike House	Old Harrisburg Pike, east of Newcomer Road	Eligible	8/18/1994
Rapho Twp.	050803	Risser's Mill Covered Bridge	L. R. 36011, Hunsecker	Listed	12/10/1980
Rapho Twp.	050811	Seigrist's Mill Covered Bridge	T-360, north of Ironville	Listed	12/10/1980
Rapho Twp.	050804	Shearer's Covered Bridge	High School Memorial Park	Listed	12/10/1980
Rapho Twp.	050812	Shenk's Mill Covered Bridge	T-372, northwest of Landisville	Listed	12/10/1980
Rapho Twp.	082035	Zug, Samuel, Farm	Colebrook Rd., west of Chiques Rd.	Eligible	7/1/1993

MUNICIPALITY	ID #	HISTORIC NAME	ADDRESS / LOCATION	STATUS	LIST DATE
West Hempfield Twp.	097289	Chickies Furnace Site No. 1	Route 441 at Chickies Creek	Eligible	5/1/1991
West Hempfield Twp.	097284	Chickies Industrial Historic District	Route 441, Furnace Road, Chickies Creek	Eligible	5/1/1991
West Hempfield Twp.	097286	Chickies Lock	0.1 miles west of Route 441	Eligible	5/1/1991
West Hempfield Twp.	097287	Chickies Silica Stone Crusher	Along Susquehanna River, between Chickies Rock and Jones	Eligible	5/1/1991
West Hempfield Twp.	050814	Forry's Mill Covered Bridge	T-362, northwest of Ironville	Listed	12/10/1980
West Hempfield Twp.	097288	Haldeman, S. S., Mansion site	Route 441 near Chickies Rock	Eligible	5/1/1991
West Hempfield Twp.	097285	Henry Clay Furnace Ruins	0.3 miles west of Route 441	Eligible	5/1/1991
West Hempfield Twp.	097293	Saint Charles Furnace Ruins	North of Columbia on Conrail Right-of-way	Eligible	5/1/1991
West Hempfield Twp.	050811	Seigrist's Mill Covered Bridge	T-360, north of Ironville	Listed	12/10/1980

Note: This list contains all municipalities that lie within the study area, with the exception of Manheim Township, of which only a very small portion exists within the study area boundary, and East Petersburg Borough, which does not contain any listed or eligible historic properties.

APPENDIX E

LIST OF PROPERTY OWNERS IN THE PROPOSED RIGHT-OF-WAY

<u>Property Owner/Address</u>	<u>Parcel Number</u>
Pennsylvania Department of Transportation (Rt. 283) Commonwealth Keystone Building 400 North Street, 8 th Floor Harrisburg, Pennsylvania 17120	1
M. Gregory Gehman Karolyn S. Gehman 556 Oak Tree Road Manheim, PA 17545	2
John E. Landis 2942 King Lane Lancaster, PA 17601	3
Warren K. Witmer Marion E. Witmer 503 Long Road Manheim, PA 17601	4
AMTRAK Mr. Larry K. Lewis Director, I & C Projects National Railroad Passenger Corporation 30th Street Station, 3rd Floor, South Tower Philadelphia, PA 19104-2817	5
East Hempfield Township 1700 Nissley Road, P.O. Box 128 Landisville, Pa. 17538 George R. Marcinko, Township Manager	6
Maholn N. and Rozanne Zimmerman 204 S. Conestoga View Drive Akron, Pa. 17501	7

Property Owner/Address

Parcel Number

Gary P. Loiseau
Christopher O. Coder
658 W. Vine Street
Lancaster, PA 17603

8

Brian E. Shank
Rebecca M. Shank
2024 Main Street
Lititz, PA 17543

9

Sigma Electronics Inc.
1184 Enterprise Road
East Petersburg, PA 17520

10

Kellogg USA Inc.
2050 State Road
P.O. Box 3006
Lancaster, PA 17601

11

APPENDIX F

PPL DESIGN CRITERIA AND SAFETY PRACTICES

The National Electrical Safety Code (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 Utilities Corp. (PPL) has developed design specifications and safety rules which meet or surpass all provisions specified by the NESC.

Engineering Design Criteria and Parameters

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 were developed to ensure public safety and welfare.

PPL transmission line design standards meet or surpass the NESC standards. For example, the relative order of grades of construction for conductors and supporting structures is B, C, and N; Grade B being the highest. According to the NESC standards, construction Grades B, C, or N may be used for transmission lines (except at crossings of railroad tracks and limited access highways where Grade B construction is specified). However, PPL designs all of its transmission lines for Grade B construction. The use of Grade B design and construction specifies such things as larger-minimum crossarm dimensions, larger-minimum conductor size, and increased safety factors.

Another example is the design parameters utilized to account for ice and wind loadings on the overhead ground wire (OHGW) and power conductors. The NESC standard ice and wind design magnitudes for the PPL territory are 0.5 inch thickness of radial ice combined with four pounds per square foot horizontal wind pressure (equivalent to 40-mile per hour wind velocity). The conductor sags and tensions used in line designs are the result of various ice and wind combinations, depending on the elevation at the line location and line design voltage. The conductor sags and tensions used in the design of all PPL transmission lines are at least 0.5-inch ice combined with eight pounds wind pressure (equivalent to 57 miles per hour wind velocity). This means that PPL lines are designed to operate safely and reliably during inclement weather even more severe than assumed by the NESC. In addition, PPL transmission lines are designed with more clearance to the ground than required by the NESC. The tables below compare PPL and NESC ground clearances for lines of various voltages.

138 kV

<u>Surface Underneath Conductors</u>	<u>Vertical Clearance to Ground</u>	
	NESC Standard	PPL Design
Roads, streets, alleys	21 Ft.	30 Ft.
Other land traversed by vehicles (such as cultivated Field, forest, etc.)	21 Ft.	30 Ft.
Spaces accessible to pedestrians only	17 Ft.	30 Ft.
Railroad tracks	31 Ft.	35 Ft.

230 kV

<u>Surface Underneath Conductors</u>	<u>Vertical Clearance to Ground</u>	
	NESC Standard	PPL Design
Roads, streets, alleys	23 Ft.	32 Ft.
Other land traversed by vehicles (such as cultivated Field, forest, etc.)	23 Ft.	32 Ft.
Spaces accessible to pedestrians only	19 Ft.	32 Ft.
Railroad tracks	31 Ft.	36 Ft.

500 kV

<u>Surface Underneath Conductors</u>	<u>Vertical Clearance to Ground</u>	
	NESC Standard	PPL Design
Roads, streets, alleys	28 Ft.	53 Ft.
Other land traversed by vehicles (such as cultivated Field, forest, etc.)	28 Ft.	53 Ft.
Spaces accessible to pedestrians only	24 Ft.	53 Ft.
Railroad tracks	38 Ft.	53 Ft.

A relay protection system is used to protect the public safety and welfare as well as equipment and 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.

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 and structure

climbing patrols. A number of helicopter patrols are performed on all lines annually. The two-man helicopter crew flies parallel, to the left, 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.

Foot and structure climbing patrol programs for a transmission line begin approximately three to five years after the line is energized, unless a helicopter patrol reports a need for earlier action. The frequency of foot patrols varies from once every year to once every several years depending on line type and age.

An assigned foot patroller checks right-of-way conditions, including access roads, bridges, pole washouts, tower footers, vegetation height and clearance to conductors, pole and tower deterioration and, with the use of binoculars, insulators, and condition of hardware. Identified problems are included in a report which is forwarded to the appropriate department for corrective action.

A scheduled line outage is required to perform an overhead patrol because of "hands-on" inspection of hardware. Overhead patrols are conducted on a schedule determined by line age, operating record, and observed general condition. The necessary repairs are also done during the inspection outage.

Personnel Safety Rules

The following are a few of the PPL safety rules which demonstrate the Company's concern for employee 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 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 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. The conductor size and attachment clamps of temporary safety grounds must be capable of conducting anticipated fault currents. Rubber gloves, rubber sleeves, and additional rubber protective equipment are used as required when applying or removing temporary safety grounds to or from the lines or apparatus to be grounded. An approved nonconductive working stick of sufficient length to allow workers to maintain the following required minimum clearances is used to test that the line has been de-energized and to apply temporary safety grounds:

Voltage-kV	Minimum Clearance
138	3'-7"
230	5'-3"
500	11'-3"

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. When ground pins are used to establish proper ground points, they are driven to a depth of not less than four feet as near vertical as possible.

- 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.



APPENDIX G

**MAGNETIC
FIELD
MANAGEMENT
PP&L, Inc.**

OCTOBER 1998

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INTRODUCTION

At PP&L, Inc., magnetic field management means investigating and implementing methods at low or no cost to reduce magnetic fields in new or rebuilt transmission and distribution lines. This document explains PP&L, Inc.'s Magnetic Field Management Program, which is part of PP&L, Inc.'s larger Electric and Magnetic Fields ("EMF") policy.

PP&L, Inc.'s View

Some people are worried that electric and magnetic fields are harming their health. Others think the scientific research does not show a problem at all, and still others believe there's just too much scientific uncertainty to draw any conclusions.

Here's what we do know now. Various panels of scientists that have reviewed the EMF research generally have drawn two main conclusions. First, the large body of evidence does not demonstrate that EMF are harmful. Second, additional research is recommended to explore questions raised in some studies.

Given these conclusions, PP&L, Inc. is taking a reasoned approach in responding to the EMF issue. PP&L, Inc.'s approach to the EMF issue consists of five elements:

- Providing EMF information to customers and employees
- Providing magnetic field measurements
- Establishing and implementing a magnetic field management program to reduce magnetic fields in new or rebuilt facilities when it can be done at no, or low, cost
- Integrating EMF in the public involvement process that PP&L, Inc. undertakes in the siting of transmission lines
- Have supported additional research

EMF Are All Around Us

Electric and magnetic fields occur in nature and in all living things. The earth, for instance, has a magnetic field, which makes the needle on a compass point north.

Electric fields and magnetic fields of a different type also surround every wire that carries electricity. In everyday life, these EMF arise from several basic sources, including power lines, electrical appliances, home and building wiring, other utility lines and cables, and currents flowing on water pipes. Though they often occur together, EMF are made up of two separate components:

Electric Fields

Electric fields are produced by the voltage — or electrical pressure — on a wire. The higher the voltage, the higher the electric field. As long as a wire is energized — has voltage present — an electric field is present (see figure 1). In other words, an appliance, or an electric power line, doesn't actually have to be turned on to create an electric field. It just has to be plugged in. Electric fields diminish with distance and can be blocked or partially shielded by objects such as trees and houses.

Magnetic Fields

Magnetic fields are created by the current or flow of electricity through a wire. Generally speaking, the higher the current, the higher the magnetic field. Because they only occur when current is flowing, magnetic fields are present only when the power is turned on (see figure 1). Magnetic fields also diminish with distance, but — unlike electric fields — are not blocked by common objects. In recent years, public and scientific interest has turned toward the magnetic field component of EMF because of some scientific studies regarding these fields.

Figure 1

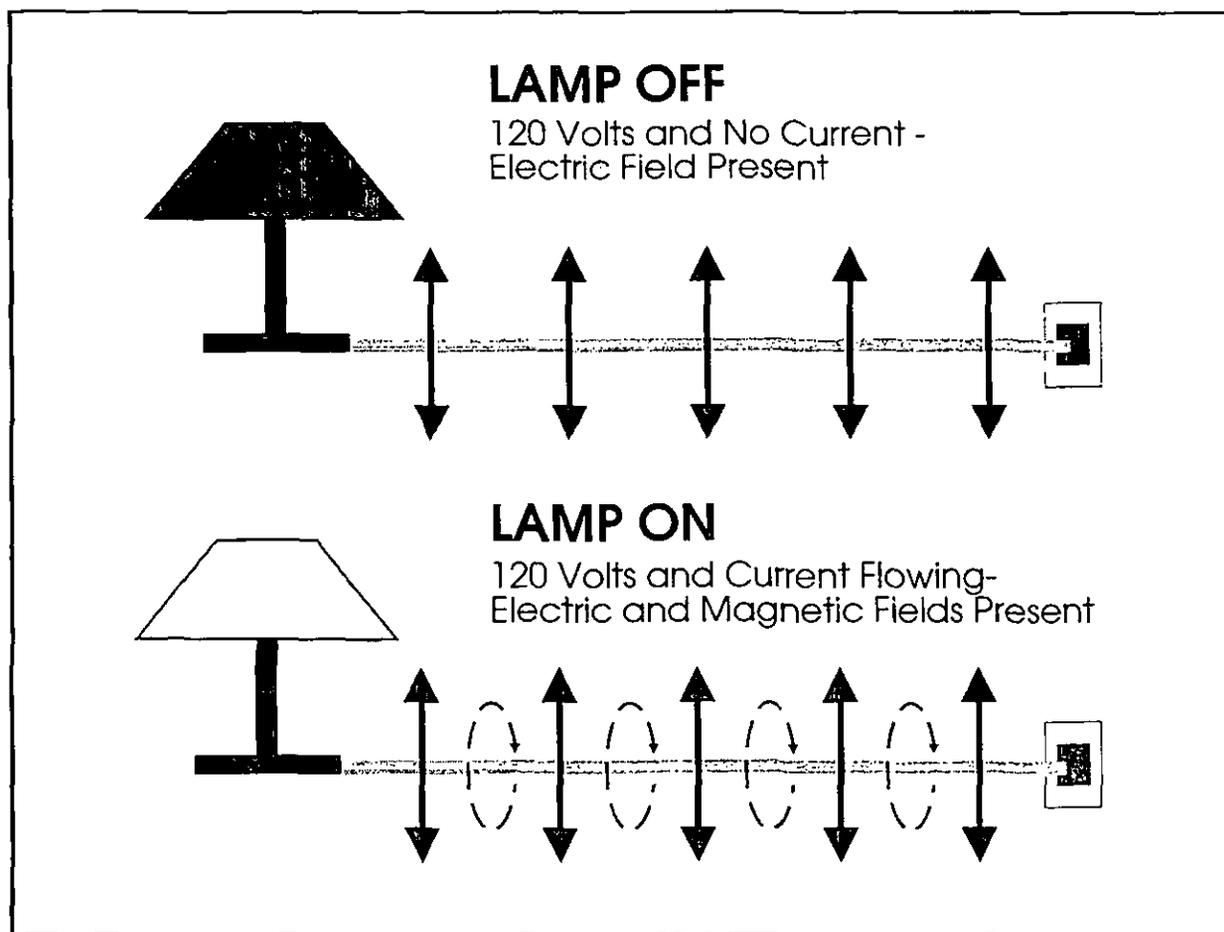


Figure 2

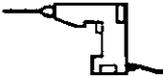
Magnetic field strengths decrease with distance Magnetic fields are measured in milligauss		Source: "EMF In Your Environment", U.S. Environmental Protection Agency 1992		
		At 6 inches	At 1 foot	At 2 feet
Clothes dryer		2 to 10	* to 3	*
Microwave oven		100 to 300	1 to 200	1 to 30
Toaster		5 to 20	* to 7	*
Power drill		100 to 200	20 to 40	3 to 6
Can opener		500 to 1500	40 to 300	3 to 30
Mixer		30 to 600	5 to 100	* to 10
Hair dryer		1 to 700	* to 70	* to 10
Color television		Data not available	* to 20	* to 8

FIGURE 2 * The magnetic field measurement at this distance from the operating appliance could not be distinguished from background measurements taken before the appliance had been turned on.

Measuring Magnetic Fields

Magnetic fields usually are measured in a unit called a milligauss. Magnetic field levels found in the living areas of homes typically range from less than 1 milligauss to about 4 milligauss according to the U.S. Environmental Protection Agency. They can be higher in some cases. The levels next to appliances can exceed 1,000 milligauss (1 gauss). Figures 2 and 3 show how the strength of the field falls off as you move away from the source, just as the heat of a campfire grows weaker as you walk away from it.

For overhead power lines, the strength of the magnetic fields is dependent upon a number of factors that will be explained later. Those factors produce a magnetic field that drops off rapidly as you move away from the power line.

Figure 3

Sample Magnetic Field Levels in Milligauss				
Type of Overhead Power Line	Distance from the line			
	Under the line	50 ft.	100 ft.	200 ft.
220 kV and 500 kV	5-400	5-250	1-75	0.5-20
69 kV and 138 kV	3-80	0.5-25	0.1-10	0.1-3
12 kV and below	0.4-20	0.1-1	-	-

The magnetic field values provided in this table represent a general range of values associated with the types of overhead power lines listed and are provided for illustration. There will be circumstances in which there will be magnetic field levels above or below the range of values provided due to variations in such factors as height of the wires, current flow and so on.

DEVELOPMENT OF PP&L, INC.'S MAGNETIC FIELD MANAGEMENT PROGRAM

One element of our response to EMF concerns expressed by some of our customers is PP&L, Inc.'s Magnetic Field Management Program. The program was initiated in March 1991 because PP&L, Inc. believes it makes good sense, as a matter of policy, to respond to the concerns expressed by some of our customers and to reduce magnetic fields in new and rebuilt facilities where it can be done with either no-cost or low-cost design changes.

