Siting Board 2-1:

Provide a map showing the proposed transmission line route and all existing transmission lines that cross the proposed line or fall within 2,000 feet of the proposed right-of-way (ROW).

Response: The Applicant has prepared a figure showing the transmission and distribution lines crossed or located within 2,000 feet of the proposed ROW (Attachment 2-1).

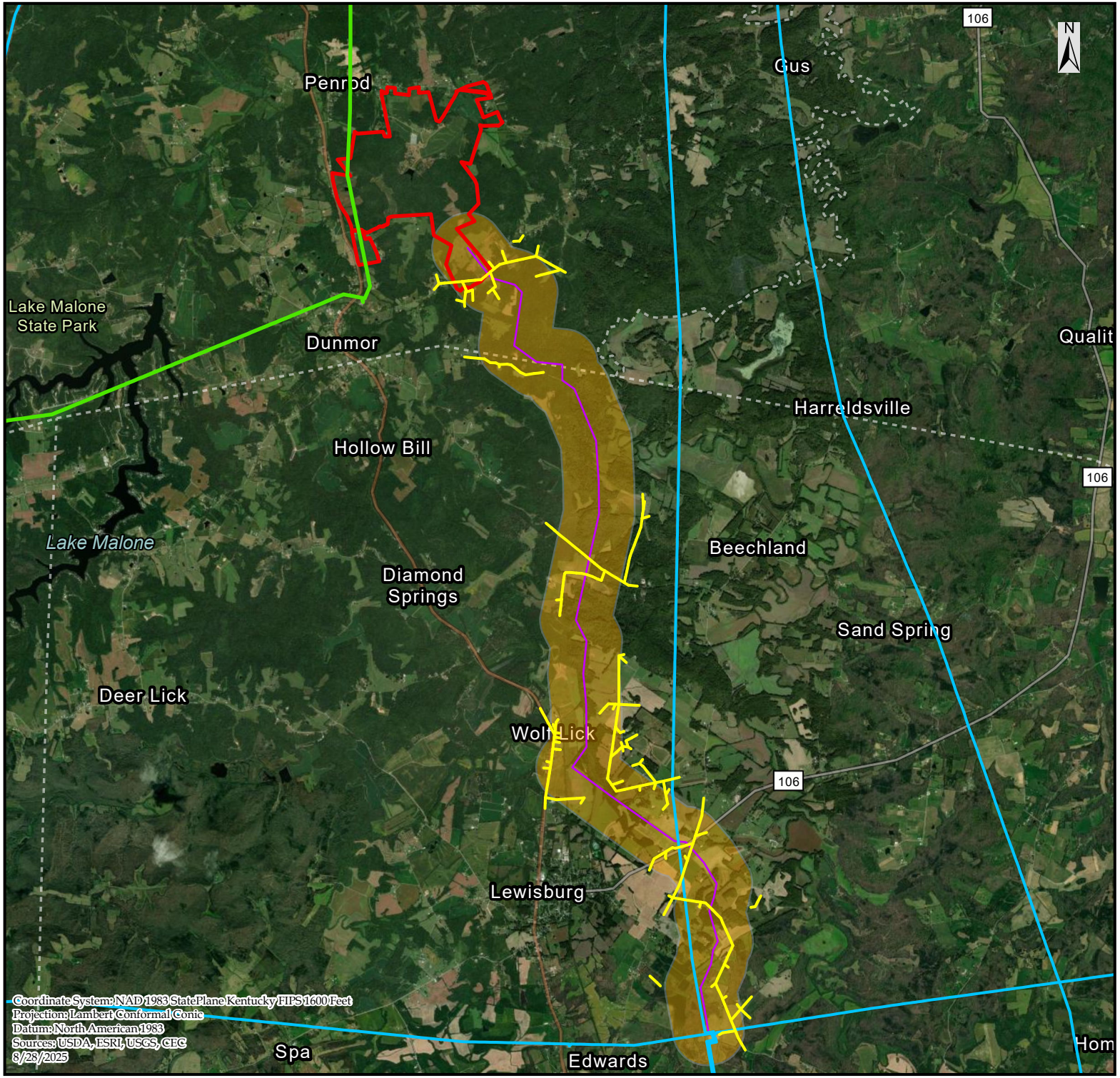
Witness: Marty Marchaterre

Attachment 2-1

DISTRIBUTION AND TRANSMISSION LINES

Lost City Renewables LLC

Muhlenberg and Logan Counties, Kentucky



COPPERHEAD
ENVIRONMENTAL CONSULTING

Prepared for:

Lost City Renewables LLC

FIGURE 2-1:
Existing Distribution and Transmission Line Map
for the Lost City Solar Project,
Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- TVA 100-161 kV Transmission Line
- TVA Under 100 kV Transmission Line
- PRECC Distribution Line
- 2,000 ft Buffer
- Facility Project Area

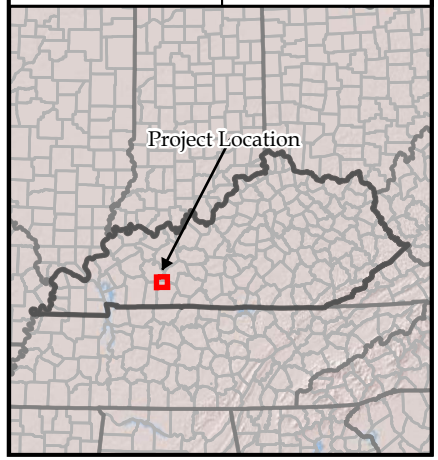
0 4,000 8,000
US Feet

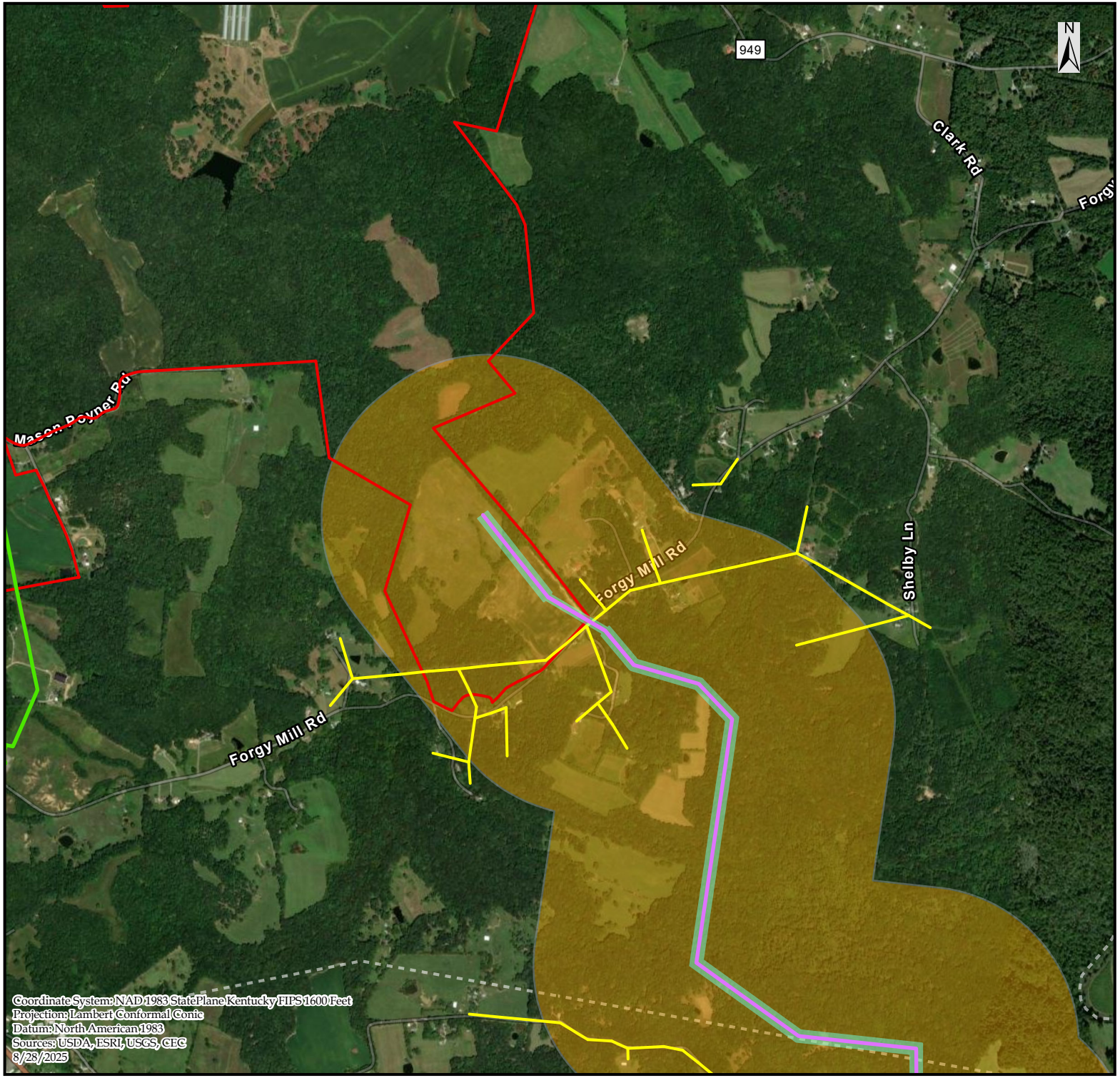
Scale: 1 in = 8,000 ft

Prepared by :

Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	8/28/2025
Checked by:	MM	Revision:	01





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Prepared for:

Lost City Renewables LLC

FIGURE 2-1a:
Existing Distribution and Transmission Line Map for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- PRECC Distribution Line
- TVA 100-161 kV Transmission Line
- TVA Under 100 kV Transmission Line
- Right of Way
- 2,000 ft Buffer
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

Prepared by :

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Paint Lick, Kentucky 40461

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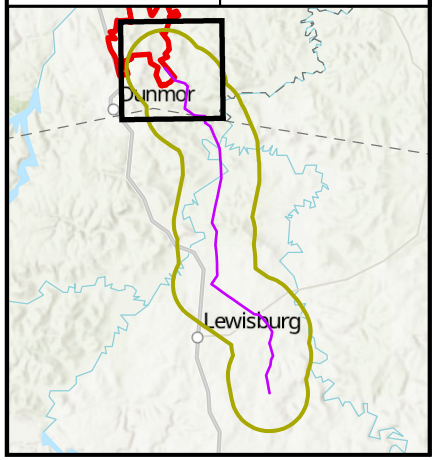
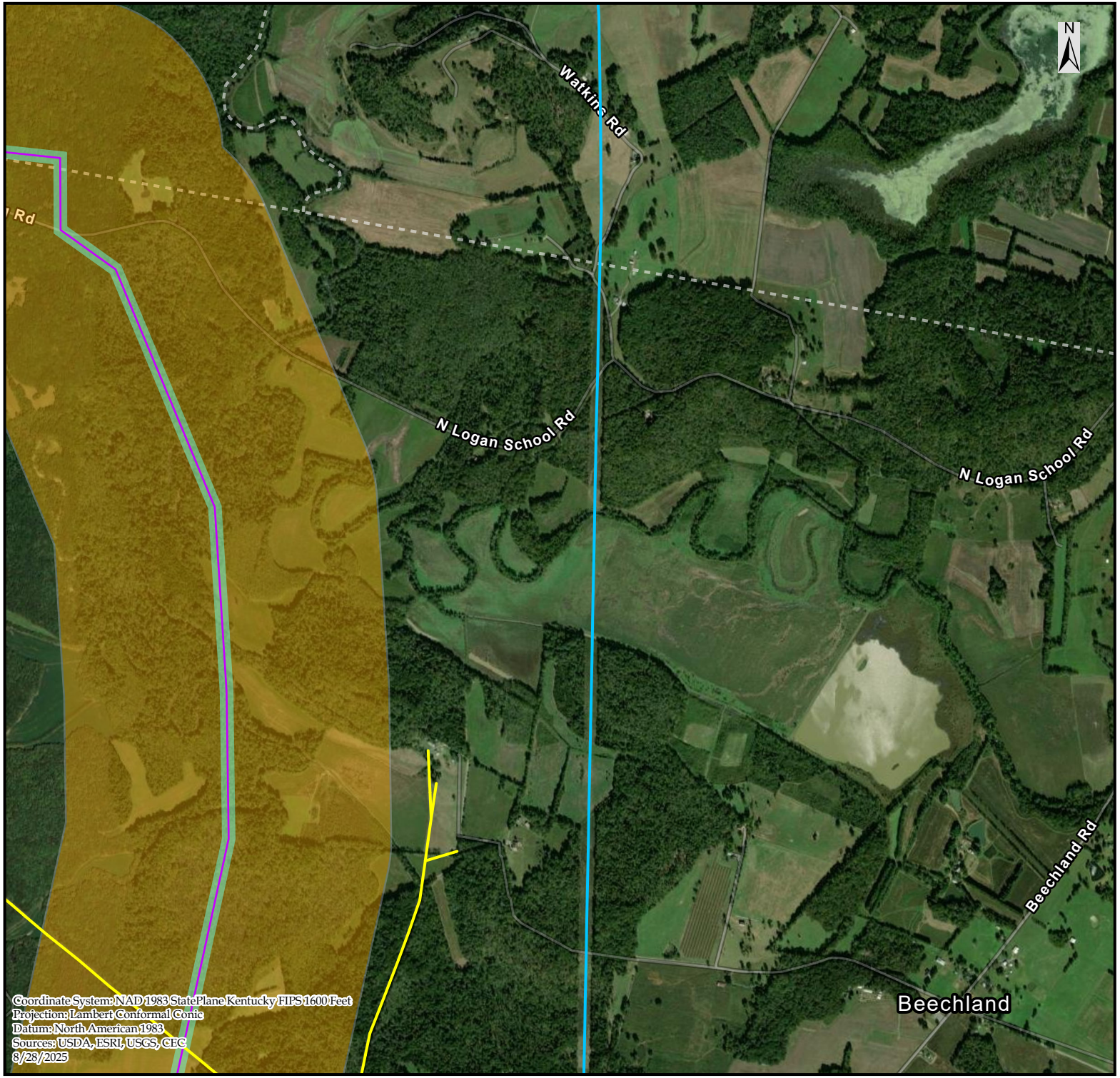
Checked by:	MM	Revision:	01





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Prepared for:

Lost City Renewables LLC

FIGURE 2-1b:
Existing Distribution and Transmission Line Map for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- PRECC Distribution Line
- TVA 100-161 kV Transmission Line
- TVA Under 100 kV Transmission Line
- Right of Way
- 2,000 ft Buffer
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

Prepared by :

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471 Main Street
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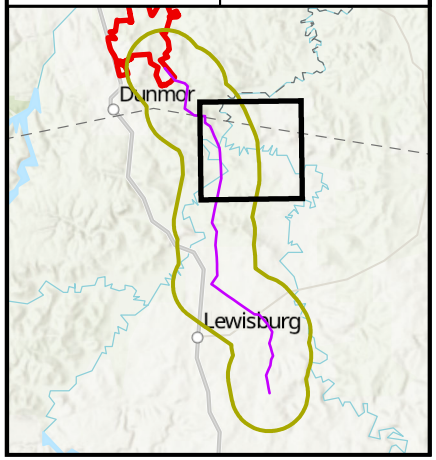

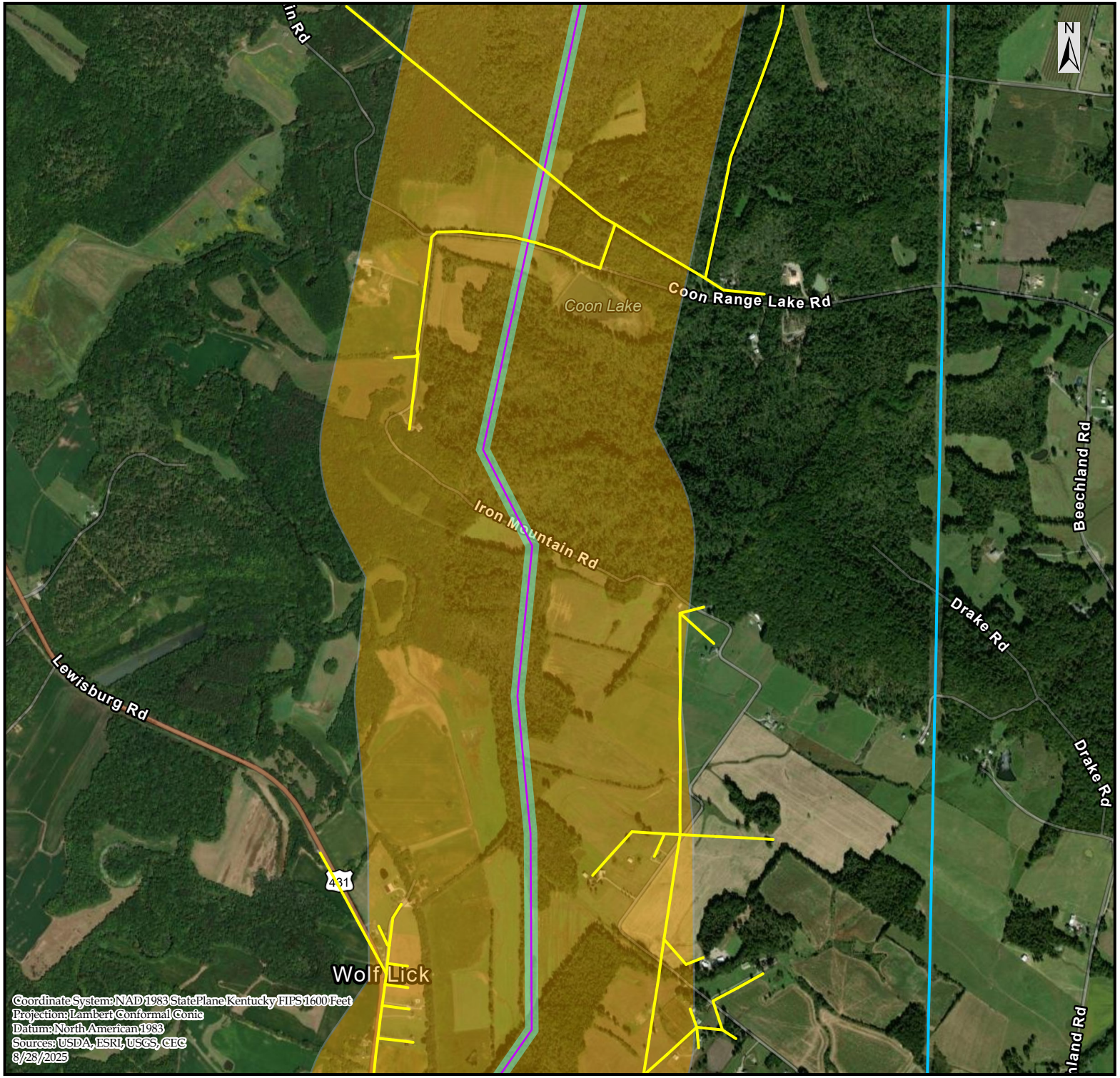

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Prepared for:

Lost City Renewables LLC

FIGURE 2-1c:
Existing Distribution and Transmission Line Map for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- PRECC Distribution Line
- TVA 100-161 kV Transmission Line
- TVA Under 100 kV Transmission Line
- Right of Way
- 2,000 ft Buffer
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

Prepared by :

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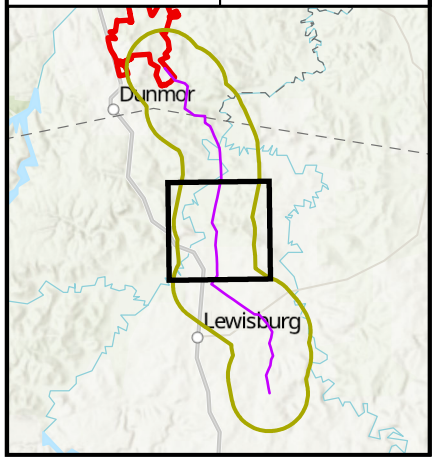
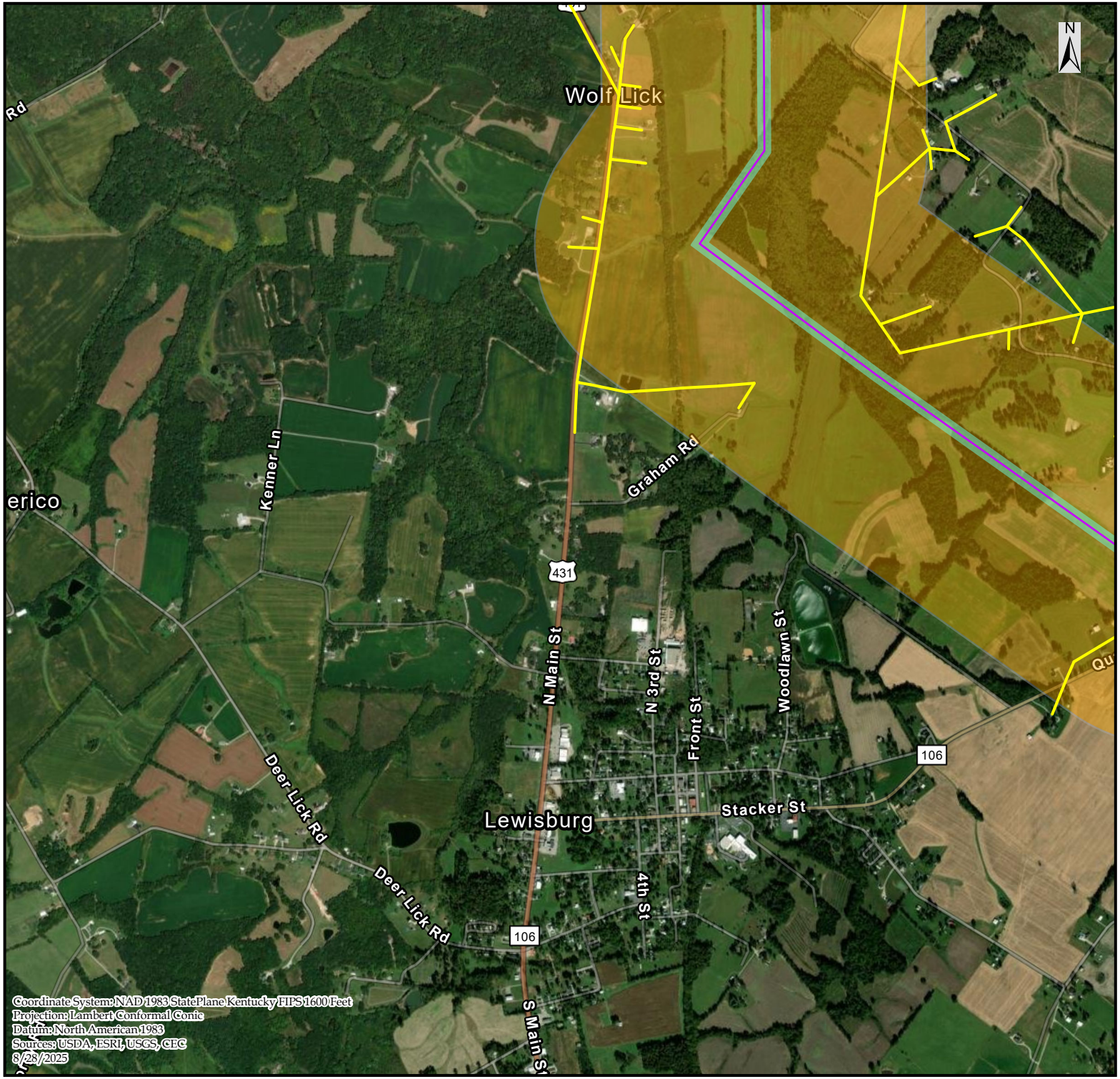
Checked by:	MM	Revision:	01





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Prepared for:

Lost City Renewables LLC

FIGURE 2-1d:
Existing Distribution and Transmission Line Map for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- PRECC Distribution Line
- TVA 100-161 kV Transmission Line
- TVA Under 100 kV Transmission Line
- Right of Way
- 2,000 ft Buffer
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

Prepared by :

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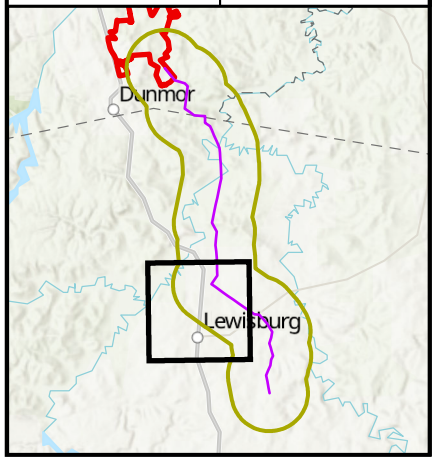

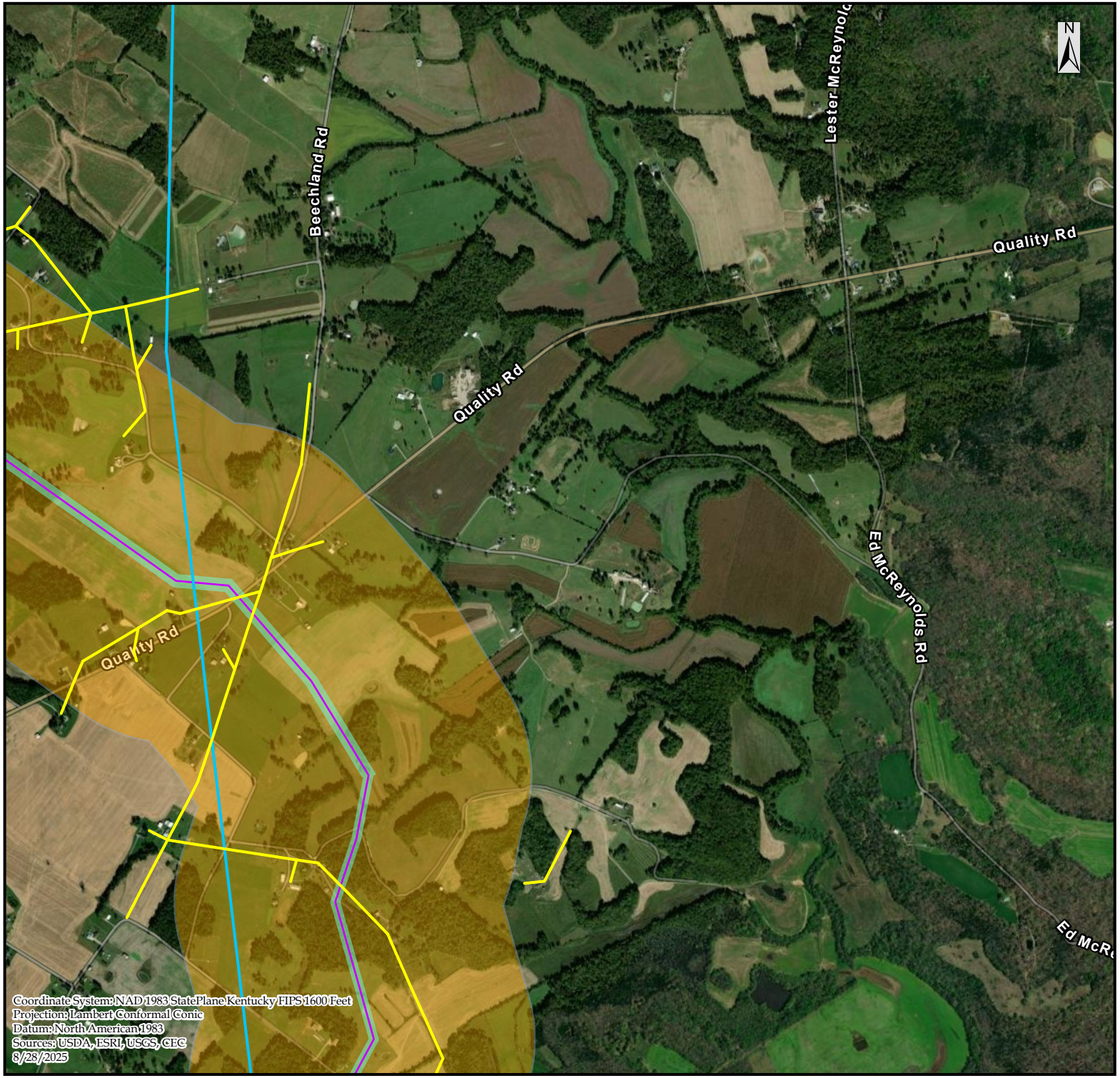

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Prepared for:

Lost City Renewables LLC

FIGURE 2-1e:
Existing Distribution and Transmission Line Map for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- PRECC Distribution Line
- TVA 100-161 kV Transmission Line
- TVA Under 100 kV Transmission Line
- Right of Way
- 2,000 ft Buffer
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

Prepared by :

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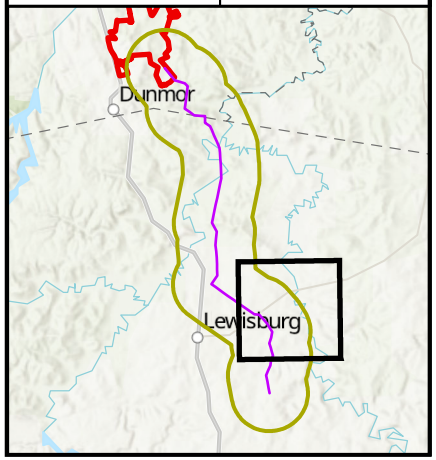

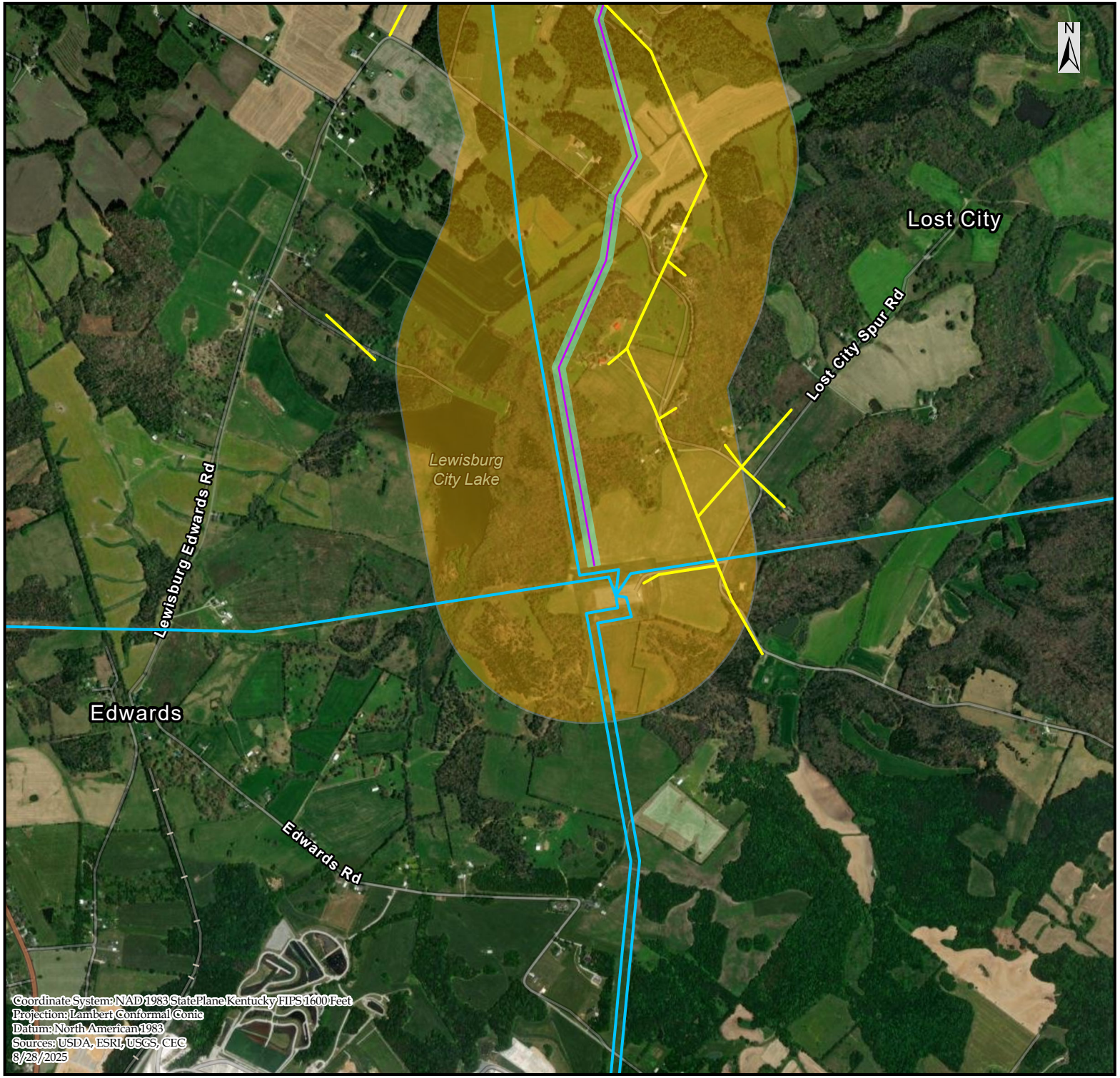

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Prepared for:

Lost City Renewables LLC

FIGURE 2-1f:
Existing Distribution and Transmission Line Map for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- PRECC Distribution Line
- TVA 100-161 kV Transmission Line
- TVA Under 100 kV Transmission Line
- Right of Way
- 2,000 ft Buffer
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

Prepared by :

Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

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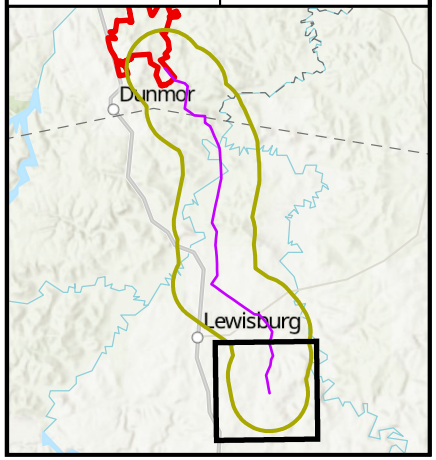
Checked by:	MM	Revision:	01



Siting Board 2-2:

Provide the owner, voltage, ROW, and setbacks for all existing transmission lines that cross or fall within the proposed transmission line ROW.