This document updates the original program which has been revised several times since 1991. These guidelines were developed by PP&L, Inc.'s EMF Working Group.

VARIABLES THAT AFFECT MAGNETIC FIELDS

Magnetic fields from transmission and distribution lines are a function of a number of design variables. The following parameters affect the magnetic field levels produced by transmission and distribution lines:

- Current
- Height of conductors above ground
- Configuration of conductors
- Distance from the line

EFFECT OF PHASE CURRENT ON MAGNETIC FIELDS

At power frequencies (i.e. 60 hertz), the magnetic field level is a function of the current or flow of electricity through a wire. Keeping all other parameters the same, the magnetic field is proportional to the current. Hence, if the current increases by 25 percent, the resulting magnetic field level will increase by 25 percent.

The overall load current on any line varies with the demand for power. It's usually highest during daytime hours and lowest at night. There also are weekly, monthly, seasonal and yearly variations.

The difference in the currents between each phase in a multiphase line also can affect the magnetic field. This difference is called phase unbalance. For a constant load, a statistical analysis of this phase unbalance can be made to determine its effect on the magnetic field. Close to the line, there is very little effect. However, the phase unbalance slows the rate at which the magnetic field decreases with distance from the line.

EFFECT OF CONDUCTOR CONFIGURATION ON MAGNETIC FIELDS

In the transmission and distribution of power, utilities like PP&L, Inc. presently use both three-phase and single-phase lines. Each phase on a three-phase power line has either a single conductor or a bundle of two or more conductors. In a three-phase system, the ground-level magnetic field is a result of the fields produced by the currents in each of the phases. Placing the three phases as close together as possible (compaction) creates some field cancellation, and the ground-level magnetic field is reduced. However, appropriate phase separation is required for the reliable operation of the line. In addition, the arrangement of the phases can create some field cancellation and reduction of the ground-level magnetic field.

EFFECT OF DISTANCE FROM THE MAGNETIC FIELD SOURCE

Magnetic field strength diminishes with the vertical and lateral distances from the magnetic field source. Increasing the height of the conductors above ground is useful for magnetic field reduction at ground level, but may result in increased structure costs and increased aesthetic impact of the structures. Another possible method of increasing the distance to the magnetic field source is to increase the right-of-way requirements. By keeping buildings off increased rights of way, thereby requiring the public to live and work further away from lines, exposure to magnetic fields produced by the lines can be reduced. Increases in right of way are not always practical and may increase costs significantly, however.

SUMMARY OF PP&L, INC.'S MAGNETIC FIELD MANAGEMENT PROGRAM

Under its Magnetic Field Management Program, PP&L, Inc. has changed the way it builds and rebuilds some of its transmission and distribution lines. These design changes reduce magnetic field levels (assuming balanced circuit loadings and phase currents) by up to 69 percent in most of the company's new transmission lines. These guidelines now are being applied to new and reconstructed transmission facilities, based on this program.

The distribution component of the program focuses on 12 kV lines, the company's standard distribution voltage. It concentrates on the three-phase, primary 12 kV lines, since these are the most heavily loaded facilities and often are located in densely populated areas. The guidelines in this program are being applied to these three-phase, primary 12 kV lines.

A maximum 3-5 percent change in estimated cost was used as the limit for the guidelines since this value is consistent with low cost, is within estimating accuracy and is likely to have little impact on overall line costs.

The magnetic field calculations used in this document for the design of PP&L, Inc.'s overall magnetic field management plan assume balanced load conditions among the phases and a fixed level of current, not necessarily representative of specific transmission or distribution lines. These levels were calculated using the Electric Power Research Institute's ENVIRO computer program. Under actual operating conditions, the magnetic field levels that result may vary due to such things as actual load per circuit, overall current on each phase conductor and the electrical configuration and operation of each line.

MAGNETIC FIELD MANAGEMENT PROGRAM GUIDELINES

The guidelines for magnetic field management are noted below, with discussion points for each.

OVERHEAD LINES

New or Rebuilt Transmission Lines

1. Balance transmission circuit loads and phase currents as much as possible.

- PP&L, Inc. should continue to make every effort to balance loadings between the two circuits of a double circuit line when planning new or rebuilt facilities to maximize the effects of reverse phasing.
- PP&L, Inc. should continue the practice of balancing single-phase loads across the three phases of the distribution system. (Unbalanced phase currents on the distribution system are reflected through to the transmission system.)
 - Unbalanced phase currents result in higher magnetic fields that do not drop off as quickly with distance as do the fields resulting from balanced phase currents.
 - For a 5 percent phase current unbalance, the magnetic field 50 feet from the centerline of a single circuit 138 kV line could be more than twice the value than if the same line had balanced phase circuits.
 - Balanced phase currents on each three-phase distribution circuit also reduce magnetic fields from the distribution circuits themselves. In addition, they reduce magnetic fields on the transmission system from which the distribution system circuits are supplied and connected through substations.
 - Apart from magnetic field considerations, balanced phase currents on each three-phase distribution circuit also reduce line losses and improve the system voltage.

2. Continue with the present practice of using long-span construction as the PP&L, Inc. 138/69 kV standard.

- Structure designs for short-span and long-span construction are illustrated on charts I and II, respectively.
- Short-span design does not significantly reduce magnetic fields when compared to long-span design even though it is more compact than long-span design. Comparison of the magnetic field values from chart III indicates essentially the same values. Therefore, short-span design should not be used solely to reduce magnetic fields.
- PP&L, Inc. will continue to use long-span construction for 138/69 kV double-circuit lines and for single-circuit/future-double-circuit lines.
- For single-circuit/future-double-circuit lines, PP&L, Inc. will continue to install two conductors

on the top positions and one in the middle position as shown in chart IV.

- This arrangement minimizes magnetic fields as shown in chart V by placing the three initial conductors higher on the structure, which increases the ground clearances, and by placing the conductors in a triangular configuration.

3. Compact design structures are not a low-cost alternative and should be used for magnetic field reduction only in special applications.

Chart VI illustrates the compact design structure.

- The compact design increases the initial installation costs by 79 percent when compared to the long-span design but reduces the magnetic field from 9 mG to 3 mG (about 67 percent) at the edge of the 100-foot-wide right of way as shown on chart III.

4. Reverse phase new or rebuilt double-circuit transmission lines for all voltage levels.

- Reverse phasing was adopted by PP&L, Inc. in March 1991 for double-circuit 138/69 kV transmission lines and in April 1992 for all other double circuit transmission lines. Reverse phasing is shown in chart VII. Reverse phasing will reduce the magnetic fields when the current flow on both circuits is in the same direction. Calculated values contained here are based on balanced and equal phase currents on both circuits.
 - Reverse phasing reduces the magnetic field of a double circuit 138 kV single pole transmission line from 29 mG to 9 mG (about 69 percent) at the edge of the 100-foot-wide right of way as shown on chart III.
 - Reverse phasing reduces the magnetic field of a double circuit 230 kV single pole transmission line from 49 mG to 16 mG (about 67 percent) at the edge of the 150-foot-wide right of way as shown on chart VIII.
 - Reverse phasing reduces the magnetic field of a double-circuit 500 kV single pole transmission line from 37 mG to 21 mG (about 43 percent) at the edge of the 200-foot-wide right of way as shown on chart IX.
- When new or rebuilt double-circuit lines require tapping existing double-circuit lines, PP&L, Inc. will review the existing lines to determine if reverse phasing can be provided at low cost.
- Computer modeling is required to develop the optimum phasing and overall conductor arrangements for lines added to, or rebuilt in, multiple-line corridors.
 - Merely adding a reverse-phase double-circuit line to an existing transmission line corridor or reverse phasing a rebuilt line in the multiple-line corridor will not necessarily produce lower magnetic field levels at the edge of the corridor right of way.
 - The corridor must be computer modeled with all the lines, existing phase conductor locations and currents. Then, magnetic field calculations must be made varying the phase arrangements of the new or reconstructed line to determine the appropriate phasing arrangement.
 - Current flow direction on a line also must be considered. For example, a reverse-phased

line should have the current flowing in the same direction on both circuits. If the current flow is in the opposite direction for one circuit, reverse phasing will not produce the lowest magnetic field and another phase arrangement that produces lower fields may need to be utilized.

5. Increase the minimum ground clearance for all new transmission lines.

138/69 kV Transmission Lines

- Increasing the minimum line design ground clearance from 25 feet to 30 feet may add up to about 5 percent to the installed cost of a new double-circuit single pole 138/69 kV line. For a given project, such cost may be substantially less, however. In fact, PP&L, Inc. frequently uses higher-than-minimum ground clearances due to such features as road crossings, line crossings and site-specific terrain. With long-span reverse-phase design, the magnetic field is reduced from 9 mG to 7 mG (about 22 percent) at the edge of a 100-foot-wide right of way as shown in chart X.
 - In the actual design of transmission lines to include higher minimum ground clearances, there may be limited segments (such as highway crossings, severe slopes and transmission line crossing locations) where National Electrical Safety Code (NESC) minimum ground clearances may need to be used. The NESC minimum ground clearances are less than the increased ground clearance discussed previously.

230 kV Transmission Lines

- Increasing the minimum line design ground clearances from 27 feet to 32 feet may add up to about 5 percent to the cost of a single-circuit single-pole line (current standard). For a given project, such cost may be substantially less, however. In fact, PP&L, Inc. frequently uses higher-than-minimum ground clearances due to such features as road crossings, line crossings and site-specific terrain. By increasing the clearances, the magnetic field is reduced from 30 mG to 28 mG (about 7 percent) at the edge of a 150-foot-wide right of way.
- Increasing clearances from 27 feet to 32 feet could theoretically add up to about 2.8 percent to the cost of a double-circuit single-pole line (current standard) and reduce the magnetic field of a reverse-phase line from 16 mG to 15 mG (about 6 percent) at the edge of a 150-foot-wide right of way. Chart XI is a summary of this data.
- Studies are required for each new 230 kV line to determine optimum structure types, ground clearances, configurations and designs to reduce field levels. Such studies could include analysis of reduction measures such as additional minimum ground clearances, increasing conductor tensions, using reduced phase spacing (a “Delta” configuration on a single-circuit line), installing the second circuit initially, and/or adding a second set of conductors that are reverse phased and operated in parallel with the first set (bundled/split phase).

500 kV Transmission Lines

- Increasing ground clearances from 33 feet to 53 feet may add up to about 4.5 percent to the

cost of a single-circuit “H-frame” line (current standard). For a given project, such cost may be substantially less, however. In fact, PP&L, Inc. frequently uses higher-than-minimum ground clearances due to such features as road crossings, line crossings and site-specific terrain. By increasing the clearances, the magnetic field is reduced from 42 mG to 35 mG (about 17 percent) at the edge of a 200-foot-wide right of way.

- Increasing ground clearances from 33 feet to 53 feet could theoretically add up to 2.8 percent to the cost of a double-circuit “H-frame” line (current standard) and reduces the magnetic field of a reverse-phase line from 21 mG to 16 mG (about 24 percent) at the edge of a 200-foot-wide right of way. Chart XII is a summary of this data.
- Studies are required for each new 500 kV line to determine optimum structure types, ground clearances, configurations and designs to reduce field levels. Such studies could include analysis of reduction measures such as additional minimum ground clearances, increasing conductor tensions, using reduced-phase spacing (a “Delta” configuration on a single circuit line), installing the second circuit initially, and/or adding a second set of conductors that are reverse phased and operated in parallel with the first set (bundled/split phase).

RECONDUCTORING OR ADDING ADDITIONAL CIRCUITS TO EXISTING TRANSMISSION LINES

When reconductoring or adding additional circuits to existing transmission lines, PP&L, Inc. will evaluate low-cost or no-cost options for magnetic field management on a case-by-case basis.

When reconductoring existing transmission lines or adding additional circuits, low-cost alternatives may not exist; however, the following steps will be taken:

- For a single-circuit line, the use of a Delta arrangement or other modifications on the existing structure, with reduced-phase spacing, will be evaluated.
- For double-circuit lines, application of reverse phasing may reduce the magnetic field under the line and within the right of way and will be evaluated.
- For single- and double-circuit lines, evaluate using higher conductor tensions that can increase the minimum line design ground clearance.

Distribution Lines

At the 12 kV distribution level, new main three-phase lines will continue to be constructed with five feet of additional ground clearance.

- Main lines are the most heavily loaded sections of a distribution line and therefore have the highest magnetic fields associated with them.
- Increasing the ground clearance by five feet reduces the magnetic field under the line from 14 mG to 11 mG using the standard eight-foot crossarm design. These values are based on increasing pole heights from 45 feet to 50 feet and a typical operating current of 300 amps per phase.

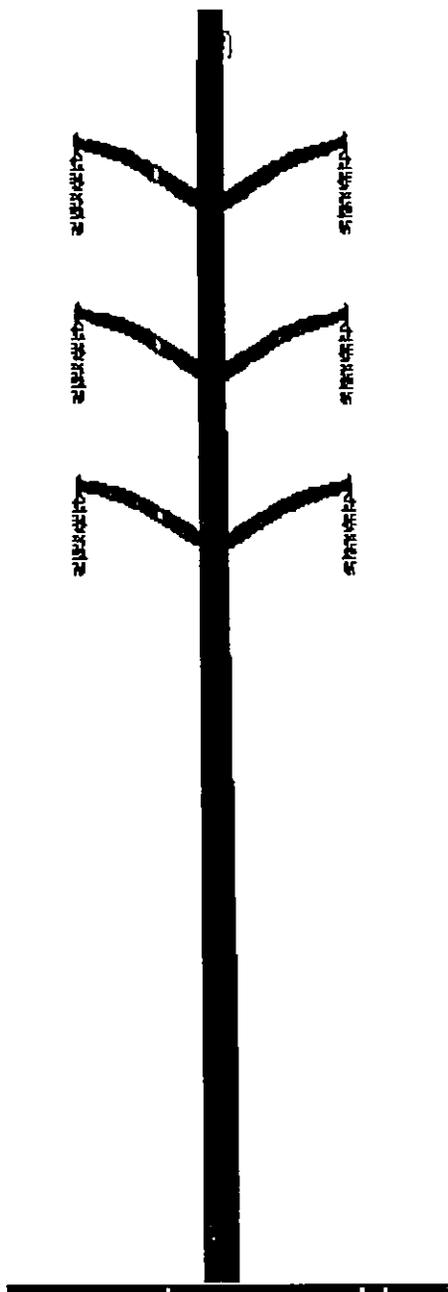
- Chart XIII is a summary of this data. Increasing ground clearance by five feet could theoretically add about 5 percent to the cost of a typical distribution line.

UNDERGROUND TRANSMISSION LINES

If underground transmission lines are required due to environmental or land use factors or restrictions on available clearances, PP&L, Inc. will evaluate options for magnetic field management techniques on a case-by-case basis.

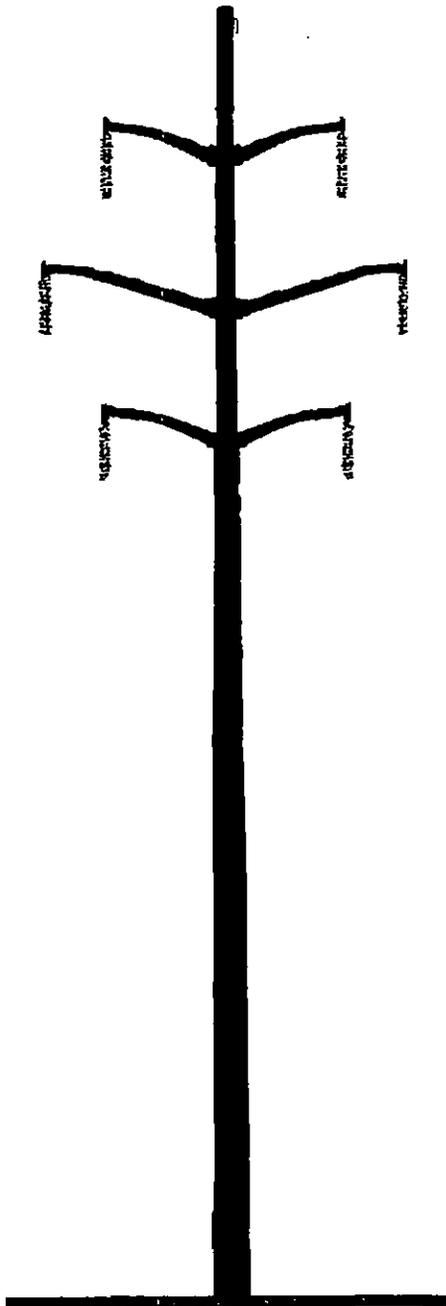
- The phase arrangement that produces the lowest field will be determined.
- The depth of burial of the line will be determined considering the cost of excavation and the location of other buried utilities in the area.
- The use of steel pipe ferromagnetic shielding that reduces magnetic fields will be evaluated.

Short-Span Construction



- More compact design
- Should not be used solely to reduce magnetic fields
- Typical conductor data:
 - 1 3/8" HS steel overhead ground wire - 7.3 feet sag
 - 6-556.5 KCMIL 24/7 ACSR power conductors - (PARAKEET) 10.0 feet sag
 - Average span - 400 feet

Long-Span Construction Remains PP&L, Inc. 138kV Standard



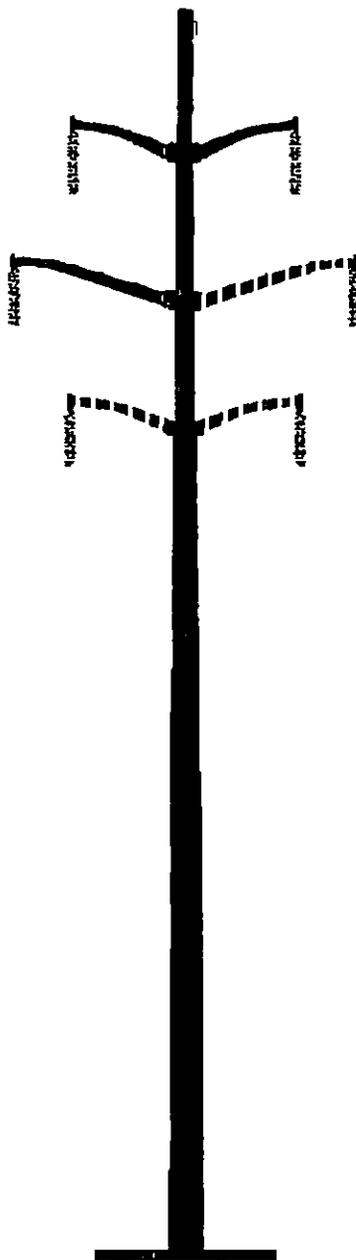
- Lower cost alternative
- Reduces magnetic fields due to higher structures
- Typical conductor data:
 - 1 3/8" HS steel overhead ground wire - 17.3 feet sag
 - 6-556.5 KCMIL 24/7 ACSR power conductors - (PARAKEET) 23.0 feet sag
 - Average span - 600 feet

**138/69 kV REVERSE-PHASE TRANSMISSION LINES
CALCULATED MAGNETIC FIELDS AT 400 AMPERES**

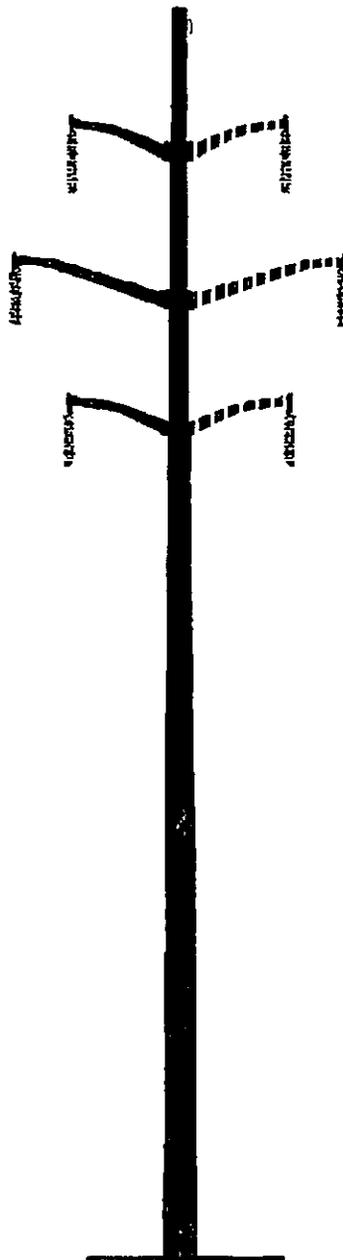
TYPE CONSTRUCTION	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
SHORT SPAN (CHART I)	30
SHORT SPAN (REVERSE PHASE)	8
LONG SPAN (CHART II)	29
LONG SPAN (REVERSE PHASE)	9
COMPACT (CHART VI)	14
COMPACT (REVERSE PHASE)	3

The edge of right of way is 50 feet from the line centerline.
The 400 ampere phase current is balanced between phases.
Calculations are based on a minimum ground clearance of 25 feet.
LONG SPAN, SHORT SPAN and COMPACT are double-circuit lines.

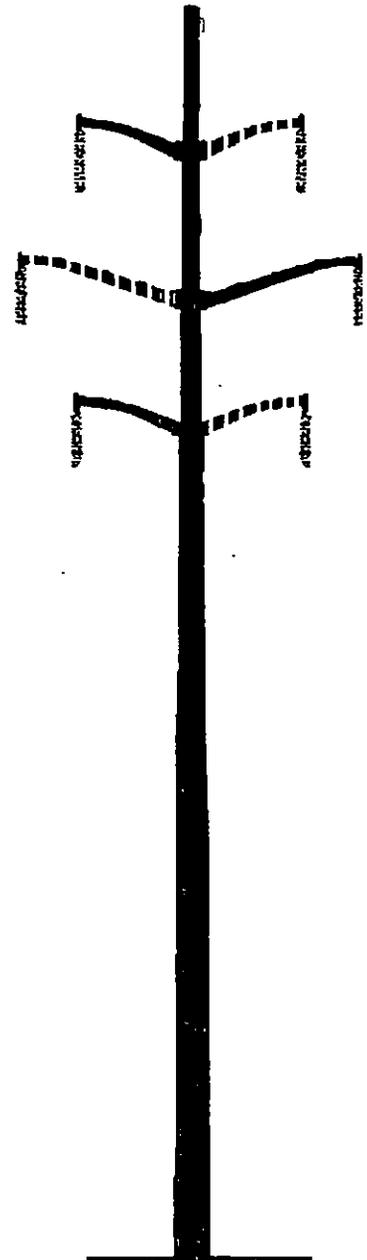
Typical Single-Circuit Structure Designs



Top/Middle



Vertical



Top/Middle/Bottom

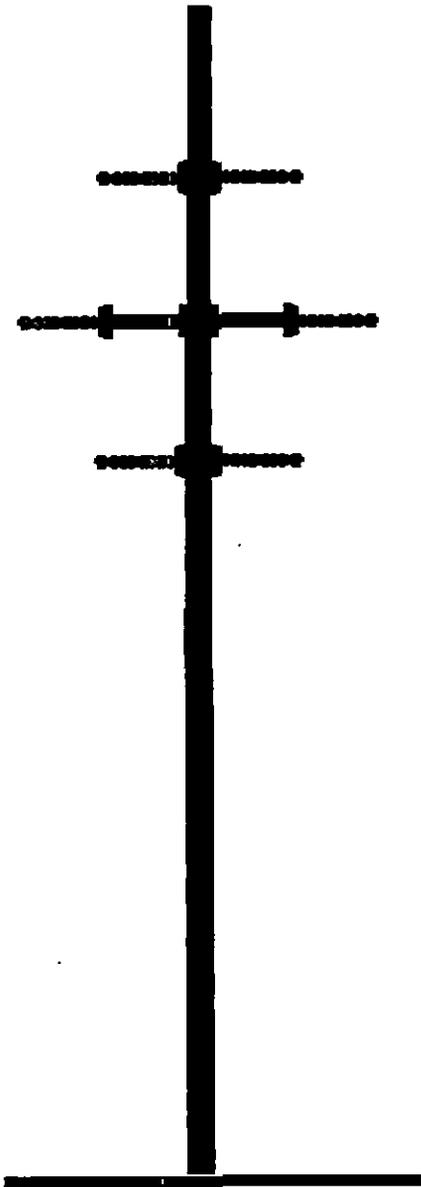
————— initial single circuit
- - - - - future second circuit

**138/69 kV SINGLE CIRCUIT TRANSMISSION LINES
CALCULATED MAGNETIC FIELDS AT 400 AMPERES**

TYPE CONSTRUCTION	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
TOP/MIDDLE/BOTTOM	20
VERTICAL	17
TOP/MIDDLE	12

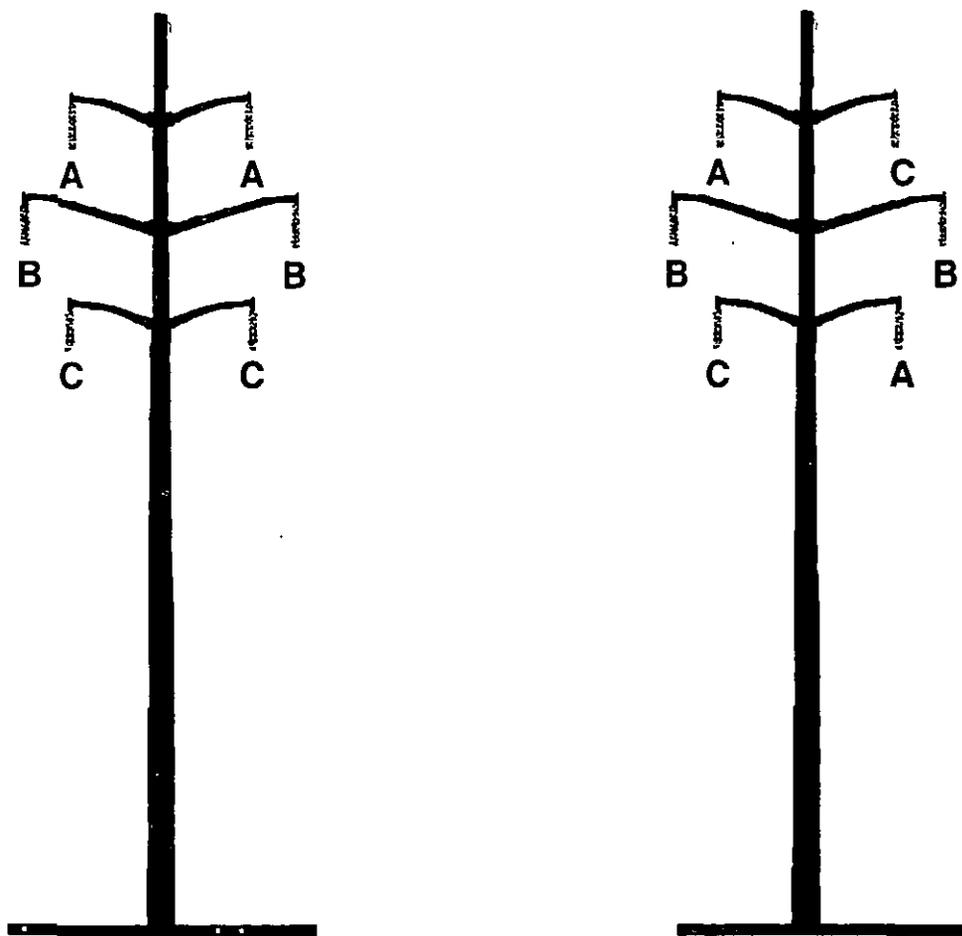
The edge of right of way is 50 feet from the line centerline.
The 400 ampere phase current is balanced between phases.
Calculations are based on a minimum ground clearance of 25 feet.

Compact Design Structure



- Minimize magnetic fields due to compact design
- Not a low-cost alternative
- Typical conductor data:
 - 1 3/8" HS steel overhead ground wire - 9.0 feet sag
 - 6-556.5 KCMIL 24/7 ACSR power conductors - (PARAKEET) 9.0 feet sag
 - Average span -300 feet

Reverse Phasing of Double-Circuit Transmission Lines



From: → → → → To:

Reverse phasing also can be one of the following phase arrangements:

A	B		B	A		B	C		C	A		C	B
C	C	or	C	C	or	A	A	or	B	B	or	A	A
B	A		A	B		C	B		A	C		B	C

CHART VIII

**230 kV REVERSE-PHASE TRANSMISSION LINES
CALCULATED MAGNETIC FIELDS AT 800 AMPERES**

TYPE CONSTRUCTION	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
DOUBLE CIRCUIT POLE	49
DOUBLE CIRCUIT POLE (REVERSE-PHASE)	16

The edge of right of way is 75 feet from the line centerline.
The 800 ampere phase current is balanced between phases.
Calculations are based on a minimum ground clearance of 27 feet.

CHART IX

**500 kV REVERSE-PHASE TRANSMISSION LINES
CALCULATED MAGNETIC FIELDS AT 1100 AMPERES**

TYPE CONSTRUCTION	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
DOUBLE CIRCUIT POLE	37
DOUBLE CIRCUIT POLE (REVERSE PHASE)	21

The edge of right of way is 100 feet from the line centerline.
The 1,100 ampere phase current is balanced between phases.
Calculations are based on a minimum ground clearance of 33 feet.

**INCREASED 138/69 kV MINIMUM GROUND CLEARANCE
CALCULATED MAGNETIC FIELDS AT 400 AMPERES**

TYPE CONSTRUCTION	MINIMUM GROUND CLEARANCE FEET	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
SINGLE CIRCUIT TOP/MIDDLE	25	12
SINGLE CIRCUIT TOP/MIDDLE	30	10
LONG SPAN	25	29
LONG SPAN	30	26
LONG SPAN (REVERSE PHASE)	25	9
LONG SPAN (REVERSE PHASE)	30	7

The edge of right of way is 50 feet from the line centerline.
The 400 ampere phase current is balanced between phases.

**INCREASED 230 kV MINIMUM GROUND CLEARANCE
CALCULATED MAGNETIC FIELDS AT 800 AMPERES**

TYPE CONSTRUCTION	MINIMUM GROUND CLEARANCE FEET	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
SINGLE CIRCUIT TOP/MIDDLE	27	30
SINGLE CIRCUIT TOP/MIDDLE	32	28
DOUBLE CIRCUIT POLE	27	49
DOUBLE CIRCUIT POLE	32	46
DOUBLE CIRCUIT POLE (REVERSE PHASE)	27	16
DOUBLE CIRCUIT POLE (REVERSE PHASE)	32	15

The edge of right of way is 75 feet from the line centerline.
The 800 ampere phase current is balanced between phases.

**INCREASED 500 KV MINIMUM GROUND CLEARANCE
CALCULATED MAGNETIC FIELDS AT 1,100 AMPERES**

TYPE CONSTRUCTION	MINIMUM GROUND CLEARANCE FEET	MAGNETIC FIELD IN MILLIGAUSS AT THE EDGE OF THE RIGHT OF WAY
SINGLE CIRCUIT "H" STRUCTURE	33	42
SINGLE CIRCUIT "H" STRUCTURE	53	35
DOUBLE CIRCUIT POLE	33	37
DOUBLE CIRCUIT POLE	53	31
DOUBLE CIRCUIT POLE (REVERSE PHASE)	33	21
DOUBLE CIRCUIT POLE (REVERSE PHASE)	53	16

The edge of right of way is 100 feet from the line centerline.
The 1,100 ampere phase current is balanced between phases.

**12 KV DISTRIBUTION LINES
CALCULATED MAGNETIC FIELDS AT 300 AMPERES**

TYPE CONSTRUCTION	POLE HEIGHT FEET	MAGNETIC FIELD IN MILLIGAUSS*	
		AT CENTERLINE	AT 30 FEET FROM CENTERLINE
STANDARD CROSSARM	45	14	7
STANDARD CROSSARM	50	11	6

* Field level under the line at mid-span based on 300 amps, balanced loading, one meter above ground level.