Response: The Lost City Transmission Line will cross one Tennessee Valley Authority (TVA) 161 kV line. It has a 150-foot easement (75-foot horizontal setback/separation requirement). The proposed transmission line will cross seven Pennyrile Rural Electric Cooperative Corporation (PRECC) distribution lines. The distribution lines are either 13 kV or 25 kV. PRECC has 40-foot easements for its distribution lines (20-foot horizontal setback/separation requirement).

The vertical clearance or separation between crossing transmission and distribution lines depends on the voltages of each line. The Applicant will follow appropriate National Electrical Safety Code (NESC), Institute of Electrical and Electronics Engineers (IEEE) standards, and state regulations. For crossing clearances, NESC-C2 Rule 233A and C applies. The Project's transmission line crossing clearance over the PRECC distribution lines would be approximately 6 feet, and approximately 10 feet over the TVA transmission line. Detailed calculations and coordination with PRECC and TVA will be conducted to determine the final crossing clearances.

Witness: Marty Marchaterre

Siting Board 2-3:

Provide all communication that has occurred with owners of transmission lines that cross or fall within the proposed transmission line ROW.

Response: The Applicant has had preliminary discussions with TVA as part of TVA's transmission line interconnection application study process. PRECC provided data related to its distribution lines and discussion horizontal and vertical setbacks/clearances needed for crossings. PRECC had no concerns about the Lost City transmission line crossing its distribution lines. PRECC has experience with transmission line crossings in its service territory.

Witness: Marty Marchaterre

Siting Board 2-4:

Explain whether the entire proposed ROW route will be cleared of vegetation prior to any construction or if it will be cleared while the line is constructed.

Response: The Applicant anticipates all vegetation would be cleared prior to construction. Transmission line construction is anticipated to take 5 to 6 months. The proposed ROW contains approximately 125 forested acres (see RFI No. 1 Response 1-3 and Attachment 1-2). The Applicant expects 85 to 100 forested acres may be cleared.

Witness: Marty Marchaterre

Siting Board 2-5:

Provide a list of all roads that will be used during the construction phase of the project. Include in the response: number of lanes, road width, weight limit, average daily traffic volume, and a map showing the proposed roads in relation to the transmission line.

Response: The Engineering Procurement and Construction (EPC) contractor will identify the haul routes to be used during construction to determine viable routes for the expected weight and dimensions of vehicles. The haul route plan should be completed prior to the final design. The Applicant has included a map showing roads crossed by the transmission line (Attachment 2-5). The Applicant will comply with all state and local requirements for road use and obtain any permits necessary. The Applicant and EPC contractor would coordinate with county road departments.

The following preliminary list of roads may be used during construction (see table below) with additional roads identified as part of EPC contractor haul route plan.

Preliminary List of Roads that May be Used During Construction				
Road Name	Number of Lanes	Road Width	Weight Limit	Average Daily Traffic
Forgy Mill Road	2	18 ft paved	Not Available	Not Available
Fagg Road	2	18 ft gravel	Not Available	Not Available
Coon Range Lake Road	1	15 ft gravel	Not Available	Not Available
Iron Mountain Road	1	14-18 ft gravel	Not Available	Not Available
Quality Road (KY 106)	2	24 feet paved	Not Available	Not Available
W.F. Hart Road	1	12-14 gravel	Not Available	Not Available
Claybrooke Lane	1	10 ft gravel	Not Available	Not Available
Lost City Road	2	20 ft paved	Not Available	Not Available

The county road departments have not identified weight limits for these roads. Based on discussions with the Logan County Road Department, local residents, farm equipment, and logging trucks use these roads.

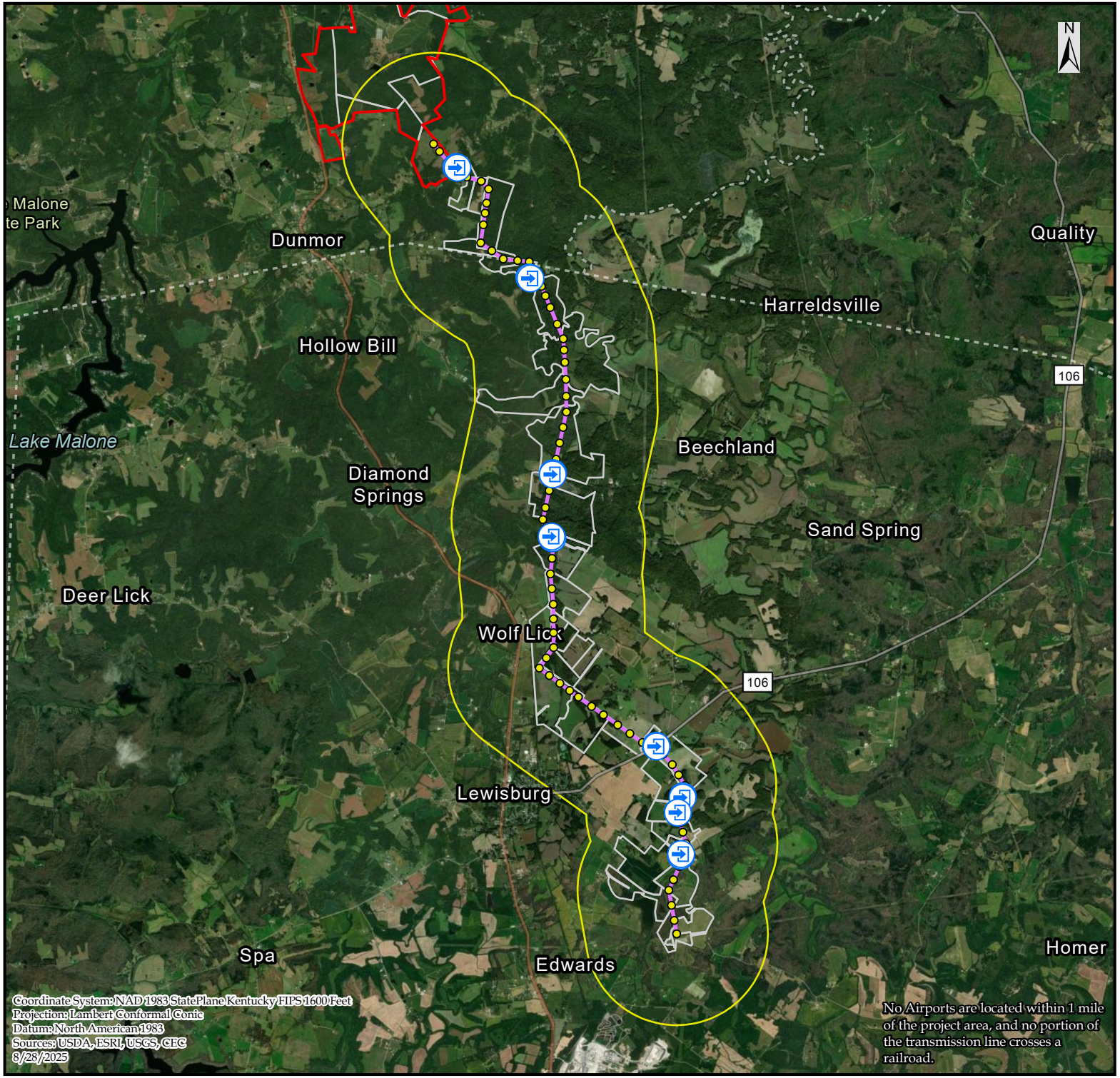
Witness: Marty Marchaterre

Attachment 2-5

ROAD CROSSINGS FIGURE

Lost City Renewables LLC

Muhlenberg and Logan Counties, Kentucky



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Prepared for:

Lost City Renewables LLC

FIGURE 2-5: Transmission Line Road Crossings for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Potential Pole Access
- Pole Location
- Transmission Centerline
- Roadway Crossing
- 1 mile Buffer
- Parcel Boundary
- Facility Project Area

0 3,950 7,900
US Feet

Scale: 1 in = 7,930 ft

Prepared by :
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471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

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Checked by:	MM	Revision:	01

Coordinate System: NAD 1983 StatePlane Kentucky FIPS 1600 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Sources: USDA, ESRI, USGS, CEC
8/28/2025

No Airports are located within 1 mile of the project area, and no portion of the transmission line crosses a railroad.

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Prepared for:

Lost City Renewables LLC

FIGURE 2-5a Transmission Line Road Crossings for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Potential Pole Access
- Pole Location
- Transmission Centerline
- Roadway Crossing
- Parcel Boundary
- 1 mile Buffer
- Facility Project Area

0 60 120
US Feet

Scale: 1 in = 120 ft

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Paint Lick, Kentucky 40461

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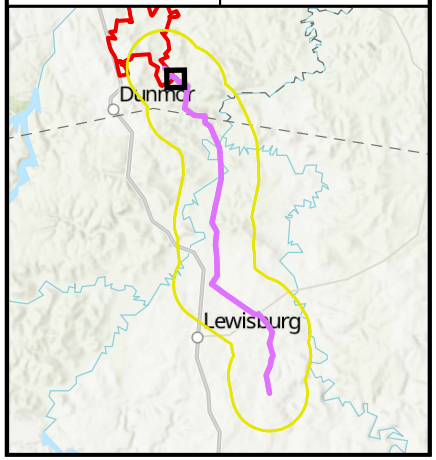

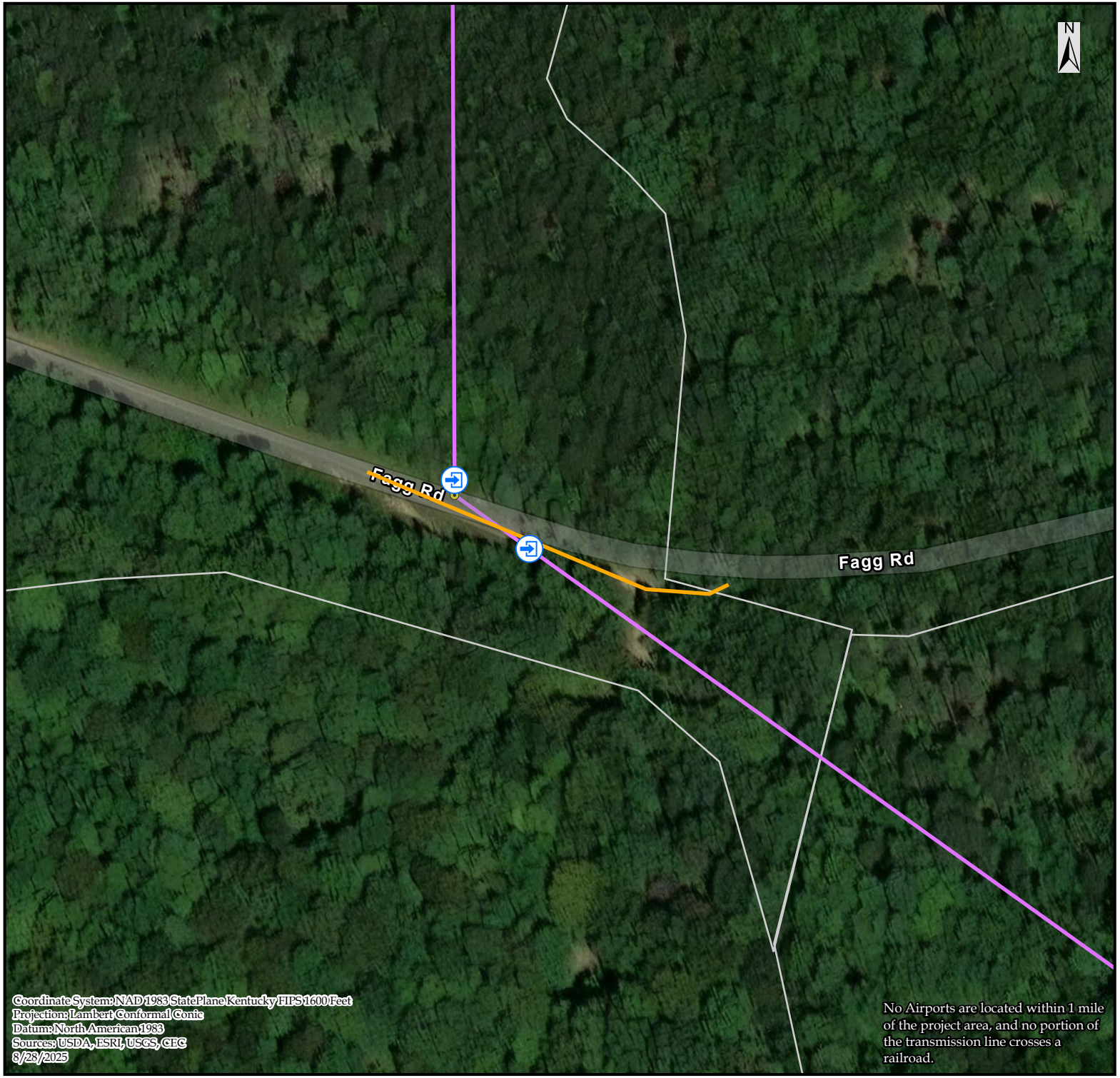

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Prepared for:

Lost City Renewables LLC

FIGURE 2-5b: Transmission Line Road Crossings for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Preliminary Pole Location
- Potential Pole Access
- Transmission Centerline
- Roadway Crossing
- Parcel Boundary
- 1 mile Buffer
- Facility Project Area

0 60 120

US Feet

Scale: 1 in = 120 ft

Prepared by :

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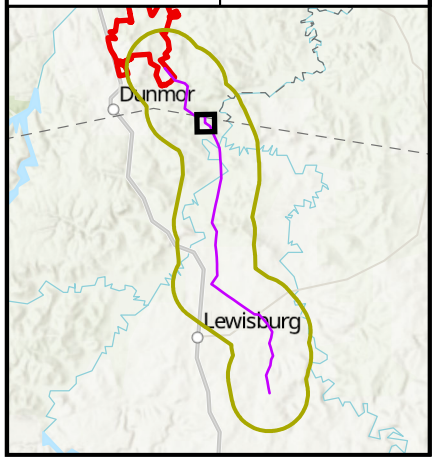
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	8/28/2025
Checked by:	MM	Revision:	01



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Prepared for:

Lost City Renewables LLC

FIGURE 2-5c: Transmission Line Road Crossings for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Preliminary Pole Location
- Potential Pole Access
- Transmission Centerline
- Roadway Crossing
- Parcel Boundary
- 1 mile Buffer
- Facility Project Area

0 60 120
US Feet

Scale: 1 in = 120 ft

Prepared by :

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Drawn by:	TC	Date:	8/28/2025
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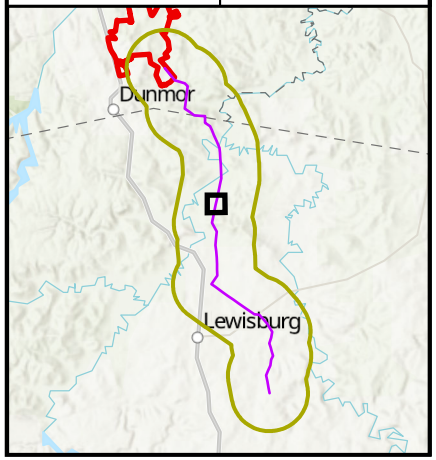

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Prepared for:

Lost City Renewables LLC

FIGURE 2-5d: Transmission Line Road Crossings for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Preliminary Pole Location
- Potential Pole Access
- Transmission Centerline
- Roadway Crossing
- Parcel Boundary
- 1 mile Buffer
- Facility Project Area

0 60 120
US Feet

Scale: 1 in = 120 ft

Prepared by :

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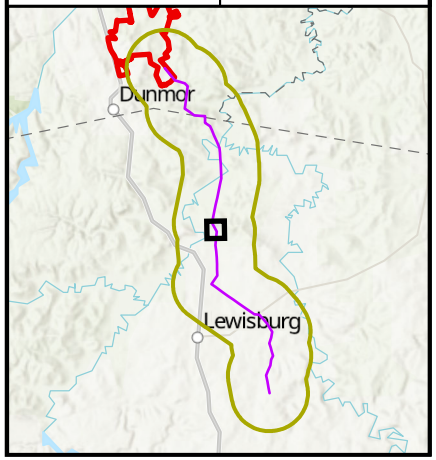
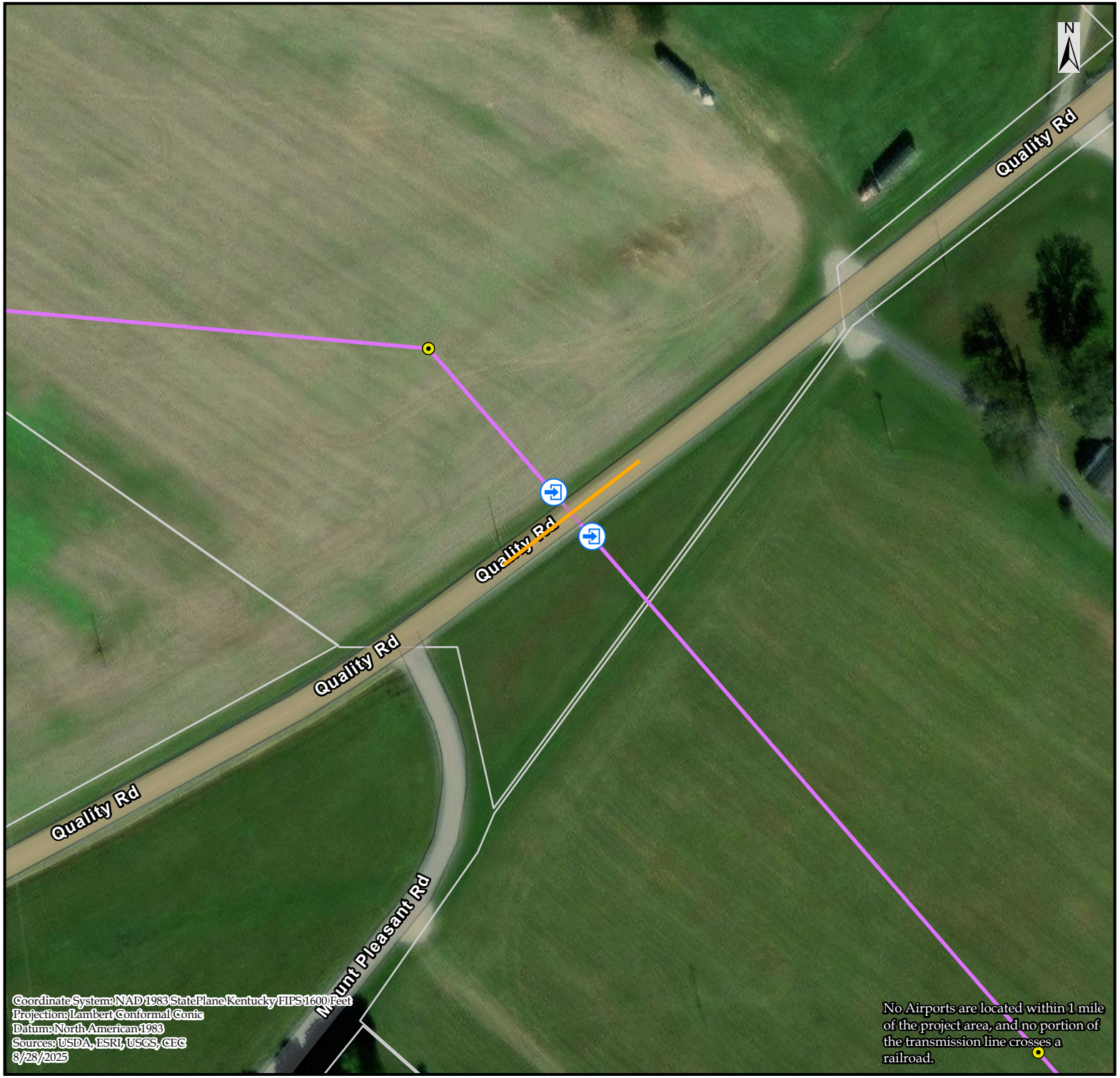
Checked by:	MM	Revision:	01





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Prepared for:

Lost City Renewables LLC

FIGURE 2-5e: Transmission Line Road Crossings for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Preliminary Pole Location
- Potential Pole Access
- Transmission Centerline
- Roadway Crossing
- Parcel Boundary
- 1 mile Buffer
- Facility Project Area

0 60 120
US Feet

Scale: 1 in = 120 ft

Prepared by :

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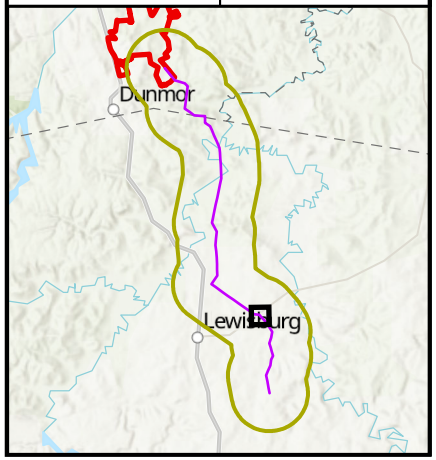

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Prepared for:

Lost City Renewables LLC

FIGURE 2-5f: Transmission Line Road Crossings for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Preliminary Pole Location
- Potential Pole Access
- Transmission Centerline
- Roadway Crossing
- Parcel Boundary
- 1 mile Buffer
- Facility Project Area

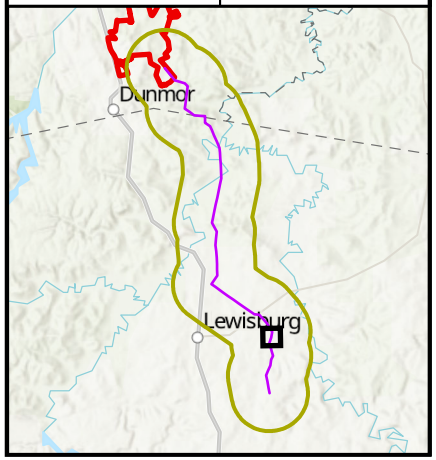
0 60 120
US Feet

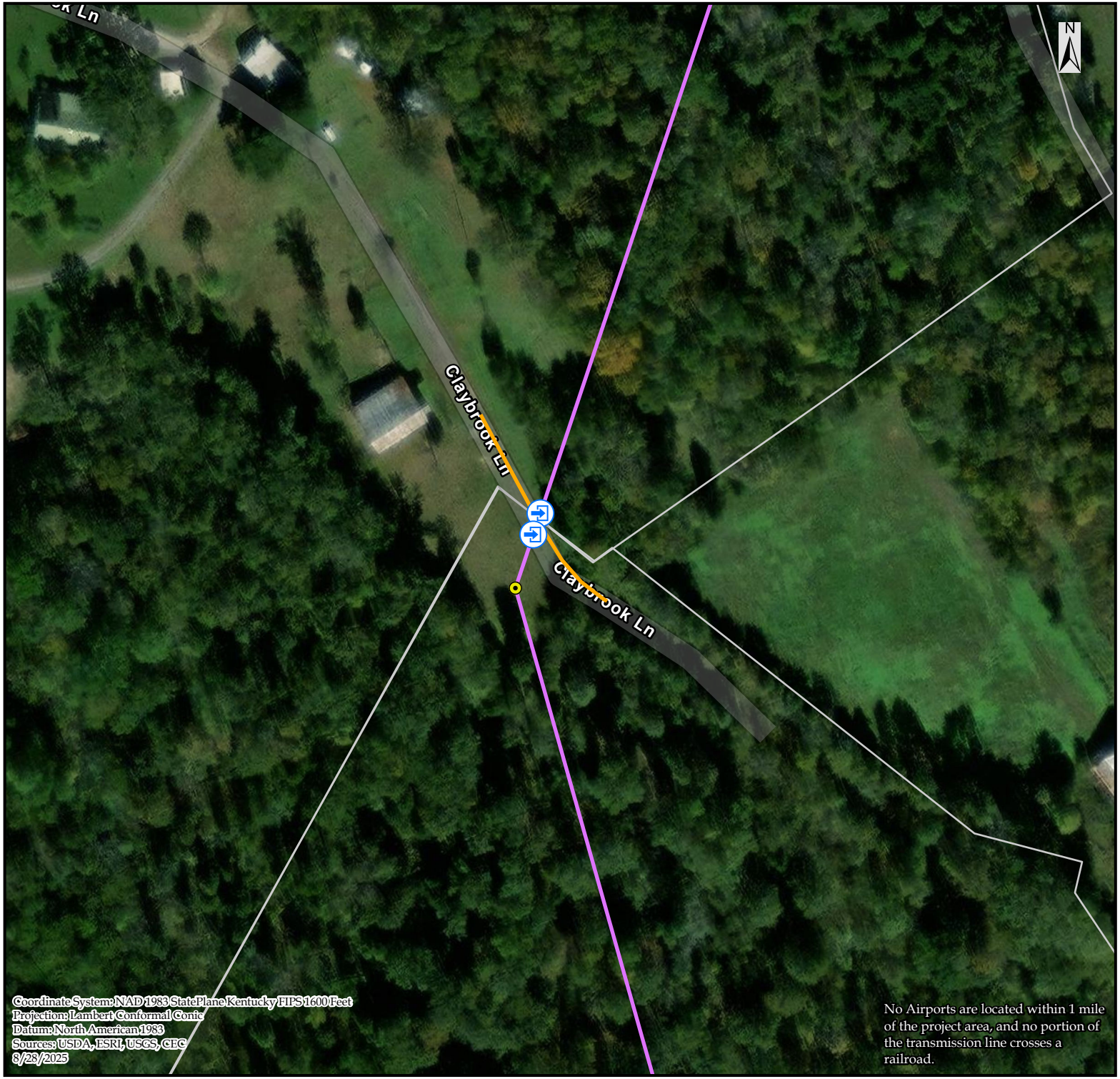
Scale: 1 in = 120 ft

Prepared by :

Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	8/28/2025
Checked by:	MM	Revision:	01





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Prepared for:

Lost City Renewables LLC

FIGURE 2-5g: Transmission Line Road Crossings for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Preliminary Pole Location
- Potential Pole Access
- Transmission Centerline
- Roadway Crossing
- Parcel Boundary
- 1 mile Buffer
- Facility Project Area

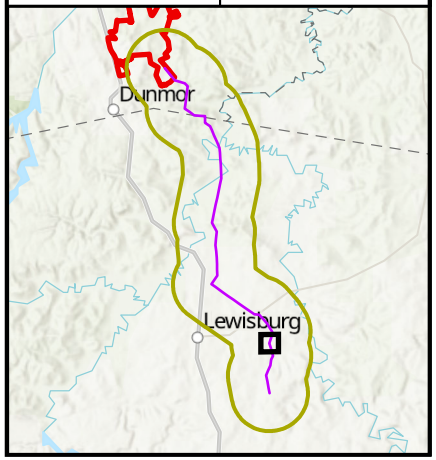
0 60 120
US Feet

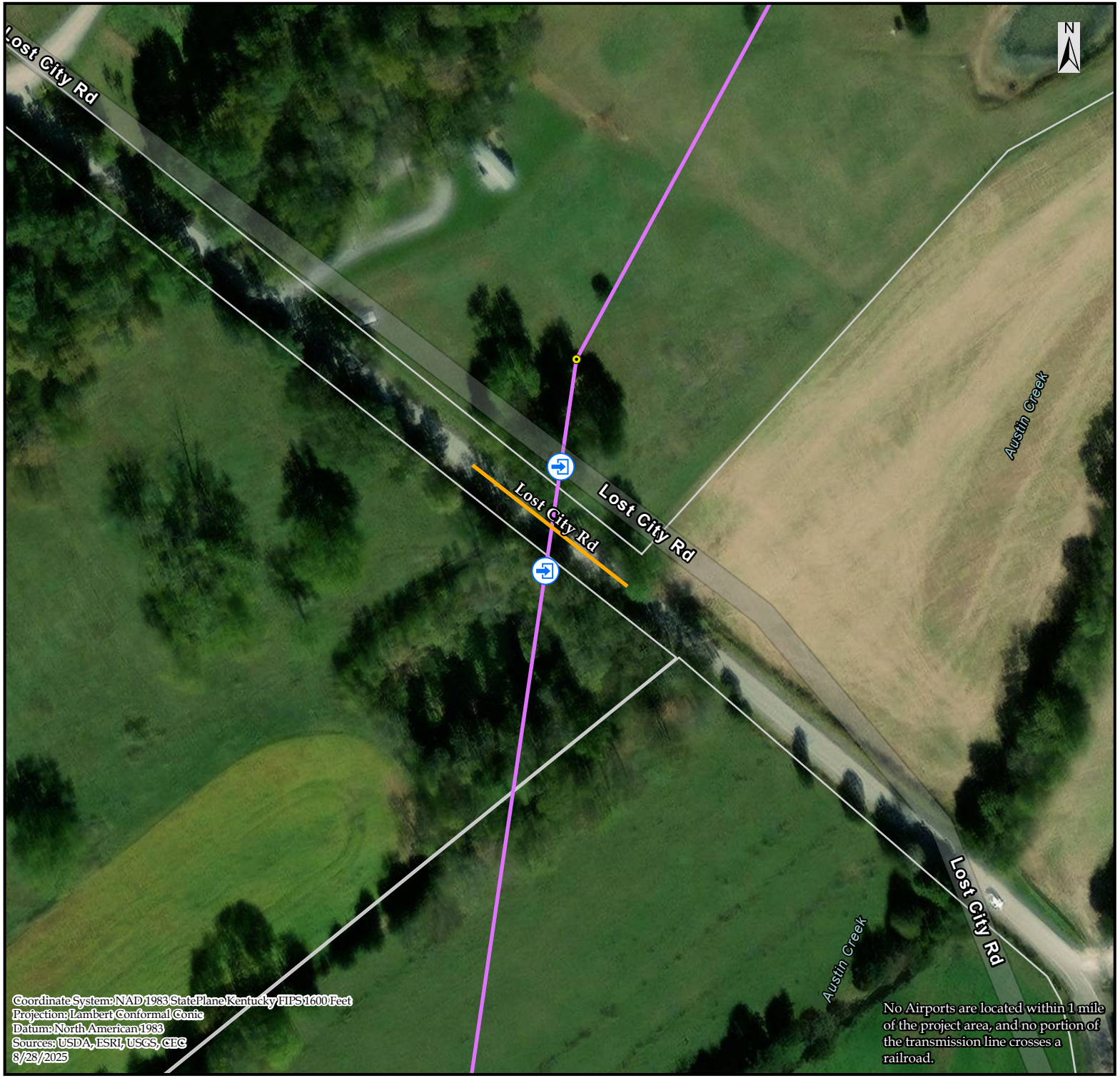
Scale: 1 in = 120 ft

Prepared by :

Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	8/28/2025
Checked by:	MM	Revision:	01





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Prepared for:

Lost City Renewables LLC

FIGURE 2-5h: Transmission Line Road Crossings for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Preliminary Pole Location
- Potential Pole Access
- Transmission Centerline
- Roadway Crossing
- Parcel Boundary
- 1 mile Buffer
- Facility Project Area

0 60 120

US Feet

Scale: 1 in = 120 ft

Prepared by :

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Paint Lick, Kentucky 40461

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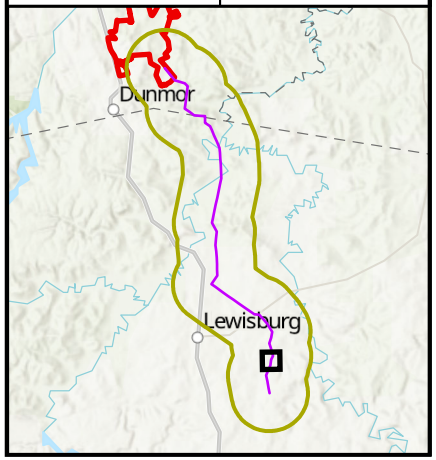
Checked by:	MM	Revision:	01



Siting Board 2-6:

Provide a list of all bridges and culverts that exist on roads that will be used during the construction phase of the project. Include in the response: weight limit, width, condition, any potential repairs or upgrades, and a map showing the location of bridges and culverts.

Response: The EPC contractor will identify the haul routes to be used during construction to determine viable routes for the expected weight and dimensions of vehicles. The haul route plan should be completed prior to the final design. Even though the haul routes are not known at this time, the Applicant agrees to comply with all state and local requirements for road use and obtain any permits necessary.

Witness: Marty Marchaterre

Siting Board 2-7:

Explain how Iron Mountain Road will be utilized during the construction phase of the project.