APPENDIX H

LIST OF GOVERNEMENTAL AGENCIES, MUNICIPALITIES AND OTHER PUBLIC ENTITIES RECEIVING APPLICATIONS

1. Pennsylvania Historical and Museum Commission
Bureau for Historic Preservation
Division for Archaeology and Protection
P. O. Box 1026
Harrisburg, Pennsylvania 17108-1026
Attn: Mr. Kurt W. Carr, Chief
2. Pennsylvania Department of Transportation
Commonwealth Keystone Building
400 North Street, 8th Floor
Harrisburg, Pennsylvania 17120
Attn: The Honorable Bradley L. Mallory, Secretary
3. Department of Environmental Protection
P. O. Box 2063
Market Street Office Building
Harrisburg, Pennsylvania 17105-2063
Attn: Mr. Joseph Sieber
4. Lancaster County Commissioners
50 N. Duke Street
Lancaster, Pennsylvania 17603
Attn: Mr. Paul Thibault, Chair
5. Lancaster County Planning Commission
50 N. Duke Street
Lancaster, Pennsylvania 17603
Attn: Mr. Ronald Bailey, Executive Director
6. Lancaster County Agricultural Preserve Board
50 N. Duke Street
P. O. Box 83480
Lancaster, PA 17608
Attn: Ms. June L. Mengel, Director
7. East Hempfield Township Supervisors
1700 Nissley Road
PO Box 128
Landisville, PA 17538
Attn: Mr. R. Michael Wagner - Chairperson

8. East Hempfield Township Planning Commission
1700 Nissley Road
PO Box 128
Landisville, PA 17538
Attn: Bernard Krutsick - Chairperson

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

RE: LETTER OF NOTIFICATION OF PPL
ELECTRIC UTILITIES CORPORATION FILED
PURSUANT TO 52 PA. CODE CHAPTER 57,
SUBCHAPTER G, WITH RESPECT TO THE
PROPOSED WEST HEMPFIELD-
McGOVERNVILLE #1 AND #2 138/69 kV TIE LINE
TO BE CONSTRUCTED IN EAST HEMPFIELD
TOWNSHIP, LANCASTER COUNTY

Docket No. A-110500 F0333

APPLICATION OF PPL ELECTRIC UTILITIES
CORPORATION UNDER 15 PA. C.S. §1511(C) FOR
A FINDING AND DETERMINATION THAT THE
SERVICE TO BE FURNISHED BY THE
APPLICANT THROUGH ITS PROPOSED
EXERCISE OF THE POWER OF EMINENT
DOMAIN TO ACQUIRE RIGHT-OF-WAY FOR
THE CONSTRUCTION, OPERATION AND
MAINTENANCE OF THE PROPOSED WEST
HEMPFIELD-MCGOVERNVILLE #1 AND #2 138/69
KV TIE LINE OVER AND ACROSS THE LANDS
OF JOHN E. LANDIS IN EAST HEMPFIELD
TOWNSHIP, LANCASTER COUNTY, IS
NECESSARY OR PROPER FOR THE SERVICE,
ACCOMMODATION, CONVENIENCE OR
SAFETY OF THE PUBLIC

DOCUMENT

Docket No. A-110500 F0344

DOCKETED

SEP 30 2004

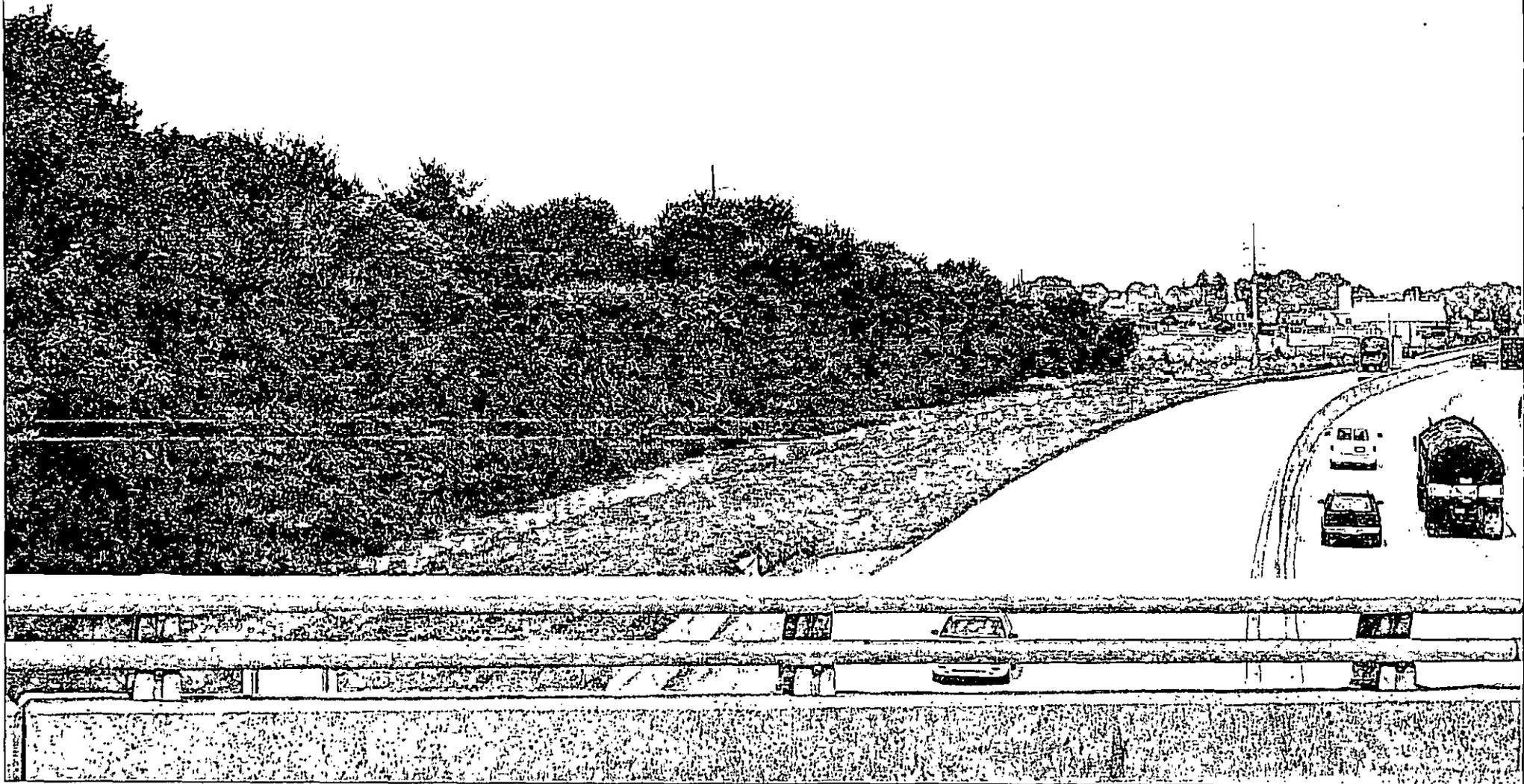
PPL EXHIBIT NO. 2

Accompanying PPL Statement No. 2

9/1/04 Hbg JK

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14 P.U.C.

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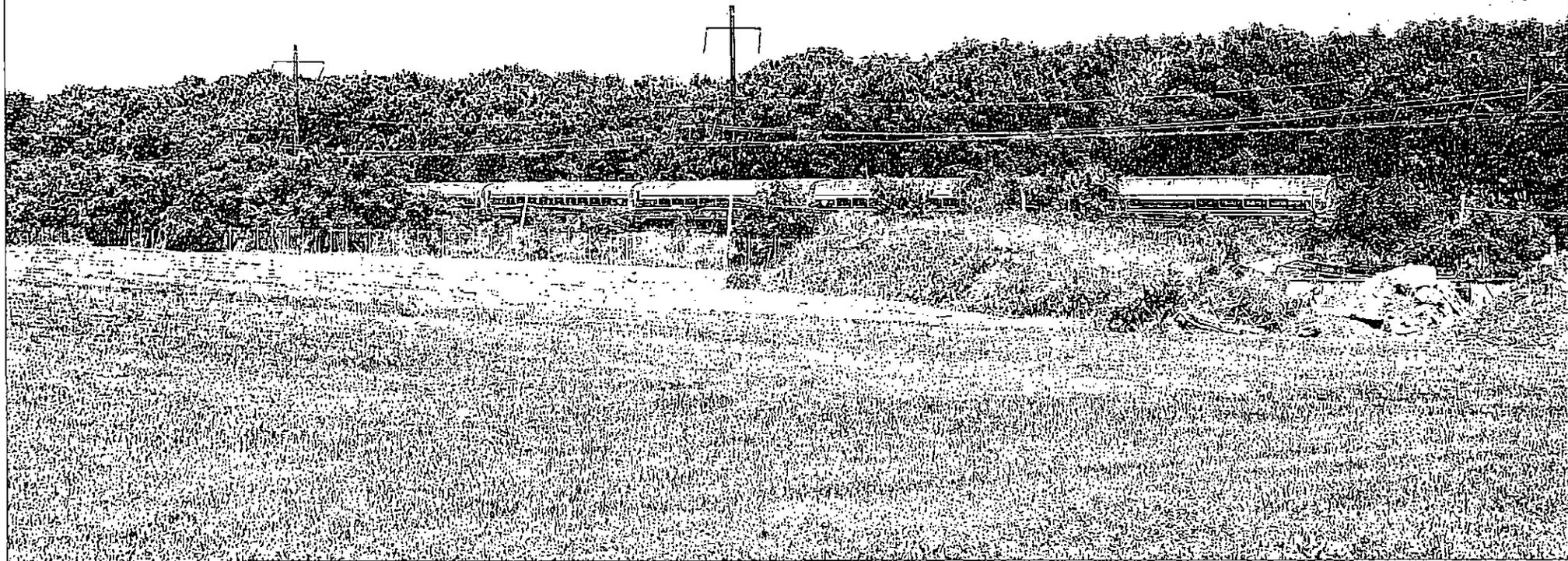
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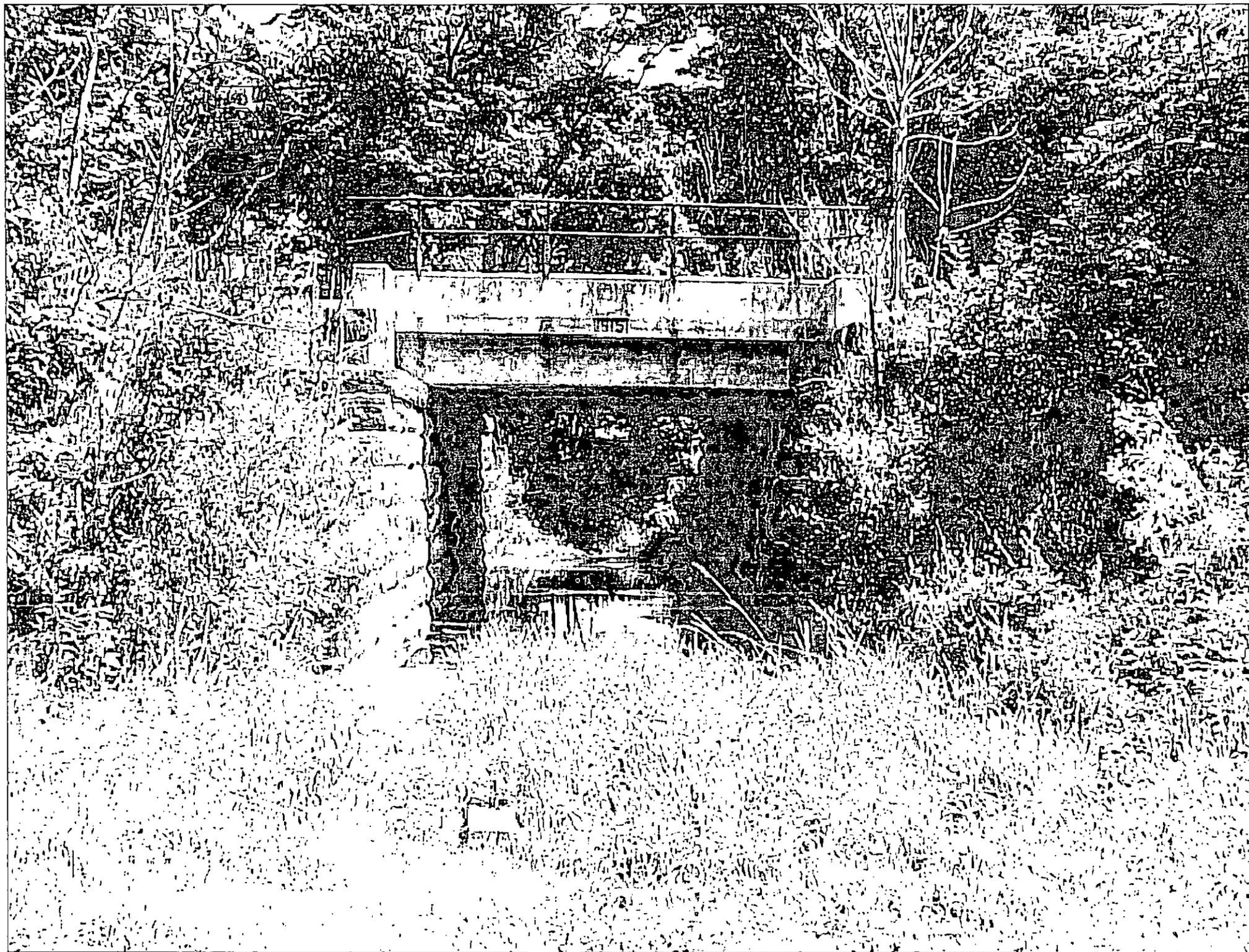


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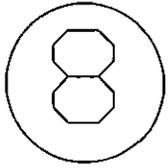


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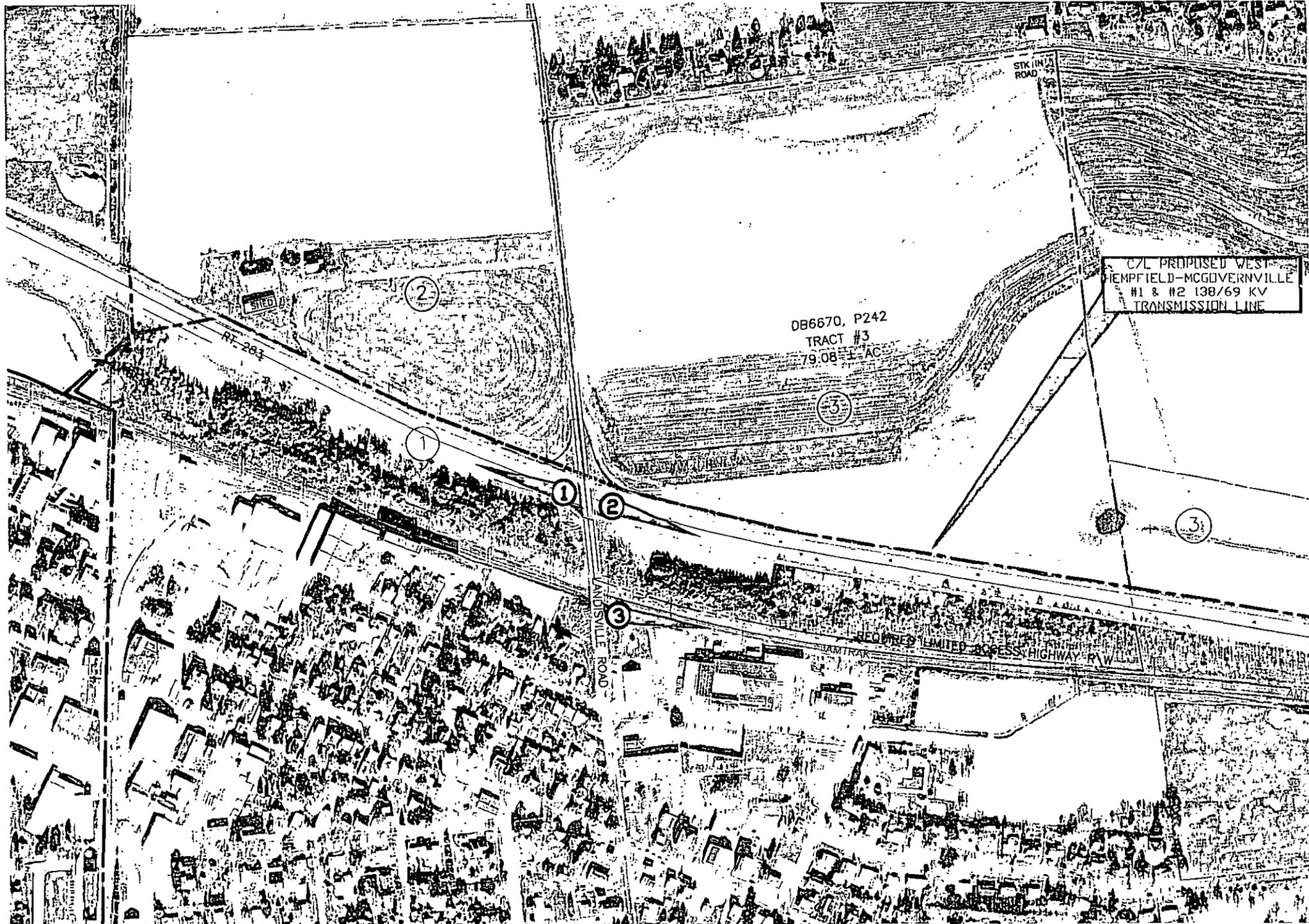


7





X



C7L PROPOSED WEST
HEMPFIELD-MCGOVERNVILLE
#1 & #2 138/69 KV
TRANSMISSION LINE

DB6670, P242
TRACT #3
79.08 ± AC

SITED

RT-293

STK IN
ROAD

MCGOVERNVILLE ROAD

REQUIRED LIMITED ACCESS HIGHWAY R/W

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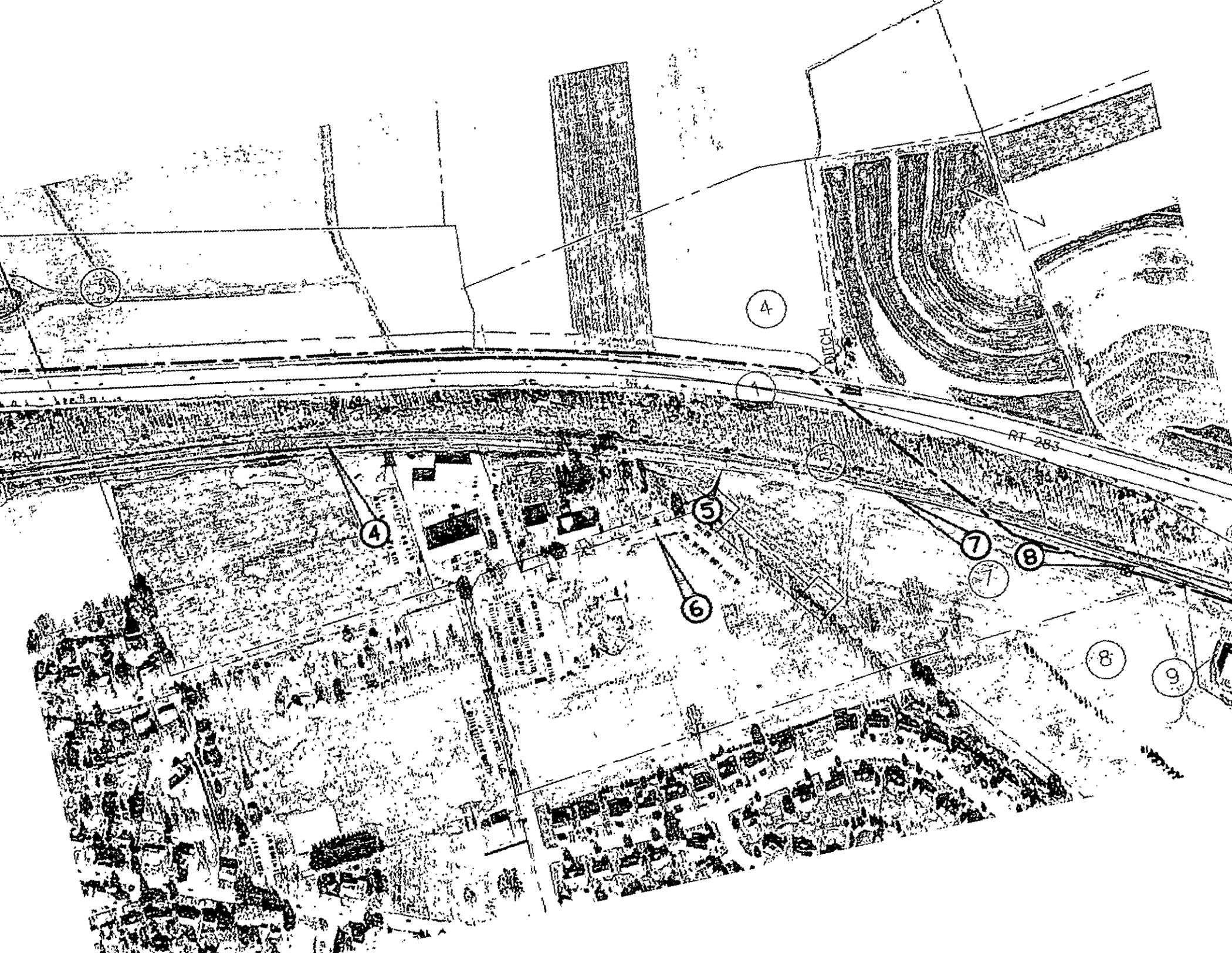
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DITCH

RT 283

4

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8

9

DOCKET

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Application Of PPL Electric Utilities Corporation Under :
15 Pa. C.S. §1511(c) For A Finding And Determination :
That The Service To Be Furnished By The Applicant :
Through Its Proposed Exercise Of The Power Of :
Eminent Domain To Acquire Right-Of-Way For The :
Construction, Operation And Maintenance Of The :
Proposed West Hempfield-McGovernville #1 And #2 :
138/69 kV Tie Line Over And Across The Lands Of :
JOHN E. LANDIS In East Hempfield Township, :
Lancaster County, Is Necessary Or Proper For The :
Service, Accommodation, Convenience Or Safety Of :
The Public :

A-110500 F0333

Docket No. _____

PA PUC
SECRETARY'S BUREAU

2004 SEP - 8 AM 9: 23

RECEIVED

**APPLICATION OF
PPL ELECTRIC UTILITIES CORPORATION
TO EXERCISE THE POWER OF EMINENT DOMAIN
ACROSS THE PROPERTY OF
JOHN E. LANDIS**

DOCKETED

SEP 30 2004

TO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:

I. INTRODUCTION AND OVERVIEW

1. This Application, which includes the accompanying, separately-bound Exhibits A-E, is filed by PPL Electric Utilities Corporation ("PPL"), Two North Ninth Street, Allentown, Pennsylvania 18101, a public utility that provides service in Pennsylvania under and subject to the jurisdiction of the Pennsylvania Public Utility Commission (PUC or Commission).

2. PPL's attorneys are:

David B. MacGregor
Anthony C. DeCusatis
Morgan, Lewis & Bockius LLP
1701 Market Street
Philadelphia, PA 19103
(T) 215.963.5034 / 215.963.5001 (Fax)

Paul E. Russell
PPL Electric Utilities Corporation
Two North Ninth Street
Allentown, PA 18101
(T) 610.774.4254
(Fax) 610.774.6726

PPL's attorneys are authorized to receive all notices and communications regarding this Application.

3. PPL is a public utility corporation of the Commonwealth of Pennsylvania duly formed by consolidation and merger, having received Letters Patent dated June 4, 1920, from the Governor of the Commonwealth of Pennsylvania. PPL is subject to the Pennsylvania Business Corporation Law of 1988, P.L. 1444, No. 177, and submits this application pursuant Section 103 of that statute (15 Pa. C.S. §1511). PPL has succeeded to the certifications, franchises and all the property, real, personal and mixed, of various other corporations, and now has authority, *inter alia*, to supply light, heat and power, or any of them, by means of electricity to the public in various cities, boroughs, townships and districts in central and eastern Pennsylvania.

4. PPL is now furnishing electric service to approximately 1.3 million customers throughout its chartered or certificated service territory, which comprises twenty-nine (29) counties in eastern and central Pennsylvania and encompasses approximately 10,000 square miles. PPL 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 and 2803). PPL is a "public utility corporation" as defined in 15 Pa. C.S. §1103.

5. PPL owns approximately 5,000 miles of transmission lines operating at 69,000 volts or higher, approximately 330 substations with a capacity of 10,000 KVA or more and approximately 43,000 miles of distribution lines operating at less than 69,000 volts. Exhibit A to this Application is a map of PPL's bulk power transmission system showing substations and transmission lines. PPL's transmission system is operated as part of the PJM Interconnection LLC (PJM), which has been approved by the Federal Energy Regulatory Commission (FERC) as the Independent System Operator ("ISO") of the transmission systems of electric utilities in the Mid-Atlantic region.

6. The West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line will be approximately 1.8 miles in length and will connect PPL's South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines, via the existing Kellogg #1 and #2 Taps, to the existing West Hempfield-Donegal 138/69 kV Line and the West Hempfield-South Manheim #3 138/69 kV Line in order to relieve a potential overloading of the South Manheim-South Akron #1 and #2 Transmission Lines.

7. The route PPL has selected for the West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line parallels existing linear features consisting of a limited access highway and a railroad corridor. As a consequence, the proposed route overlaps highway and railroad easements, thereby reducing the amount of new right-of-way needed for the line.

8. On July 10, 2003, PPL filed with the PUC a Letter of Notification pursuant to 52 Pa. Code §57.72(d)(1)(vi) for siting certification of the proposed West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line. The Letter of Notification was docketed at A-110500 F0333. Accompanying the Letter of Notification, PPL filed Exhibits A-D and Appendices A-H. The Letter of Notification and its accompanying Exhibits and Appendices are incorporated herein by reference. No protests or petitions to intervene were filed with respect to the Letter of Notification, which is still pending.

II. DESCRIPTION OF THE PROJECT

9. PPL's South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines are supplied from PPL's South Manheim 230-69 kV Substation. The Kellogg #1 and #2 Taps are 69 kV tap lines from the South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines. The Kellogg Taps supply the Kellogg and McGovernville 69/12 kV Substations, which, in turn supply customer load. (This arrangement is depicted in the upper right quadrant of Figure 1 in Exhibit A accompanying PPL's Letter of Notification.)

10. PPL's West Hempfield-Donegal 138/69 kV and West Hempfield-South Manheim #3 138/69 kV Transmission Lines are supplied from PPL's West Hempfield 230-69 kV Substation. (These facilities are depicted in the lower left quadrant of Figure 1 in Exhibit A accompanying PPL's Letter of Notification.)

11. The proposed West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line will create a high capacity transmission link, via the Kellogg Tap Lines, between PPL's South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines and PPL's West Hempfield-Donegal 138/69 kV and West Hempfield-South Manheim #3 138/69 kV Transmission Lines. Creating this transmission link will alleviate potential overloading of the South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines under projected summer peak conditions in the event of a single contingency outage of either of the South Manheim-South Akron circuits. (The proposed facility is depicted on Figure 2 in Exhibit A accompanying the Letter of Notification.)

III. NECESSITY FOR THE PROPOSED TIE LINE

12. PPL is confronted with the serious problem of alleviating overload constraints on the South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines in the event of a single contingency outage of either of the circuits on that line. (The details of the potential overloading are explained in Exhibit A accompanying the Letter of Notification, and projected summer loadings of those circuits under normal and single contingency conditions are set forth in Table 1 of that exhibit.) Another factor that contributes to the need for the proposed Tie Line is the current inability to shift the supply of load between the existing South Manheim and West Hempfield Substations in the event of the loss of the transformers at either location.

13. PPL carefully reviewed the possible alternatives for alleviating the overloading condition described above. The analysis of each alternative is described in detail in Exhibit A accompanying the Letter of Notification. The proposed West Hempfield-McGovernville Tie

Line is the best functional alternative based on its ability to alleviate the overloading condition, provide capacity to transfer load between the two 230-69 kV substations and facilitate the conversion of PPL's regional transmission system to 138 kV operation when projected increases in load justify that conversion.

IV. SITING ANALYSIS

14. PPL conducted an extensive, multi-faceted analysis to select a route for the proposed transmission line that best balances functional requirements, environmental factors and cost considerations.

15. PPL conducted a detailed environmental inventory to identify and locate environmental factors that need to be considered when evaluating and selecting transmission line routes, as described in Exhibit B accompanying its Letter of Notification and as depicted on Maps 1-7 in that exhibit. In addition, PPL reviewed the project with municipal and state officials and agencies.

16. Using the information developed in the manner described above, PPL identified the proposed line route, which takes advantage of existing linear features and minimizes land use constraints to the extent possible. PPL also identified an alternative route that, after thorough analysis, was rejected because of its greater visual and environmental impacts and higher construction and operating costs, as fully explained in Exhibit C (pp. 6-7) accompanying the Letter of Notification.

17. PPL's proposed line route, for which approval is requested herein, is plotted on the aerial map in the map pocket of Exhibit C accompanying the Letter of Notification and is described in detail at pages 1-2 of that exhibit. The proposed line route is 1.8 miles long and, for virtually its entire length, parallels existing linear features (Route 283, a limited access highway, and an Amtrak rail corridor) such that the line's right-of-way will overlap existing highway and

railroad easements. The proposed line route begins at its point of interconnection with the West Hempfield-Donegal and West Hempfield-South Manheim #3 138/69 kV Lines, which lies between Route 283 and the Amtrak railroad corridor, approximately 1,650 feet west of Landisville Road. The proposed route then heads northeast and crosses Route 283 approximately 315 feet from that connection point. After crossing Route 283, the line heads southeast, parallel to Route 283, a distance of approximately 1.1 miles. Most of this segment of the route lies over agricultural land, and a portion crosses property formerly owned by Armstrong World Industries. The last segment of the line, approximately 2,890 feet in length, also heads southeast, crosses Route 283 and the Amtrak railroad tracks, and connects to the Kellogg #1 and #2 Taps on the property of Kellogg USA. A small segment of this line section crosses property owned by East Hempfield Township.

V. PROPERTY FOR WHICH CONDEMNATION APPROVAL IS SOUGHT

18. The route of the proposed transmission line crosses a certain tract or tracts of land, a legal description of which is provided in Exhibit B to this Application. The name and post office address of the owner of record of said land are: John E. Landis, 2942 King Lane, Lancaster, PA 17601. PPL has endeavored to purchase a right-of-way over the said tract of land for the purposes described above, but has been unable to reach any agreement with the property owner.

19. PPL desires to enter upon, use, take and appropriate an easement across a portion of the aforesaid land to the extent authorized by law and necessary for its corporate use as a right-of-way for the construction, operation and maintenance of the proposed line for the transmission of electric energy for light, heat and power. A legal description and map of the right-of-way to be acquired by condemnation are provided in Exhibits C and D, respectively, to this Application.

20. The right-of-way sought to be acquired in this Application does not include any streams, rivers, or waterways of the Commonwealth, or property of a public utility, or property used as a burying ground or place of public worship, or a dwelling house or any part of the reasonable curtilage appurtenant thereto. The proposed right-of-way is not inconsistent with, and will not materially interfere with, any existing public use.

VI. THE REQUIREMENTS FOR CONDEMNATION APPROVAL HAVE BEEN MET

21. No other public utility is now furnishing, or has the corporate right, power, franchise or certification to furnish, the same service as, or service similar to, that which PPL will furnish by means of the transmission line to be constructed over and upon the right-of-way to be acquired as set forth in this Application.

22. The service to be furnished by PPL through the proposed transmission line and related facilities is necessary or proper for the service, accommodation, convenience or safety of the public for the reasons set forth in this Application and in the Letter of Notification filed at Docket No. A-110500 F0333.

23. An appropriate resolution was adopted by PPL's Board of Directors authorizing and directing the instant Application. A copy of said resolution is provided in Exhibit E to this Application and is made a part hereof.

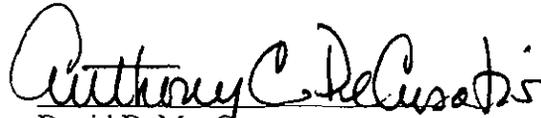
VII. CONSOLIDATION WITH LETTER OF NOTIFICATION

24. Pursuant to 52 Pa. Code §57.75(i)(1), PPL seeks to consolidate this Application for the exercise of the power of eminent domain with the Letter of Notification docketed at A-110500 F0333. In accordance with the requirements of 52 Pa. Code §57.75(i)(2), PPL previously has served a copy of the Letter of Notification upon the persons, corporations or other entities having a property interest sought to be acquired by this eminent domain Application.

VIII. CONCLUSION

WHEREFORE, PPL respectfully requests that the Commission: (1) consolidate this Application for the exercise of the power of eminent domain with the aforementioned Letter of Notification at Docket No. 110500 F0333; and (2) find and determine that the service to be furnished by PPL through the proposed exercise of eminent domain, as set forth above, is necessary or proper for the service, accommodation, convenience, or safety of the public.

Respectfully submitted,



David B. MacGregor
Anthony C. DeCusatis
Morgan, Lewis & Bockius LLP
1701 Market Street
Philadelphia, PA 19103
215.963.5448
215.963.5001 (fax)

Paul E. Russell
PPL Electric Utilities Corporation
Two North Ninth Street
Allentown, PA 18101

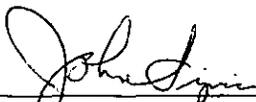
Attorneys for PPL Electric Utilities
Corporation

Dated: March 30, 2003

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA)
: SS
COUNTY OF LEHIGH :
)

JOHN F. SIPICS, being duly sworn according to law, deposes and says that he is President of PPL Electric Utilities Corporation; that he is authorized to and does make this affidavit for it; and that the facts set forth above are true and correct to the best of his knowledge, information and belief and he expects PPL Electric Utilities Corporation to be able to prove the same at hearing hereof.



John F. Sipics

Sworn to and subscribed
before me this 26th day
of March.



Notarial Seal
James R. Harper, Notary Public
City Of Allentown, Lehigh County
My Commission Expires Dec. 23, 2006
Member, Pennsylvania Association of Notaries

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

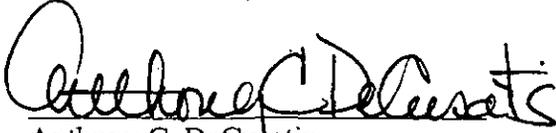
Application Of PPL Electric Utilities :
Corporation Under 15 Pa. C.S. §1511(c) :
For A Finding And Determination That :
The Service To Be Furnished By The :
Applicant Through Its Proposed Exercise :
Of The Power Of Eminent Domain To :
Acquire Right-Of-Way For The :
Construction, Operation And Maintenance :
Of The Proposed West Hempfield- : Docket No. _____
McGovernville #1 And #2 138/69 kV Tie :
Line Over And Across The Lands Of :
JOHN E. LANDIS In East Hempfield :
Township, Lancaster County, Is Necessary :
Or Proper For The Service, :
Accommodation, Convenience Or Safety :
Of The Public :

CERTIFICATE OF SERVICE

I hereby certify that I have, this 30th day of March, 2004, served true and correct copies of the above-captioned Application and accompanying Exhibit A-E upon the persons and in the manner listed below.

BY CERTIFIED MAIL/RETURN RECEIPT REQUESTED

John E. Landis
2942 King Lane
Lancaster, PA 17601


Anthony C. DeCusatis
Counsel for PPL Electric Utilities
Corporation

March 30, 2004



Before the
Pennsylvania Public Utility Commission

**Exhibits to the Application for
Eminent Domain Across Property
of**

John E. Landis

EXHIBITS - A - E

**West Hempfield – McGovernville
#1 & #2 138/69 kV Tie**

Application Docket No. _____

Submitted by: PPL Electric Utilities Corp.