Response: The EPC contractor will identify access and haul routes to be used during construction to determine viable routes for the expected weight and dimensions of vehicles. It is anticipated that the Applicant and the EPC contractor will coordinate with the Logan County Road Department on use of Iron Mountain Road. Based on discussions with the Logan County Road Department, local residents, farm equipment, and logging trucks have previously used Iron Mountain Road.

Witness: Marty Marchaterre

Siting Board 2-8:

Provide a narrative description of all proposed access points to the proposed transmission line. Explain in the response whether vegetative clearing will be required for access to the proposed transmission line.

Response: At this time, the Applicant anticipates access points to occur where proposed Right of Way (ROW) crosses existing county and state roads (Attachment 2-5). Prior to construction vegetation in the ROW will be cleared. Currently, additional vegetation clearing is not anticipated as access points will occur in the ROW at road crossings.

Witness: Marty Marchaterre

Siting Board 2-9:

Provide a map showing all proposed access points to the proposed transmission line.

Response: The Applicant has prepared a figure showing access points for the proposed transmission line (Attachment 2-5).

Witness:Marty Marchaterre

Siting Board 2-10:

Provide any communication that has occurred with the Kentucky Transportation Cabinet and the county road department regarding the proposed transmission line.

Response: The Applicant has had verbal communications with the Kentucky Transportation Cabinet District 2 (Muhlenberg County) and District 3 (Logan County) to discuss potential use of roads, access/entrance permits (i.e., Quality Road/KY 1153), and oversize/overweight permits.

The Applicant has met with the Muhlenberg County Road Department to discuss use of roads (e.g., Forgy Mill Road), rating of road conditions, widths, and county plans for road improvements in the Project Area. Based on communications with the Muhlenberg County Judge/Executive, the Judge/Executive and Fiscal Court will work with the Applicant on a road use agreement.

In addition, the Applicant met with the Logan County Road Department Supervisor to discuss the transmission line project, county roads being crossed, road conditions, speed limits, and current use. A site visit is being scheduled with the Supervisor for a site visit to evaluate roads that would be potentially used, crossing areas, and access.

Witness: Marty Marchaterre

Siting Board 2-11

Confirm if any structures will be demolished during the construction phase of the project. If confirmed, provide narrative description of the structures and a map identifying the structures' location(s).

Response: The Applicant does not anticipate demolishing any structures as part of the transmission line construction.

Witness: Marty Marchaterre

Siting Board 2-12:

Confirm whether the habitat of any endangered species is located along the proposed transmission line route. If confirmed, provide a listing identifying the endangered species, a narrative of the expected impact upon each species habitat and a map identifying the location of habitats of the species.

Response: Based on a review of the United States Fish and Wildlife Service Information for Planning and Consultation (IPaC) database, the following federally listed threatened and endangered species may occur in the Project area (Attachment 2-12). Maps depicting potential habitat for bats and mussels are in Attachment 2-12.

Federally listed Species Known to Occur or Potentially Occur in the Project Area, Logan and Muhlenberg Counties, Kentucky.

Group	Scientific Name	Common Name	Federal Status	Within Critical Habitat*
Mammals	*Myotis grisescens*	Gray Bat	Endangered	N/A
	Myotis sodalis	Indiana Bat	Endangered	No
	Myotis septentrionalis	Northern Long-eared Bat	Endangered	N/A
	Perimyotis subflavus	Tricolored Bat	Proposed Endangered	N/A
Birds	*Grus americana*	Whooping Crane	Experimental Population, Non-Essential	N/A
Clams	*Lampsilis abrupta*	Pink Mucket	Endangered	N/A
Insects	*Danaus plexippus*	Monarch Butterfly	Proposed Endangered	N/A

* Yes = within designated critical habitat; No = not within designated critical habitat; N/A = No critical habitat has been designated for this species

Bats: The Indiana bat, northern long-eared bat, and gray bat are federally listed endangered species. On April 16, 2025, the USFWS recommended the delisting of the gray bat as part of its five-year review of the species. The tricolored bat is a proposed endangered species but currently has no Endangered Species Act (ESA) protections or requirements.

No caves or mines, which are winter habitats for Indiana and northern long-eared bats or year-round roosting habitats for gray bats, occur in the Project Area. The ROW contains approximately 125 acres of forested habitat for summer foraging, travel, and roosting habitat for the Indiana bat and northern long-eared bat (Attachment 2-12). Approximately 85-100 acres of forested habitat may be cleared during construction.

A bat mist-net survey was conducted at nine sites along the transmission line (Attachment 2-12). During the mist-net survey, two gray bats and one tricolored was captured at one site towards the center of the transmission line ROW. Radio-telemetry efforts documented a total of five tricolored bat roost trees located outside the western boundary of the ROW. No Indiana bats or northern long-eared bats were captured during the mist-net survey. This suggests that Indiana bats and northern long-eared bats are not likely present within these survey areas during the summer maternity season or are present in numbers too low to be detected by approved USFWS protocols. According to USFWS guidance, probable absence results for federally listed bat species are valid for up to five years (USFWS 2025).

Pink Mucket Mussel: Based on a desktop review, the transmission line ROW crosses perennial or intermittent streams which is pink mucket habitat (Attachment 2-12). No pink muckets or mussel

relic shells were found during site reconnaissance field visits. During construction, temporary stream crossings may occur in the ROW.

Whooping Crane: Whooping crane habitat includes marshes, lakes, open ponds, pastures, and agricultural fields. In Kentucky, whooping cranes have been documented wintering in Hopkins, Hardin, Hickman, and Barren counties (USFWS 2025). Since the Project Area is not located within these counties, the USFWS considers impacts to the species and its habitat from the proposed project as unlikely. No further coordination is anticipated on the whooping crane.

Monarch Butterfly: Currently, the monarch butterfly is proposed as federally threatened. Open prairies, meadows, roadsides, and grassy areas could provide suitable habitat for the monarch butterfly. As a proposed federally listed species, it receives no statutory protection under the ESA. The Applicant is planning to establish a pollinator area in the main solar facility project area. The planting of pollinator-friendly supporting plans would help mitigate the loss of milkweed from construction activities.

Witness: Marty Marchaterre

Attachment 2-12

BAT HABITAT FIGURE, MUSSEL HABITAT FIGURE, BAT SURVEY REPORT

Lost City Renewables LLC

Muhlenberg and Logan Counties, Kentucky

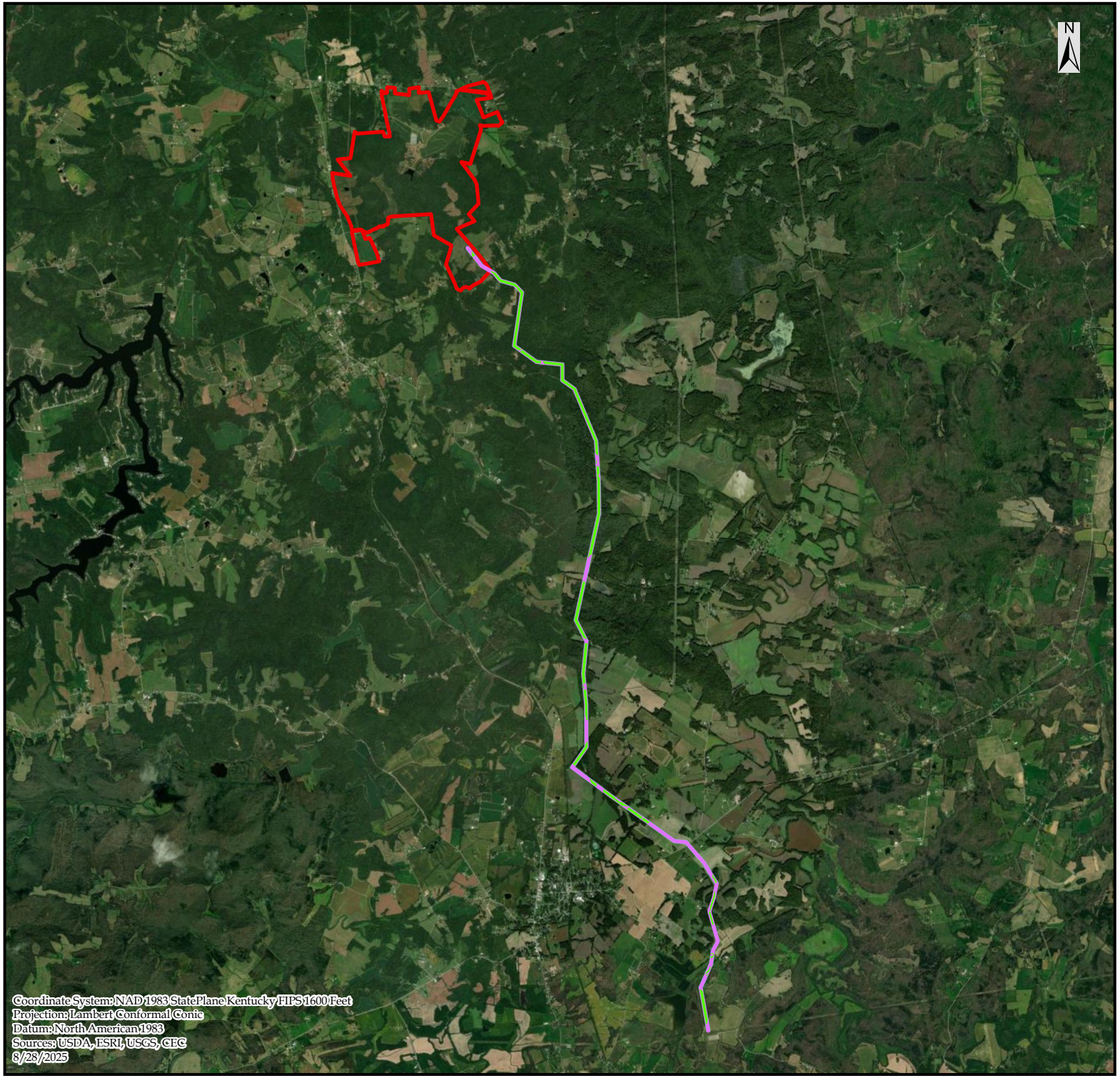


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FIGURE 2-12.1:
Potential Bat Habitat in Transmission Line ROW for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

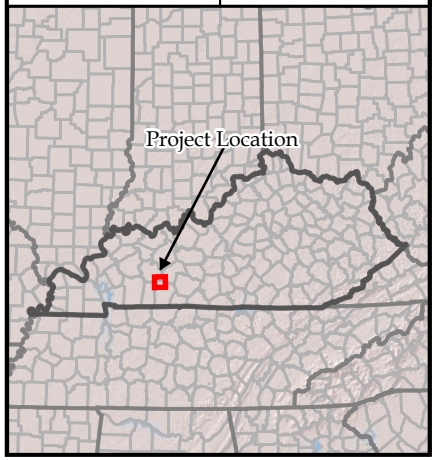
- Transmission Centerline
- Potential Bat Habitat
- Right of Way
- Facility Project Area

0 4,250 8,500
US Feet

Scale: 1 in = 8,000 ft

Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	8/28/2025
Checked by:	MM	Revision:	02



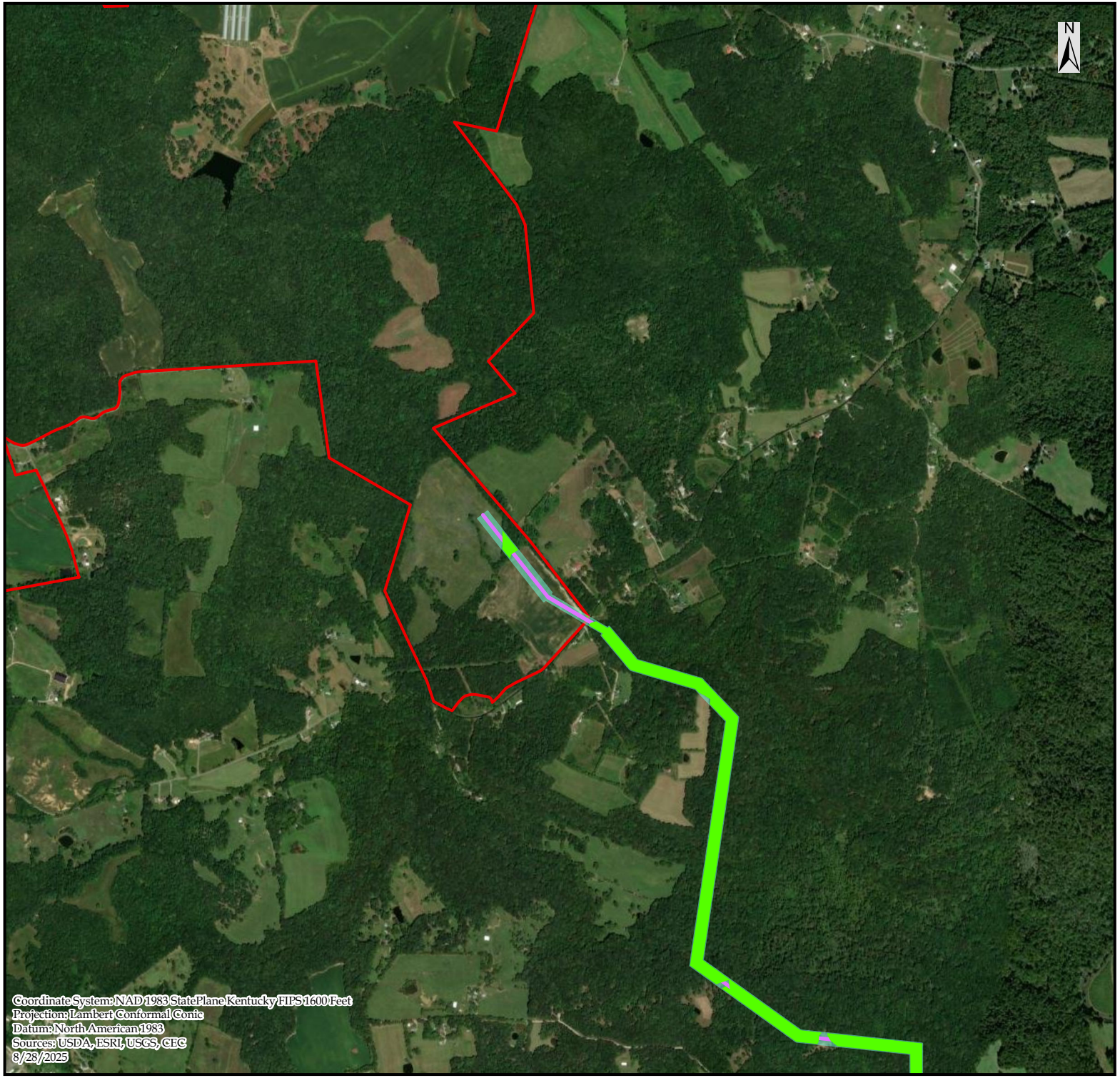


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FIGURE 2-12.1a:
Potential Bat Habitat in Transmission Line ROW for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- Potential Bat Habitat
- Right of Way
- Facility Project Area

0 1,125 2,250
US Feet

Scale: 1 in = 1,750 ft

Prepared by :
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471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

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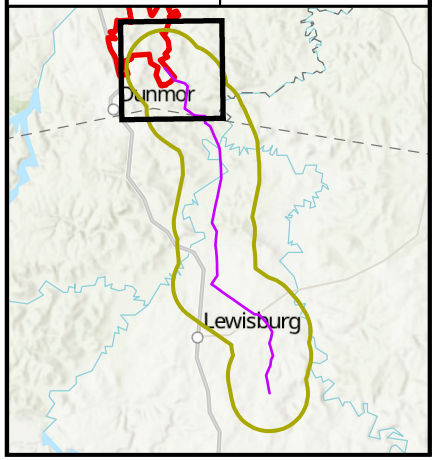
Checked by:	MM	Revision:	01



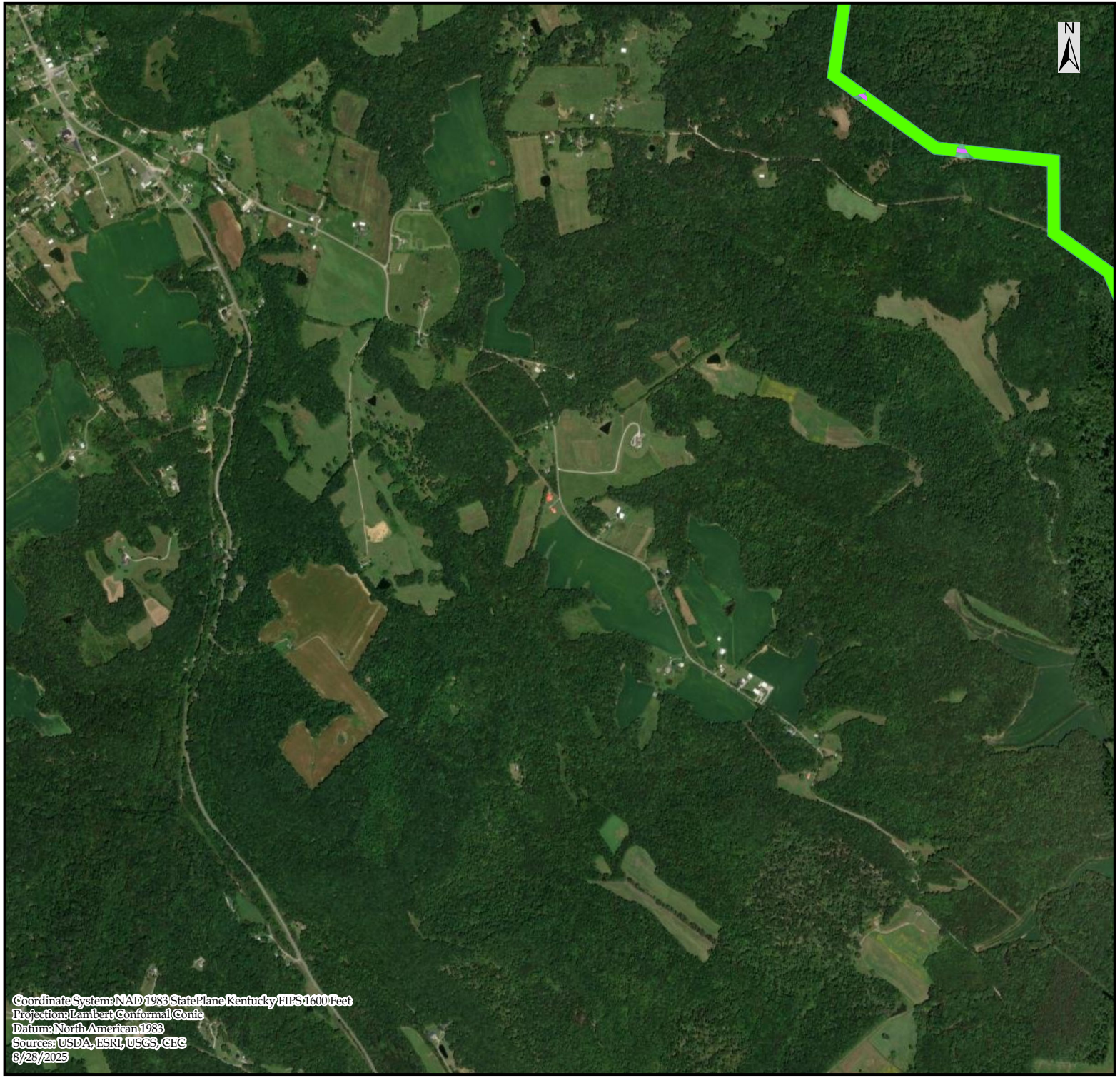


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FIGURE 2-12.1b:
Potential Bat Habitat in Transmission Line ROW for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- Potential Bat Habitat
- Right of Way
- Facility Project Area

0 1,125 2,250
US Feet

Scale: 1 in = 1,750 ft

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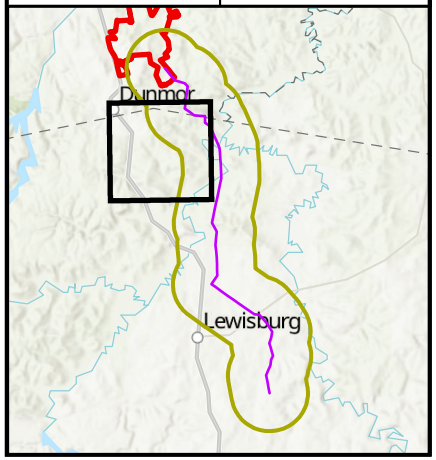

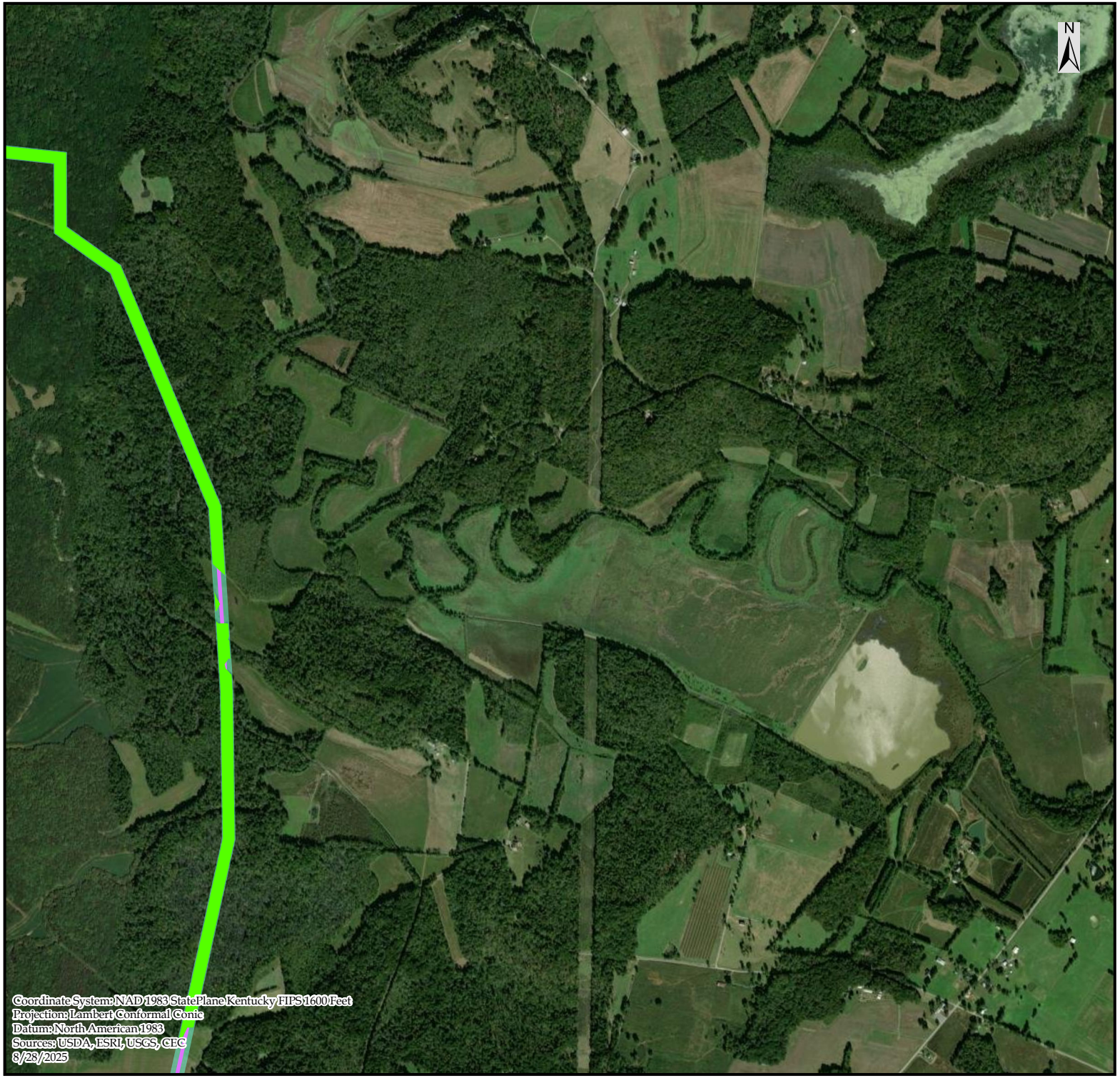

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FIGURE 2-12.1c:
Potential Bat Habitat in Transmission Line ROW for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- Forested Habitat
- Right of Way
- Facility Project Area

0 1,125 2,250
US Feet

Scale: 1 in = 1,750 ft

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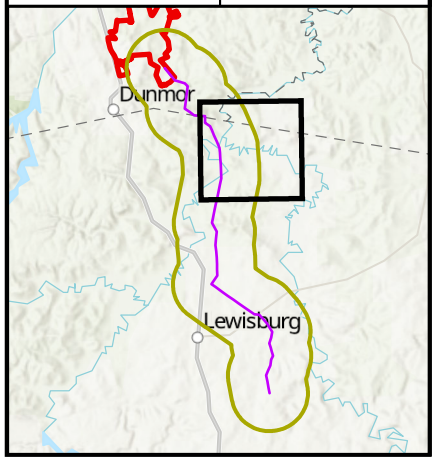

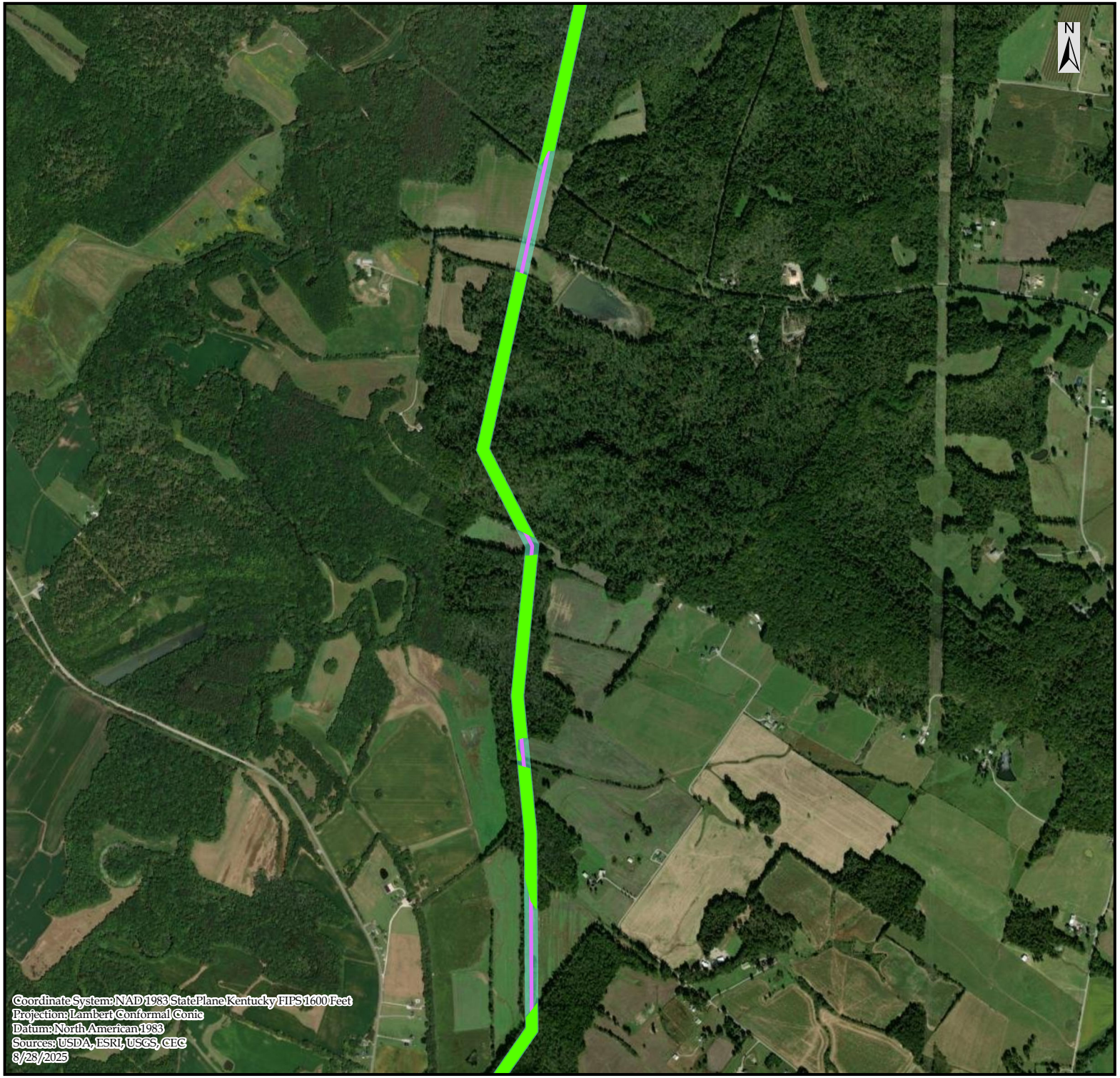

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FIGURE 2-12.1d:
Potential Bat Habitat in Transmission Line ROW for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- Potential Bat Habitat
- Right of Way
- Facility Project Area

0 1,125 2,250
US Feet

Scale: 1 in = 1,750 ft

Prepared by :
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Paint Lick, Kentucky 40461

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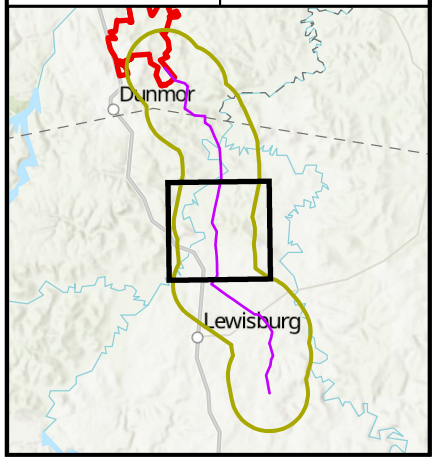

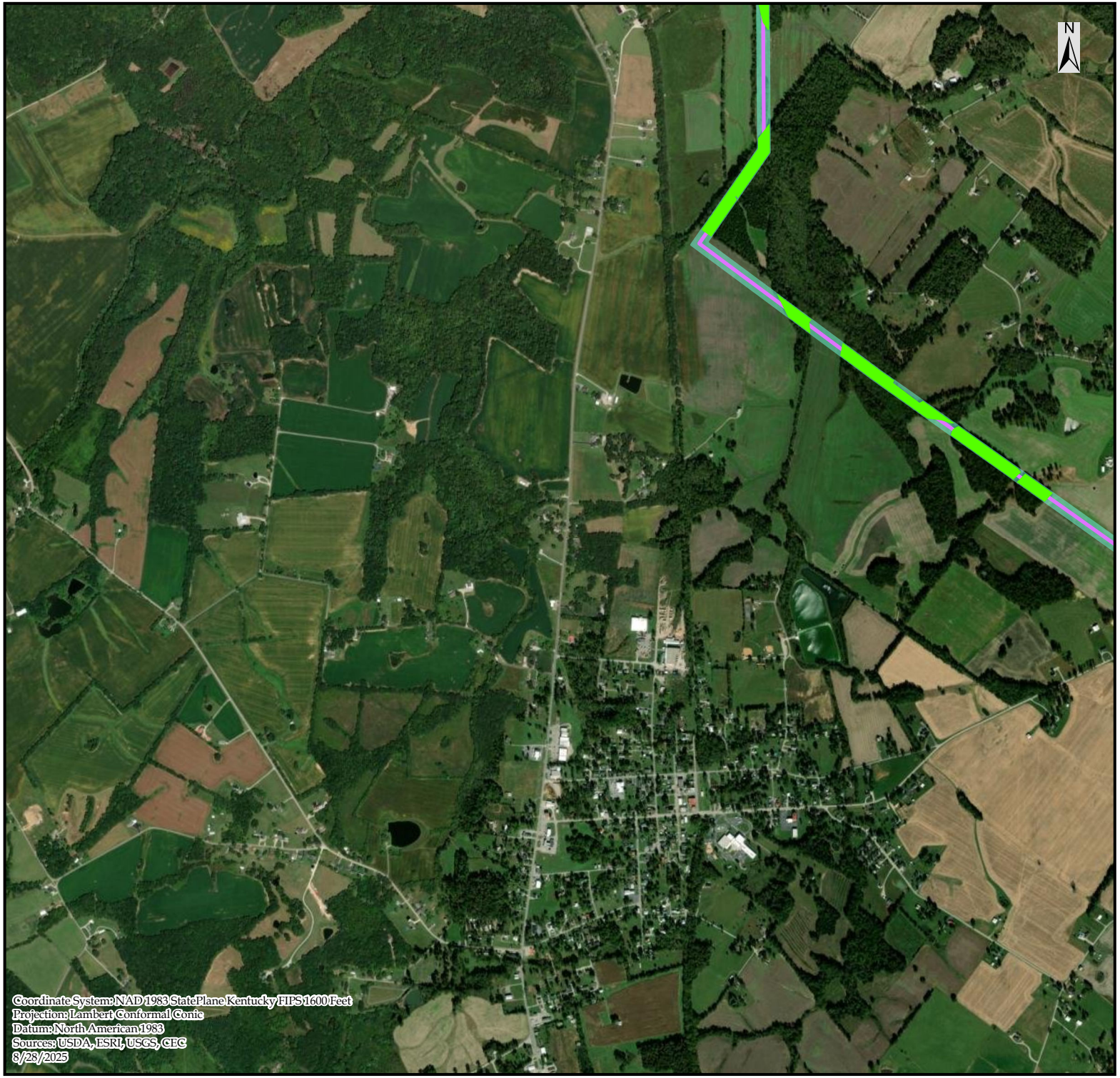

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FIGURE 2-12.1e:
Potential Bat Habitat in Transmission Line ROW for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- Potential Bat Habitat
- Right of Way
- Facility Project Area