**APPLICATION FOR EMINENT DOMAIN ACROSS PROPERTY OF
JOHN E. LANDIS – EXHIBIT A**

<u>TOPIC</u>	<u>TAB</u>
SYSTEM MAP.....	A
DESCRIPTION OF THE PROPERTY.....	B
LEGAL METES AND BOUNDS DESCRIPTION OF THE RIGHTS-OF-WAY TO BE CONDEMNED.....	C
MAP SHOWING THE LOCATION OF THE TRANSMISSION LINE AND RIGHTS-OF-WAY TO BE ACQUIRED: B318997.....	D
PPL ELECTRIC UTILITIES CORPORATION’S BOARD OF DIRECTORS RESOLUTION.....	E

C



D

E

MF

F

PC FORMAT



OVER SIZED DOCUMENTS



ACCT-		ELECTRICAL SYSTEM MAP	
SCALE- NONE			
BY-			
REVIEWED		WEST HEMPFIELD-McGOVERNVILLE	
APPROVED ORIGINALLY BY G. HAKUN III		DATE 7/17/85	
PP&L DRAWING NO. D191830		SHEET NO. 1	REV. 23

**DESCRIPTION OF PROPERTY OF
JOHN E. LANDIS
TRACT 1**

ALL THAT CERTAIN tract of farmland, with the improvements thereon erected, situated on the public road leading from East Petersburg to Landisville in East Hempfield Township, Lancaster County, Pennsylvania, and bounded and described according to a draft thereof made in November, 1964 by Henry H. Koser, R. S., as follows, to wit:

BEGINNING at the southwest corner thereof at an iron pipe, said iron pipe being 474.44 feet distant northward from the northern right-of-way line of U. S. Route No. 230 and in line of land now or late of Harry S. Mumma; thence along land now or late of said Harry S. Mumma, North 02 degrees and 07 minutes East (erroneously stated as West in herein recited Deed) 373.9 feet to a point, and North 01 degree and 47 minutes East, 1,071.04 feet to a point in the middle of Long Road; thence in the middle of Long Road, by lands now or late of William C. Burkhard, John A. Strickler, et al, South 74 degrees and 16 minutes East, 943.91 feet to a point in said road; thence crossing said road, by a line crossing an iron pipe on the northern side of said road, by lands now or late of John A. Strickler, North 01 degree and 47 minutes East, 374.7 feet to an iron pipe; thence still by lands now or late of John A. Strickler, et al, South 89 degrees and 09 minutes West 476.86 feet to an iron pipe in line of land now or late of William C. Burkhard; thence along lands of the same, North 01 degree and 47 minutes East, 307.36 feet to an iron pipe in line of land now or late of Willis R. Weaver; thence by land of the same, South 89 degrees and 17 minutes East, 728.43 feet to a locust tree; thence by land now or late of Henry Kettering, South 12 minutes West, 163.35 feet to a point; and South 88 degrees and 59 minutes East, 698.27 feet to a point; thence by land now or late of the Estate of Benjamin E. Mann, deceased, South 15 degrees and 41 minutes West, 748.66 feet to a point in the middle of Long Road; thence still by same lands, South 16 degrees and 27 minutes West, 358.45 feet to a point and South 15 degrees and 20 minutes West, 1,089.76 feet to an iron pipe; thence by land now or late of the Kready Construction Company, North 72 degrees and 11 minutes West, 1,385.6 feet to the Place of BEGINNING.

CONTAINING 72 acres of land, be the same more or less.

Note: The proposed easement to be condemned does not cross Tract 1.

Parcel #3

**DESCRIPTION OF PROPERTY OF
JOHN E. LANDIS
TRACT 2**

ALL THAT CERTAIN lot or piece of farm land situated on the North side of U. S. Route No. 230 in East Hempfield Township, Lancaster County, Pennsylvania, bounded and described as follows, to wit:

BEGINNING at a point on the North side of U. S. Route 230, the southeast corner of the premises herein described; thence extending along the North side of said U. S. Route 230, the following two (2) courses and distances: (1) North 71 degrees 04 minutes West, 168.60 feet to a point; and (2) North 72 degrees 11 minutes West, 1,093.87 feet to a point, a corner of land now or late of Harry L. Mumma; thence extending along the same North 02 degrees 07 minutes West, 474.44 feet to a point, a corner of other land now or late of said Gerald E. Noll and Miriam W. Noll, formerly belonging to Clyde E. Hottenstein and Leroy H. Hottenstein; thence extending along the same South 72 degrees 11 minutes East, 1,385.60 feet to a point, a corner of land now or late of Ben E. Mann; thence extending along the same the following two (2) courses and distances: (1) South 15 degrees 20 minutes West, 163.60 feet to a stake; and (2) South 11 degrees 31 minutes West, 284.71 feet to the Place of BEGINNING.

CONTAINING 13.6 acres, more or less.

Parcel #3

**DESCRIPTION OF PROPERTY OF
JOHN E. LANDIS
TRACT 3**

ALL THAT CERTAIN message or tenement and tract of land, situated in the Township of East Hempfield, County of Lancaster and Commonwealth of Pennsylvania.

BOUNDED AND DESCRIBED as follows, to wit:

BEGINNING at a stone in the public road leading to Landisville; thence along land now or late of Harry L. Mumma and wife, South 01 degree West, 24 chains and 25 links to a stone on the North side of the Pennsylvania Railroad; thence along the North side of said Railroad, South 65-3/4 degrees East, 4 chains and 25 links to a stake; South 71 degrees East, 5 chains to a stake; South 72 1/2 degrees East, 2 chains to a stake; South 74 degrees East, 3 chains to a stake; South 76 degrees East, 4 chains and 78 links to a stone and South 77 - 1/2 degrees East, 10 chains and 28 links to a stone; thence by land now or late of Earl Long, North 2-3/4 degrees West, 18 chains to a stone and North 3/4 of a degree East, 14 chains and 83 links to a stake in the middle of a private road; thence along the same and by land now or late of Wallace Greider and John G. Weidler, respectively, South 89-1/4 degrees West, 26 chains and 92 links to the Place of BEGINNING.

CONTAINING 79 acres and 22 perches, strict measure.

Parcel #3

**RIGHT-OF-WAY TO BE CONDEMNED ON PROPERTY OF
JOHN E. LANDIS**

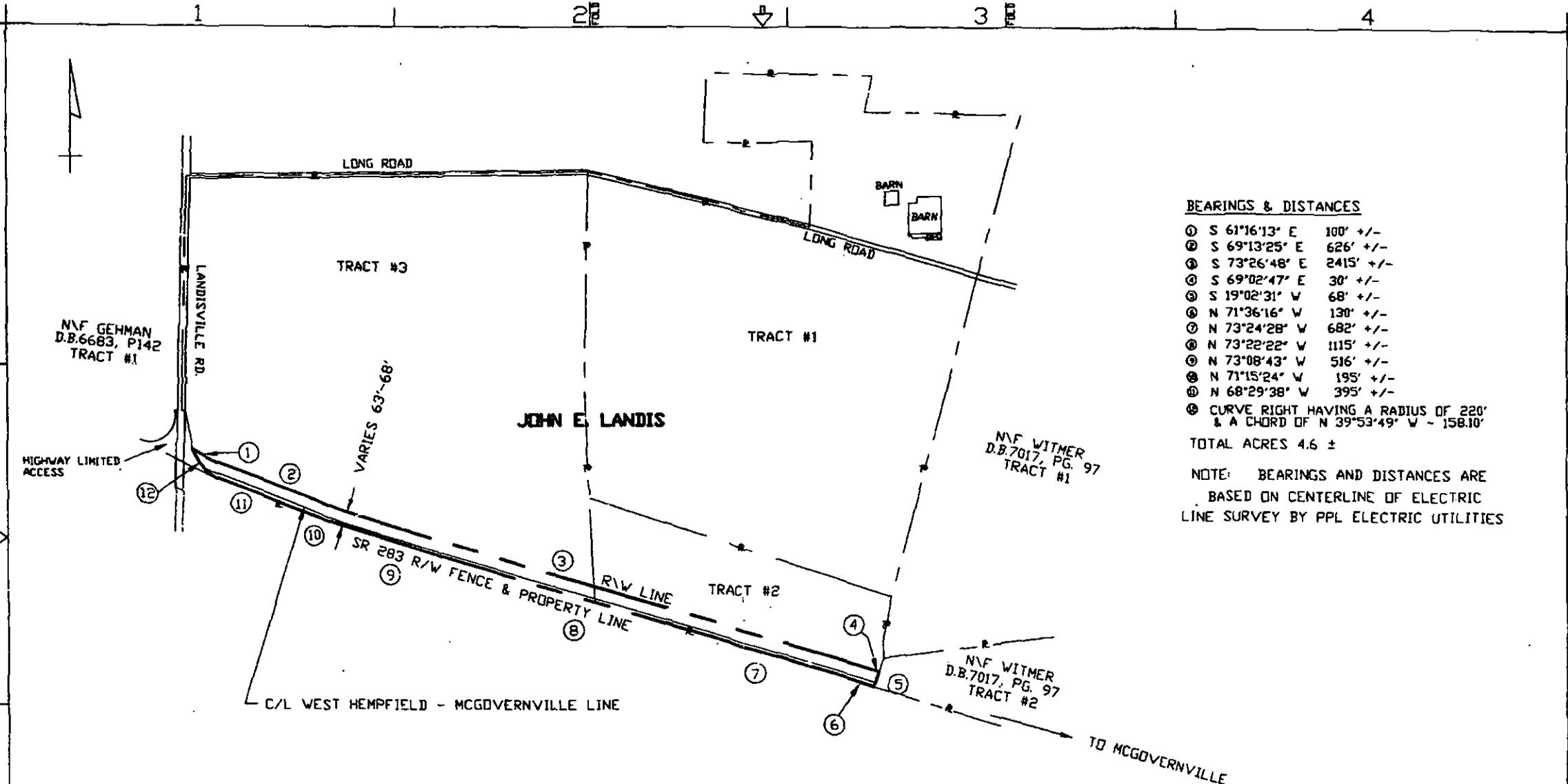
BEGINNING at a point in line of land of Pennsylvania Department of Transportation Limited Access right-of-way, said point being located 169' +/- from the intersection of Landisville Road right-of-way and highway limited access, thence through lands of John E. Landis (D. B. 6670, Page 0242) of which the easement herein described is a part, and by a line 50 feet distant from, and parallel with the centerline of proposed PPL Electric Utility electric line now known as West Hempfield – McGovernville Line the following (4) bearings and distances, (1) S 61° 16' 13" E for a distance of 100 feet more or less, (2) S 69° 13' 25" E for a distance of 626 feet more or less, (3) S 73° 26' 48" E for a distance of 2,415 feet more or less, (4) S 69° 02' 47" E for a distance of 30 feet more or less to a point, said point being the northeast corner of herein described easement, thence continuing through the same and passing over the proposed centerline of electric line at a distance of 50 feet more or less, S 19° 02' 31" W for a distance of 68 feet more or less to a point, said point being located on the Pennsylvania Department of Transportation Limited Access Right-of-Way for State Route 283; thence continuing along the Limited Access Right-of-Way the following (6) bearings and distances, (1) N 71° 36' 16" W for a distance of 130 feet more or less, (2) N 73° 24' 28" W for a distance of 682 feet more or less, (3) N 73° 22' 22" W for a distance of 1,115 feet more or less, (4) N 73° 08' 43" W for a distance of 516 feet more or less, (5) N 71° 15' 24" W for a distance of 195 feet more or less, (6) N 68° 29' 38" W for a distance of 395 feet more or less to a point, thence along the same and a curve to the right having a radius of 220 feet, chord bearing N 39° 53' 49" W a distance of 158 feet more or less to the place of beginning.

CONTAINING 4.6 acres more or less.

Bearings and distances are based on centerline of electric line surveyed by PPL Electric Utilities.

Parcel #3

THIS DRAWING IS THE PROPERTY OF PPL ELECTRIC UTILITIES AND CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH MUST NOT BE REPRODUCED, COPIED, OR DISCLOSED WITHOUT WRITTEN AUTHORIZATION FROM PPL ELECTRIC UTILITIES.



BEARINGS & DISTANCES

- ① S 61°16'13" E 100' +/-
- ② S 69°13'25" E 626' +/-
- ③ S 73°26'48" E 2415' +/-
- ④ S 69°02'47" E 30' +/-
- ⑤ S 19°02'31" W 68' +/-
- ⑥ N 71°36'16" W 130' +/-
- ⑦ N 73°24'28" W 682' +/-
- ⑧ N 73°22'22" W 1115' +/-
- ⑨ N 73°08'43" W 516' +/-
- ⑩ N 71°15'24" W 195' +/-
- ⑪ N 68°29'38" W 395' +/-
- ⑫ CURVE RIGHT HAVING A RADIUS OF 220' & A CHORD OF N 39°53'49" W - 158.10'

TOTAL ACRES 4.6 ±

NOTE: BEARINGS AND DISTANCES ARE BASED ON CENTERLINE OF ELECTRIC LINE SURVEY BY PPL ELECTRIC UTILITIES

N/F GEHMAN
D.B.6683, P142
TRACT #1

N/F WITMER
D.B.7017, PG. 97
TRACT #1

N/F WITMER
D.B.7017, PG. 97
TRACT #2

Agreement Dated _____
Copy of this Plan _____
Received By _____
Date _____

NOTE: FOR EXACT LOCATION OF R/W AND/OR FACILITIES WITHIN THE R/W, CONTACT THE LOCAL PPL ELECTRIC UTILITIES CORPORATION OFFICE.



3

PPL ELECTRIC UTILITIES (01)

NO.	DATE	ACCT.	REVISION	BY	REVIEWED
1	9/3/03	169857	CONDEMNATION	JES/DLH	O.L.H.

ACCT- 169857	WEST HEMPFIELD-MCGOVERNVILLE #1 & #2 LINES
SCALE- NONE	PLAN SHOWING ELECTRIC LINE RIGHT OF WAY
BY- GRB	TO BE CONDEMNED OVER PROPERTY OF
O.L.H.	JOHN E. LANDIS, D.B. 6670, PG. 0242
REVIEWED	EAST HEMPFIELD TWP. LANCASTER CO., PA
APPROVED	DATE
DOUG L. MAUPT	7/23/02
PPL ELECTRIC UTILITIES	

PPL DRAWING NO.	SHEET NO.	REV.
B318997	1	1

I, DIANE M. KOCH, the duly elected and acting Assistant Secretary of PPL Electric Utilities Corporation, do hereby CERTIFY that the following is a true and correct copy of certain resolutions duly adopted by the Board of Directors of the Company by a Unanimous Written Consent, dated March 5, 2004, and that said resolutions have not been altered, amended or repealed and are in full force and effect:

WHEREAS, John E. Landis is the owner of certain property in East Hempfield Township, Lancaster County, as more particularly described in Exhibit A;

* * * * *

WHEREAS, The construction by the Company of the West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line (to be initially operated at 69 kV), on, over, across or under such lands, is necessary for the supply of light, heat and power to the public;

WHEREAS, the Company has endeavored to agree but has not reached agreement with the landowners or their representatives upon the proper compensation, terms and conditions for the damage which will be done or is likely to be done to or sustained by them;

WHEREAS, the Company is authorized by law to condemn and appropriate the properties necessary for such purposes; and

WHEREAS, Board of Directors approval is a necessary legal condition for the Company to appropriate the necessary rights-of-way.

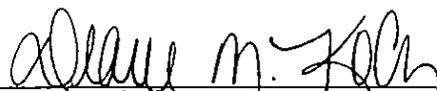
NOW THEREFORE, BE IT RESOLVED That it is necessary for the corporate use of the Company to condemn and appropriate easements on, over, across or under such lands to the extent required for rights-of-way to be presently used for the overhead or underground construction, operation and maintenance of the 138/69 kV double circuit West Hempfield-McGovernville #1 and #2 Tie Line, for the transmission and/or distribution of electric light, heat and power, or any of them, including such poles, wires, conduits, cables, manholes, and all other facilities, fixtures and apparatus as may be necessary for the proper and efficient

construction, operation and maintenance of such line; and further

RESOLVED, That the Company shall and hereby does condemn and appropriate easements to the extent necessary for the rights-of-way as aforementioned on, over, across or under the lands owned or reputed to be owned by the above-named property owners, such rights-of-way being more fully described in Exhibit A, as applicable, and being necessary for the Company's corporate uses for the construction, operation, renewal, replacement, relocation, addition to, and maintenance of the facilities constituting the overhead or underground transmission line, including poles, wires, conduits, cables, manholes and all other necessary appurtenances for the transmission or distribution of electricity, on, over, across or under the rights-of-way described in Exhibit A, as applicable, together with: (1) the right, as often as necessary, to cut down or remove any trees or brush, including the root systems of such trees or brush, and to remove any buildings or other things from the rights-of-way; (2) the right to cut down or trim any trees within 25 feet on either or both sides of the edge of the rights-of-way which may endanger the safety of, interfere with the use of, or be a menace to any facilities or structures which may now or in the future be maintained upon the rights-of-way; and (3) the right of ingress and egress to, from, upon and over the rights-of-way for the construction, operation and maintenance of such line; and further

RESOLVED, That the proper officers of the Company are hereby authorized and directed to execute such bonds and/or other paper, to take such action and to bring such proceedings on behalf of the Company as may be necessary or advisable in the exercise of the power of eminent domain to condemn and appropriate such easements and to enter upon, use and occupy such lands for the purposes described in the above resolutions.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Company this 24th day of March, 2004.