0 1,125 2,250
US Feet

Scale: 1 in = 1,750 ft

Prepared by :
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Paint Lick, Kentucky 40461

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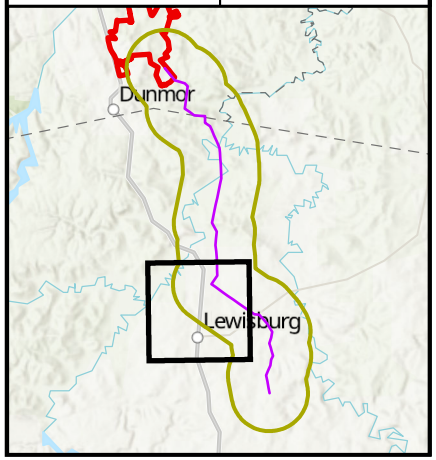

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FIGURE 2-12.1f:
Potential Bat Habitat in Transmission Line ROW for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- Potential Bat Habitat
- Right of Way
- Facility Project Area

0 1,125 2,250
US Feet

Scale: 1 in = 1,750 ft

Prepared by :
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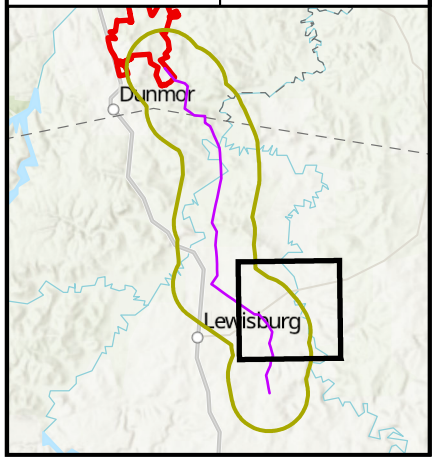

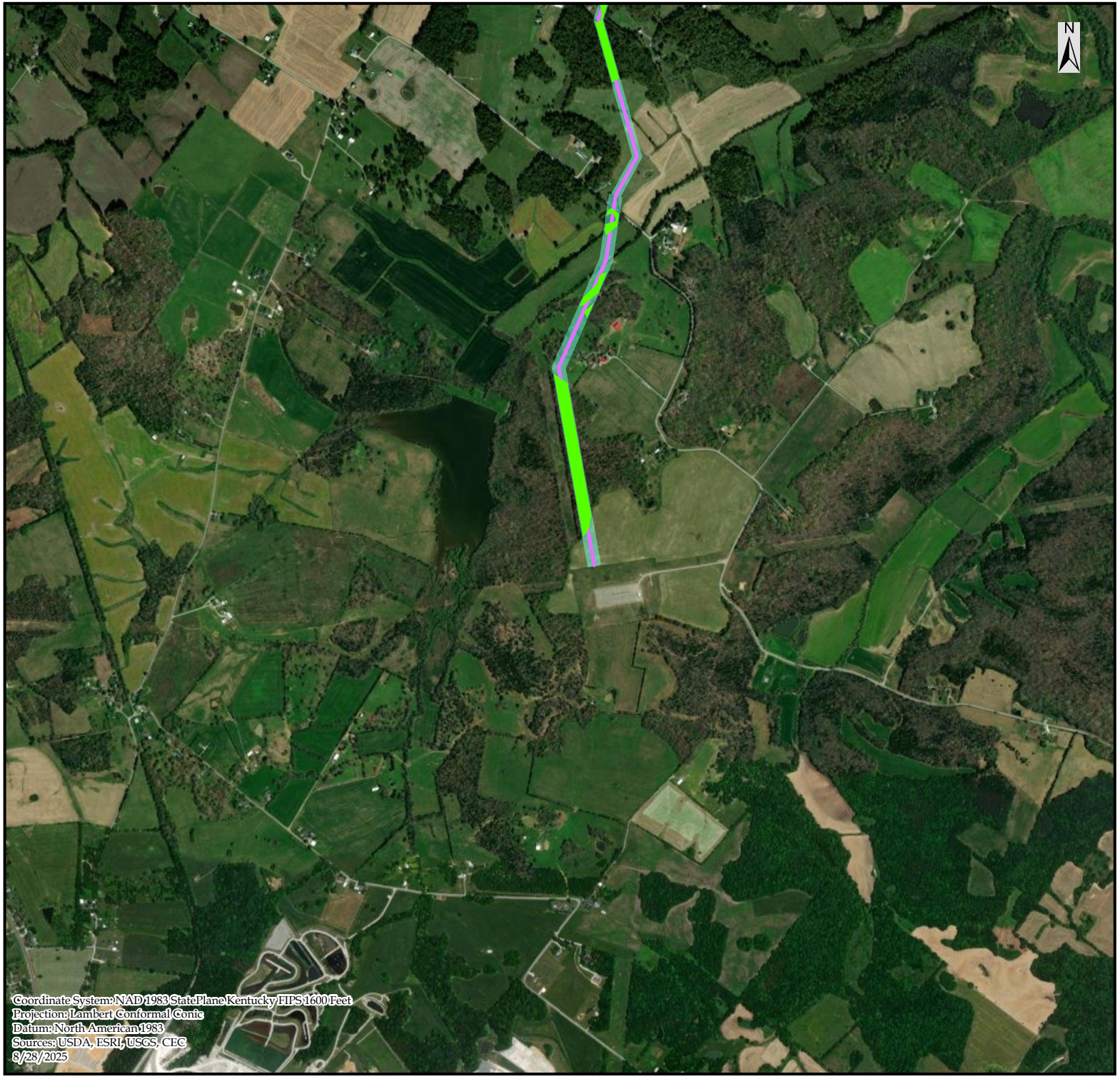

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FIGURE 2-12.1g:
Potential Bat Habitat in Transmission Line ROW for the Lost City Solar Project, Muhlenberg and Logan Counties, Kentucky.

Legend

- Transmission Centerline
- Potential Bat Habitat
- Right of Way
- Facility Project Area

0 1,125 2,250
US Feet

Scale: 1 in = 1,750 ft

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Paint Lick, Kentucky 40461

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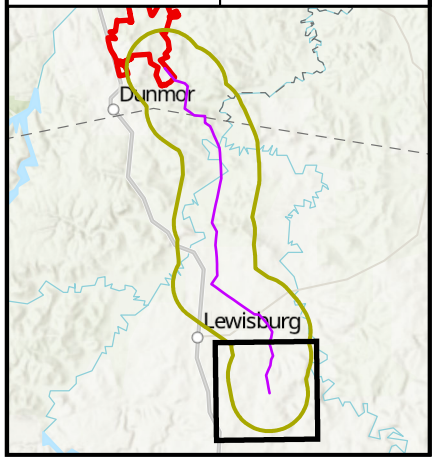

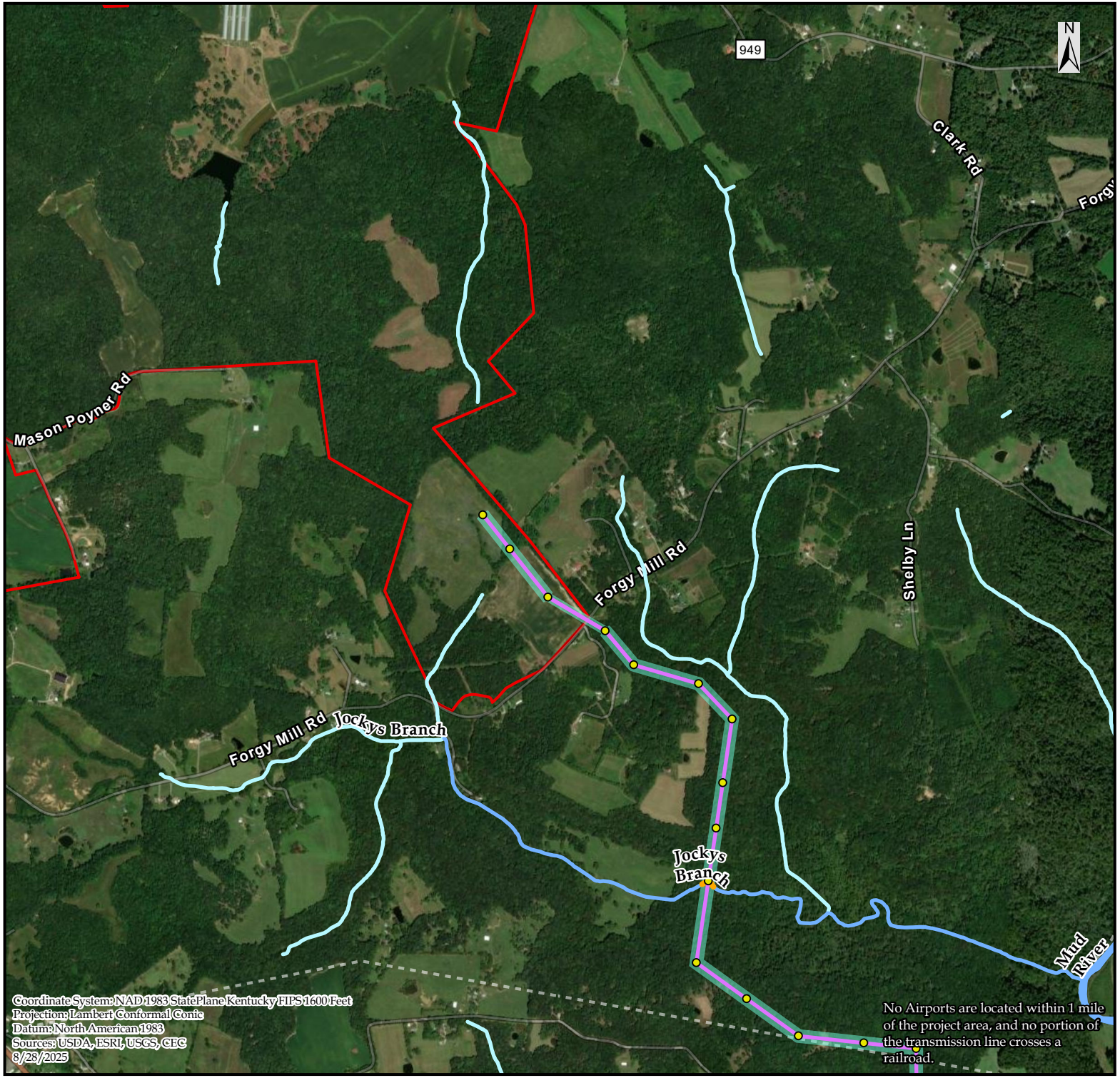

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FIGURE 2-12.2:
Potential Freshwater Mussel Habitat for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Transmission Line Pole
- Transmission Centerline
- Potential Habitat Stream Crossing
- Intermittent Stream
- Perennial Stream
- Perennial Waterway
- Right of Way
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

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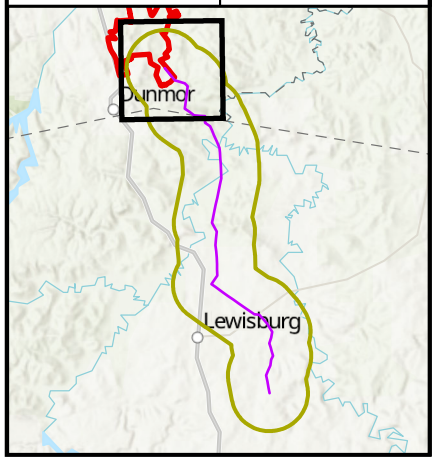

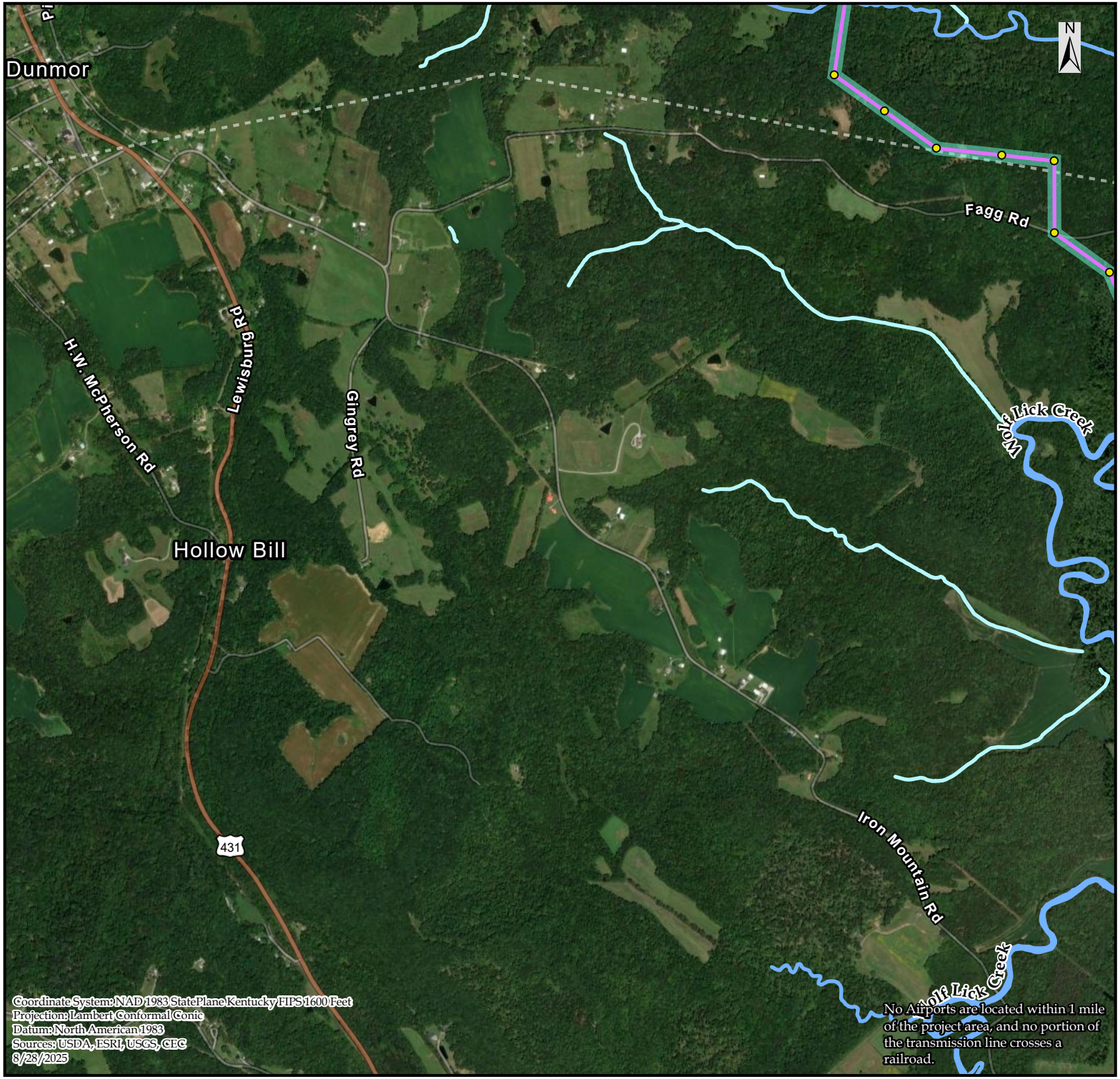

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FIGURE 2-12.2a:
Potential Freshwater Mussel Habitat for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Transmission Line Pole
- Transmission Centerline
- Potential Habitat Stream Crossing
- Intermittent Stream
- Perennial Stream
- Perennial Waterway
- Right of Way
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

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Paint Lick, Kentucky 40461

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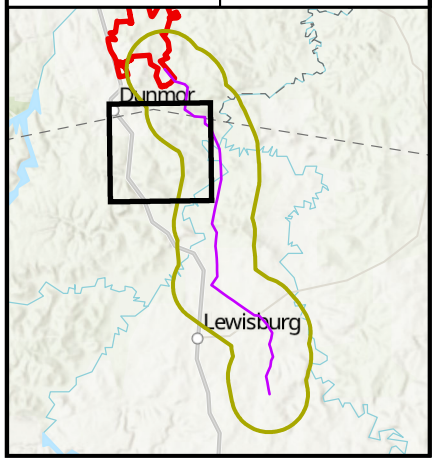

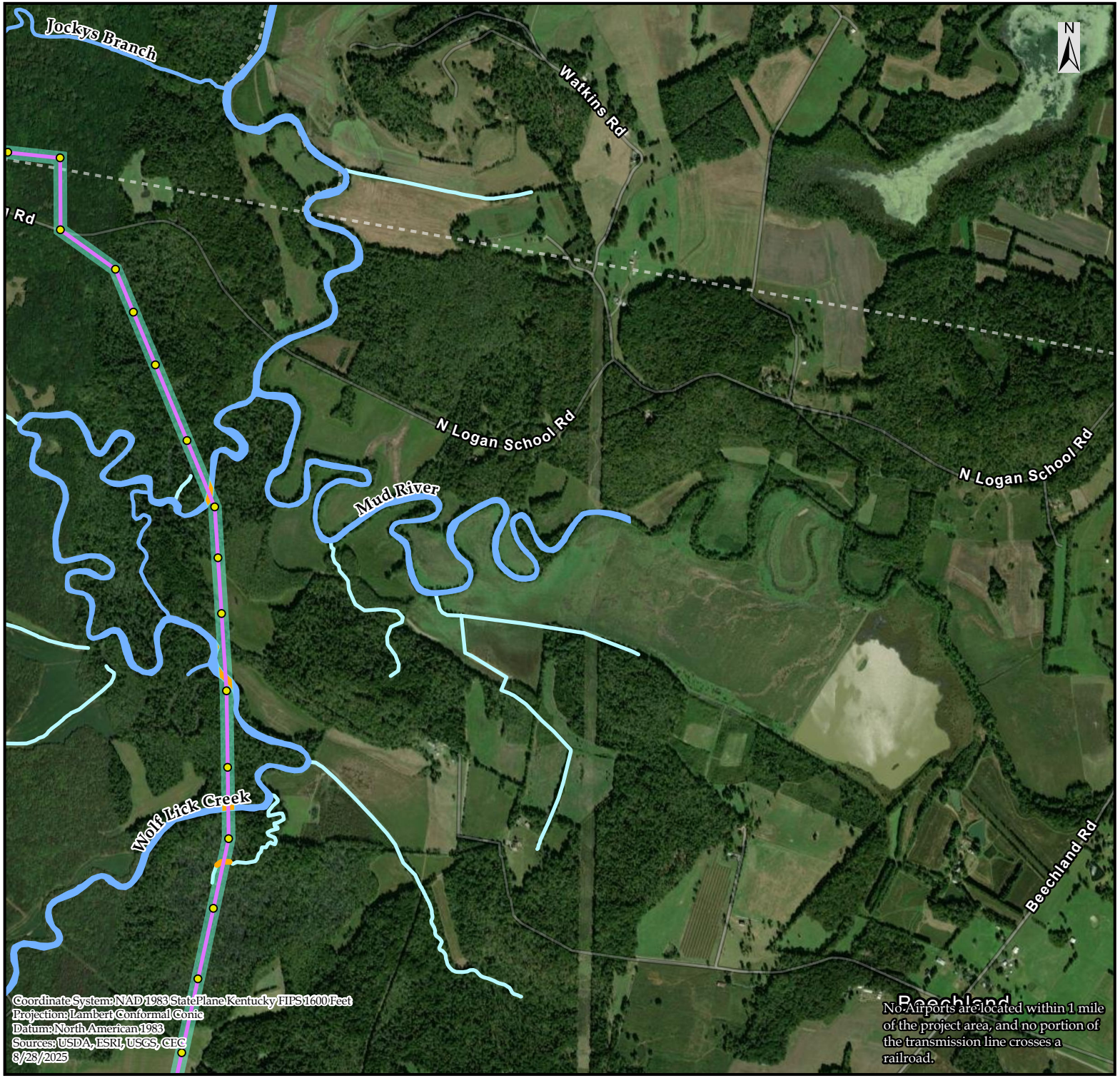

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Lost City Renewables LLC

FIGURE 2-12.2b:
Potential Freshwater Mussel Habitat for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Transmission Line Pole
- Transmission Centerline
- Potential Habitat Stream Crossing
- Intermittent Stream
- Perennial Stream
- Perennial Waterway
- Right of Way
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

Prepared by :
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Paint Lick, Kentucky 40461

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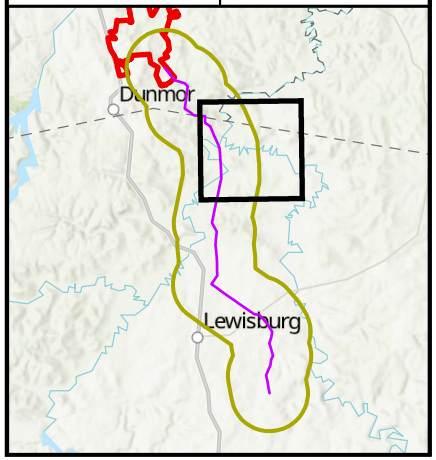

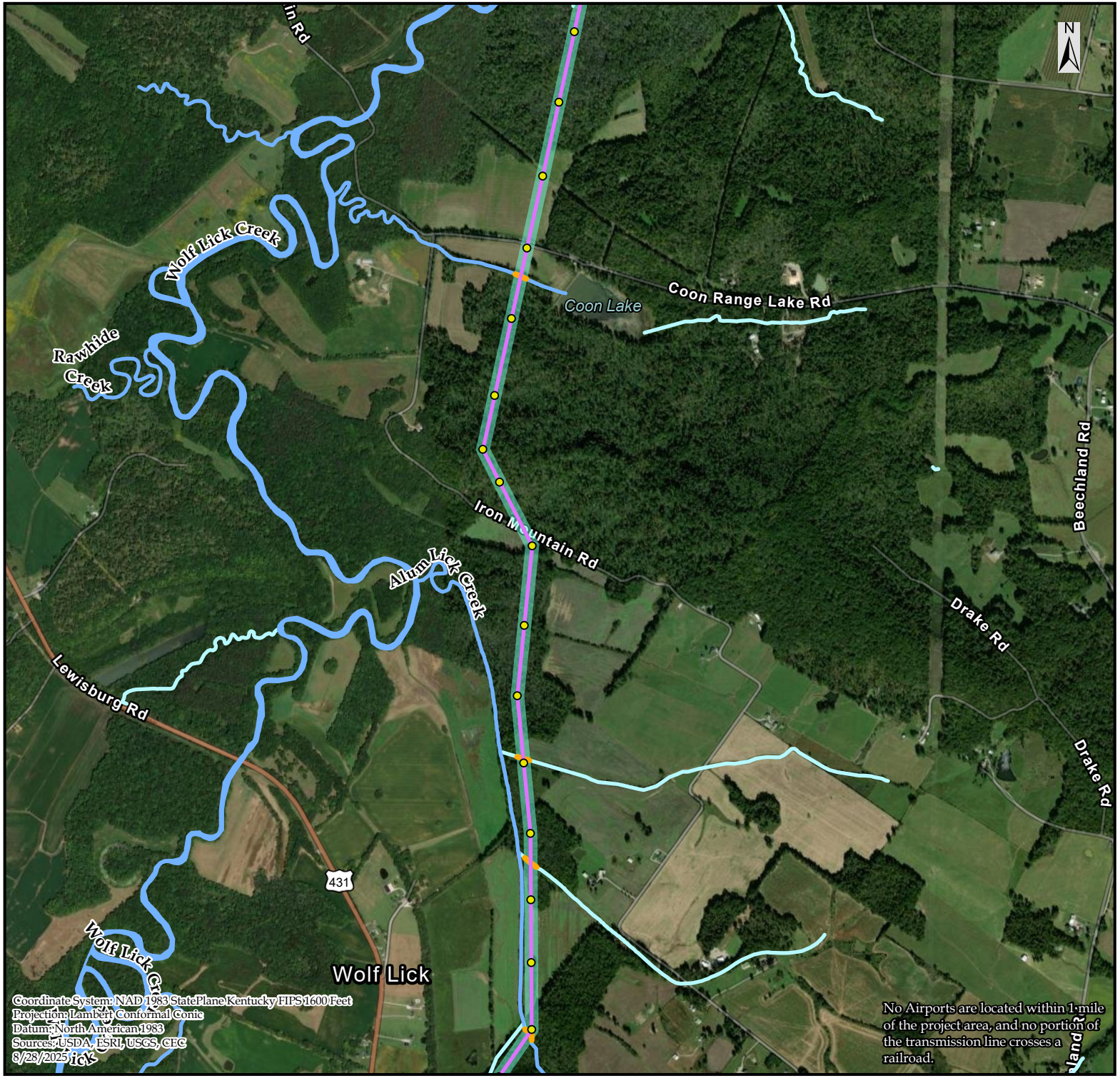

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Prepared for:

Lost City Renewables LLC

FIGURE 2-12.2c:
Potential Freshwater Mussel Habitat for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Transmission Line Pole
- Transmission Centerline
- Potential Habitat Stream Crossing
- Intermittent Stream
- Perennial Stream
- Perennial Waterway
- Right of Way
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

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Paint Lick, Kentucky 40461

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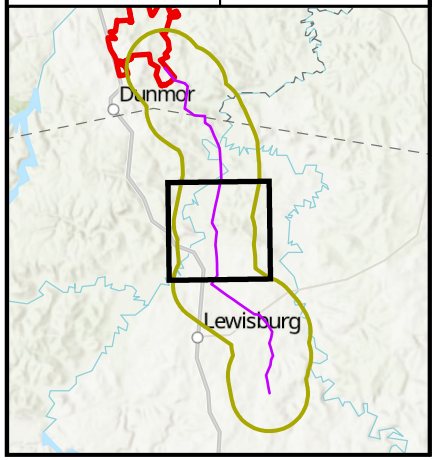

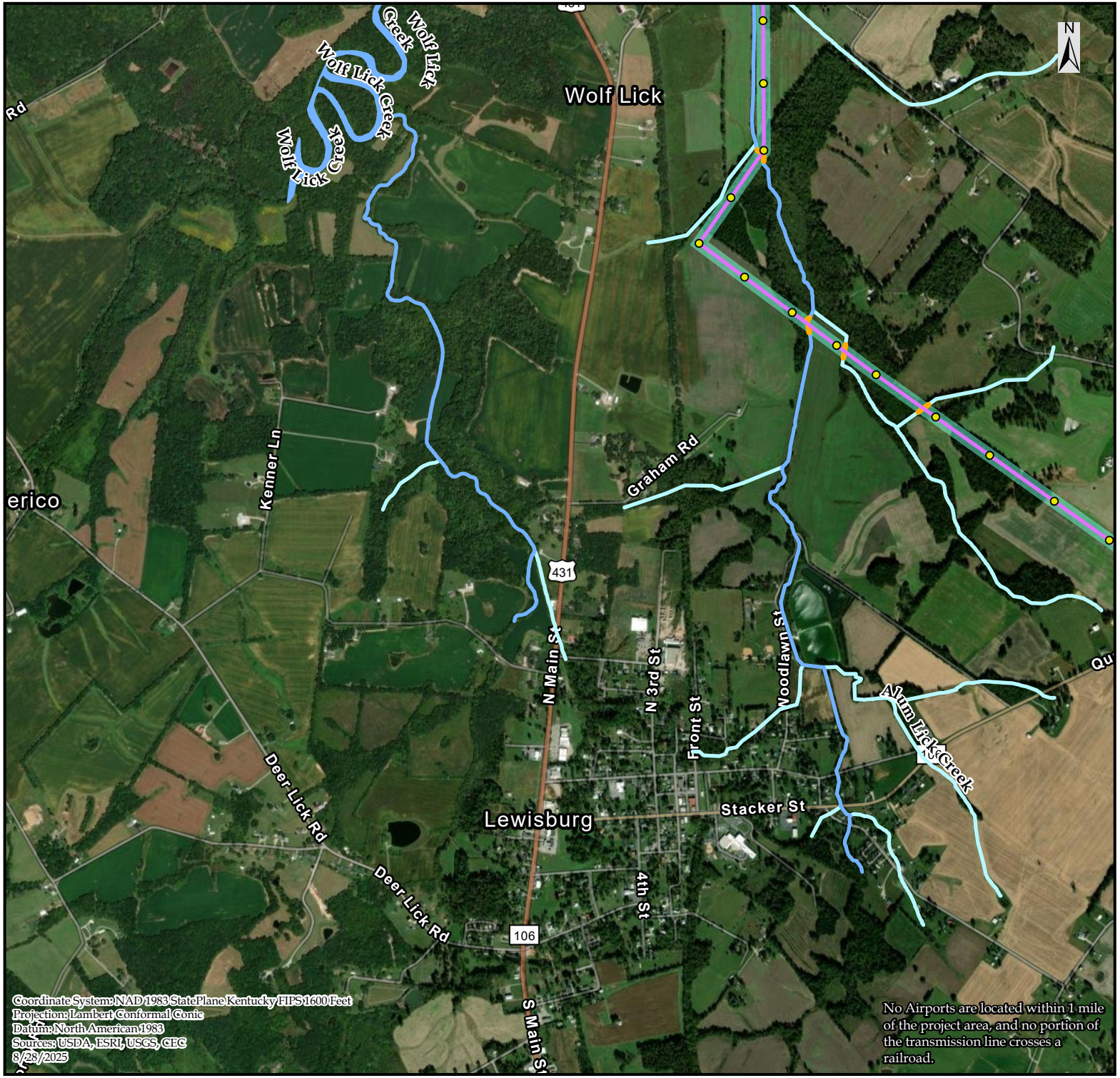

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Prepared for:

Lost City Renewables LLC

FIGURE 2-12.2d:
Potential Freshwater Mussel Habitat for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Transmission Line Pole
- Transmission Centerline
- Potential Habitat Stream Crossing
- Intermittent Stream
- Perennial Stream
- Perennial Waterway
- Right of Way
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

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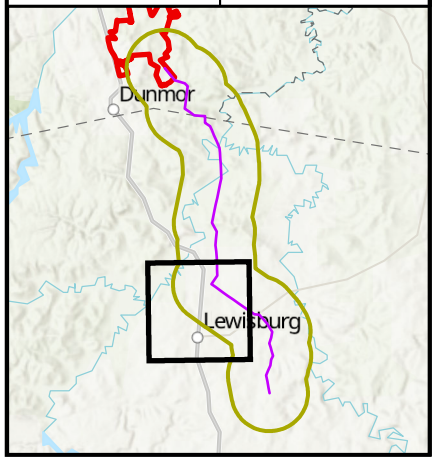

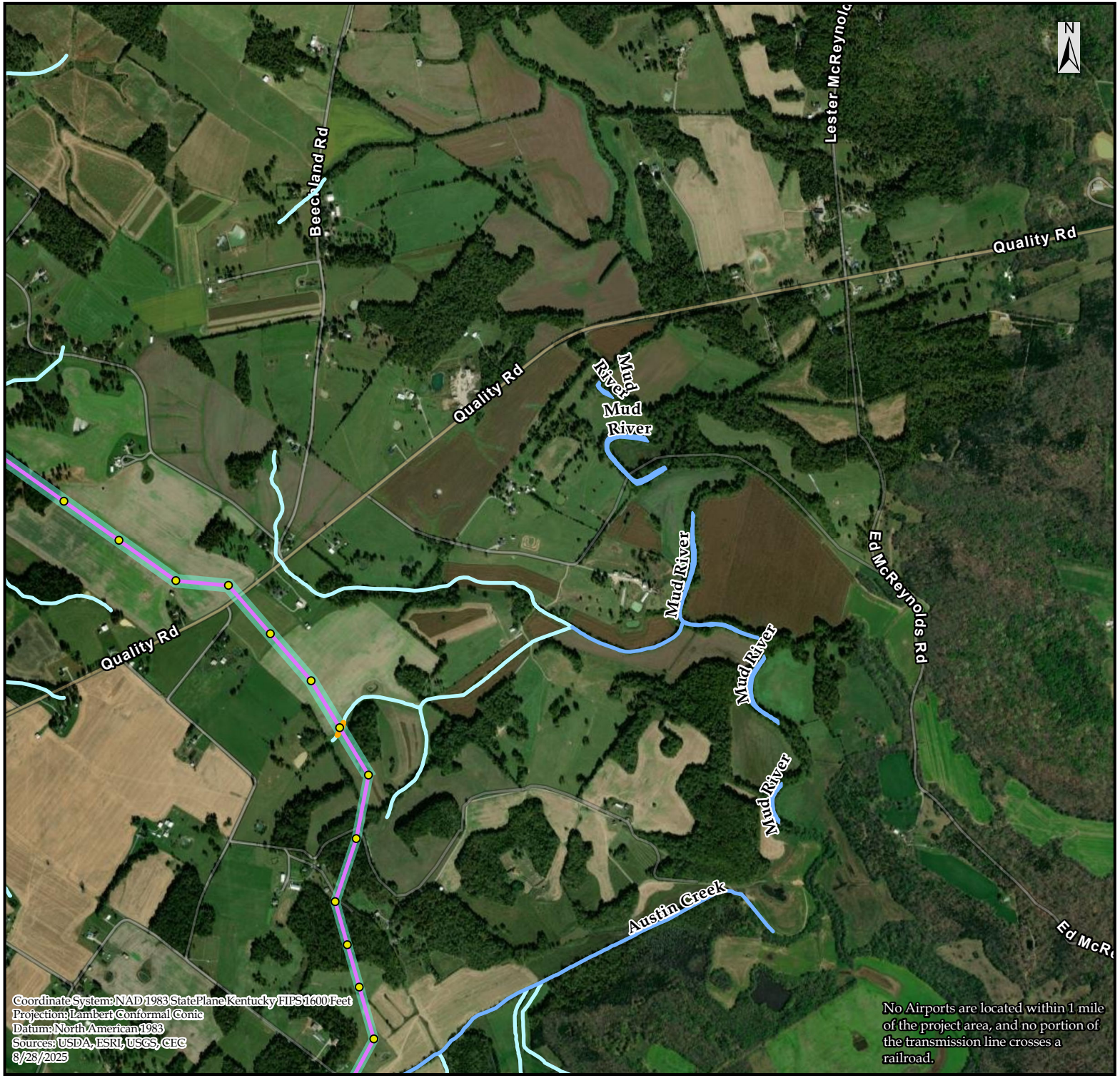

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Prepared for:

Lost City Renewables LLC

FIGURE 2-12.2e:
Potential Freshwater Mussel Habitat for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Transmission Line Pole
- Transmission Centerline
- Potential Habitat Stream Crossing
- Intermittent Stream
- Perennial Stream
- Perennial Waterway
- Right of Way
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

Prepared by :
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P.O. Box 73
Paint Lick, Kentucky 40461

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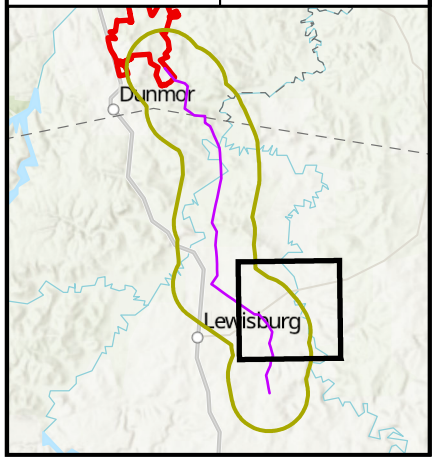
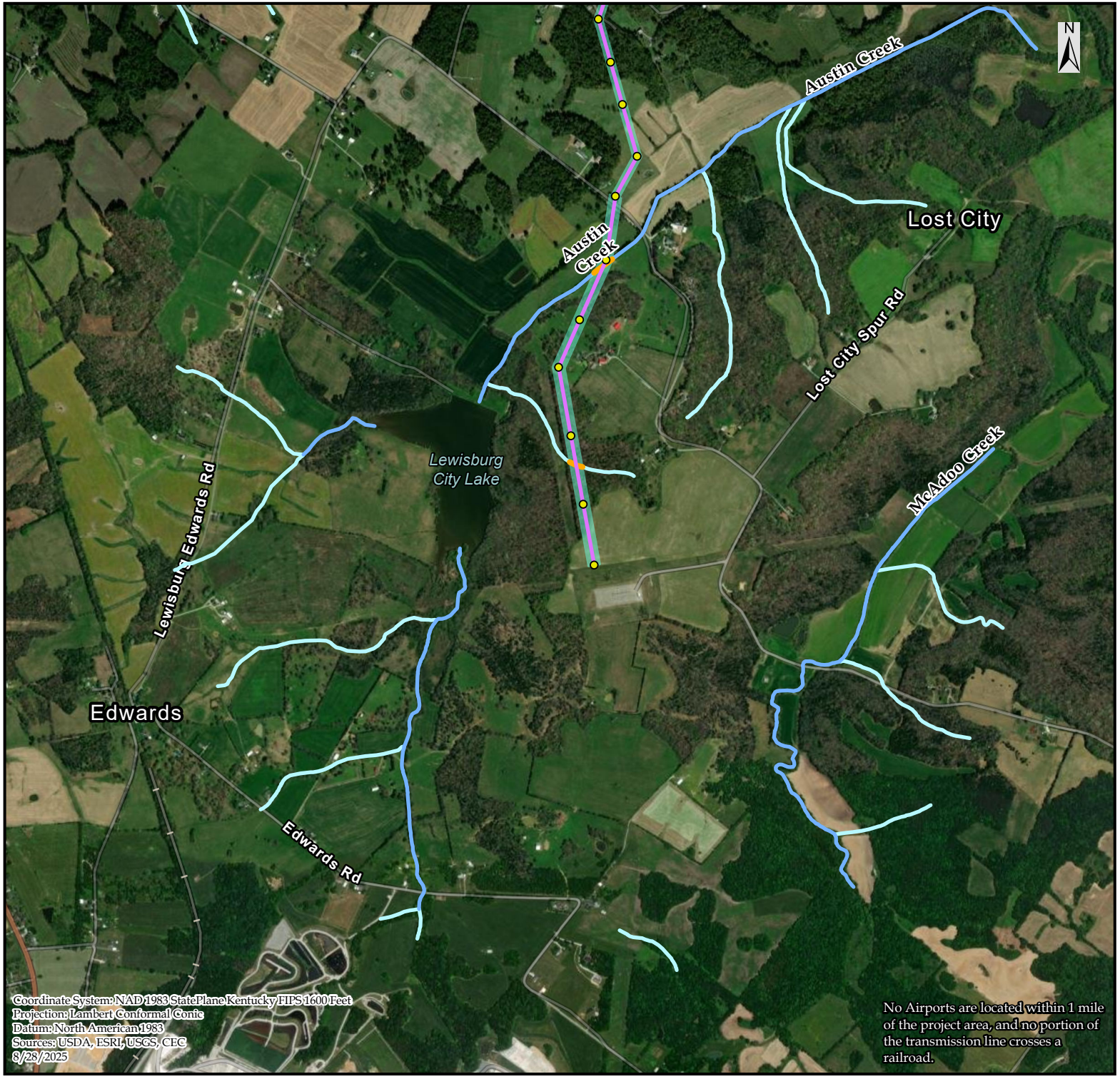
Checked by:	MM	Revision:	01





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Prepared for:

Lost City Renewables LLC

FIGURE 2-12.2f:
Potential Freshwater Mussel Habitat for the Lost City Solar Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Transmission Line Pole
- Transmission Centerline
- Potential Habitat Stream Crossing
- Intermittent Stream
- Perennial Stream
- Perennial Waterway
- Right of Way
- Facility Project Area

0 875 1,750
US Feet

Scale: 1 in = 1,750 ft

Prepared by :

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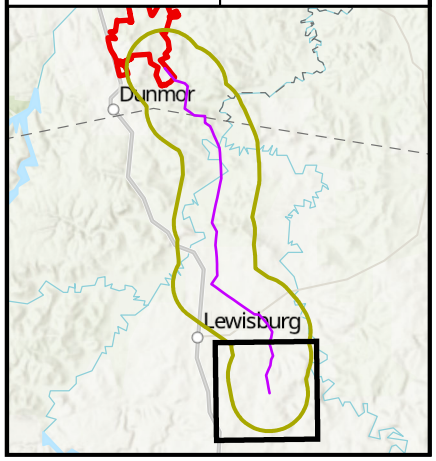
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	8/28/2025
Checked by:	MM	Revision:	01



COPPERHEAD
ENVIRONMENTAL CONSULTING

Summer 2024 Bat Mist-Net Survey for the Lost City Solar Transmission Line, Logan and Muhlenberg Counties, Kentucky

IPaC Consultation Code: 2024-0063692

Submitted To:

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Kentucky Field Office
US Fish and Wildlife Service

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On Behalf Of:

Lost City Renewables, LLC

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15 November 2024

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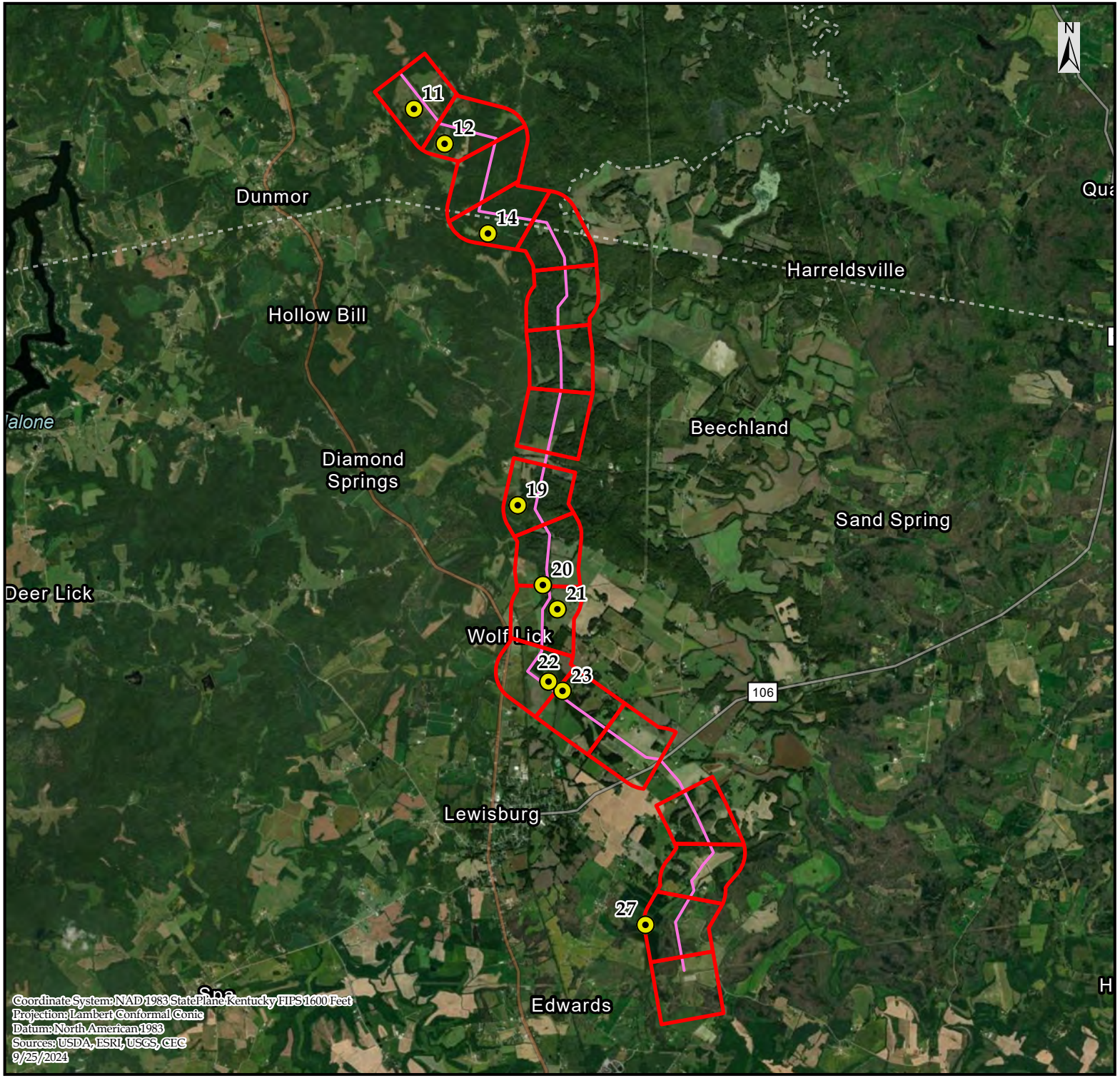
PROJECT BACKGROUND

Copperhead Environmental Consulting, Inc. (Copperhead) was contracted by Lost City Renewables, LLC (Lost City) to conduct a bat mist-net survey for the Lost City Solar Transmission Line Project (Project) in Logan and Muhlenberg counties, Kentucky (Figure 1). The goal of this survey was to document the presence or probable absence of the federally endangered Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*), the proposed federally endangered tricolored bat[1] (*Perimyotis subflavus*), and the little brown bat[2] (*Myotis lucifugus)* (collectively referred to as target species) within the Project area of investigation (AOI) during the summer maternity season. Additionally, any target species captured would be radio-tagged to determine their roost locations to inform Project design. Based on mapping provided by Lost City, the AOI contains 18 kilometers of suitable forested bat habitat.

A Study Plan was submitted to the US Fish and Wildlife Service (USFWS) Kentucky Field Office and the Kentucky Department of Fish and Wildlife Resources (KDF&WR) on 24 July 2024. Study Plan approval was received from both agencies on 25 July (Appendix A). Surveys were conducted under USFWS Federal Fish and Wildlife Permit #ES94849B-2 and #ES56515D-1, and KDF&WR Scientific Wildlife Collecting Permit SC2411004, SC2411005, SC2411008, SC2411010, SC2411016, SC2411018, SC2411176.

[1] On 14 September 2022, USFWS announced a proposal to list the tricolored bat as endangered under the Endangered Species Act (USFWS 2022).

[2] The USFWS is currently conducting a discretionary status review of the little brown bat to determine if listing under the Endangered Species Act is warranted (USFWS 2024a).



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Prepared for:

Lost City

FIGURE 1:
Site Overview of the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Mist Net Site
- Project Centerline
- Survey Kilometer

0 0.5 1
Miles

Scale: 1 in = 1 mi

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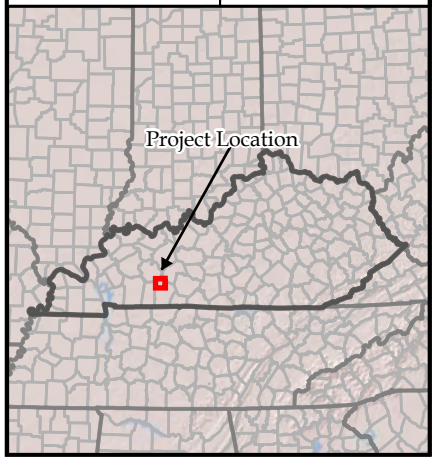
Drawn by:	TC	Date:	9/25/2024
Checked by:	ZB	Revision:	02



METHODOLOGY

Level of Effort/Site Selection

Mist-net surveys were implemented in accordance with the USFWS 2024 Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines (USFWS 2024b; Guidance). Based on the Guidance for the required number of net nights (nn) for linear projects, the requisite mist-net survey level of effort (LOE) for Indiana bats is 2 nn per kilometer of forested habitat, and the requisite LOE for northern long-eared bats in non-coastal areas is 4 nn per kilometer of forested habitat. The Guidance states that the northern long-eared bat survey LOE is also adequate to determine the presence or probable absence of tricolored bats during the 2024 survey season. To complete a presence or probable absence survey for all four target species, the higher northern long-eared bat survey LOE (4 nn per kilometer of forest) was used during the mist-net survey. Based on the number of suitable forested bat habitat kilometers within the Project AOI (18 kilometers), 72 nn of survey (4 nn of survey conducted at 18 survey sites) was proposed to be completed to ensure regulatory compliance for the Project. Proposed potential mist-net site locations were included in the Study Plan approved by USFWS; however, final mist-net sites were selected in the field.

Prior to field work, survey sites were renumbered 11-28. Due to limited landowner permission after the initiation of the field work, only nine (36 nn) of the proposed 18 sites (72 nn) were surveyed during the summer of 2024. Sites surveyed include 11, 12, 14, 19, 20, 21, 22, 23, and 27.

Mist-Net Surveys

Prior to the survey, Copperhead biologists conducted field reconnaissance of the Project AOI to select mist-net locations best suitable for target species bat capture. Mist-nets were set up to maximize coverage of flight paths used by bats along suitable travel corridors, foraging areas, or drinking areas. Placement of mist-nets was based on the extent of canopy cover, presence of an open flyway, and forest conditions near the site. Mist-net locations and orientations were determined in the field to maximize target species captures by biologists permitted to survey for federally listed bats. Individual net locations were recorded using handheld GPS enabled tablets and mapped with ArcGIS Pro (v. 3.x ESRI, Redlands, CA).

One two-person survey team (consisting of a federally and state permitted biologist and one technician) surveyed a maximum of two net sets each night. Each site was surveyed for two full calendar nights of survey. Low visibility, high-quality, nylon nets, 4 to 18 meters (~13 - 59 feet) in length and 5.2 to 7.8 meters (~17 – 26 feet) high were used for each net set. Nets were deployed at sunset each night, left open for at least five hours, and checked every 10 minutes. Disturbance near the nets was kept to a minimum between checks. Weather data, including temperature, wind speed, and cloud cover, were recorded for each site on an hourly basis to ensure compliance with the Guidance. Mist-net surveys cannot be conducted during inclement weather (i.e., temperatures <50°F, precipitation/heavy fog that exceeds 30 minutes, or sustained wind speeds greater than 9

mph that exceeds 30 minutes). Therefore, if inclement weather was encountered during the survey, mist-net survey efforts were suspended for that night and repeated on a subsequent night when weather conditions were suitable.

Bats were live-caught, processed within 30 minutes from the time of capture, and released unharmed near the point of capture. Data recorded for each individual bat included time of capture, capture net ID, capture height, species, sex, age class, reproductive condition, mass, and forearm length.

Diurnal Radio-Telemetry

Target species captured during the mist-net survey were fitted with unique frequency radio-transmitters to determine locations of day roosts. Biologists searched for each radio-tagged bat for a minimum of four hours per day (or until each bat was located) for a period of seven days. The transmitters were Holohil Systems Ltd. (Carp, Ontario, Canada) LB-2X (frequency 172.xxx) with a standard minimum lifespan of 12 days. The transmitters were tested before attachment and attached between the scapula of each bat using non-toxic surgical adhesive. Model TRX-1000S (Wildlife Materials Inc., Carbondale, Illinois, USA) tracking receivers and 172 FB 3- or 5-element Yagi directional antennas were used to locate day roosts used by radio-tagged bats.

Each located roost was photographed, and the location recorded using a handheld GPS enabled tablet. Data recorded for each individual roost tree included roost ID, tree species, location description, date first used by radio-tagged bat, diameter at breast height (DBH), tree height, roost height, micro-habitat used, decay state (as described by Thomas et al. [1979]), percent bark cover, percent bark cover usable by bats, tree ranking, percent canopy clover, habitat classification and plot characteristics (number of live trees, snags, total trees determined using a 10-factor prism). When a radio-tagged bat was found roosting on private property outside the Project AOI, and land access was not granted, the estimated location of the roost was determined using radio-telemetry triangulation techniques.

Emergence Count Survey

If an Indiana bat, northern long-eared bat, or little brown bat had been tracked to a roost, and land access was granted, two evening emergence count surveys would have been conducted. Per the Guidance, no emergence count surveys were conducted at tricolored bat roosts due to the difficulty of observing them emerge from their roosts.

White-Nose Syndrome and Safety Protocols

To minimize the transmission of White-nose Syndrome (WNS) between captured bats, all survey activities adhered to the March 2024 *National White-Nose Syndrome Decontamination Protocol* (WSDMWG 2024). All hard, non-porous netting equipment was sanitized with Isopropyl alcohol wipes (70%) prior to arrival and after each survey night; all other equipment was submersed in hot water (131°F) for a minimum of five minutes. Individual bats were kept in unused paper bags

while awaiting processing. Disposable latex gloves were worn over sanitized handling gloves and changed or sanitized following the handling of each bat. Additionally, biologists wore site dedicated clothing while handling bats. All non-disposable equipment (e.g., PESOLA® scales, rulers, calipers, etc.) coming into contact with bats were sanitized immediately following the handling of each bat. Bats were evaluated for potential WNS infection through wing scoring following the *Wing-Damage Index Used for Characterizing Wing Condition of Bats Affected by White-nose Syndrome* (Reichard 2008). All Copperhead employees coming in direct contact with bats had up-to-date rabies vaccinations.

COVID-19 Protocol

To minimize the potential for transmission of COVID-19, Copperhead conducted surveys in accordance with *Guidance for Fish and Wildlife Service Employees Engaging in Activities with Bats* (USFWS 2020), and our federal and state permit guidelines. In addition to the personal protective equipment identified in the March 2024 *National White-Nose Syndrome Decontamination Protocol*, biologists wore non-vented N95 masks while handling bats. Photographs of bats were taken for confirmation of species when required, but all unnecessary handling was reduced. Employees who had tested positive for COVID-19, or were suspected to have COVID-19, were not allowed to work on the Project until the most current CDC criteria for when infected persons can safely be around others were met. While in the field, personnel monitored themselves and each other for signs of COVID-19 infection. If any person had shown signs of infection, that person would have been isolated and returned home as soon as possible.

RESULTS

Mist-Net Surveys

Mist-net surveys were conducted at nine sites from 5 - 14 August 2024 (Table 1, Figure 1, Appendix B). Inclement weather at Site 20 and Site 21 during the night of 12 August resulted in these surveys nights being cancelled before completing five hours of effort. These surveys were repeated on subsequent nights under suitable weather conditions.

A total of 71 bats of five species were captured during the survey (Table 2). Eastern red bats (*Lasiurus borealis*) comprised 45% of total captures (n=32), big brown bats (*Eptesicus fuscus*) comprised 28% of total captures (n=20), evening bats (*Nycticeius humeralis*) comprised 23% of total captures (n=16), gray bats (*Myotis grisescens*) comprised 3% of total captures (n=2), and tricolored bats comprised 1% of total captures (n=1). Both federally endangered gray bats and the single tricolored bat were captured at Site 22 on 10 August (Table 3). Detailed mist-net site, capture and weather data are provided in Appendix C, mist-net site photographs are provided in Appendix D, and gray bat and tricolored bat photographs are provided in Appendix E.

Table 1. Mist-Net Site Locations Surveyed During the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Mist-Net Site Number	Survey Dates (2024)	Net Nights Completed	Latitude	Longitude	Site Location Description
11	7, 8 Aug	4	37.08406	-86.96831	Fence row creek north of Forgy Mill Rd.
12	7, 8 Aug	4	37.07500	-86.96124	Farm trail south of Forgy Mill Rd.
14	10, 11 Aug	4	37.04951	-86.95407	Forested section of Fagg Rd.
19	12, 13 Aug	4	37.02463	-86.94929	Forest east of Iron Mountain Rd.
20	12*, 13, 14 Aug	4	37.01650	-86.94558	Small woodlot southwest of Iron Mt. Rd.
21	12*, 13, 14 Aug	4	37.01528	-86.94475	Wood lot between Alum Lick Creek and Iron Mtn Rd.
22	10, 11 Aug	4	37.00506	-86.94482	Wooded corridor east of Lewisburg Rd.
23	10, 11 Aug	4	37.00404	-86.94371	Alum Creek, East of Lewisburg Rd.
27	5, 6 Aug	4	36.97054	-86.92825	Northwest corner of Lewisburg Lake

*Survey cancelled due to inclement weather

Table 2. Summary of Bat Captures During the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

	Adult					Juvenile				
	Male		Female			Male		Female		
Species	TD	NR	L	PL	NR	TD	NR	NR	UNK*	Total
Lasiurus borealis	5	2	-	-	3	-	7	13	2	32
Eptesicus fuscus	1	3	-	-	5	-	4	6	1	20
Nycticeius humeralis	5	1	-	-	2	2	1	4	1	16
Myotis grisescens	-	2	-	-	-	-	-	-	-	2
Perimyotis subflavus	-	-	-	-	-	-	-	1	-	1
Total	11	8	-	-	10	2	12	24	4	71

Eptesicus fuscus = big brown bat, *Lasiurus borealis* = eastern red bat, *Perimyotis subflavus* = tricolored bat, *Myotis grisescens* = gray bat, *Nycticeius humeralis* = evening bat
NR = non-reproductive, TD = testes descended, PL = post-lactating, L = lactating, UNK = Unknown
* Bat escaped or released prior to processing

Table 3. Summary of Listed Bat and Target Species Bat Captures During the Lost City Solar Transmission Line Project, Logan County, Kentucky.

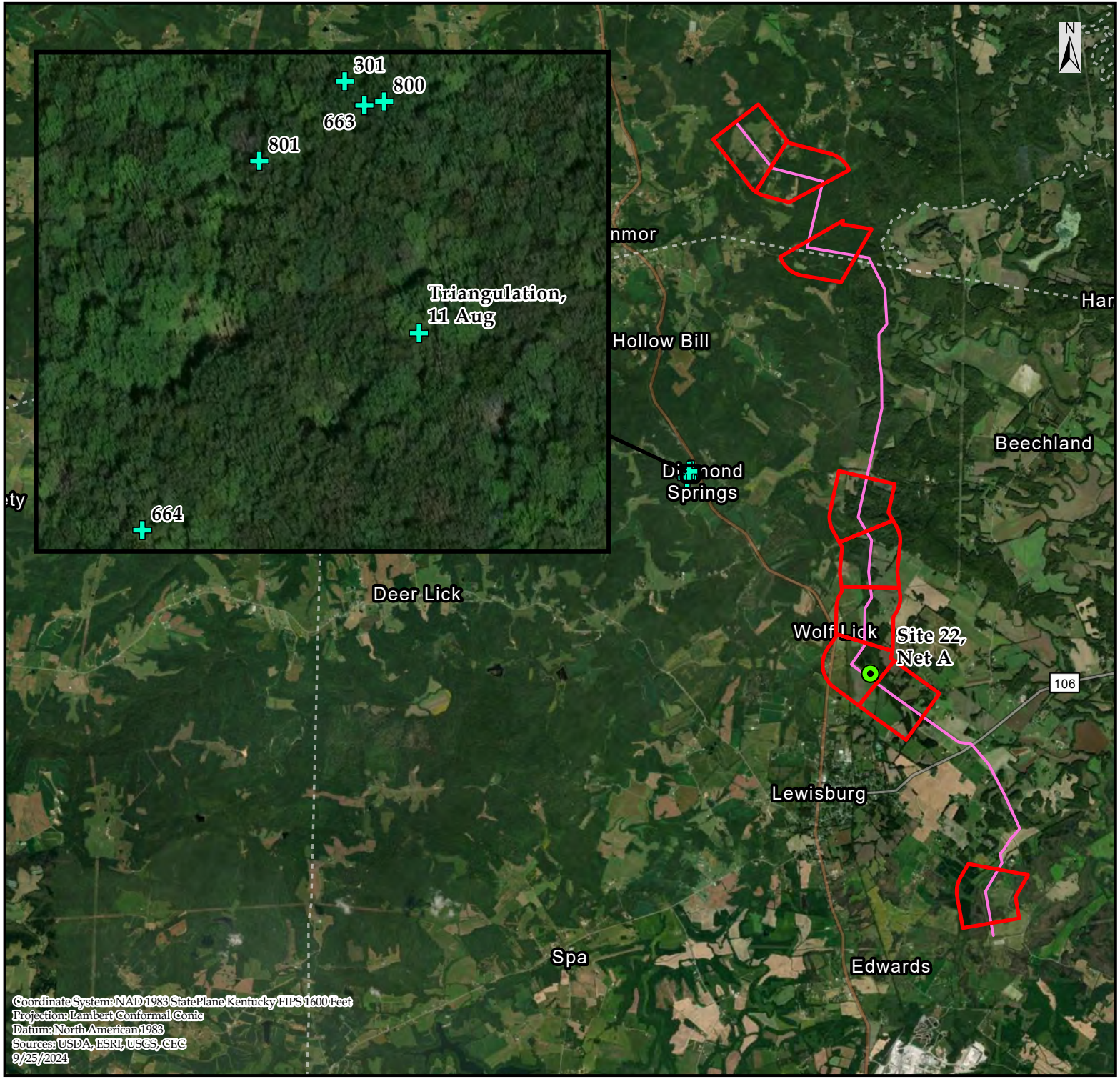
Bat Species	Capture Site Number	Capture Date (2024)	Age	Sex	Reproductive Status	Transmitter Freq. (172.xxx)	Band ID (KYF&W)
Perimyotis subflavus	22	10 Aug	Juvenile	Female	Non-reproductive	182	C21798
Myotis grisescens	22	10 Aug	Adult	Male	Non-reproductive	-	B26401
Myotis grisescens	22	10 Aug	Adult	Male	Non-reproductive	-	B26402

Diurnal Radio-Telemetry

One juvenile non-reproductive female tricolored bat (Bat 182) captured at Site 22 on 10 August 2024 was banded, fitted with radio-transmitter and tracked for seven days (11 – 17 August). Bat 182 was first located on 11 August approximately 4,668 meters northwest of the capture location and approximately 2,995 meters from the center line of the Project AOI. Due to the lack of landowner access, radio-telemetry triangulation techniques were used to determine the approximate roost location (37.03618, -86.98140). On 12 August, landowner access to this area was secured and Bat 182 was found roosting in a red oak (*Quercus rubra*) (RT 301) approximately 81 meters northwest of the triangulated roost locations from the previous day. On 13 August, Bat 182 was found to have moved approximately 152 meters southwest to roost in a southern red oak (*Quercus falcata*) (RT 664). On 14 August, Bat 182 was found to have moved approximately 148 meters northeast to roost in a sugar maple (*Acer saccharum*) (RT 663). On 15 August, Bat 182 was found to have moved approximately 6 meters east to roost in a red oak (RT 800). On 16 August, Bat 182 was found to have moved approximately 43 meters southwest to roost in a red oak (RT 801). On 17 August, a Copperhead biologist searched for Bat 182 for four hours, but it was never heard. A summary of radio-tracking results is provided in Table 4. In total, radio-telemetry efforts documented five roosts used by Bat 182 (Figure 2, Table 5). Detailed roost tree data are provided in Appendix F and roost tree photographs are provided in Appendix G.

Table 4. Daily Roost Use by Radio-Tagged Tricolored Bat 182 During the Lost City Solar Transmission Line Project, Logan County, Kentucky.

Bat ID	11 August	12 August	13 August	14 August	15 August	16 August	17 August
182	Triangulated at 37.03618, -86.98140	RT 301	RT 664	RT 663	RT 800	RT 801	Unable to locate bat after four hours of searching



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Prepared for:

Lost City

FIGURE 2:
Bat 182 Roost Locations for the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Roost Tree Location
- Capture Site
- Project Centerline
- Survey Kilometer

0 4,000 8,000
US Feet

Scale: 1 in = 7,858 ft

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Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	9/25/2024
Checked by:	ZB	Revision:	01

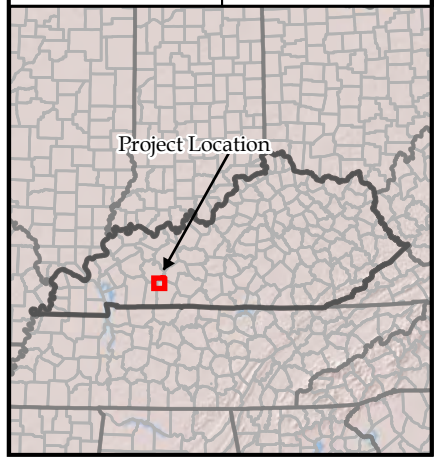

Table 5. Roost Locations Used by Radio-Tagged Tricolored Bat 182 During the Lost City Solar Transmission Line Project, Logan Counties, Kentucky.

Roost ID	Date First Used (2024)	Tree Species	Latitude	Longitude	Tree Decay State	DBH (cm)	Tree Height (m)	Percent Bark Cover
301	12 August	*Quercus rubra*	37.03688	-86.98167	Live	48.1	26	100
664	13 August	*Quercus falcata*	37.03562	-86.98235	Live	85.3	18	100
663	14 August	*Acer saccharum*	37.03681	-86.98160	Live	41.6	17	100
800	15 August	*Quercus rubra*	37.03682	-86.98153	Live	58.2	21	100
801	16 August	*Quercus rubra*	37.03665	-86.98196	Live	34.8	17	100

Habitat

The Project AOI is located southeast of Penrod, and northwest of Cooperstown, Kentucky, and consists of a variety of habitats including residential and commercial farming property, agricultural fields, mowed fields, fallow fields, and forested areas. A summary of habitat at each of the mist-net survey sites is provided in Table 6.

Table 6. Habitat Classifications for the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Site ID	Roost Habitat[1]	Water Resources[2]	Forest Structure[3]	Land Cover[4]	Dominant Vegetation
11	Poor	Moderate	Poor	Poor	*Carya glabra, Fagus grandifolia, Juglans nigra, Liquidambar styraciflua, Populus deltoides, Quercus falcata, Quercus palustris, Ulmus rubra*
12	Moderate	Poor	Moderate	Optimal	*Carya ovata, Acer rubrum, Acer saccharum, Liquidambar styraciflua, Juniperus virginiana*
14	Moderate	Poor	Optimal	Optimal	*Acer saccharum, Carya cordiformis, Celtis occidentalis, Liriodendron tulipifera, Quercus rubra, Fagus grandifolia*
19	Moderate	Poor	Moderate	Optimal	*Acer saccharum, Carya ovata, Ostrya virginiana, Liriodendron tulipifera, Quercus rubra, Quercus alba*
20	Moderate	Poor	Poor	Poor	*Quercus rubra, Acer rubrum, Gleditsia triacanthos, Ulmus rubra, Carya spp.*
21	Moderate	Optimal	Optimal	Moderate	*Acer rubrum, Liquidambar styraciflua, Ostrya virginiana, Populus deltoides, Ulmus rubra*
22	Optimal	Moderate	Moderate	Moderate	*Juniperus virginiana, Celtis occidentalis, Quercus muehlenbergii, Ulmus rubra, Carya ovata*
23	Optimal	Optimal	Moderate	Moderate	*Acer negundo, Aesculus glabra, Celtis occidentalis, Juglans nigra, Ulmus americana*
27	Poor	Moderate	Moderate	Moderate	*Acer negundo, Juglans nigra, Juniperus virginiana, Ulmus rubra*

[1]Roost Habitat - Poor: No or few snags >= ~5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc.); Moderate: Snags with sloughing bark or other roost features present ~5-15-inch DBH within 1000 feet of forested areas; Optimal: Snags with sloughing bark or other roost features present >~15-inch DBH within 1000 feet of forested areas. [2]Water Resources - Poor: bat drinking resources not present at the site; Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource; Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available. [3]Forest Structure - Poor: Habitat even aged and young. Trees smaller than 5-inch DBH. Understory growth cluttered and restricts flying/foraging. Hardwoods are absent or stand is monoculture; Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15" DBH may be present but rare; Optimal: Mature forest. Diverse age classes of trees present. Trees > 15-inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and gaps that facilitate bat foraging. [4]Land Cover- Poor: Area surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees; Moderate: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas; Optimal: Area is largely forested. Wooded stands are connected to other wooded stands via wooded stream, fence row, or other wooded corridor.

CONCLUSIONS

Due to limited landowner access, nine (36 nn; sites 11, 12, 14, 19, 20, 21, 22, 23, and 27) of the proposed 18 sites (72 nn) were surveyed during the summer of 2024. The remaining survey kilometers (sites 13, 15, 16, 17, 18, 24, 25, 26, and 28) were not surveyed in accordance with the Guidelines and therefore presence/probable absence survey results do not apply to these kilometers of the Project AOI.

During the mist-net survey, one tricolored bat and two gray bats were captured at Site 22 towards the center of the Project AOI. Radio-telemetry efforts documented a total of five tricolored bat roost trees located outside the western boundary of the Project AOI (Table 5, Figure 2). No Indiana bats, northern long-eared bats, or little brown bat bats were captured during the mist-net survey at sites 11, 12, 14, 19, 20, 21, 22, 23, or 27. This suggests these species are not likely present within these survey kilometers during the maternity season or are present in numbers too low to be detected by approved USFWS protocols. According to the Guidance, probable absence results for federally listed bat species are valid for up to five years (USFWS 2024b).

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APPENDIX A

US Fish and Wildlife Service Correspondence

U.S. Fish and Wildlife Service

Study Plan Form for Bat Surveys and Monitoring (v. 2.1)[1]

PROJECT & SURVEY INFORMATION

Project Name: Lost City Solar (Transmission Line)

Proposed Survey Start Date: 1 August 2024

Project Proponent's Name (e.g., client/company/institution): Lost City Renewables, LLC

Project Location: State(s): Kentucky

County(s): Muhlenberg

Latitude: 37.03071

Longitude: -86.94600

REQUIRED: Attach or provide links to Google Earth® KMZ files (preferred) and/or shapefiles (mapping must show project boundaries, impacted forest habitat (if known) and all proposed survey sites)
Files are attached: Yes ☑ No ☐
File Links: _____

Project Summary. In the space provided below, please provide a description of the proposed action, including any activities that will permanently or temporarily alter the current environment and existing habitat features.

Lost City Renewables, LLC plans to develop a electric transmission line for their proposed solar generating facility near the town of Penrod, Kentucky in Muhlenberg County. Development is planned to occur in non-forested and forested areas throughout the Project LOD. The actual amount of tree clearing is not yet known, and will depend on the final Project design and layout.

CONTACT INFORMATION

Project Manager/Primary Point of Contact (POC): Zachary Baer

Phone: 724-549-6739

Field Survey Crew Leader (if different from POC): Zachary Baer

Cell Phone: 724-549-6739

Institution/Company Name: Copperhead Environmental Consulting, Inc.

Mailing Address: 471 Main Street, P.O. Box 73, Paint Lick, KY 40461

POC Email Address: zbaer@copperheadconsulting.com

USFWS Sec. 10(a)(1)(A) Permit No.(s) (if applicable): ES94849B-2; ES25612A-2; ES56515D-1

State Permit No.(s) (if applicable): see additional survey information section below

[1] Unless otherwise directed by the Service, surveyors may complete this fillable form, in lieu of a traditional narrative format, and submit it (and supporting files) to the Ecological Services Field Office in the state(s) where the work is to be completed (https://www.fws.gov/our-facilities). Use of this form is not a requirement at this time. Our goal is to improve pre-survey coordination and to expedite the Field Office review and approval process. Please submit your study plan at least 15 working days in advance of your proposed survey start date. Suggestions for improving this document may be sent to R4_Bat_Survey_Guidance@fws.gov.

Have project proponents been informed that abiding by protective time-of-year restrictions (where available) may be sufficient to avoid take of federally listed bats and (in some cases) may negate the need for a bat survey? Yes☑ No☐

Have project proponents been informed that the Service does not require presence/probable absence surveys for federally listed species and that presence can be assumed in a project area containing suitable habitat? Yes☑ No☐

Will this survey be conducted on private or public lands? *(Check both if applicable)*: Private☑ Public☐

Has permission of all necessary landowners/managing agencies been obtained? Yes☑ No☑

If no, explain: Landowner permission will be secured prior to survey within each survey kilometer

Does this project have a federal nexus[2]? Yes☑ No☐ Unsure☐

If yes, explain: Project may require US Army Corps of Engineers 404 permit

IPaC[3] Consultation Code (if applicable): 2024-0063692

Purpose of Survey: Official P/A Survey ☑ Research ☐ Monitoring ☐
Educational Outreach/Training Other: _____

Survey Target Species: Indiana bat (IBAT) ☑ Northern long-eared bat (NLEB) ☑
Tricolored bat (TCB) ☑ Other: Little brown bat

Has a Phase-1 Habitat Assessment* of the project area been conducted? Yes☑ No☐
If yes, how was the habitat assessment conducted? Field☐ Desktop☑ Combo☐
*(*if available, attach a written report)*

Is suitable habitat[4] present (or assumed present) for all "target" species? Yes☑ No☐

If no, explain: _____

Does this project fall within the outer-tier[5] of any "target" species known home range? Yes☐ No☐ Unsure☑

If yes, which species: _____

Project Configuration

Is this project **linear** (>1 km in total length)? Yes☑ No☐ Combo☐ Unsure☐

If yes, how many 1-km sections containing suitable IBAT/NLEB habitat will be impacted? 18

Is this project **non-linear**? Yes☐ No☑ Combo☐ Unsure☐

If yes, how many acres of suitable IBAT/NLEB habitat is in the overall project area? _____

If yes, how many acres of suitable IBAT/NLEB habitat will be directly impacted/cleared? _____

PROPOSED METHODS & SURVEY LEVEL OF EFFORT[6]

ACOUSTICS

Total number of detector sites proposed to be surveyed: 0 Number of detector nights/site: N/A

[2] A project or action that is carried out, authorized, funded, and/or permitted by a federal agency.
[3] https://ipac.ecosphere.fws.gov/
[4] See Appendix A of the Guidelines regarding suitable habitat definitions.
[5] See Appendix G of the Guidelines if you are unclear what the out-tier of a known range includes.
[6] Survey level of effort (acoustic or netting) must be spread over at least two calendar nights/survey site.

Total number of detector nights for entire survey: _____

Total proposed number of calendar nights to complete the entire survey: _____

Detector(s) (Brand, Model): _____ Microphone(s): directional ☐ omnidirectional ☐

Recording Format: Full Spectrum ☐ Zero-Crossing ☐

FWS-Approved[7] Acoustic Bat ID Software: KPro vers.____ KPro Classifier, NA vers. ____ BCID vers.____
Other Candidate Programs (e.g., Sonobat) vers.: _____

Species to be included for automatic software ID classification analysis:

EPFU☐ CORA☐ COTO☐ LABO☐ LACI☐ LANO☐ LASE☐ TABR☐ MYCI☐ MYEV☐ MYGR☐ MYLU☑
MYLE☐ MYSE☑ MYSO☑ MYTH☐ MYVO☐ NYHU☐ PESU☑ Others:_____

Will qualitative analysis (i.e., manual vetting) be used? Yes☐ No☐ Unsure☐

Name(s) of qualified biologist(s) conducting qualitative/manual identifications (attach resume or link with qualifications):

_____

MIST-NETTING

Total number of net sites to be surveyed: 18 Total number of net nights/site: 4

Total number of net nights for entire survey (No. of sites X No. of net nights/site): 72

Total proposed number of calendar nights to complete the entire survey: 14

A) Maximum number of net set-ups that will be operated/checked (10-min interval) on a given calendar night at a given survey site: 2
B) Minimum Number of personnel present to operate/check X (see A) net set-ups on a given site: 2
C) Proposed Staffing Rate (A divided by B): 2

Staffing Rate

Number of Section 10-permitted biologists per net site (or state-permitted in USFWS R5): 1

Do you propose to band bats? Yes☑ No☐

If yes, please answer the following:

What species will be banded? COTO☐ MYGR☐ MYLU☑ MYSE☑ MYSO☑ PESU☑
Others:_____ All captured bats:
If banding *Myotis* sp. or PESU, specify band size: 2.4-PESU 2.9-Myotis
Describe your proposed bands (color and letter-numbers) and banding scheme: Silver KDFWR
Will banding pliers be used? Yes☑ No☐

Will any biological samples be collected from captured bats (e.g., guano, hair, swab, wing punch)? Yes☐ No☑

If yes, explain: _____

Name of institution or facility to conduct DNA analysis: _____

RADIO-TRACKING

Will any bats be radio-tagged and tracked? Yes☑ No☐

[7] https://www.fws.gov/media/automated-acoustic-bat-id-software-programs

If yes, please answer following:

Which species will be radio-tagged? Indiana, northern long-eared, tricolored, and little brown bats

Name of USFWS Section 10 permitted biologist(s) who will apply transmitter(s): see additional survey information below

Make/model and approximate weight of transmitter(s) to be used: Holohil, LB-2X, 0.27g

Manufacturer date and estimated life-span of transmitters to be used: 1 January 2023 or newer, 12 days

Frequency range (MHz) of transmitters (e.g., 150.xxx or 172.xxx): 172.xxx

If radio-tracking multiple targeted bats/species, what criteria will be used in selecting which bats will be tracked?
Up to two bats of each target species will be radio-tagged. Preference will be given to adult reproductive females and juvenile bats of each target species.

Will all radio-tagged bats be tracked (min. of 4-hrs. search effort/day) to their diurnal roosts for the minimum recommended period of 7 days? Yes☑ No☐

If no, explain: _____

Will night-time foraging data/telemetry be collected? Yes☐ No☑

Glue used for attaching transmitters: Type: Silicone-based Surgical Adhesive Name: Permatype

Manufacturer: Perma-Type Company, In Other: _____

EMERGENCE SURVEYS

After diurnal roost sites of radio-tagged bats are identified, will emergence surveys be conducted at each identified roost (assuming landowner permission is obtained)? Yes☑ No☐

If yes, how many emergence surveys/roost? maximum of two per roost

Have you identified a small number (e.g., ≤10) of potentially suitable roost trees* that you propose to conduct emergence surveys for? Yes☐ No☑

*(*If yes, provide photographs of each tree documenting that all of the tree can be observed by the surveyor along with coordinates (lat/long and/or KML/shapefile) of all trees to be surveyed.)*

POTENTIAL HIBERNACULA SURVEYS

Are you aware of any known hibernacula used by the target species within the project area itself or nearby?

Yes☐ No☑ Unknown☐

If yes or unknown, list sites or explain: _____

Has your desktop analysis identified any natural or man-made features that could be used as a hibernaculum by any of the target bat species? Yes☐ No☑ Unknown☐

If yes, underground features (e.g., caves, mines, tunnels, bunkers, cisterns) present: Yes☐ No☐

If yes, above-ground features* (e.g., crawl spaces) present: Yes☐ No☐

If unknown, explain: _____

Are you requesting approval of a field survey for potential hibernacula at this time? Yes*☐ No☑

*(*If yes, attach a separate narrative explaining how the project area(s) will be surveyed for potential hibernacula.)*

Are you submitting the results of a Phase 1 Habitat Assessment of potentially suitable hibernacula identified from field surveys? Yes*☐ No☑

*(*If yes, provide a Phase 1 Habitat Assessment Data Sheet for each potential hibernaculum/portal(s)[8] identified to be surveyed.)*

BRIDGE & CULVERT ASSESSMENTS

Will any bridges or culverts be surveyed for bat presence? Yes☑ No☐

If yes, please answer the following:

[8] If multiple cave entrances/portals, please list all locations.

Structure type(s) (check all that apply): Bridge☑ Culvert☑ Other☐
If "other", explain: _____

Survey methodology for structure(s) (check all that apply):
Visual inspection☑ Guano collection☐ Emergence survey☐ Acoustics*☐
Mist-net*☐ Harp-trap*☐ Other _____
*(*Due to site-specific conditions of structures, coordination with the local USFWS Field Office and appropriate state agency(ies) is necessary before proceeding with these survey methodologies)*

Will guano be collected and analyzed to confirm species ID? Yes☐ No☑
If "yes", name of institution/entity performing analysis: _____

ADDITIONAL SURVEY INFORMATION[9]

Will the proposed bat survey deviate from the current version of the USFWS Survey Guidelines?[10] Yes☐ No☑

If yes, provide justification for any departures or modifications to the guidelines (if applicable) below:

Proposed mist-net locations are provided on the attached Project mapping files. However, actual locations will be determined in the field based on landowner access and site specific conditions. Proposed survey start date, field survey crew and field survey crew leader will be dependent on staff availability, landowner access and scheduling. If captured, emergence surveys will not be conducted at tricolored bat roost per the 2024 USFWS Range-wide Indiana Bat & Northern Long-eared Bat Survey Guidelines.

Kentucky State Permit Numbers: SC2411004; SC2411010; SC2411005; SC2411006; SC2411011; SC2411018; SC2411012; SC2411013; SC2411007; SC2411008; SC2411014; SC2411015; SC2411176; SC2411016; SC2411017;

Name of USFWS Section 10 permitted biologist(s) who may apply transmitter(s): Zachary Baer, Crystal Birdsall, Ian Burns, Taylor Culbertson, Kelsie Eshler, Malachia Evans, Mark Gumbert, Chris Leftwich, Les Meade, Piper Roby, Steve Samoray, Michael Schirmacher, William Seiter, and/or Price Sewell

Any bridge/culvert encountered during the mist-net survey will be evaluated for bat presence.

I hereby acknowledge that the information being provided to the Service is accurate and complete as of today's date.

Signature: Zachary Baer Digitally signed by Zachary Baer Date: 2024.07.24 09:26:13 -04'00' Date: 07-24-2024

[9] Attach additional pages to this form, if needed.

[10] Proposed surveys deviating from the current Range-wide IBAT & NLEB Survey Guidelines will only be accepted with a thoroughly described justification. Coordinate with your local USFWS Field Office (https://www.fws.gov/our-facilities) for acceptable modifications.

********FOR U.S. FISH AND WILDLIFE SERVICE USE ONLY**********

United States Department of the Interior

Fish and Wildlife Service

Kentucky ES Field Office

330 W. Broadway, Room 265, Frankfort, KY 40601

Office Phone: (502) 695-0468

SITE-SPECIFIC AUTHORIZATION - BAT WORK

Our Field Office has reviewed your study plan and found it to contain sufficient information for our approval. When signed, this statement serves as your site-specific authorization to conduct the proposed activities at the specified locations included in the attached Study Plan Form and supporting files and must be carried with your federal permit when conducting work for this project. All activities must be carried out with strict adherence to permit conditions and authorizations specified in your federal permit as well as your state permit(s) (if needed). The section 10(a)(1)(A) permit authorizing the activities must remain with the surveyor at all times. This authorization is not valid if you have not obtained permission from the owner of the lands where activities will occur.

For federal permit reporting purposes, please use the appropriate USFWS bat survey data spreadsheet, available on the IBAT and NLEB Summer Survey Guidance website[1]. To mitigate the risk of humans transmitting viruses (e.g., SARS-CoV-2) to bats or viral transmission from bats to humans, the U.S. Fish and Wildlife Service requests anyone directly handling or working in close proximity to bats follow current guidelines prepared by the CDC[2] and IUCN Bat Specialist Group[3] in addition to the following the standard WNS decontamination protocols[4].

If the work expands beyond the scope of your original study plan or if there are adverse effects to bats that were not anticipated, cease all survey and/or research activities, and contact this office prior to continuing. Additionally, if a federally listed bat is captured, this USFWS Field Office must be notified within 48 hours with information regarding species, sex, age, and whether or not the bat has a transmitter attached.

Field Office POC: Mike Armstrong

email: Mike_Armstrong@fws.gov phone: (502) 229-4632

☐ **Authorized as Proposed**

☑ **Authorized with Conditions** (see below)

You are authorized to proceed provided that the following adjustment(s) and/or conditions are met.

(1) Please band all cave hibernating species with appropriate sized bands using pliers with the exception of MYSE. Please attach transmitters and consider also tracking MYLU along with MYSO, MYSE, and PESU. (2) Ensure net set placements reflect variation of habitats present on site and preferred by MYSO, MYSE, and PESU. (3) Ensure transmitters are thoroughly tested for proper

☐ **Not Authorized.**

Comments:

Signature & Date: MICHAEL ARMSTRONG

Digitally signed by MICHAEL ARMSTRONG
Date: 2024.07.25 11:42:34 -04'00'

NOTE: Please check the appropriate box above before signing/locking the document.

[1] https://www.fws.gov/library/collections/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines
[2] https://www.cdc.gov/healthypets/covid-19/wildlife.html
[3] https://www.iucnbsg.org/uploads/6/5/0/9/6509077/amp_recommendations_for_researchers_final.pdf
[4] https://www.whitenosesyndrome.org/mmedia-education/national-wns-decontamination-protocol-u-s

Zack Baer

From: Armstrong, Mike <mike_armstrong@fws.gov>
Sent: Thursday, July 25, 2024 11:45 AM
To: Zack Baer; FWWildlifeDiversity@ky.gov; KentuckyES, FW4; Burford, Laura S (FW)
Cc: Marty Marchaterre; Chris Leftwich
Subject: Re: [EXTERNAL] Lost City Solar Transmission Line (IPaC: 2024-0063692)
Attachments: Lost City (Transmission Line) Bat Survey_Study Plan_07242024_Signed_KFO approved.pdf

Morning Zack.

Your study plan is approved with conditions. Please reach out if you have any questions.

Stay safe,

Mike

Mike Armstrong
Southeast Region Bat Recovery Biologist
U.S. Fish & Wildlife Service
Kentucky Field Office
330 W. Broadway, Room 265
Frankfort, KY 40601
Cell: 502-229-4632
Office/Teams: 502-653-0498

**Check us out at https://www.fws.gov/office/kentucky-ecological-services

---

From: Zack Baer <zbaer@copperheadconsulting.com>
Sent: Wednesday, July 24, 2024 9:54 AM
To: Armstrong, Mike <mike_armstrong@fws.gov>; FWWildlifeDiversity@ky.gov <FWWildlifeDiversity@ky.gov>; KentuckyES, FW4 <kentuckyes@fws.gov>; Burford, Laura S (FW) <Laura.Burford@ky.gov>
Cc: Marty Marchaterre <mmarchaterre@copperheadconsulting.com>; Chris Leftwich <cleftwich@copperheadconsulting.com>
Subject: [EXTERNAL] Lost City Solar Transmission Line (IPaC: 2024-0063692)

Mr. Armstrong, and Ms. Burford,

Please find attached Copperhead Environmental Consulting, Inc.'s (Copperhead) Study Plan to conduct a bat mist-net, and radio-telemetry survey for the proposed Lost City Solar Transmission Line Project in Muhlenberg County, Kentucky (IPaC: 2024-0063692). Can you please review the completed USFWS Study Plan form and attached Project mapping and provide Study Plan approval and site specific authorization, if appropriate.

I have also attached the KDFWR Project Proposal Form.

Please let me know if you have any questions or require any additional information.

Thank you,

Zachary Baer
Sr. Scientist

Copperhead Environmental Consulting, Inc.
471 Main St.
P.O. Box 73
Paint Lick, Kentucky 40461
724.549.6739 - Mobile
859.925.9012 - Office
859.925.9816 - Fax
www.copperheadconsulting.com

Zack Baer

From: Burford, Laura S (FW) <Laura.Burford@ky.gov>
Sent: Thursday, July 25, 2024 12:08 PM
To: Zack Baer
Cc: Rogers, Michaela L (FW)
Subject: RE: Lost City Solar Transmission Line (IPaC: 2024-0063692)

Hi Zack,

Thank you for sharing your study plan for the proposed Lost City Solar transmission line in Muhlenberg County. Your notification satisfies the requirements of your Kentucky Collection Permit.

Good luck with the survey!

Best regards,

Laura
Laura Burford
State Wildlife Action Plan Coordinator
Kentucky Department of Fish and Widlife Resources
#1 Sportsman's Lane, Frankfort, KY 40601
502-892-4536 | Laura.Burford@ky.gov

From: Zack Baer <zbaer@copperheadconsulting.com>
Sent: Wednesday, July 24, 2024 9:55 AM
To: Mike Armstrong (Mike_Armstrong@fws.gov) <Mike_Armstrong@fws.gov>; FW Wildlife Diversity <FWwildlifediversity@ky.gov>; KentuckyES, FW4 <kentuckyes@fws.gov>; Burford, Laura S (FW) <Laura.Burford@ky.gov>
Cc: Marty Marchaterre <mMarchaterre@copperheadconsulting.com>; Chris Leftwich <cleftwich@copperheadconsulting.com>
Subject: Lost City Solar Transmission Line (IPaC: 2024-0063692)

Mr. Armstrong, and Ms. Burford,

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Please let me know if you have any questions or require any additional information.

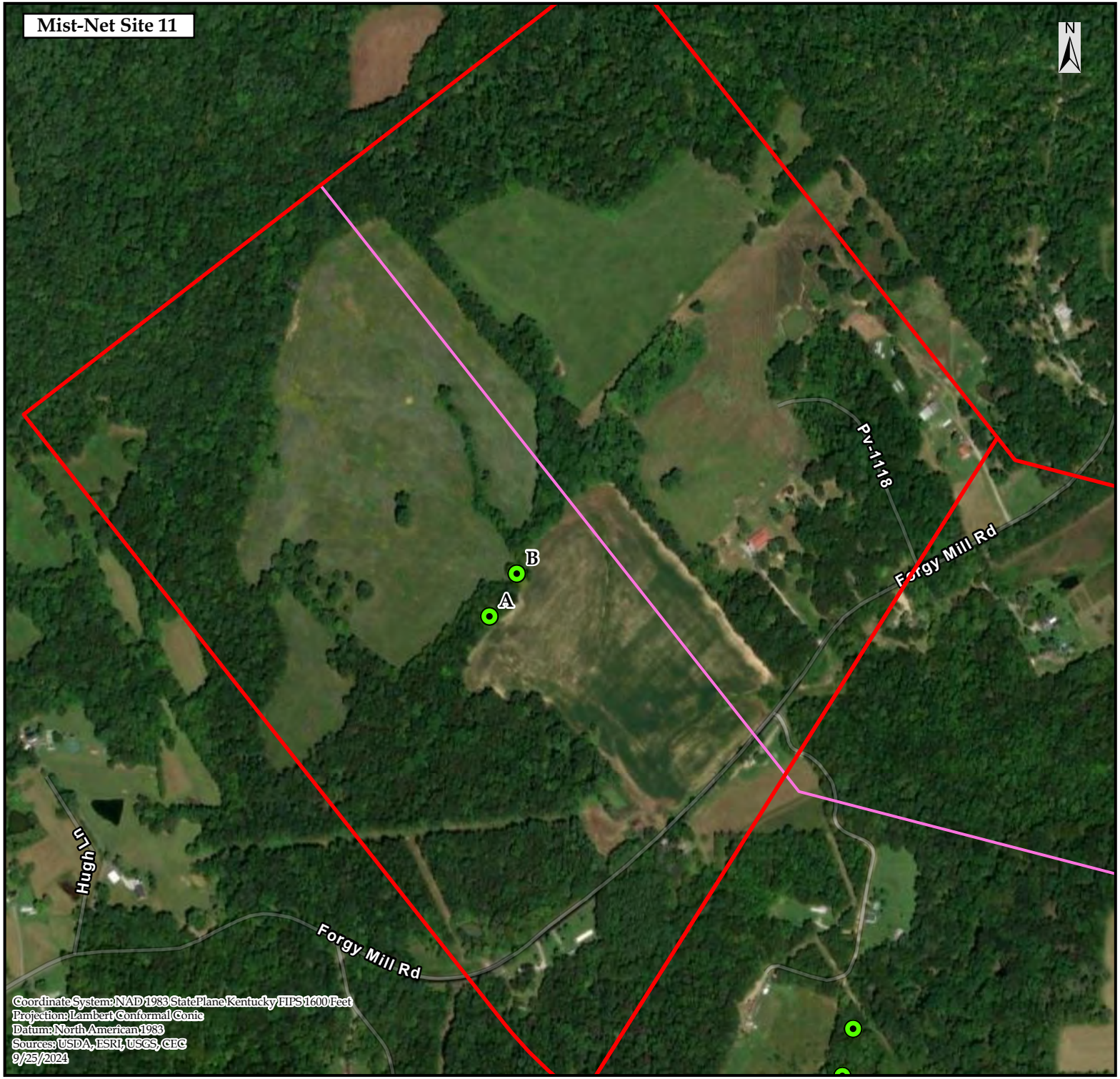
Thank you,

Zachary Baer
Sr. Scientist

Copperhead Environmental Consulting, Inc.
471 Main St.
P.O. Box 73
Paint Lick, Kentucky 40461
724.549.6739 - Mobile
859.925.9012 - Office
859.925.9816 - Fax
www.copperheadconsulting.com

APPENDIX B

Mist-Net Site Maps



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ENVIRONMENTAL CONSULTING

Prepared for:

Lost City

APPENDIX B. FIGURE 1:
Site 11 Mist-Net Locations for the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Legend

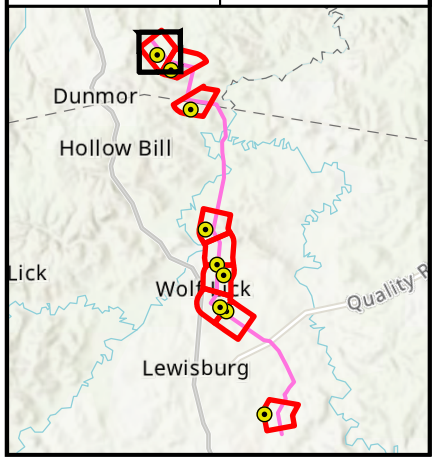
- Mist-Net Location
- Project Centerline
- Survey Kilometer

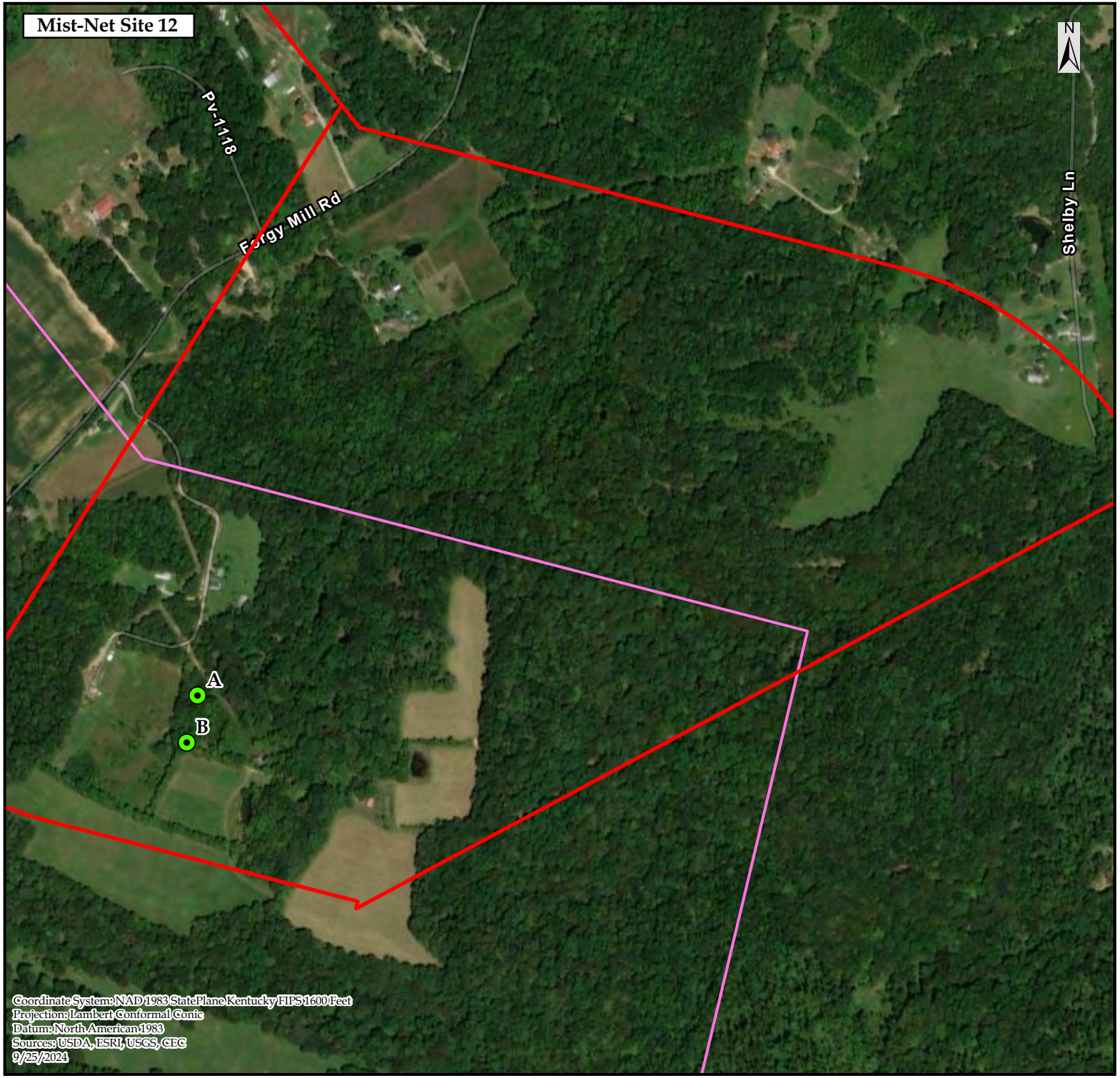
0 300 600
US Feet

Scale: 1 in = 600 ft

Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	9/25/2024
Checked by:	ZB	Revision:	02





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APPENDIX B. FIGURE 2:
Site 12 Mist-Net Locations for the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Legend

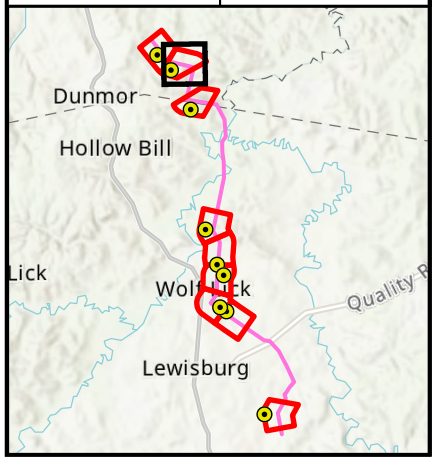
- Mist-Net Location
- Project Centerline
- Survey Kilometer

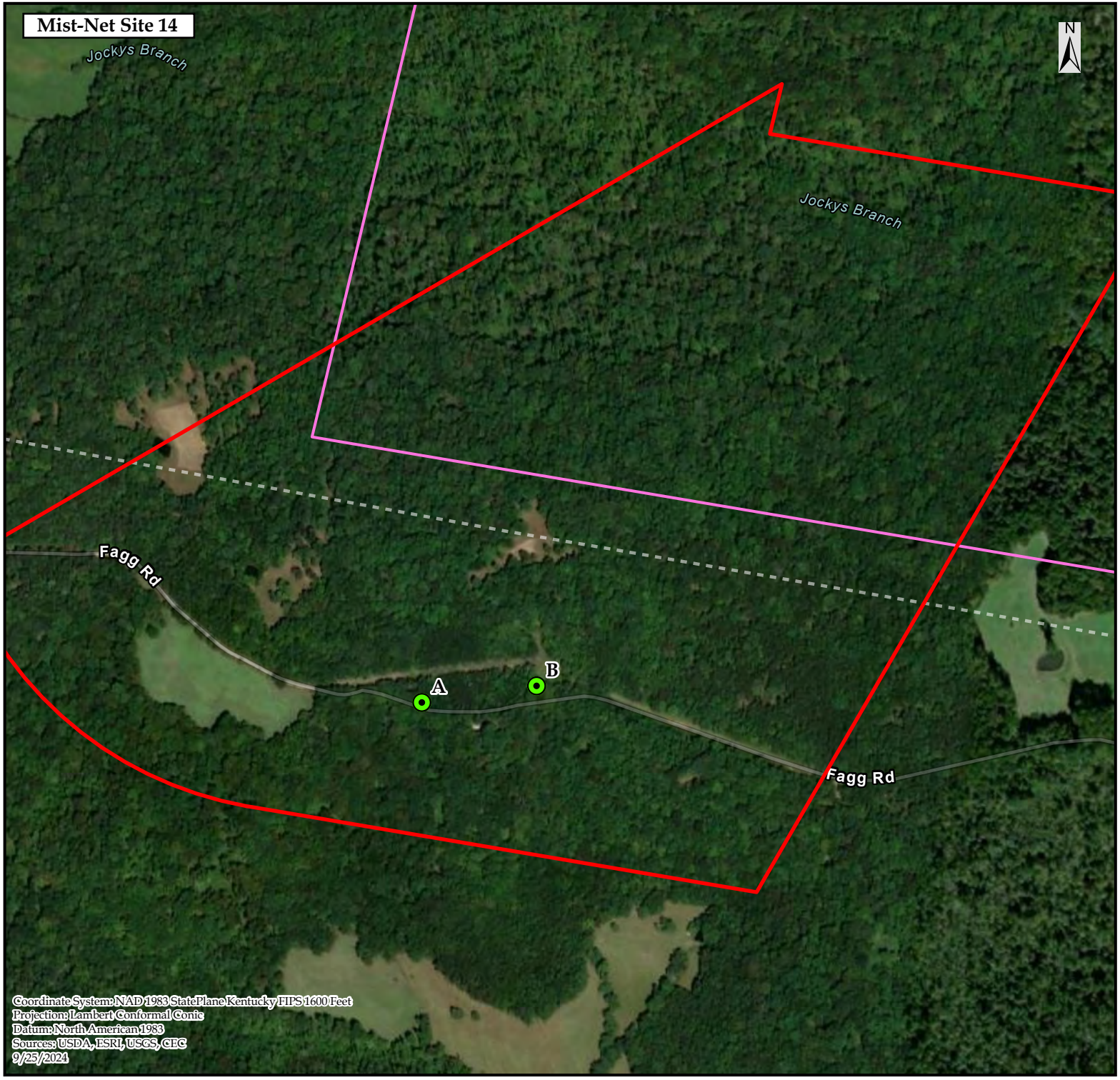
0 300 600
US Feet

Scale: 1 in = 600 ft

Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	9/25/2024
Checked by:	ZB	Revision:	02