Assistant Secretary

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Application Of PPL Electric Utilities Corporation Under :
15 Pa. C.S. §1511(c) For A Finding And Determination :
That The Service To Be Furnished By The Applicant :
Through Its Proposed Exercise Of The Power Of :
Eminent Domain To Acquire Right-Of-Way For The :
Construction, Operation And Maintenance Of The :
Proposed West Hempfield-McGovernville #1 And #2 :
138/69 kV Tie Line Over And Across The Lands Of :
EAST HEMPFIELD TOWNSHIP In East Hempfield :
Township, Lancaster County, Is Necessary Or Proper :
For The Service, Accommodation, Convenience Or :
Safety Of The Public :

A-110500 P0333

Docket No. _____

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SECRETARY'S BUREAU
PA PUC

DOCUMENT

APPLICATION OF
PPL ELECTRIC UTILITIES CORPORATION
TO EXERCISE THE POWER OF EMINENT DOMAIN
ACROSS THE PROPERTY OF
EAST HEMPFIELD TOWNSHIP

DOCKETED

SEP 30 2004

TO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION:

I. INTRODUCTION AND OVERVIEW

1. This Application, which includes the accompanying, separately-bound Exhibits A-E, is filed by PPL Electric Utilities Corporation ("PPL"), Two North Ninth Street, Allentown, Pennsylvania 18101, a public utility that provides service in Pennsylvania under and subject to the jurisdiction of the Pennsylvania Public Utility Commission (PUC or Commission).

2. PPL's attorneys are:

David B. MacGregor
Anthony C. DeCusatis
Morgan, Lewis & Bockius LLP
1701 Market Street
Philadelphia, PA 19103
(T) 215.963.5034 / 215.963.5001 (Fax)

Paul E. Russell
PPL Electric Utilities Corporation
Two North Ninth Street
Allentown, PA 18101
(T) 610.774.4254
(Fax) 610.774.6726

PPL's attorneys are authorized to receive all notices and communications regarding this Application.

3. PPL is a public utility corporation of the Commonwealth of Pennsylvania duly formed by consolidation and merger, having received Letters Patent dated June 4, 1920, from the Governor of the Commonwealth of Pennsylvania. PPL is subject to the Pennsylvania Business Corporation Law of 1988, P.L. 1444, No. 177, and submits this application pursuant Section 103 of that statute (15 Pa. C.S. §1511). PPL has succeeded to the certifications, franchises and all the property, real, personal and mixed, of various other corporations, and now has authority, *inter alia*, to supply light, heat and power, or any of them, by means of electricity to the public in various cities, boroughs, townships and districts in central and eastern Pennsylvania.

4. PPL is now furnishing electric service to approximately 1.3 million customers throughout its chartered or certificated service territory, which comprises twenty-nine (29) counties in eastern and central Pennsylvania and encompasses approximately 10,000 square miles. PPL 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 and 2803). PPL is a "public utility corporation" as defined in 15 Pa. C.S. §1103.

5. PPL owns approximately 5,000 miles of transmission lines operating at 69,000 volts or higher, approximately 330 substations with a capacity of 10,000 KVA or more and approximately 43,000 miles of distribution lines operating at less than 69,000 volts. Exhibit A to this Application is a map of PPL's bulk power transmission system showing substations and transmission lines. PPL's transmission system is operated as part of the PJM Interconnection LLC (PJM), which has been approved by the Federal Energy Regulatory Commission (FERC) as the Independent System Operator ("ISO") of the transmission systems of electric utilities in the Mid-Atlantic region.

6. The West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line will be approximately 1.8 miles in length and will connect PPL's South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines, via the existing Kellogg #1 and #2 Taps, to the existing West Hempfield-Donnegal 138/69 kV Line and the West Hempfield-South Manheim #3 138/69 kV Line in order to relieve a potential overloading of the South Manheim-South Akron #1 and #2 Transmission Lines.

7. The route PPL has selected for the West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line parallels existing linear features consisting of a limited access highway and a railroad corridor. As a consequence, the proposed route overlaps highway and railroad easements, thereby reducing the amount of new right-of-way needed for the line.

8. On July 10, 2003, PPL filed with the PUC a Letter of Notification pursuant to 52 Pa. Code §57.72(d)(1)(vi) for siting certification of the proposed West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line. The Letter of Notification was docketed at A-110500 F0333. Accompanying the Letter of Notification, PPL filed Exhibits A-D and Appendices A-H. The Letter of Notification and its accompanying Exhibits and Appendices are incorporated herein by reference. No protests or petitions to intervene were filed with respect to the Letter of Notification, which is still pending.

II. DESCRIPTION OF THE PROJECT

9. PPL's South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines are supplied from PPL's South Manheim 230-69 kV Substation. The Kellogg #1 and #2 Taps are 69 kV tap lines from the South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines. The Kellogg Taps supply the Kellogg and McGovernville 69/12 kV Substations, which, in turn supply customer load. (This arrangement is depicted in the upper right quadrant of Figure 1 in Exhibit A accompanying PPL's Letter of Notification.)

10. PPL's West Hempfield-Donegal 138/69 kV and West Hempfield-South Manheim #3 138/69 kV Transmission Lines are supplied from PPL's West Hempfield 230-69 kV Substation. (These facilities are depicted in the lower left quadrant of Figure 1 in Exhibit A accompanying PPL's Letter of Notification.)

11. The proposed West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line will create a high capacity transmission link, via the Kellogg Tap Lines, between PPL's South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines and PPL's West Hempfield-Donegal 138/69 kV and West Hempfield-South Manheim #3 138/69 kV Transmission Lines. Creating this transmission link will alleviate potential overloading of the South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines under projected summer peak conditions in the event of a single contingency outage of either of the South Manheim-South Akron circuits. (The proposed facility is depicted on Figure 2 in Exhibit A accompanying the Letter of Notification.)

III. NECESSITY FOR THE PROPOSED TIE LINE

12. PPL is confronted with the serious problem of alleviating overload constraints on the South Manheim-South Akron #1 and #2 138/69 kV Transmission Lines in the event of a single contingency outage of either of the circuits on that line. (The details of the potential overloading are explained in Exhibit A accompanying the Letter of Notification, and projected summer loadings of those circuits under normal and single contingency conditions are set forth in Table 1 of that exhibit.) Another factor that contributes to the need for the proposed Tie Line is the current inability to shift the supply of load between the existing South Manheim and West Hempfield Substations in the event of the loss of the transformers at either location.

13. PPL carefully reviewed the possible alternatives for alleviating the overloading condition described above. The analysis of each alternative is described in detail in Exhibit A accompanying the Letter of Notification. The proposed West Hempfield-McGovernville Tie

Line is the best functional alternative based on its ability to alleviate the overloading condition, provide capacity to transfer load between the two 230-69 kV substations and facilitate the conversion of PPL's regional transmission system to 138 kV operation when projected increases in load justify that conversion.

IV. SITING ANALYSIS

14. PPL conducted an extensive, multi-faceted analysis to select a route for the proposed transmission line that best balances functional requirements, environmental factors and cost considerations.

15. PPL conducted a detailed environmental inventory to identify and locate environmental factors that need to be considered when evaluating and selecting transmission line routes, as described in Exhibit B accompanying its Letter of Notification and as depicted on Maps 1-7 in that exhibit. In addition, PPL reviewed the project with municipal and state officials and agencies.

16. Using the information developed in the manner described above, PPL identified the proposed line route, which takes advantage of existing linear features and minimizes land use constraints to the extent possible. PPL also identified an alternative route that, after thorough analysis, was rejected because of its greater visual and environmental impacts and higher construction and operating costs, as fully explained in Exhibit C (pp. 6-7) accompanying the Letter of Notification.

17. PPL's proposed line route, for which approval is requested herein, is plotted on the aerial map in the map pocket of Exhibit C accompanying the Letter of Notification and is described in detail at pages 1-2 of that exhibit. The proposed line route is 1.8 miles long and, for virtually its entire length, parallels existing linear features (Route 283, a limited access highway, and an Amtrak rail corridor) such that the line's right-of-way will overlap existing highway and

railroad easements. The proposed line route begins at its point of interconnection with the West Hempfield-Donegal and West Hempfield-South Manheim #3 138/69 kV Lines, which lies between Route 283 and the Amtrak railroad corridor, approximately 1,650 feet west of Landisville Road. The proposed route then heads northeast and crosses Route 283 approximately 315 feet from that connection point. After crossing Route 283, the line heads southeast, parallel to Route 283, a distance of approximately 1.1 miles. Most of this segment of the route lies over agricultural land, and a portion crosses property formerly owned by Armstrong World Industries. The last segment of the line, approximately 2,890 feet in length, also heads southeast, crosses Route 283 and the Amtrak railroad tracks, and connects to the Kellogg #1 and #2 Taps on the property of Kellogg USA. A small segment of this line section crosses property owned by East Hempfield Township.

V. PROPERTY FOR WHICH CONDEMNATION APPROVAL IS SOUGHT

18. The route of the proposed transmission line crosses a certain tract or tracts of land, a legal description of which is provided in Exhibit B to this Application. The name and post office address of the owner of record of said land are: East Hempfield Township, 1700 Nissley Road, P.O. Box 128, Landisville, PA 17538. PPL has endeavored to purchase a right-of-way over the said tract of land for the purposes described above, but has been unable to reach any agreement with the property owner.

19. PPL desires to enter upon, use, take and appropriate an easement across a portion of the aforesaid land to the extent authorized by law and necessary for its corporate use as a right-of-way for the construction, operation and maintenance of the proposed line for the transmission of electric energy for light, heat and power. A legal description and map of the right-of-way to be acquired by condemnation are provided in Exhibits C and D, respectively, to this Application.

20. The right-of-way sought to be acquired in this Application does not include any streams, rivers, or waterways of the Commonwealth, or property of a public utility, or property used as a burying ground or place of public worship, or a dwelling house or any part of the reasonable curtilage appurtenant thereto. The proposed right-of-way is not inconsistent with, and will not materially interfere with, any existing public use.

VI. THE REQUIREMENTS FOR CONDEMNATION APPROVAL HAVE BEEN MET

21. No other public utility is now furnishing, or has the corporate right, power, franchise or certification to furnish, the same service as, or service similar to, that which PPL will furnish by means of the transmission line to be constructed over and upon the right-of-way to be acquired as set forth in this Application.

22. The service to be furnished by PPL through the proposed transmission line and related facilities is necessary or proper for the service, accommodation, convenience or safety of the public for the reasons set forth in this Application and in the Letter of Notification filed at Docket No. A-110500 F0333.

23. An appropriate resolution was adopted by PPL's Board of Directors authorizing and directing the instant Application. A copy of said resolution is provided in Exhibit E to this Application and is made a part hereof.

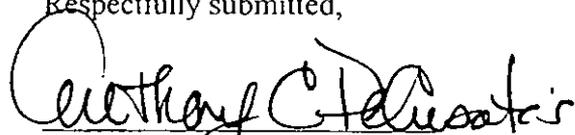
VII. CONSOLIDATION WITH LETTER OF NOTIFICATION

24. Pursuant to 52 Pa. Code §57.75(i)(1), PPL seeks to consolidate this Application for the exercise of the power of eminent domain with the Letter of Notification docketed at A-110500 F0333. In accordance with the requirements of 52 Pa. Code §57.75(i)(2), PPL previously has served a copy of the Letter of Notification upon the persons, corporations or other entities having a property interest sought to be acquired by this eminent domain Application.

VIII. CONCLUSION

WHEREFORE, PPL respectfully requests that the Commission: (1) consolidate this Application for the exercise of the power of eminent domain with the aforementioned Letter of Notification at Docket No. 110500 F0333; and (2) find and determine that the service to be furnished by PPL through the proposed exercise of eminent domain, as set forth above, is necessary or proper for the service, accommodation, convenience, or safety of the public.

Respectfully submitted,



David B. MacGregor
Anthony C. DeCusatis
Morgan, Lewis & Bockius LLP
1701 Market Street
Philadelphia, PA 19103
215.963.5448
215.963.5001 (fax)

Paul E. Russell
PPL Electric Utilities Corporation
Two North Ninth Street
Allentown, PA 18101

Attorneys for PPL Electric Utilities
Corporation

Dated: March 30, 2003

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

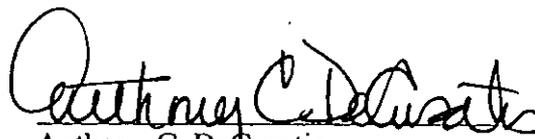
Application Of PPL Electric Utilities :
Corporation Under 15 Pa. C.S. §1511(c) :
For A Finding And Determination That :
The Service To Be Furnished By The :
Applicant Through Its Proposed Exercise :
Of The Power Of Eminent Domain To :
Acquire Right-Of-Way For The :
Construction, Operation And Maintenance :
Of The Proposed West Hempfield- : Docket No. _____
McGovernville #1 And #2 138/69 kV Tie :
Line Over And Across The Lands Of :
EAST HEMPFIELD TOWNSHIP In :
East Hempfield Township, Lancaster :
County, Is Necessary Or Proper For The :
Service, Accommodation, Convenience :
Or Safety Of The Public :

CERTIFICATE OF SERVICE

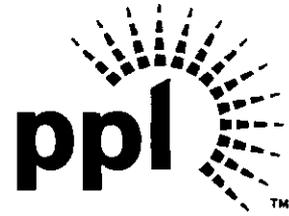
I hereby certify that I have, this 30th day of March, 2004, served true and correct copies of the above-captioned Application and accompanying Exhibit A-E upon the persons and in the manner listed below.

BY CERTIFIED MAIL/RETURN RECEIPT REQUESTED

East Hempfield Township
1700 Nissley Road
P.O. Box 128
Landisville, PA 17538


Anthony C. DeCusatis
Counsel for PPL Electric Utilities
Corporation

March 30, 2004



Before the
Pennsylvania Public Utility Commission

**Exhibits to the Application for
Eminent Domain Across Property
of**

East Hempfield Township

EXHIBITS - A - E

**West Hempfield – McGovernville
#1 & #2 138/69 kV Tie**

Application Docket No. _____

Submitted by: PPL Electric Utilities Corp.

**APPLICATION FOR EMINENT DOMAIN ACROSS PROPERTY OF
EAST HEMPFIELD TOWNSHIP – EXHIBIT B**

<u>TOPIC</u>	<u>TAB</u>
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DESCRIPTION OF THE PROPERTY.....	B
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MAP SHOWING THE LOCATION OF THE TRANSMISSION LINE AND RIGHTS-OF-WAY TO BE ACQUIRED: B327670.....	D
PPL ELECTRIC UTILITIES CORPORATION'S BOARD OF DIRECTORS RESOLUTION.....	E

C

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D

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PC FORMAT



OVER SIZED DOCUMENTS



ACCT-		ELECTRICAL SYSTEM MAP	
SCALE-- NONE			
BY-			
REVIEWED		WEST HEMPFIELD--McGOVERNVILLE	
APPROVED ORIGINALLY BY		DATE	
G. HAKUN III		7/17/85	
PP&L DRAWING NO.		SHEET NO.	REV.
D191830		1	23

ED

**DESCRIPTION OF PROPERTY OF
EAST HEMPFIELD TOWNSHIP
TRACT 1**

ALL THAT CERTAIN lot or tract of unimproved land being situate in the Township of East Hempfield, County of Lancaster and Commonwealth of Pennsylvania, and more particularly shown as Lot No. 2 on a Final Plan of Lots prepared for Amos. R. Herr (deceased), by D. C. Gohn Associates, Inc., Surveyors and Engineers, on July 14, 1981, and recorded in the Recorder of Deeds Office of Lancaster County, Pennsylvania, on December 21, 1981, in Subdivision Plan Book J-126, Page 139, and all of the same being more fully bounded and described as follows, to wit:

BEGINNING at an iron pin, (set), in line of other property of the Township of East Hempfield, The Amos R. Herr Park, and the Southwesternmost corner of Lot No. 1, as shown on the abovesaid Recorded Plan; said iron pin being further located from the intersection of the West right-of-way line of Township Road No. 707, Nissley Road, with the center of the Old Harrisburg Pike, Pennsylvania Legislative Route No. 36184 by the following two courses: (1) North zero five (05) degrees twenty (20) minutes fifty-five (55) seconds East, a distance of one thousand one hundred fifty-one and thirty-four hundredths (1,151.34) feet to a point, and (2) North eighty-nine (89) degrees sixteen (16) minutes thirty (30) seconds West, a distance of eighty and zero hundredths (80.00) feet to the said point of BEGINNING; thence continuing along other property of the Township of East Hempfield, the Amos R. Herr Park, on a course of North eighty-nine (89) degrees sixteen (16) minutes (30) seconds West, a distance of eight hundred twenty-seven and twenty-five hundredths (827.25) feet to an iron pin, (set by other), at the Easternmost termination point of Naomi Avenue; thence continuing along the Easternmost termination point of Naomi Avenue, and along property of, now or late, of Larry W. Newswanger and Columbus P. Sacco, respectively, on a course of North zero (00) degrees zero four (04) minutes zero (00) seconds West, a distance of six hundred fifty-nine and forty-seven hundredths (659.47) feet to an iron pin, (set by other), in line of property of the Penn Central Railroad – Amtrak; thence continuing along the same, the following two courses: (1) South seventy-eight (78) degrees twenty-three (23) minutes fifteen (15) seconds East, a distance of two hundred eleven and nineteen hundredths (211.19) feet to a point, and (2) on a curved line to the right, said curve having a radius of 5,670.00 feet, an arc length of six hundred forty-nine and seven hundredths (649.07) feet, and said arc being subtended by a chord of South seventy-five (75) degrees zero six (06) minutes twenty-nine (29) seconds East, a distance of six hundred forty-eight and seventy-one hundredths (648.71) feet to an iron pin, (set), at the Northwesternmost corner of Lot No. 1 as shown on the abovesaid Recorded Plan; thence continuing along the West property line of Lot No. 1 as shown on said Plan, and passing over iron pins (set), at one hundred (100) feet, and one hundred sixty-four and twenty-six hundredths (164.26) feet, respectively, on a course of South zero (00) degrees forty-three (43) minutes thirty (30) seconds West, a distance of four hundred sixty and seventy-five hundredths (460.75) feet to an iron pin, (set), at the Southwest corner of Lot No. 1 as shown on said Plan, and in line of property

of the Township of East Hempfield, the Amos R. Herr Park, the point or place of BEGINNING.