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APPENDIX B. FIGURE 3:
Site 14 Mist-Net Locations for the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Legend

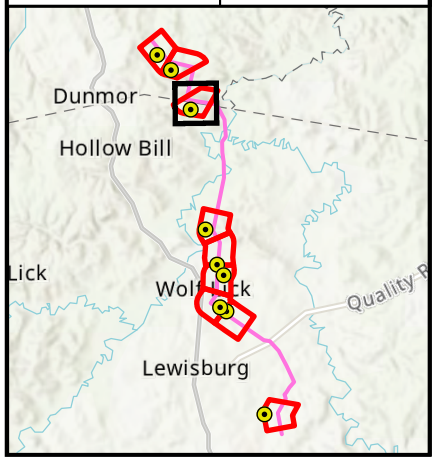
- Mist-Net Location
- Project Centerline
- Survey Kilometer

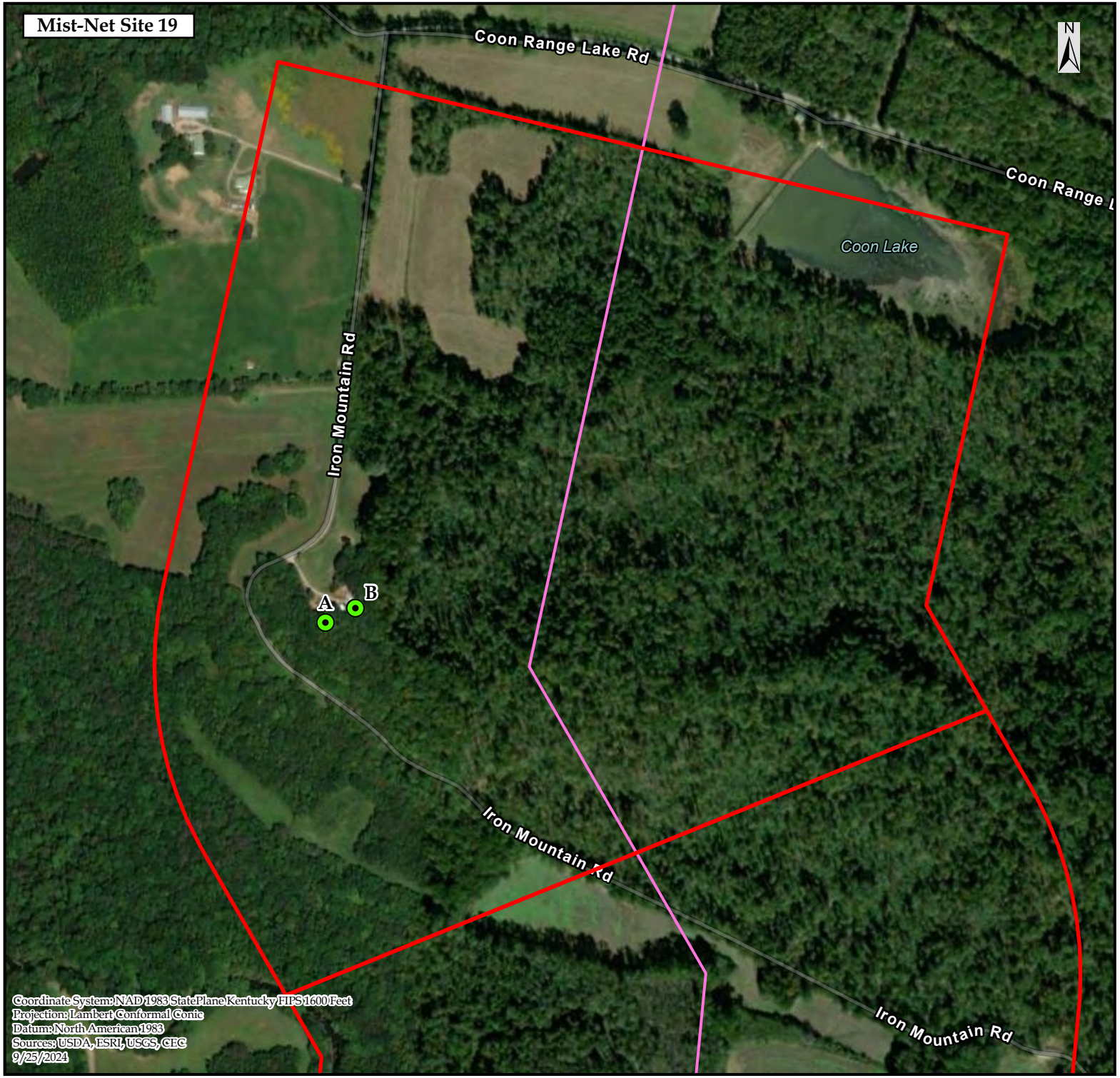
0 300 600
US Feet

Scale: 1 in = 600 ft

Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	9/25/2024
Checked by:	ZB	Revision:	02





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APPENDIX B. FIGURE 4:
Site 19 Mist-Net Locations for the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Legend

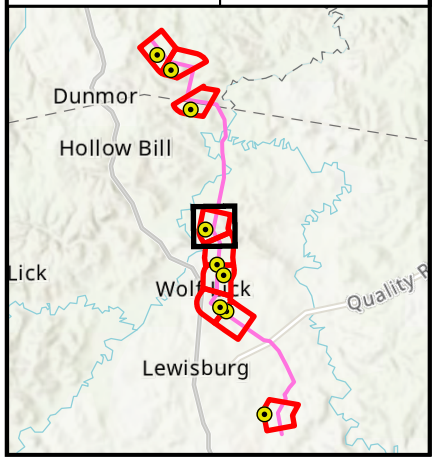
- Mist-Net Location
- Project Centerline
- Survey Kilometer

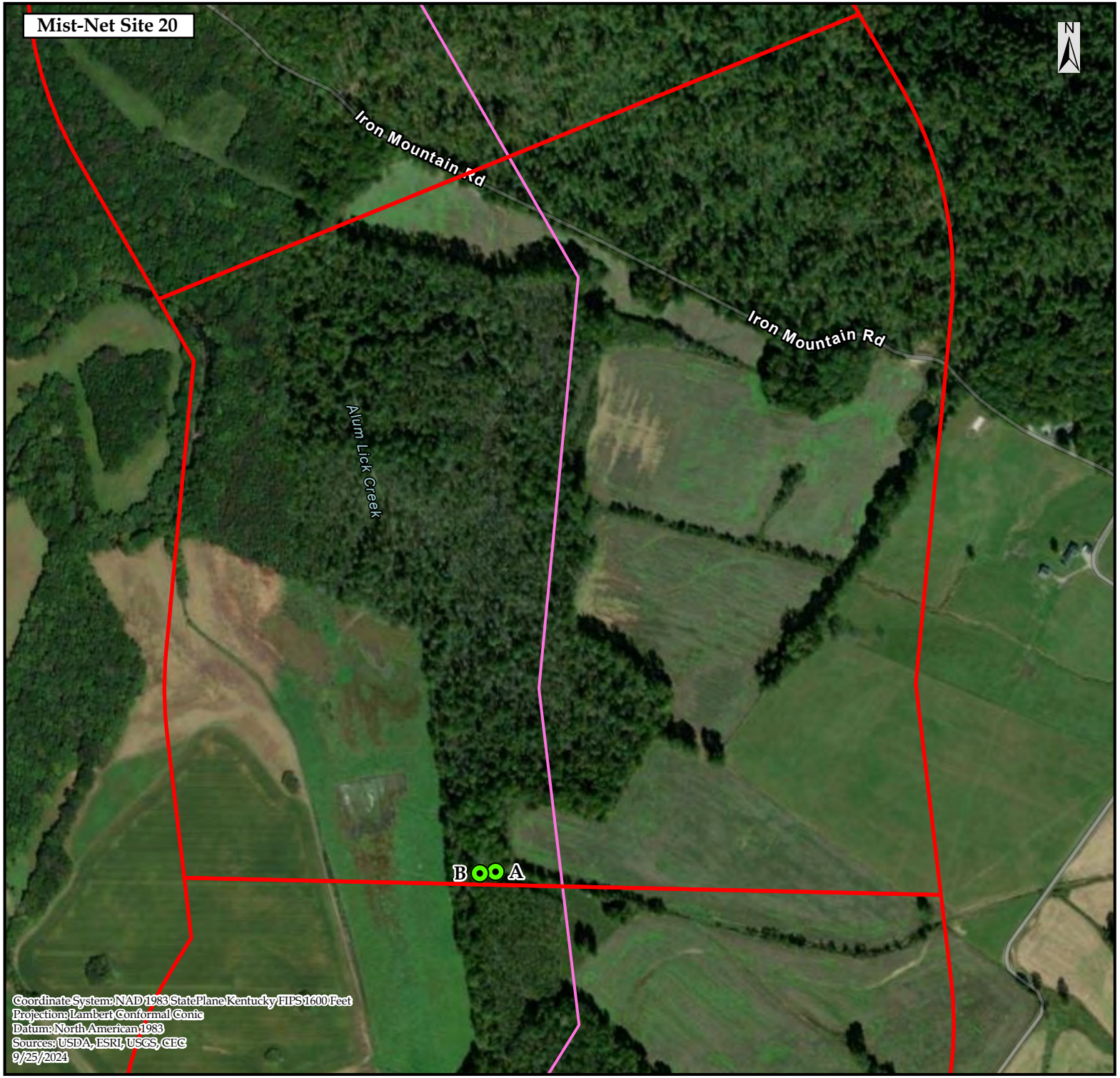
0 300 600
US Feet

Scale: 1 in = 600 ft

Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	9/25/2024
Checked by:	ZB	Revision:	02





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APPENDIX B. FIGURE 5:
Site 20 Mist-Net Locations for the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Legend

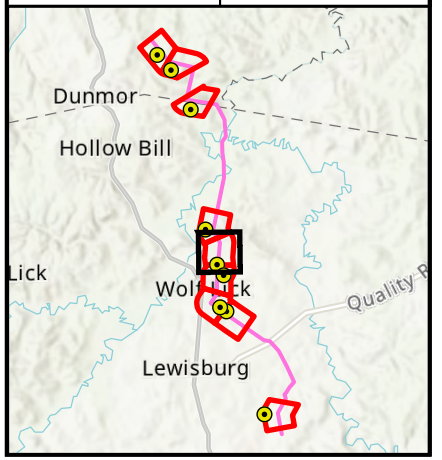
- Mist-Net Location
- Project Centerline
- Survey Kilometer

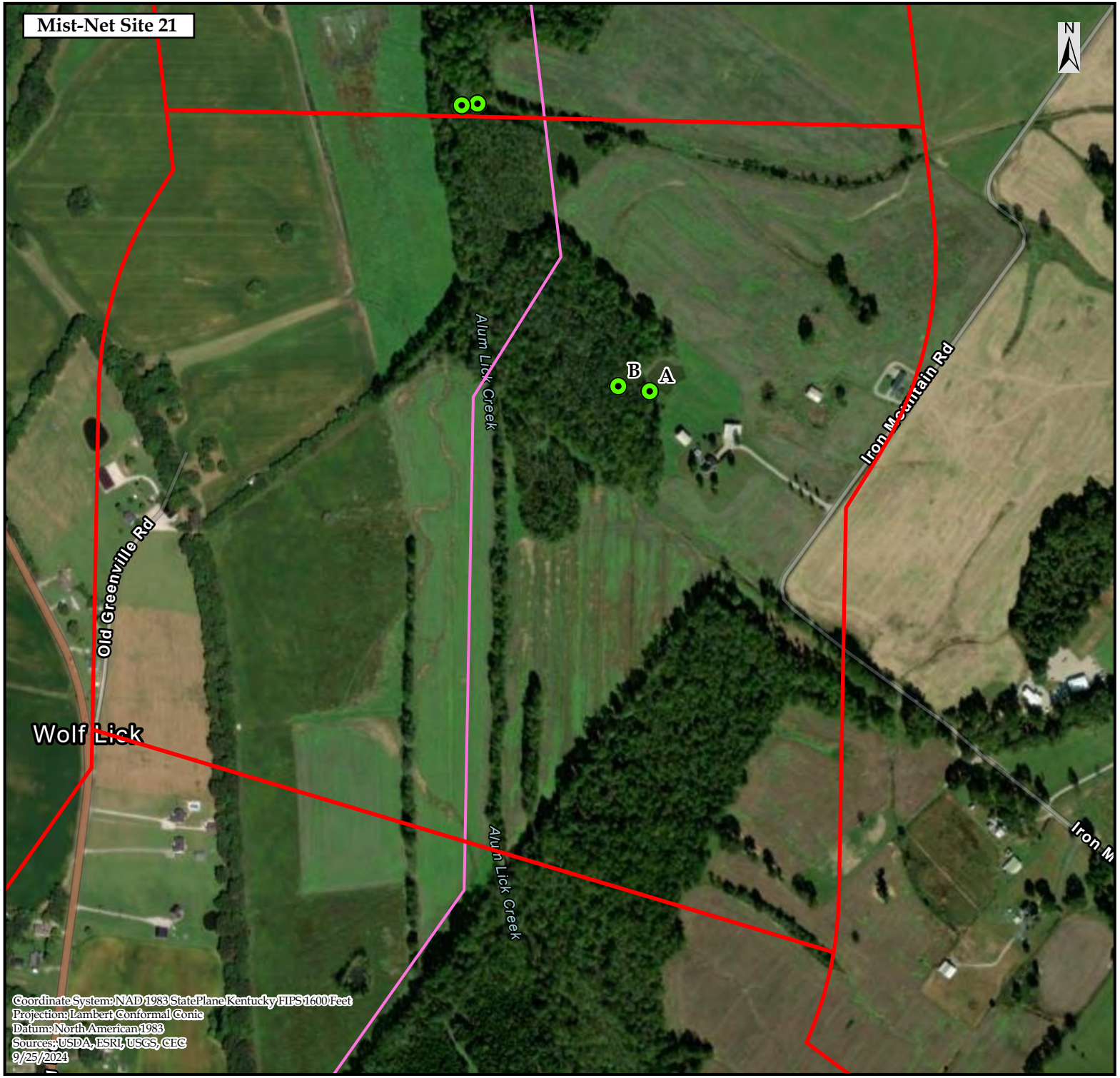
0 300 600
US Feet

Scale: 1 in = 600 ft

Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	9/25/2024
Checked by:	ZB	Revision:	02





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ENVIRONMENTAL CONSULTING

Prepared for:

Lost City

APPENDIX B. FIGURE 6:
Site 21 Mist-Net Locations for the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Legend

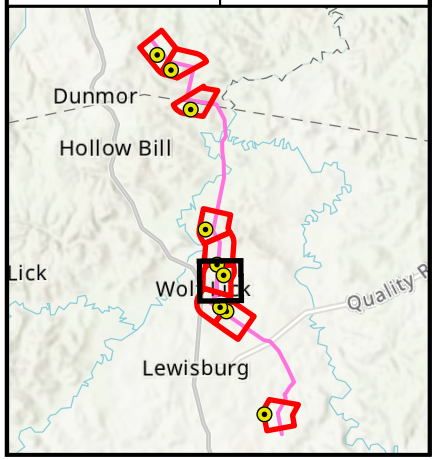
- Mist-Net Location
- Project Centerline
- Survey Kilometer

0 300 600
US Feet

Scale: 1 in = 600 ft

Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	9/25/2024
Checked by:	ZB	Revision:	01



COPPERHEAD
ENVIRONMENTAL CONSULTING

Prepared for:

Lost City

APPENDIX B. FIGURE 7:
Site 22 Mist-Net Locations for the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Legend

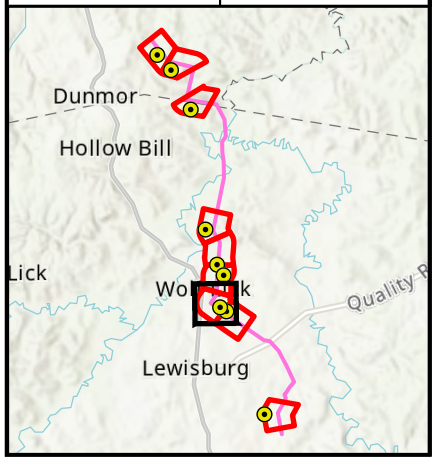
- Mist-Net Location
- Project Centerline
- Survey Kilometer

0 300 600
US Feet

Scale: 1 in = 600 ft

Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	9/25/2024
Checked by:	ZB	Revision:	01



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ENVIRONMENTAL CONSULTING

Prepared for:

Lost City

APPENDIX B. FIGURE 8:
Site 23 Mist-Net Locations for the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Legend

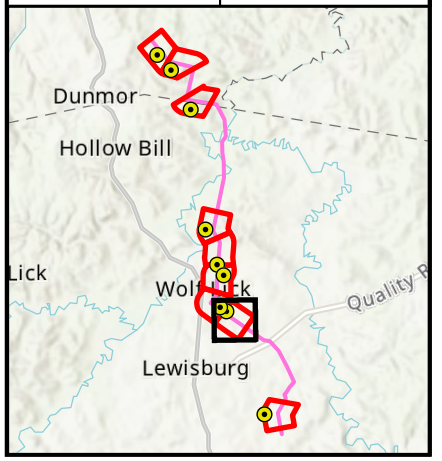
- Mist-Net Location
- Project Centerline
- Survey Kilometer

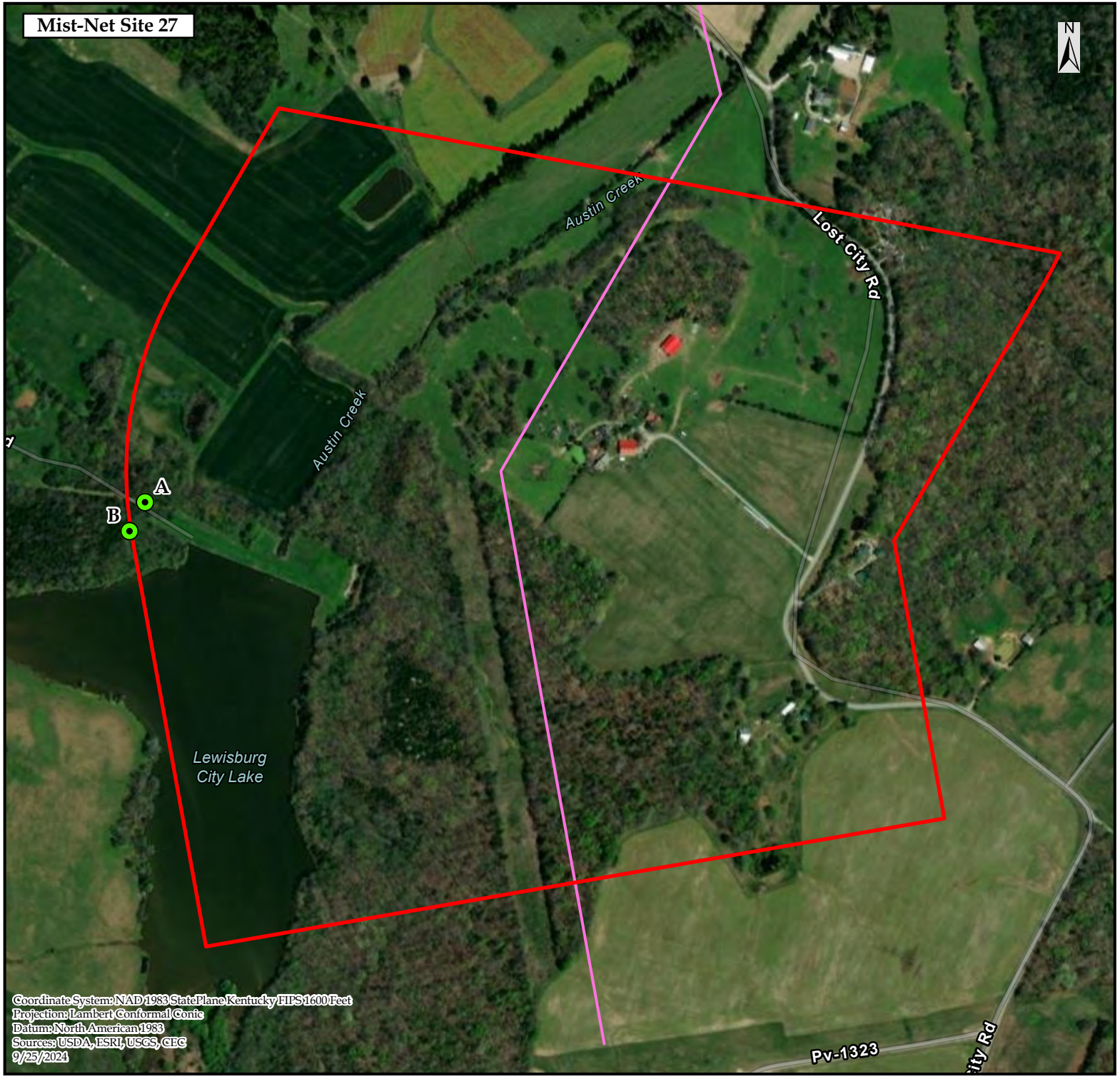
0 300 600
US Feet

Scale: 1 in = 600 ft

Prepared by :
Copperhead Environmental Consulting, Inc.
471 Main Street
P.O. Box 73
Paint Lick, Kentucky 40461

Drawn by:	TC	Date:	9/25/2024
Checked by:	ZB	Revision:	01





COPPERHEAD
ENVIRONMENTAL CONSULTING

Prepared for:

Lost City

APPENDIX B. FIGURE 9:
Site 27 Mist-Net Locations for the Lost City Solar Transmission Line Project, Logan and Muhlenberg Counties, Kentucky.

Legend

- Mist-Net Location
- Project Centerline
- Survey Kilometer

0 300 600
US Feet

Scale: 1 in = 600 ft

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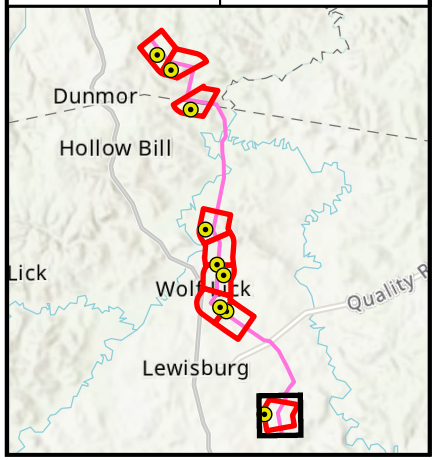
Drawn by:	TC	Date:	9/25/2024
Checked by:	ZB	Revision:	01



APPENDIX C

Mist-Net Survey Data

Appendix B, Table 1. Mist-Net Site Data for the Lost City Solar Transmission Line; Logan and Muhlenberg Counties, Kentucky.

Site No.	Latitude	Longitude	County	State	Site Location Description	Site Habitat Type	Dominant Vegetation	Roost Habitat[1]	Water Resources[2]	Forest Structure[3]	Land Cover[4]
11	37.08406	-86.96831	Muhlenberg	KY	Fence row creek north of Forgy Mill Rd.	Riparian Creek	*Carya glabra, Fagus grandifolia, Juglans nigra, Liquidambar styraciflua, Populus deltoides, Quercus falcata, Quercus palustris, Ulmus rubra*	Poor	Moderate	Poor	Poor
12	37.07500	-86.96124	Muhlenberg	KY	Farm trail south of Forgy Mill Rd.	Forest Upland	*Carya ovata, Acer rubrum, Acer saccharum, Liquidambar styraciflua, Juniperus virginiana*	Moderate	Poor	Moderate	Optimal
14	37.04951	-86.95407	Logan	KY	Forested section of Fagg Rd.	Forest Upland	*Acer saccharum, Carya cordiformis, Celtis occidentalis, Liriodendron tulipifera, Quercus rubra, Fagus grandifolia*	Moderate	Poor	Optimal	Optimal
19	37.02463	-86.94929	Logan	KY	Forest east of Iron Mountain Rd.	Forest Upland	*Acer saccharum, Carya ovata, Ostrya virginiana, Liriodendron tulipifera, Quercus rubra, Quercus alba*	Moderate	Poor	Moderate	Optimal

Site No.	Latitude	Longitude	County	State	Site Location Description	Site Habitat Type	Dominant Vegetation	Roost Habitat[1]	Water Resources[2]	Forest Structure[3]	Land Cover[4]
20	37.01650	-86.94558	Logan	KY	Small woodlot southwest of Iron Mt. Rd.	Forest Bottomland	*Quercus rubra, Acer rubrum, Gleditsia triacanthos, Ulmus rubra, Carya spp.*	Moderate	Poor	Poor	Poor
21	37.01528	-86.94475	Muhlenberg	KY	Wood lot between Alum Lick Creek and Iron Mtn Rd.	Forest Bottomland	*Acer rubrum, Liquidambar styraciflua, Ostrya virginiana, Populus deltoides, Ulmus rubra*	Moderate	Optimal	Optimal	Moderate
22	37.00506	-86.94482	Logan	KY	Wooded corridor east of Lewisburg Rd.	Forest Bottomland	*Juniperus virginiana, Celtis occidentalis, Quercus muehlenbergii, Ulmus rubra, Carya ovata*	Optimal	Moderate	Moderate	Moderate
23	37.00404	-86.94371	Logan	KY	Alum Creek, East of Lewisburg Rd.	Riparian Creek	*Acer negundo, Aesculus glabra, Celtis occidentalis, Juglans nigra, Ulmus americana*	Optimal	Optimal	Moderate	Moderate
27	36.97054	-86.92825	Logan	KY	Northwest corner of Lewisburg Lake	Forest Bottomland	*Acer negundo, Juglans nigra, Juniperus virginiana, Ulmus rubra*	Poor	Moderate	Moderate	Moderate

[1]Roost Habitat - Poor: No or few snags >= ~5" DBH with sloughing bark or other usable roost features (cracks, crevices, etc.); Moderate: Snags with sloughing bark or other roost features present ~5-15-inch DBH within 1000 feet of forested areas; Optimal: Snags with sloughing bark or other roost features present >~15-inch DBH within 1000 feet of forested areas.
[2]Water Resources - Poor: bat drinking resources not present at the site; Moderate: Ephemeral or intermittent streams or ponded areas present but too cluttered to allow many bats to drink easily or simultaneously. No corridors, openings or canopy gaps allow bats easy access to the resource; Optimal: Streams or ponds (including road ruts) present that appear to offer drinking resource throughout the majority of the summer. Flyways to resources are available.
[3]Forest Structure - Poor: Habitat even aged and young. Trees smaller than 5-inch DBH. Understory growth cluttered and restricts flying/foraging. Hardwoods are absent or stand is monoculture; Moderate: some diversity in age of trees in the stand. Trees 5 to 15 inches present. Understory clutter dominant but not ubiquitous. Trees greater than 15" DBH may be present but rare; Optimal: Mature forest. Diverse age classes of trees present. Trees > 15-inch DBH frequent. Varying tree height and treefalls allow for frequent small openings and gaps that facilitate bat foraging.
[4]Land Cover- Poor: Area surrounding site predominantly un-forested. Few mature trees present not connected to other areas of trees; Moderate: Trees present in the form of small woodlots and wooded fence rows. Little connection to adjacent forested areas; Optimal: Area is largely forested. Wooded stands are connected to other wooded stands via wooded stream, fence row, or other wooded corridor.

Appendix B, Table 2. Nightly Mist-Net Survey Data for the Lost City Solar Transmission Line; Logan and Muhlenberg Counties, Kentucky.

Site No.	Survey Date (2024)	Total Nightly Net Sets	Time Nets Up	Time Nets Down	Bat Captures (Per Night)	Moon Percent	Moonrise	Moonset	Sunrise	Sunset	Nightly Survey Status	Permitted Biologist
11	07-Aug	2	19:48	00:48	0	new-20	08:53	21:34	05:58	19:48	Complete	William Seiter
	08-Aug	2	19:47	00:47	0	new-20	09:50	21:55	05:59	19:47	Complete	William Seiter
12	07-Aug	2	19:48	00:48	0	new-20	08:53	21:34	05:58	19:48	Complete	Leslie Meade
	08-Aug	2	19:47	00:47	0	new-20	09:50	21:55	05:59	19:47	Complete	Leslie Meade
14	10-Aug	2	19:45	00:44	15	21-40	11:45	22:40	06:01	19:44	Complete	Zachary Baer
	11-Aug	2	19:44	00:44	8	41-60	12:44	23:06	06:01	19:44	Complete	Zachary Baer
19	12-Aug	2	19:42	00:52	0	41-60	13:47	23:38	06:02	19:42	Complete	Zachary Baer
	13-Aug	2	19:41	00:41	3	61-80	14:50	-	06:03	19:41	Complete	Zachary Baer
20	12-Aug	2	19:42	22:51	6	41-60	13:47	23:38	06:02	19:42	Rain Out	Crystal Birdsall
	13-Aug	2	19:41	00:41	8	61-80	14:50	-	06:03	19:41	Complete	Crystal Birdsall
	14-Aug	2	19:40	00:40	5	61-80	15:47	00:16	06:04	19:40	Complete	Mike Schirmacher
21	12-Aug	2	19:42	22:50	8	41-60	13:47	23:38	06:02	19:42	Rain Out	Ian Burns
	13-Aug	2	19:41	00:41	1	61-80	14:50	-	06:03	19:41	Complete	Ian Burns
	14-Aug	2	19:40	00:40	4	61-80	15:47	00:16	06:04	19:40	Complete	Ian Burns
22	10-Aug	2	20:44	00:44	10	21-40	11:45	22:40	06:01	19:44	Complete	Crystal Birdsall
	11-Aug	2	20:43	00:43	1	41-60	12:44	23:06	06:01	19:43	Complete	Crystal Birdsall

Site No.	Survey Date (2024)	Total Nightly Net Sets	Time Nets Up	Time Nets Down	Bat Captures (Per Night)	Moon Percent	Moonrise	Moonset	Sunrise	Sunset	Nightly Survey Status	Permitted Biologist
23	10-Aug	2	19:44	00:44	2	21-40	11:45	22:40	06:01	19:44	Complete	Ian Burns
	11-Aug	2	18:44	00:43	0	41-60	12:44	23:06	06:01	19:43	Complete	Ian Burns
27	05-Aug	2	19:50	00:50	0	new-20	06:54	20:49	05:56	19:50	Complete	William Seiter
	06-Aug	2	19:49	00:49	0	new-20	07:54	21:13	05:57	19:49	Complete	William Seiter

Appendix B, Table 3. Site Specific Mist-Net Data for the Lost City Solar Transmission Line; Logan and Muhlenberg Counties, Kentucky.

Site No.	Survey Date (2024)	Net ID	Mist-Net Set Habitat	Net Height (m)	Net Length (m)	Latitude	Longitude	Comments
11	07-Aug	A	Corridor	5.2	9.0	37.08655	-86.97115	Corridor in fence row between fields leading to puddles on a creek
11	07-Aug	B	Creek	5.2	18.0	37.08707	-86.97075	Creek/puddle gap in fence row between field
11	08-Aug	A	Corridor	5.2	9.0	37.08655	-86.97115	Corridor in fence row between fields leading to puddles on a creek
11	08-Aug	B	Creek	5.2	18.0	37.08707	-86.97075	Creek/puddle gap in fence row between field
12	07-Aug	A	Corridor	5.2	6.0	37.08127	-86.96565	
12	07-Aug	B	Corridor	5.2	9.0	37.08135	-86.96569	
12	08-Aug	A	Corridor	5.2	6.0	37.08127	-86.96565	
12	08-Aug	B	Corridor	5.2	9.0	37.08135	-86.96569	
14	10-Aug	A	Corridor	7.8	12.0	37.06872	-86.95683	
14	10-Aug	B	Corridor	5.2	9.0	37.06868	-86.95678	
14	11-Aug	A	Corridor	7.8	12.0	37.06872	-86.95683	
14	11-Aug	B	Corridor	5.2	9.0	37.06868	-86.95678	
19	12-Aug	A	Corridor	5.2	12.0	37.03028	-86.95137	
19	12-Aug	B	Corridor	5.2	6.0	37.03035	-86.95129	
19	13-Aug	A	Corridor	5.2	12.0	37.03028	-86.95137	
19	13-Aug	B	Corridor	5.2	6.0	37.03035	-86.95129	
20	12-Aug	A	Corridor	7.8	12.0	37.01897	-86.94714	
20	12-Aug	B	Corridor	5.2	9.0	37.01894	-86.94737	
20	13-Aug	A	Corridor	7.8	12.0	37.01897	-86.94714	

Site No.	Survey Date (2024)	Net ID	Mist-Net Set Habitat	Net Height (m)	Net Length (m)	Latitude	Longitude	Comments
20	13-Aug	B	Corridor	5.2	9.0	37.01894	-86.94737	
20	14-Aug	A	Corridor	7.8	12.0	37.01895	-86.94703	
20	14-Aug	B	Corridor	5.2	9.0	37.01890	-86.94737	
21	12-Aug	A	Pond	7.8	12.0	37.01528	-86.94475	
21	12-Aug	B	Corridor	5.2	12.0	37.01529	-86.94475	
21	13-Aug	A	Pond	7.8	12.0	37.01528	-86.94475	
21	13-Aug	B	Corridor	5.2	12.0	37.01529	-86.94475	
21	14-Aug	A	Pond	7.8	12.0	37.01528	-86.94475	
21	14-Aug	B	Corridor	5.2	12.0	37.01529	-86.94475	
22	10-Aug	A	Corridor	5.2	9.0	37.00521	-86.94592	
22	10-Aug	B	Corridor	7.8	12.0	37.00696	-86.94595	
22	11-Aug	A	Corridor	5.2	9.0	37.00521	-86.94592	
22	11-Aug	B	Corridor	7.8	12.0	37.00696	-86.94595	
23	10-Aug	A	Corridor	7.8	9.0	37.00391	-86.94340	
23	10-Aug	B	Creek	5.2	9.0	37.00418	-86.94402	
23	11-Aug	A	Corridor	7.8	9.0	37.00391	-86.94340	
23	11-Aug	B	Creek	5.2	9.0	37.00418	-86.94402	Used single high 4m to make a T net
27	05-Aug	A	Corridor	5.2	9.0	36.97072	-86.92814	
27	05-Aug	B	Corridor	5.2	9.0	36.97037	-86.92836	
27	06-Aug	A	Corridor	5.2	9.0	36.97072	-86.92814	
27	06-Aug	B	Corridor	5.2	9.0	36.97037	-86.92836	

Appendix B, Table 4. Bat Capture Data for the Lost City Solar Transmission Line; Logan and Muhlenberg Counties, Kentucky.

Site No.	Date (2024)	Nightly Capture No.	Species	Time Caught	Capture Net	Net Height (m)	Age	Sex	Repro Status	Mass (g)	RFA (mm)	Wing Damage Index	Comments
14	10-Aug	1	EPFU	20:30	A	6	A	F	N	15.25	48	0	
14	10-Aug	2	EPFU	20:40	A	4	J	M	N	16	47	0	
14	10-Aug	3	EPFU	20:40	A	5	A	F	N	21.25	51	0	
14	10-Aug	4	EPFU	20:46	A	8	J	F	N	21.75	49	0	
14	10-Aug	5	EPFU	20:52	A	3	A	M	N	19	49	0	
14	10-Aug	6	NYHU	21:10	A	4	A	M	N	10	47	0	
14	10-Aug	7	EPFU	21:10	B	2.5	U	U	U	18.5	-	U	Escaped
14	10-Aug	8	EPFU	21:10	B	4.5	A	M	N	17.5	47	0	
14	10-Aug	9	EPFU	21:20	A	2.5	J	F	N	20.75	49	0	
14	10-Aug	10	EPFU	21:20	A	6.5	J	M	N	18.75	49	0	
14	10-Aug	11	EPFU	21:40	B	1.5	J	F	N	21.75	50	0	
14	10-Aug	12	LABO	22:00	A	2.5	J	F	N	8.75	39	0	
14	10-Aug	13	LABO	22:46	B	4	J	M	N	8.5	40	0	
14	10-Aug	14	LABO	00:28	A	2.5	J	M	N	8	41	0_P	Pin holes in wings
14	10-Aug	15	LABO	00:43	A	2	J	M	N	8.5	38	0	
14	11-Aug	1	LABO	20:20	B	4.5	J	F	N	9.75	41	0	
14	11-Aug	2	EPFU	21:09	B	5	A	F	N	20.75	50	0	
14	11-Aug	3	EPFU	21:10	B	5	A	F	N	20.75	50	0	
14	11-Aug	4	EPFU	21:50	A	2	J	M	N	15.75	47	0	
14	11-Aug	5	EPFU	21:50	A	4	J	M	N	16.25	48	0	

Site No.	Date (2024)	Nightly Capture No.	Species	Time Caught	Capture Net	Net Height (m)	Age	Sex	Repro Status	Mass (g)	RFA (mm)	Wing Damage Index	Comments
14	11-Aug	6	EPFU	21:50	A	2.5	A	F	N	16.75	50	0	
14	11-Aug	7	EPFU	21:50	A	4	J	F	N	20.25	50	0_P	4mm hole right wing
14	11-Aug	8	EPFU	23:10	B	2	J	F	N	21.25	49	0	
19	13-Aug	1	NYHU	21:05	A	4	A	M	TD	10.5	35	0	
19	13-Aug	2	NYHU	00:25	A	4	J	M	N	8.5	36	0	
19	13-Aug	3	NYHU	00:41	B	4.5	J	F	N	9.75	38	0	
20	12-Aug	1	LABO	20:18	B	3	J	F	N	10.75	40	0	
20	12-Aug	2	LABO	20:28	A	5.5	J	F	N	10.25	40	0	
20	12-Aug	3	LABO	20:40	B	2	J	M	N	10.25	40	0	
20	12-Aug	4	NYHU	20:40	B	1.5	A	M	TD	10.75	35	0	
20	12-Aug	5	EPFU	20:40	A	4.5	J	F	N	16	47	0	
20	12-Aug	6	EPFU	20:40	A	3.5	A	M	TD	17	45	0	
20	13-Aug	1	EPFU	20:28	A	1.5	A	M	N	14.25	46	0	
20	13-Aug	2	NYHU	20:45	A	4	J	F	N	11	34	0	
20	13-Aug	3	LABO	20:45	A	5	A	M	TD	9.5	39	0	
20	13-Aug	4	NYHU	20:45	A	5.5	A	F	N	10	37	0	
20	13-Aug	5	LABO	21:25	A	1	A	F	N	12.5	40	0	
20	13-Aug	6	LABO	23:05	B	1	A	M	TD	10.25	40	0	
20	13-Aug	7	LABO	23:58	B	5	A	M	N	9	38	0	
20	13-Aug	8	LABO	00:05	B	3	A	M	TD	11.5	40	0	
20	14-Aug	1	NYHU	19:28	A	1	A	F	N	10.25	35	0	

Site No.	Date (2024)	Nightly Capture No.	Species	Time Caught	Capture Net	Net Height (m)	Age	Sex	Repro Status	Mass (g)	RFA (mm)	Wing Damage Index	Comments
20	14-Aug	2	NYHU	19:28	B	3	J	M	TD	9.5	36	0	
20	14-Aug	3	NYHU	19:28	A	7.5	J	F	N	10.75	36	0	
20	14-Aug	4	LABO	21:42	A	2	A	F	N	12.25	41	0	
20	14-Aug	5	LABO	22:52	B	2	A	M	TD	9.5	39	0	
21	12-Aug	1	NYHU	20:40	B	2	J	F	N	11	38	0	
21	12-Aug	2	NYHU	20:40	B	1.5	A	M	TD	8.25	33	0	
21	12-Aug	3	LABO	20:40	A	5	J	F	N	9.75	42	0	
21	12-Aug	4	LABO	20:40	A	6.5	J	F	N	9	40	0	
21	12-Aug	5	NYHU	20:40	B	4	U	U	U	-	-	-	Escaped
21	12-Aug	6	LABO	20:40	B	3.5	U	U	U	-	-	-	Escaped
21	12-Aug	7	LABO	21:45	A	1	J	M	N	8.5	38	0	
21	12-Aug	8	NYHU	22:40	B	1	J	M	TD	9.25	34	0	
21	13-Aug	1	NYHU	21:10	A	1	A	M	TD	9.25	33	0	Recapture from same site
21	14-Aug	1	LABO	20:01	A	7	A	F	N	13.5	40	0	
21	14-Aug	2	NYHU	00:20	B	3	A	M	TD	9.75	37	0	
21	14-Aug	3	LABO	00:20	B	5	U	U	U	-	-	-	Escaped
21	14-Aug	4	LABO	00:49	B	1	J	F	N	12.75	41	0	
22	10-Aug	1	LABO	20:04	A	2	J	F	N	8.25	38	0	
22	10-Aug	2	LABO	20:20	B	2	J	F	N	8.75	38	0	
22	10-Aug	3	LABO	20:34	A	2	J	F	N	8.75	38	0	
22	10-Aug	4	LABO	21:10	B	5	A	M	TD	8.25	37	0	

Site No.	Date (2024)	Nightly Capture No.	Species	Time Caught	Capture Net	Net Height (m)	Age	Sex	Repro Status	Mass (g)	RFA (mm)	Wing Damage Index	Comments
22	10-Aug	5	LABO	21:45	B	3.5	J	M	N	8	38	0	
22	10-Aug	6	MYGR	21:45	B	6	A	M	N	10	42	0	Band KYF&W B26401; Bat mites
22	10-Aug	7	LABO	23:28	A	1	A	M	N	11.5	40	0	
22	10-Aug	8	MYGR	23:20	B	1.5	A	M	N	9.75	43	0	Band KYF&W B26402
22	10-Aug	9	LABO	23:20	B	7	J	F	N	13	41	0	
22	10-Aug	10	PESU	00:45	A	1.5	J	F	N	6.25	34	0	Band KYF&W C21798; Freq. 172.182
22	11-Aug	1	LABO	20:04	A	4.5	J	F	N	8.5	38	0	
23	10-Aug	1	LABO	20:15	A	2	J	F	N	11	9.5	0	
23	10-Aug	2	LABO	21:00	B	2.5	J	M	N	9.5	39	0	

LABO=*Lasiurus borealis* (eastern red bat); EPFU=*Eptesicus fuscus* (big brown bat); NYHU=*Nycticeius humeralis* (evening bat); MYGR=*Myotis grisescens* (gray bat); PESU=*Perimyotis subflavus* (tricolored bat)
A=adult; J=juvenile; M=male; F=female; N=non-reproductive; PL=post-lactating; L=lactating

Appendix B, Table 5. Nightly Weather Conditions Data for the Lost City Solar Transmission Line; Logan and Muhlenberg Counties, Kentucky.

Site No.	Survey Date (2024)	Time	Temperature (°F)	Sky Conditions	Estimated Wind Speed	Comments
27	05-Aug	19:50	79	0	0	
27	05-Aug	20:50	76	0	0	
27	05-Aug	21:50	74	0	0	
27	05-Aug	22:50	73	0	0	
27	05-Aug	23:50	72	0	0	
27	05-Aug	00:50	72	0	0	
27	06-Aug	19:49	80	0	0	
27	06-Aug	20:49	76	0	0	
27	06-Aug	21:49	76	0	0	
27	06-Aug	22:49	75	0	0	
27	06-Aug	23:49	74	0	0	
27	06-Aug	00:49	74	1	0	
11	07-Aug	19:48	77	2	1	
11	07-Aug	20:48	76	3	1	
11	07-Aug	21:48	74	2	1	
11	07-Aug	22:48	72	2	1	
11	07-Aug	23:48	70	0	0	
11	07-Aug	00:48	70	1	0	

Site No.	Survey Date (2024)	Time	Temperature (°F)	Sky Conditions	Estimated Wind Speed	Comments
12	07-Aug	19:48	77	3	0	
12	07-Aug	20:48	76	2	0	
12	07-Aug	21:48	75	1	0	
12	07-Aug	22:48	74	1	0	
12	07-Aug	23:48	72	0	0	
12	07-Aug	00:48	72	0	0	
11	08-Aug	19:47	76	2	0	
11	08-Aug	20:47	73	0	2	
11	08-Aug	21:47	71	1	1	
11	08-Aug	22:47	69	0	0	
11	08-Aug	23:47	69	0	0	
11	08-Aug	00:47	68	0	0	
12	08-Aug	19:47	75	1	0	
12	08-Aug	20:47	74	1	0	
12	08-Aug	21:47	73	0	0	
12	08-Aug	22:47	72	0	0	
12	08-Aug	23:47	71	0	0	
12	08-Aug	00:47	70	0	0	
23	10-Aug	19:44	73	0	0	
23	10-Aug	20:44	65	0	0	
23	10-Aug	21:44	62	0	0	

Site No.	Survey Date (2024)	Time	Temperature (°F)	Sky Conditions	Estimated Wind Speed	Comments
23	10-Aug	22:44	61	0	0	
23	10-Aug	23:44	60	0	0	
23	10-Aug	00:44	61	0	0	
14	10-Aug	19:45	76	0	0	
14	10-Aug	20:45	67	0	0	
14	10-Aug	21:45	64	0	0	
14	10-Aug	22:45	63	0	1	
14	10-Aug	23:45	61	1	1	
14	10-Aug	00:45	63	3	1	
22	10-Aug	19:45	73	0	0	
22	10-Aug	20:45	66	0	0	
22	10-Aug	21:45	61	0	0	
22	10-Aug	22:45	60	0	0	
22	10-Aug	23:45	59	0	0	
22	10-Aug	00:45	62	2	0	
23	11-Aug	19:43	71	0	0	
23	11-Aug	20:43	65	0	0	
23	11-Aug	21:43	63	0	0	
23	11-Aug	22:43	63	0	0	
23	11-Aug	23:43	61	0	0	
23	11-Aug	00:43	60	0	0	

Site No.	Survey Date (2024)	Time	Temperature (°F)	Sky Conditions	Estimated Wind Speed	Comments
14	11-Aug	19:44	70	0	0	
14	11-Aug	20:44	67	0	0	
14	11-Aug	21:44	64	0	0	
14	11-Aug	22:44	63	0	0	
14	11-Aug	23:44	63	0	1	
14	11-Aug	00:44	63	0	1	
22	11-Aug	19:44	71	0	0	
22	11-Aug	20:44	66	0	1	
22	11-Aug	21:44	64	0	0	
22	11-Aug	22:44	64	0	0	
22	11-Aug	23:44	63	0	0	
22	11-Aug	00:44	62	0	0	
19	12-Aug	19:42	72	3	0	
19	12-Aug	20:42	70	3	0	
19	12-Aug	21:42	70	3	0	
19	12-Aug	22:42	68	3	1	10 min of light rain, added to end of night
19	12-Aug	23:42	66	3	1	
19	12-Aug	00:42	66	3	1	
20	12-Aug	19:45	77	1	0	
20	12-Aug	20:45	73	2	0	
20	12-Aug	21:45	70	5	0	

Site No.	Survey Date (2024)	Time	Temperature (°F)	Sky Conditions	Estimated Wind Speed	Comments
20	12-Aug	22:51	67	5	1	Rainout at 2250
21	12-Aug	19:42	77	1	0	
21	12-Aug	20:42	70	3	0	
21	12-Aug	21:42	70	5	0	
21	12-Aug	22:42	70	6	0	Rainout at 2250
19	13-Aug	19:41	75	2	0	
19	13-Aug	20:41	72	2	1	
19	13-Aug	21:41	70	1	1	
19	13-Aug	22:41	70	1	1	
19	13-Aug	23:41	68	0	0	
19	13-Aug	00:41	68	0	1	
20	13-Aug	19:45	76	1	0	
20	13-Aug	20:45	74	0	0	
20	13-Aug	21:45	69	0	0	
20	13-Aug	22:45	68	0	0	
20	13-Aug	23:45	67	0	0	
20	13-Aug	00:45	66	0	0	
21	13-Aug	19:41	76	1	0	
21	13-Aug	20:41	71	1	0	
21	13-Aug	21:41	70	1	0	
21	13-Aug	22:41	68	1	0	

Site No.	Survey Date (2024)	Time	Temperature (°F)	Sky Conditions	Estimated Wind Speed	Comments
21	13-Aug	23:41	68	1	0	
21	13-Aug	00:41	68	1	0	
20	14-Aug	19:40	79	0	0	
20	14-Aug	20:40	72	0	0	
20	14-Aug	21:40	70	0	0	
20	14-Aug	22:40	69	0	0	
20	14-Aug	23:40	67	0	0	
20	14-Aug	00:40	66	0	0	
21	14-Aug	19:40	75	2	0	
21	14-Aug	20:40	72	1	0	
21	14-Aug	21:40	70	1	0	
21	14-Aug	22:40	68	1	0	
21	14-Aug	23:40	68	0	0	
21	14-Aug	00:40	68	0	0	

COPPERHEAD
ENVIRONMENTAL CONSULTING

Weather Conditions Key	
Sky Conditions Code	
0	Clear
1	Few Clouds
2	Partly Cloudy
3	Cloudy or Overcast
4	Fog or Smoke
5	Drizzle or light rain
6	Heavy Rain - thunderstorm
Estimated Wind Speet (Beaufort Wind Scale)	
0	Calm: <1 mph
1	Light air: 1-3 mph
2	Light breeze: 4-6 mph
3	Gentle breeze: 7-10 mph
4	Moderate breeze: 11-16 mph

APPENDIX D

Mist-Net Site Photograph Log

COPPERHEAD ENVIRONMENTAL CONSULTING	Summer 2024 Bat Mist-Net Surveys for the Lost City Solar Transmission Line Mist-Net Photograph Log	
Project No.: 1543	**County, State:** Logan & Muhlenberg, Kentucky	**Photograph Log Page Number:** 1

Site 11
Net A

Site 11
Net B

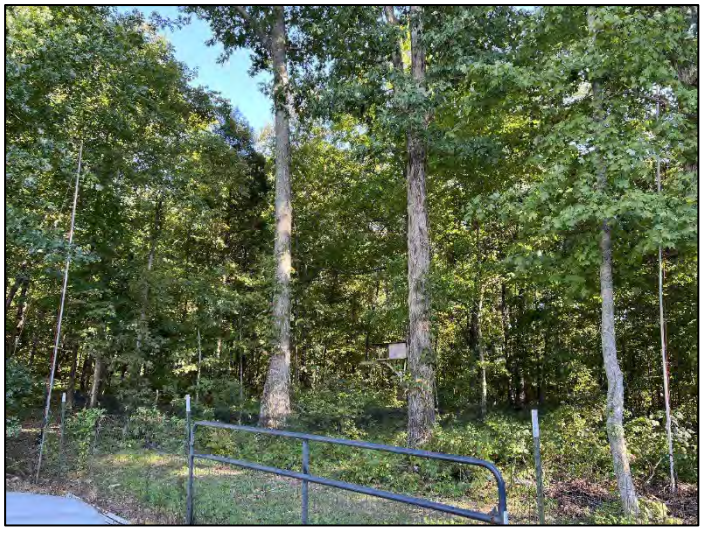
Site 12
Net A

Site 12
Net B

COPPERHEAD ENVIRONMENTAL CONSULTING	Summer 2024 Bat Mist-Net Surveys for the Lost City Solar Transmission Line Mist-Net Photograph Log	
Project No.: **1543**	**County, State:** **Logan & Muhlenberg, Kentucky**	**Photograph Log Page Number:** **2**

Site 14
Net A

Site 14
Net B



Site 19
Net A

Site 19
Net B

COPPERHEAD ENVIRONMENTAL CONSULTING	Summer 2024 Bat Mist-Net Surveys for the Lost City Solar Transmission Line Mist-Net Photograph Log	
Project No.: **1543**	**County, State:** **Logan & Muhlenberg, Kentucky**	**Photograph Log Page Number:** **3**

Site 20
Net A

Site 20
Net B

Site 21
Net A

Site 21
Net B

COPPERHEAD ENVIRONMENTAL CONSULTING	Summer 2024 Bat Mist-Net Surveys for the Lost City Solar Transmission Line Mist-Net Photograph Log	
Project No.: 1543	**County, State:** Logan & Muhlenberg, Kentucky	**Photograph Log Page Number:** 4

Site 22
Net A

Site 22
Net B

Site 23
Net A

Site 23
Net B

COPPERHEAD ENVIRONMENTAL CONSULTING	Summer 2024 Bat Mist-Net Surveys for the Lost City Solar Transmission Line Mist-Net Photograph Log	
Project No.: **1543**	**County, State:** **Logan & Muhlenberg, Kentucky**	**Photograph Log Page Number:** **5**

Site 23
Net B on 11 August
(used a single high 4m net to make a T)

Site 27
Net A

Site 27
Net B

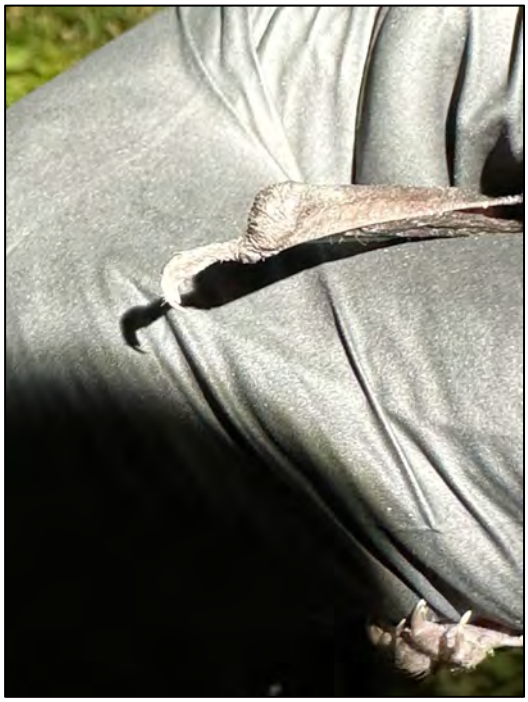
APPENDIX E

Listed Bat and Target Species Bat Photograph Log

COPPERHEAD ENVIRONMENTAL CONSULTING	**Summer 2024 Bat Mist-Net Surveys for the Lost City Solar Transmission Line Listed Bat Photograph Log**	
Project No.: 1543	**County, State:** Logan & Muhlenberg, Kentucky	**Photograph Log Page Number:** 1

Tricolored bat 182 (KYF&WR C21798)
(juvenile, female, non-reproductive)
Captured at Site 22 on 10 August 2024

Gray bat (KYF&WR B26401)
(adult, male, non-reproductive)
Captured at Site 22 on 10 August 2024



Gray bat (KYF&WR B26401)
(adult, male, non-reproductive)
Captured at Site 22 on 10 August 2024

Gray bat (KYF&WR B26402)
(adult, male, non-reproductive)
Captured at Site 22 on 10 August 2024

COPPERHEAD ENVIRONMENTAL CONSULTING	Summer 2024 Bat Mist-Net Surveys for the Lost City Solar Transmission Line Listed Bat Photograph Log	
Project No.: **1543**	**County, State:** **Logan & Muhlenberg, Kentucky**	**Photograph Log Page Number:** **2**

Gray bat (KYF&WR B26402)
(adult, male, non-reproductive)
Captured at Site 22 on 10 August 2024

APPENDIX F

Roost Tree Survey Data

Bat 182 Roost Tree Habitat Overview for the Lost City Solar Transmission Line Project, Logan County, Kentucky.

Roost ID	Latitude	Longitude	Location Description	Date First Used (2024)	Habitat	Roost Tree Plot Characteristics*		
						Live Trees	Snags	All Trees
301	37.03688	-86.98167	Forested hillside between Peach Orchard Rd and Lewisburg Rd	12-Aug	Interior	14	0	14
664	37.03562	-86.98235	Northeast of Peach Orchard Rd southwest of RT301	13-Aug	Interior	14	1	15
663	37.03681	-86.98160	Northeast of Peach Orchard Rd approximately 10 feet south of RT301	14-Aug	Interior	15	0	15
800	37.03682	-86.98153	Forested hillside between Peach Orchard Rd and Lewisburg Rd	15-Aug	Interior	-	-	-
801	37.03665	-86.98196	Forested hillside between Peach Orchard Rd and Lewisburg Rd	16-Aug	Interior	-	-	-

*Plot characteristics determined using a 10-factor prism based at the roost tree location. Plot data not collected for RT800 or RT801

Bat 182 Roost Tree Data for the Lost City Solar Transmission Line Project, Logan County, Kentucky.

Roost ID	Roost Type	Tree Species	DBH (cm)	Tree Height (m)	Roost Height (m)	Micro-Habitat Used by Bat	Tree Decay State	Bark Cover (%)		Tree Ranking	Canopy Cover (%)
								Total	Usable		
301	Live tree	*Quercus rubra*	48.1	26	24	Canopy leaf cluster	1	100	0	C	75
664	Live tree	*Quercus falcata*	85.3	18	14	Canopy leaf cluster	1	100	0	C	80
663	Live tree	*Acer saccharum*	41.6	17	15	Canopy leaf cluster	1	100	0	C	85
800	Live tree	*Quercus rubra*	58.2	21	20	Canopy leaf cluster	1	100	0	C	75
801	Live tree	*Quercus rubra*	34.8	17	15	Canopy leaf cluster	1	100	0	C	100

C = Canopy, SC = sub-canopy; tree decay state 1 = Live

APPENDIX G

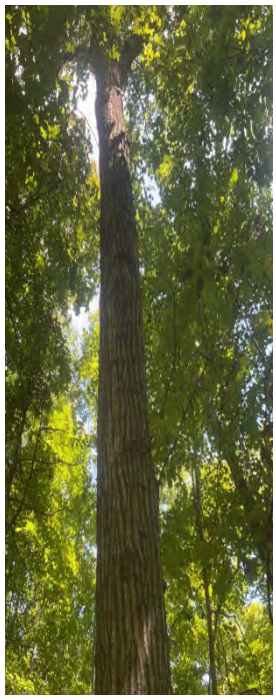
Roost Tree Photograph Log

COPPERHEAD ENVIRONMENTAL CONSULTING	Summer 2024 Bat Mist-Net Surveys for the Lost City Solar Transmission Line Roost Tree Photograph Log	
Project No.: **1543**	**County, State:** **Logan & Muhlenberg, Kentucky**	**Photograph Log Page Number:** **1**

Roost tree 301 used by bat 182
(37.03688, -86.98167)

Roost tree 663 used by bat 182
(37.03681, -86.98160)

Roost tree 664 used by bat 182
(37.03562, -86.98235)



Roost tree 800 used by bat 182
(37.03682, -86.98153)

COPPERHEAD ENVIRONMENTAL CONSULTING	Summer 2024 Bat Mist-Net Surveys for the Lost City Solar Transmission Line Roost Tree Photograph Log	
Project No.: **1543**	**County, State:** **Logan & Muhlenberg, Kentucky**	**Photograph Log Page Number:** **2**

Roost tree 801 used by bat 182
(37.03665, -86.98196)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
Phone: (502) 695-0467 Fax: (502) 695-1024
Email Address: kentuckyes@fws.gov

In Reply Refer To: 08/29/2025 13:39:36 UTC
Project Code: 2024-0063692
Project Name: Lost City Transmission Line

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

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the

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

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

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

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

It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

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

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

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

This species list is provided by:

Kentucky Ecological Services Field Office
J C Watts Federal Building, Room 265
330 West Broadway
Frankfort, KY 40601-8670
(502) 695-0467

PROJECT SUMMARY

Project Code: 2024-0063692
Project Name: Lost City Transmission Line
Project Type: Transmission Line - New Constr - Above Ground
Project Description: Transmission line
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.02677855,-86.94669029797402,14z

Counties: Logan and Muhlenberg counties, Kentucky

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

MAMMALS

NAME	STATUS
Gray Bat *Myotis grisescens* No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: ▪ The project area includes potential gray bat habitat. Species profile: https://ecos.fws.gov/ecp/species/6329 General project design guidelines: https://ipac.ecosphere.fws.gov/project/T4K5DEUXJVHXBCY4K7D4UNUQLA/documents/generated/6422.pdf	Endangered
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. This species only needs to be considered under the following conditions: ▪ The project area includes 'potential' habitat. All activities in this location should consider possible effects to this species. Species profile: https://ecos.fws.gov/ecp/species/5949 General project design guidelines: https://ipac.ecosphere.fws.gov/project/T4K5DEUXJVHXBCY4K7D4UNUQLA/documents/generated/6422.pdf	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045 General project design guidelines: https://ipac.ecosphere.fws.gov/project/T4K5DEUXJVHXBCY4K7D4UNUQLA/documents/generated/6422.pdf	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Whooping Crane *Grus americana* Population: U.S.A. (AL, AR, CO, FL, GA, ID, IL, IN, IA, KY, LA, MI, MN, MS, MO, NC, NM, OH, SC, TN, UT, VA, WI, WV, western half of WY) No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/758	Experimental Population, Non-Essential

CLAMS

NAME	STATUS
Pink Mucket (pearlymussel) *Lampsilis abrupta* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7829 General project design guidelines:	Endangered

NAME	STATUS

https://ipac.ecosphere.fws.gov/project/T4K5DEUXJVHXBCY4K7D4UNUQLA/documents/generated/5639.pdf

INSECTS

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

CRITICAL HABITATS

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

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

IPAC USER CONTACT INFORMATION

Agency:	Copperhead Consulting
Name:	Kelsie Eshler
Address:	471 Main Street
Address Line 2:	PO BOX 73
City:	Paint Lick
State:	KY
Zip:	40461
Email	keshler@copperheadconsulting.com
Phone:	8599259012

Siting Board 2-13:

Identify the entity that will be responsible for maintaining vegetative clearing the ROW for the life of the project and provide any vegetation management plan for the proposed transmission line route.

Response: The Applicant will be responsible for maintaining vegetative clearing in the ROW for the life of the Project. At this time, no vegetation management plan has been developed but a vegetation management plan will be prepared prior to operation.

Witness: Marty Marchaterre

Siting Board 2-14:

After performing the transmission line studies with the Tennessee Valley Authority (TVA), explain the likelihood that the proposed transmission line will require a second line or require converting the current proposed single circuit transmission line into a double circuit transmission line.

Response:

At this time in the TVA process, there is no expectation of adding a second line or conversion to a double circuit transmission line. As this is generation interconnection (and not load interconnection), the proposed single circuit would suffice project needs. Usually, similar changes/modifications require a new application along with necessary modeling studies and data submittals.

Witness: Shane Kelley

Siting Board 2-15:

Refer to Lost City Renewables' response to Siting Board Staff's First Request for Information, Item 12, Attachment. Alternate routes B and C have different start points than Alternate route A. Explain whether the alternate start points are related to alternate locations for the solar collector substation. If so, explain whether the proposed transmission line route is also based on the location of the solar collector substation.

Response: For Alternates B and C, the different start point was based on an earlier proposed location of the substation. The revised preliminary design shifted the substation approximately 1.3 miles southeast (shown as the starting point for Alternative A). This new location reduced the length of the Alternative A transmission line.

Witness: Marty Marchaterre

Siting Board 2-16:

Confirm that the proposed transmission line will comply with American Society for Testing and Materials (ASTM) and American Society of Civil Engineers (ASCE) standards. If not confirmed, explain why not.

Response: Yes, the Lost City transmission line will comply with ASTM and ASCE standards.

Witness: Marty Marchaterre

COMMONWEALTH OF KENTUCKY
BEFORE THE KENTUCKY STATE BOARD
ON ELECTRIC GENERATION AND TRANSMISSION SITING

In the Matter of:

Electronic Application on behalf of Lost City Renewables LLC for a Certificate of Construction for a 161kV Nonregulated Electric Transmission Line up to approximately 10.5 miles in Length in Muhlenberg and Logan Counties, Kentucky Pursuant to KRS 278.700, et seq. and 807 KAR 5:110	)	**Case No. 2025-00030**

CERTIFICATION

This is to certify that I have supervised the preparation of the Lost City Renewables LLC's responses to the Siting Board Staff's Second Request for Information and that the responses on which I am identified as a sponsoring witness are true and accurate to the best of my knowledge, information, and belief after reasonable inquiry.

8/29/2025
Date

Shane Kelley

COMMONWEALTH OF KENTUCKY
BEFORE THE KENTUCKY STATE BOARD
ON ELECTRIC GENERATION AND TRANSMISSION SITING

In the Matter of:

Electronic Application on behalf of Lost City Renewables LLC for a Certificate of Construction for a 161kV Nonregulated Electric Transmission Line up to approximately 10.5 miles in Length in Muhlenberg and Logan Counties, Kentucky Pursuant to KRS 278.700, et seq. and 807 KAR 5:110	)	**Case No. 2025-00030**

CERTIFICATION

This is to certify that I have supervised the preparation of the Lost City Renewables LLC's responses to the Siting Board Staff's Second Request for Information and that the responses on which I am identified as a sponsoring witness are true and accurate to the best of my knowledge, information, and belief after reasonable inquiry.

8/29/2025
Date

Marty Marchaterre
Marty Marchaterre