CONTAINING an area of four hundred seventy-three thousand three hundred sixty-three and thirty-nine hundredths (473,363.39) square feet or ten and eight hundred sixty-seven thousandths (10.867) acres of land.

Note: The proposed easement to be condemned does not cross Tract 1.

Parcel #6

**DESCRIPTION OF PROPERTY OF
EAST HEMPFIELD TOWNSHIP
TRACT 2**

ALL THAT CERTAIN lot or tract of land having a two and one-half story frame dwelling, two story frame barn, tobacco shed, frame shed, and other improvements thereon erected, and being situated in the Township of East Hempfield, County of Lancaster and the Commonwealth of Pennsylvania, and more particularly shown on a Topographic Survey Plot Plan, prepared for East Hempfield Township, by Huth Engineers, Inc., on April 20, 1976, reference Drawing No. AA-1985-1, and to a Final Plan of Lots prepared for Amos R. Herr, by D. C. Gohn Associates, Inc., Surveyors and Engineers, on July 14, 1981 and recorded in the Recorder's Office in and for Lancaster County, PA, on December 21, 1981, in Subdivision Plan Book J-126, Page 139, and all of the same being more fully bounded and described as follows, to wit:

BEGINNING at an iron pin set on the West right-of-way line of Township Road No. 707, Nissley Road, the Southeasternmost corner of the Amos R. Herr Park, property of East Hempfield Township and corner of property, now or late, of Roy T. Rossey, and Martin B. Thomas, said iron pin being located North of the intersection of the West right-of-way line of Township Road No. 707, Nissley Road, with the center of the Old Harrisburg Pike, Pennsylvania Legislative Route No. 36184, by a distance of four hundred forty-seven and fifty-nine hundredths (447.59) feet more or less; thence continuing along the West right-of-way line of Township Road No. 707, Nissley Road, property of the Amos R. Herr Park, as aforesaid, on a course of North zero five (05) degrees twenty (20) minutes fifty-five (55) seconds East, a distance of six hundred forty-two and forty-one hundredths (642.41) feet to a point, the Southernmost corner of Lot No. 1, as shown on the Final Plan prepared for Amos R. Herr, by D. C. Gohn Associates, Inc., on July 14, 1981, and recorded in the Recorder's Office in and for Lancaster County, PA, in Subdivision Plan Book J-126, Page 139; thence continuing along a portion of the Southeast property line of Lot No. 1, as aforesaid, the following three course: (1) on a curved line to the right, said curve having a radius of sixty-six and fifty hundredths (66.50) feet, an arc length of ninety-nine and nine hundredths (99.09) feet, and said arc being subtended by a chord of North forty-eight (48) degrees zero two (02) minutes thirteen (13) seconds East, a distance of ninety and eighteen hundredths (90.18) feet to a point, (2) South eighty-nine (89) degrees sixteen (16) minutes thirty (30) seconds East, a distance of one hundred eighteen and sixty-six hundredths (118.66) feet to an iron pin, and (3) North zero (00) degrees forty-three (43) minutes thirty (30) seconds East, a distance of three hundred eighty-eight and fifty-six hundredths (388.56) feet to an iron pin (set), at the Northeast corner of Lot No. 1, as aforesaid, and in line of property of Penn Central Railroad – Amtrak; thence continuing along the Penn Central Railroad – Amtrak the following three courses: (1) on a curved line to the right, said curve having a radius of five thousand six hundred seventy and zero hundredths (5,670.00) feet, an arc length of one thousand six hundred twenty-four and twenty-nine hundredths (1,624.29) feet, and said arc being subtended by a chord of South sixty (60) degrees fifty (50) minutes forty-five (45) seconds East, a distance of one thousand six hundred eighteen and

seventy-five hundredths (1,618.75) feet to a point, (2) South fifty-two (52) degrees thirty-eight (38) minutes twenty (20) seconds East a distance of three hundred seventy-nine and thirty hundredths (379.30) feet to an iron pin, and (3) South zero two (02) degrees forty-seven (47) minutes twenty (20) seconds West, a distance of fifty and ten hundredths (50.10) feet to a metal fence post, a corner of the aforesaid property of Martin B. Thomas; thence continuing along said property, now or late, of Martin B. Thomas, and crossing over the bed of Township Road No. 707 Nissley Road, on a course of South eighty-nine (89) degrees fifty-seven (57) minutes ten (10) seconds West, a distance of one thousand nine hundred sixty-two and ninety-nine hundredths (1,962.99) feet to an iron pin (set), on the West right-of-way line of Township Road No. 707, Nissley Road, a corner of property, now or late of Roy T. Rossey and The Amos R. Herr Park, the point and place of BEGINNING.

CONTAINING an arc of twenty-seven and five hundred thirty-four thousandths (27.534) acres of land, which includes the right-of-way area of Township Road No. 707, Nissley Road, and the areas of rights-of-way No. 1 and No. 2 as hereinafter described, but excluding the areas of Lots 1 and 2 as hereinafter described.

EXCEPTING AND RESERVING out of the above described tract of land Lots No. 1 and No. 2 as shown on a Final Subdivision Plan prepared for the Municipal Authority of The Township of East Hempfield, by Gannett Fleming Water Resources Engineers, Inc., on November 9, 1986, and recorded in the Recorder's Office in and for Lancaster County, PA, on January 23, 1987, in Subdivision Plan Book J-152, Page 84, and subsequently recorded by Deed reference Volume 2074, Page 162, in said Recorder's Office in and for Lancaster County, PA.

Parcel #6

**RIGHT-OF-WAY TO BE CONDEMNED ON PROPERTY OF
EAST HEMPFIELD TOWNSHIP**

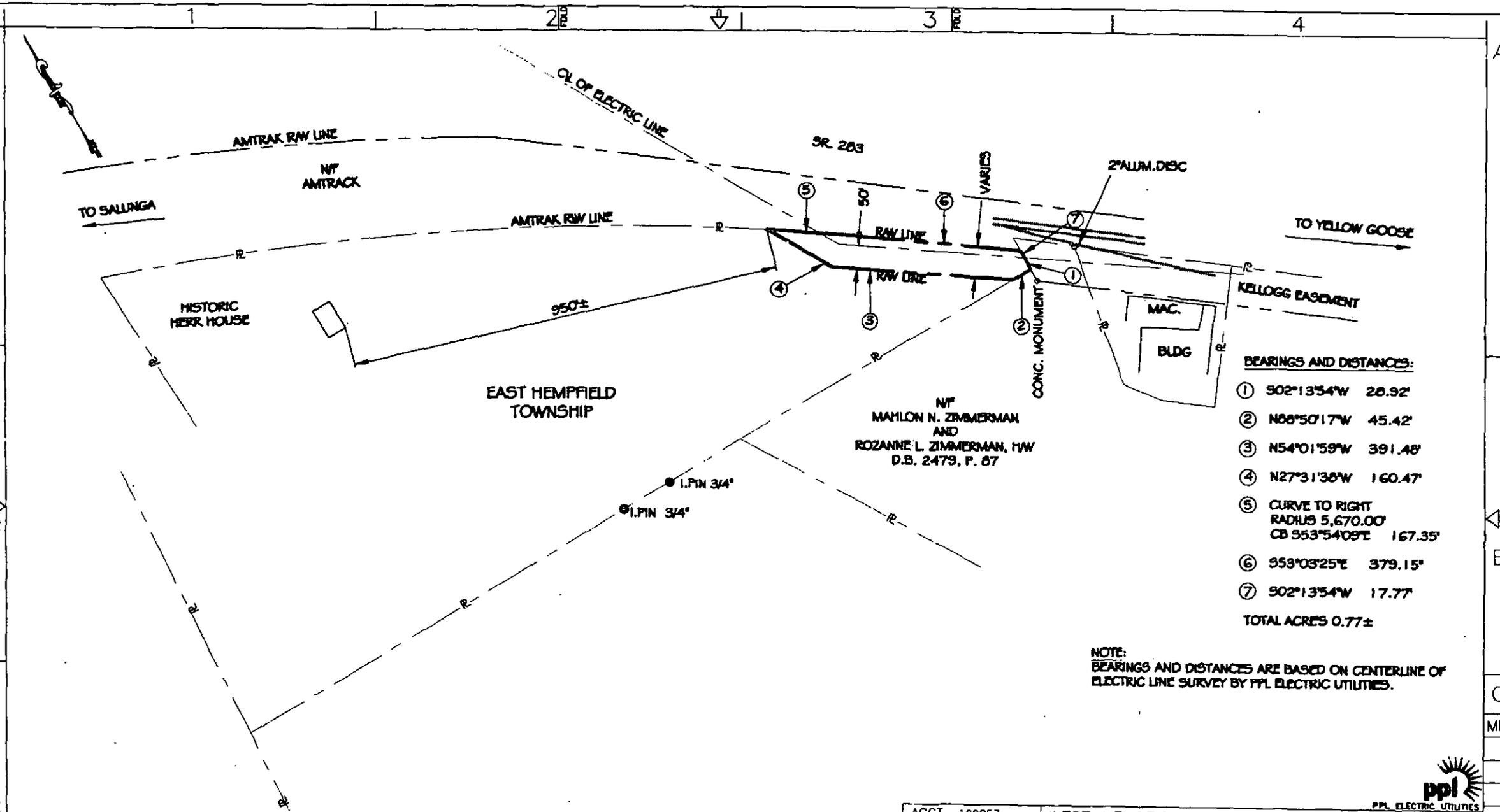
BEGINNING at a point, said point being located at the intersection of the proposed centerline of electric line and the easternmost property line of East Hempfield Township (DB 2462, Pg. 545), said point also being located in an easement as granted by Martin B. & Dorothy M. Thomas to Kellogg Company by deed dated July 1st, 1974 and recorded in Deed Book L, Volume 65, Page 926. Thence continuing along East Hempfield Township and through Kellogg easement and along property now or formerly of Mahlon N. and Rozanne L. Zimmerman (DB 2479, Pg. 87), S 2°13'54" W for a distance of 28.92' to a point, thence along same N 88°50'17" W for a distance of 45.42' to a point, thence through lands of East Hempfield Township N 54°01'59" W for a distance of 391.48' to a point, and N 27°31'38" W for a distance of 160.47' to a point, said point being located on property now or formerly of Amtrak, thence along Amtrak along a curve to the right having a radius of 5670' and a chord bearing of S 53°54'09" E for a distance of 167.35' to a point, also crossing the proposed center line of electric line at a distance of 111.4' +/-, thence along same S 53°03'25" E for a distance of 379.15', said point being located on the property line of said Zimmerman (DB 2479, Pg. 87), thence along Zimmerman and through said Kellogg easement, S 2°13'54" W for a distance of 17.77' to the place of BEGINNING.

Said easement containing 0.77 acres +/- . As shown on a plan prepared by PPL Electric Utilities titled PLAN SHOWING ELECTRIC LINE RIGHT OF WAY TO BE CONDEMNED OVER PROPERTY OF EAST HEMPFIELD TOWNSHIP on PPL drawing number B 327670.

Bearings and distances are based on centerline of electric line surveyed by PPL Electric Utilities.

Parcel #6

THIS DRAWING IS THE PROPERTY OF PPL CORP. AND CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH MUST NOT BE DUPLICATED, USED OR DISCLOSED WITHOUT WRITTEN AUTHORIZATION FROM PPL CORP.



NOTE: BEARINGS AND DISTANCES ARE BASED ON CENTERLINE OF ELECTRIC LINE SURVEY BY PPL ELECTRIC UTILITIES.

NOTE: FOR EXACT LOCATION OF RAW AND/OR FACILITIES WITHIN THE RAW, CONTACT THE LOCAL PPL ELECTRIC UTILITIES CORPORATION OFFICE.



ACCT- 169857	WEST HEMPFIELD-McGOVERNVILLE #1 & #2 LINE	
SCALE- NONE	PLAN SHOWING ELECTRIC LINE RIGHT OF WAY TO BE CONDEMNED OVER PROPERTY OF EAST HEMPFIELD TOWNSHIP DB-2462 PAGE-545	
BY- CDW	EAST HEMPFIELD TWP. LANCASTER CO., PA.	
DLH	APPROVED <i>[Signature]</i> DATE 8/26/13	PPL ELECTRIC UTILITIES
REVIEWED	PPL DRAWING NO. B327670	SHEET NO. 1
		REV. 0

NO.	DATE	ACCT.	REVISION	BY	REVIEWED	APPROVED

PPL EU FORM-073 (7/01)

A B C MF PC CAD

I, DIANE M. KOCH, the duly elected and acting Assistant Secretary of PPL Electric Utilities Corporation, do hereby CERTIFY that the following is a true and correct copy of certain resolutions duly adopted by the Board of Directors of the Company by a Unanimous Written Consent, dated March 5, 2004, and that said resolutions have not been altered, amended or repealed and are in full force and effect:

* * * * *

WHEREAS, East Hempfield Township is the owner of certain property in East Hempfield Township, Lancaster County, as more particularly described in Exhibit B;

* * * * *

WHEREAS, The construction by the Company of the West Hempfield-McGovernville #1 and #2 138/69 kV Tie Line (to be initially operated at 69 kV), on, over, across or under such lands, is necessary for the supply of light, heat and power to the public;

WHEREAS, the Company has endeavored to agree but has not reached agreement with the landowners or their representatives upon the proper compensation, terms and conditions for the damage which will be done or is likely to be done to or sustained by them;

WHEREAS, the Company is authorized by law to condemn and appropriate the properties necessary for such purposes; and

WHEREAS, Board of Directors approval is a necessary legal condition for the Company to appropriate the necessary rights-of-way.

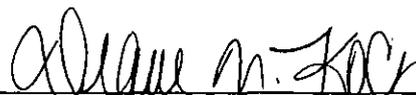
NOW THEREFORE, BE IT RESOLVED That it is necessary for the corporate use of the Company to condemn and appropriate easements on, over, across or under such lands to the extent required for rights-of-way to be presently used for the overhead or underground construction, operation and maintenance of the 138/69 kV double circuit West Hempfield-McGovernville #1 and #2 Tie Line, for the transmission and/or distribution of electric light, heat and power, or any of them, including such poles, wires, conduits, cables, manholes, and all other facilities, fixtures and

apparatus as may be necessary for the proper and efficient construction, operation and maintenance of such line; and further

RESOLVED, That the Company shall and hereby does condemn and appropriate easements to the extent necessary for the rights-of-way as aforementioned on, over, across or under the lands owned or reputed to be owned by the above-named property owners, such rights-of-way being more fully described in Exhibit B, as applicable, and being necessary for the Company's corporate uses for the construction, operation, renewal, replacement, relocation, addition to, and maintenance of the facilities constituting the overhead or underground transmission line, including poles, wires, conduits, cables, manholes and all other necessary appurtenances for the transmission or distribution of electricity, on, over, across or under the rights-of-way described in Exhibit B, as applicable, together with: (1) the right, as often as necessary, to cut down or remove any trees or brush, including the root systems of such trees or brush, and to remove any buildings or other things from the rights-of-way; (2) the right to cut down or trim any trees within 25 feet on either or both sides of the edge of the rights-of-way which may endanger the safety of, interfere with the use of, or be a menace to any facilities or structures which may now or in the future be maintained upon the rights-of-way; and (3) the right of ingress and egress to, from, upon and over the rights-of-way for the construction, operation and maintenance of such line; and further

RESOLVED, That the proper officers of the Company are hereby authorized and directed to execute such bonds and/or other paper, to take such action and to bring such proceedings on behalf of the Company as may be necessary or advisable in the exercise of the power of eminent domain to condemn and appropriate such easements and to enter upon, use and occupy such lands for the purposes described in the above resolutions.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the Company this 24th day of March, 2004.



Assistant Secretary